

**FORM AND STRUCTURE OF THE RURAL-URBAN FRINGE AS A
DIAGNOSTIC TOOL OF POSTMODERN URBAN DEVELOPMENT IN
CANADA**

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ABSTRACT

This research presents an attempt to “geolocate” postmodern urban development within Canadian urban space using changes in the form and structure of the rural-urban fringe areas as a diagnostic tool. The main argument presented herein is that conceptualizations of postmodern urban form and structure, and particularly their treatment in the urban geographic literature, mask the high level of diversity occurring across the Canadian urban hierarchy.

A two-stage methodology linking the models describing postmodern urban form and structure found in the North American geographic literature with the theoretical contributions dealing with factors and forces of urban development is employed. First, investigation of the current patterns of differentiation of the urban social space in Canadian metropolitan areas is conducted. This stage of the analysis is informed by a structural approach to urban geography and carried out by means of factorial ecology. A typology of Canadian rural-urban fringe CSDs is developed using data from 1991 and 1996 censuses of population. Second, two indicators of functional relationships existing between urban fringe and urban core areas — the geographic extent of personal networks of individuals and the activity spaces of households — are investigated in the exemplar rural-urban fringe CSDs. This stage of the analysis is informed by propositions of structuration theory, although it remained compositional with regards to the main focus of analysis.

The results of this research suggest that models of postmodern urban form and structure, which have developed in the context of the recent socio-economic restructuring taking place in the United States, do not adequately describe the situation in Canada. While the current context of urban development in Canada shows certain similarities to that in the United States, it also exhibits some unique features that have important implications for the urban development. Variation in urban form and structure in Canada appears to follow two axes — the regional location of metropolitan areas and their positions within the national urban hierarchy. Although Canada exhibits a strong spatial differentiation into heartland and hinterland regions, no shift in focus of the socio-economic space comparable to that of the American Frostbelt-Sunbelt dichotomy is observed here. The majority of rural-urban fringe areas that have elements of postmodern form and structure were found at the top of the urban hierarchy and in the region that has historically been the economic and political core of Canada. Urban areas positioned in the middle of the urban hierarchy appear to have a monocentric structure with a significant degree of centrality.

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To my Mom, Professor Margarita Dvorzhetska

TABLE OF CONTENTS

PERMISSION TO USE	i
ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER 1: INTRODUCTION	1
1.1 North American Urban Development in the Second Half of the Twentieth Century	1
1.2 Conceptualization of the Postmodern Urban Form and Structure in Urban Geography	7
1.3 Research Approach and Objectives of the Study	12
CHAPTER 2: RURAL-URBAN FRINGE: TERMINOLOGY AND DEFINITION	16
2.1 Approaches to Defining the Rural-Urban Fringe	16
2.2 Statistics Canada's Definition of Rural-Urban Fringe	27
2.3 Relationship between the Concepts of Rural-Urban Fringe and Suburb	32
2.4 Conclusion	36
CHAPTER 3: THE RURAL-URBAN FRINGE IN THE CONTEXT OF URBAN DEVELOPMENT	42
3.1 Factors and Forces of Postmodern Urban Development	43
3.1.1 Treatment of Factors and Forces of Postmodern Urban Development within the Neo-Classical Economic Framework: The University of Waterloo School	44
3.1.2 Treatment of Factors and Forces of Postmodern Urban Development within the Framework of Structuralism	47
3.1.2.1 Richard Walker	47
3.1.2.2 Michael Gottdiener	52
3.1.2.3 Allen Scott	55
3.1.2.4 Rachel Law and Jennifer Wolch	59
3.2 Unevenness and Contextuality of Urban Development	64

3.2.1 Arguments from the Neo-Classical Economic Point of View	65
3.2.2 Arguments from the Structural Point of View	67
3.2.2.1 General Patterns of Temporal and Spatial Dynamics of Urban Development under Capitalism	67
3.2.2.2 The Role of Labour Markets and the State in Uneven and Contextual Patterns of Urban Development	69
3.2.3 Contribution of Structuration Theory to the Conceptualisation of Urban Development as Uneven and Contextual	74
3.2.3.1 Limitations of the Neoclassical Economic and Structural Approaches to Urban Development	74
3.2.3.2 Conceptualisation of the Relationship between Structure and Agency	75
3.2.3.3 Implications of Structure-Agency Duality for the Production of Social Space	77
3.3 Towards a Framework for Analysis of the Spatial Distribution of Postmodern Urban Form in Canada	81
3.4 Context of the Post-Modern Urban Development in Canada	84
3.5 Conclusion	89
CHAPTER 4: METHODOLOGY	93
4.1 Stage 1: Development of a Classification of Rural-Urban Fringe Areas	94
4.2 Stage 2: Study of the Characteristics and Relationships of Exemplar Rural-Urban Fringe Communities	105
CHAPTER 5: CLASSIFICATION OF CANADIAN RURAL-URBAN FRINGE AREAS	120
5.1 Basic Dimensions of Variation among Metropolitan Census Subdivisions	120
5.2 Discussion	135
5.3 Classification of the Metropolitan Census Subdivisions	139
5.4 Discussion	161
CHAPTER 6: CHARACTERISTICS AND RELATIONSHIPS OF EXEMPLAR RURAL-URBAN FRINGE CENSUS SUBDIVISIONS	167
6.1 Description of the Rural-Urban Fringe CSDs Exemplar for Clusters 1, 2, and 3	170
6.1.1 Cluster 1: Stoneham-et-Tewkesbury, Quebec CMA	170
6.1.2 Cluster 2: Subdivision C of Halifax County, Halifax CMA	174

6.1.3 Cluster 3: The Town of East Gwillimbury, Toronto CMA	178
6.2 Analysis of the Activity Spaces and Personal Networks of Households Residing in Exemplar Census Subdivisions	181
6.2.1 Central Tendency Measures	182
6.2.1.1 Description of Activity Spaces of Households in Exemplar Census Subdivisions	183
6.2.1.2 Description of the Geographic Extent of Personal Networks of Individuals in Exemplar Census Subdivisions	190
6.2.1.3 Description of the Socio-Demographic Characteristics of Survey Respondents in Exemplar Census Subdivisions	191
6.2.2 Significance of the Collected Variables for Between-Group Differences	194
6.3 Test of the Ability of the Variables Significant for Between-Group Differences to Predict Cluster Membership of Cases	201
6.4 Discussion	202
CHAPTER 7: CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH	208
7.1 Conclusions	208
7.2 Theoretical and Methodological Contributions	212
7.3 Methodological Issues and Limitations	215
7.4 Directions for Future Research	218
APPENDIX A: LIST OF VARIABLES INITIALLY SELECTED FOR ANALYSIS AT STAGE 1	223
APPENDIX B: SURVEY QUESTIONNAIRE	231
APPENDIX C: EXAMPLE OF THE SURVEY COVER LETTER	236
APPENDIX D: EXAMPLE OF THE SURVEY REMINDER LETTER	238
APPENDIX E: DIMENSIONS OF SOCIO-ECONOMIC STRUCTURE OF CSDS WITHIN CANADIAN METROPOLITAN AREAS	240
REFERENCES	247

LIST OF TABLES

Table 4.1	Frequency Distribution of Missing Values	99
Table 4.2	Clusters Excluded from Further Analysis	106
Table 4.3	Communities Included in the Survey Sample Frame	115
Table 5.1	Total Variance Explained by the Eleven-Factor Structure	121
Table 5.2	Changes in the Absolute Total and Employment Income Values, 1991–1996	127
Table 5.3	Changes in the Nature of Employment, 1991–1996	130
Table 5.4	Average Factor Scores for the Extracted Clusters	145
Table 5.5	Distribution of Indian Reserves among Extracted Clusters	160
Table 6.1	Census Subdivisions Selected as Exemplar Cases for Each of the Identified Types of Rural-Urban Fringe Areas	169
Table 6.2	Central Tendency Measures for the Three Exemplar Census Subdivisions	184
Table 6.3	Frequency Distribution of Values for Variables Describing Activity Spaces, Personal Networks, and Characteristics of Respondents for the Exemplar CSDs	186
Table 6.4	Comparison between Data Collected via Mail Survey and Data from Statistics Canada Community Profiles	192
Table 6.5	Results of Crosstabulation Analysis with Cluster Membership as Dependent Variable	195
Table 6.6a	Kolmogorov-Smirnov Comparisons between Stoneham-et-Tewkesbury and Halifax, Subdivision C	197
Table 6.6b	Kolmogorov-Smirnov Comparisons between Halifax, Subdivision C and East Gwillimbury	198
Table 6.6c	Kolmogorov-Smirnov Comparisons between Stoneham-et-Tewkesbury and East Gwillimbury	199

LIST OF FIGURES

Figure 2.1	Delimitation of rural-urban fringe according to Prior (1968)	18
Figure 2.2	Hierarchy of Nodal Regions	22
Figure 2.3	The Form of the Regional City and Urban Field	24
Figure 2.4	Statistics Canada Definition of Metropolitan Areas (CAs and CMAs)	29
Figure 2.5	Component Parts of CA and CMA	30
Figure 4.1	Scree-Plot of the Preliminary PAF 1 Results	100
Figure 4.2	Scree-Plot of the Preliminary PAF 2 Results	101
Figure 4.3	Scree-Plot of the PAF Results	102
Figure 4.4	Eleven-Cluster Solution Based on the Eleven-Factor Structure	104
Figure 4.5	Relative Size and Shape of the Three CSDs Selected for Analysis at the Second Stage	117
Figure 5.1a	Distribution of the Identified Types of Metropolitan CSDs: Eastern Canada, Québec, and Ontario	141
Figure 5.1b	Distribution of the Identified Types of Metropolitan CSDs: Central Canada	142
Figure 5.1c	Distribution of the Identified Types of Metropolitan CSDs: Western Canada	143
Figure 5.2	Average Factor Scores for Cluster 1	146
Figure 5.3	Average Factor Scores for Cluster 2	147
Figure 5.4	Average Factor Scores for Cluster 3	149
Figure 5.5	Average Factor Scores for Clusters 4 and 5	151
Figure 5.6	Average Factor Scores for Cluster 6	155
Figure 5.7	Average Factor Scores for Cluster 7	155
Figure 5.8	Average Factor Scores for Cluster 9	156
Figure 6.1	Location of Cantons-Unis of Stoneham-et-Tewkesbury	173
Figure 6.2	Location of the Subdivision C of Halifax County	177
Figure 6.3	Location of the Town of East Gwillimbury	179
Figure 6.4	Distribution of Population in the Town of East Gwillimbury	179

CHAPTER 1: INTRODUCTION

1.1. North American Urban Development in the Second Half of the Twentieth Century

Until recently it was common to portray a typical North American city as a dense plexus of high-rises comprising a central business district (CBD) presiding over a sprawling, undifferentiated mass of suburbs interspersed by highways. However, this imagery is rapidly becoming obsolete in many ways. Although still prominent, an urban core does not represent an unquestionable “heart and brain” of the urban organism. Suburbs and rural-urban fringe areas have moved to the forefront of the urban system not only in terms of their sheer mass due to areal expansion and population growth, but also as areas where all vitally important urban functions are located. The nature of rural-urban fringe development has changed significantly in the past fifty years, and that change is reflected in the new role the rural-urban fringe plays in the internal structure of the North American city.

Areal expansion and population growth of outer urban areas started the “turning of the city inside out” (Badcock 1984), a trend that intensified significantly in the last quarter of the twentieth century. Since 1945, the overall increase in the urban population in North America has disproportionately shifted from the central city to the suburbs. The proportion of the population of US metropolitan areas residing in suburban locations increased from 23 percent in 1950 to 47 percent in 1990 (Yeates 1998a). Similarly, in

Canada the proportion of the metropolitan population residing in the suburbs increased from 4 percent in 1961 to 27 percent in 1981 and 31 percent in 1991 (Patterson 1993). Generally, between 1945 and 1990 Canadian suburban areas consistently experienced the highest rates of growth compared to those in central cities and rural areas (Bourne 1991). For example, in the 1980s nearly 60 percent of the net growth occurring in Canada's Census Metropolitan Areas (CMAs) and almost half of the net population growth of Canada was situated in the fringe areas of CMAs (Patterson 1993).

Increases in the area occupied by suburbs and development at the rural-urban fringes were even more impressive. For example, the area of Chicago more than tripled in size due to suburban expansion between 1945 and 1995, while the population of this metropolitan area increased by only 45 percent (Yeates 1998a: 213). Over the same period of time, in the United States overall, metropolitan areas have experienced relatively small population increases of 3 to 5 percent while land consumption has increased 40 to 60 percent (Truelsen 1996). The same trend toward "spreading the cities over the landscape" (Olson 1991:253) due to suburban development has been observed in Canada (Bourne 1991; Bunting, Filion 1996) between 1945 and 1995. According to Bryant et al. (1982: 8), the concentrated built-up part of Canadian metropolitan areas contained 75 to 90 percent of the population while accounting only for about 5 percent of the land space, whereas the dispersed part may have contained "10 to 25 percent of the people with their activities spread over about 95 percent of the living space."

In the 1960s, population growth and dispersion changed the geographic and demographic configuration of labour markets within North American urban areas, which had a significant impact on the overall patterns of industrial location. The suburban share of metropolitan employment in the largest urban areas in the USA grew by 44

percent compared to a 7 percent decrease in share of the central cities, and by 1973 suburban employment nationwide surpassed that of the central cities for the first time (Muller 1981). In the 1980s, roughly two-thirds of 19 million new jobs were located in the suburbs of the American metropolitan areas (Yeates 1998a).

The trend toward deconcentration of population and economic activities within cities was not new. Rather, it represented a “more or less continuous historical pattern of the past 100 years” (Bowen, Kimble 1997:9) that recently has become more visible due to its acceleration. Certain types of employment were found in the suburbs before 1945. Manufacturing began to decentralize to the fringe areas with the advent of intra-urban railway systems as early as the 1880s (Muller 1981; Fishman 1987; Yeates 1998a). Food and convenience stores were commonly found in the 1920s suburbs of the “recreational automobile era” (Muller 1981: 48). The first complete shopping center was opened in the Country Club District, a planned upper-middle-class suburban community in the outer fringes of Kansas City, in 1922 (Muller 1981:46). However, the most recent round of industrial deconcentration differs from previous rounds in that it was prompted not only by the availability and relative cheapness of land at the fringe (Bunting, Filion 1996) or by the location of a specific consumer market segment. The main stimulus by far came from (1) the changes in the configuration of the metropolitan labour markets in both geographic and demographic terms aided by investment of public funds into arterial roads and expressways and (2) the spread of electronic means of communications.

Even in this recent round of industrial deconcentration suburbs did initially attract those functions that required greater space and more routine labour, whereas more specialized functions that depended on networks of professional relationships tended to stay in the city. For example, Stanback (1991: 53-4) describes growing specialization of

employment in American central cities into two groups of services — city centres comprised jobs in the sectors of finance, insurance, and real estate (FIRE), and transportation, communication, and utilities (TCU), as well as some other types of services that employed skilled, well-educated workers, while suburbs tended to specialize in low-paying back-office or residentiary financial activities. With time, however, corporate head offices that once occupied signature buildings downtown started to relocate to suburban locations, thus escaping the congestion and high rents of the central city (Muller 1981, Yeates 1998a). It is interesting to note that in the midst of the deindustrialization that swept through the industrial urban regions of North America roughly between the 1970 and the 1990, many suburban areas had retained certain sectors of manufacturing. Norcliffe (1996) has shown that in Toronto, as in a number of US cities, there was a decline in manufacturing and total employment in the central city area but rapid growth in the outer city from 1971 to 1981, and again from 1981 to 1991. By 1996, most of the metropolitan manufacturing employment in North America was found in the outer suburbs (Mercer 1999). These findings are in agreement with the results of a study done by Yeates (1998b), who also demonstrated decline in manufacturing employment in the central city accompanied by its significant growth in the outer suburbs in Canada's "million plus" CMAs (i.e., Toronto, Montréal, and Vancouver). Muller (1997) notes that the distribution of high-tech industrial activity in the United States is "overwhelmingly suburban."

Various accounts of suburban economic development provide evidence that it "does not take place evenly across the outlying metropolitan area but rather is centered in key or magnet areas, where agglomeration economies arise" (Stanback 1991: 80). As a result of agglomeration advantages, those areas experience rapid growth and

development of export sectors, i.e., those activities that service not only local population, but get “exported” back to the urban core and even to the adjacent metropolitan regions. Traditional suburban exports, such as the “daily ‘export’ of commuters’ services to the central city” and products of manufacturing have been increasingly eclipsed in importance by wholesaling and specialized producer-services (Stanback 1991: 5-6).

These suburban concentrations of economic activity have been variously labelled as “suburban minicities” (Muller 1981), “suburban downtowns” (Hartshorn, Muller 1989), “edge cities” (Garreau 1991), and “exopolises” (Soja 1992), and have been classified into different types. Muller (1976, 1981) was probably the first to provide a detailed account of the emergence of this new urban form in the United States. He observed that minicities tended to form in the rural-urban fringe around certain growth poles such as airports, highway intersections, and old towns that found themselves pulled into the orbits of nearby metropolitan areas. Depending on the nature of a growth pole, the subsequent growth tends to take one of two forms — that of a node or that of a suburban freeway corridor. Analysing six suburban downtowns in three US metropolitan areas, Hartshorne and Muller (1989) proposed a periodization of the development of suburban centres, which suggested that suburban centres typically progressed through a succession of stages becoming increasingly more complex and diversified in form and function

According to Garreau(1991), in the United States this new type of urban development challenges the CBD not only economically (particularly with regard to the delivery of specialized consumer and producer services [Bogart 1998: 177-203]) but also socially, culturally, and politically. Because they are often located in unincorporated areas or spanseveral political jurisdictions (Beauregard 1995), edge cities exhibit a

propensity to become “seats of ‘shadow government’,” “a privatized protogovernment that . . . is responsive primarily to wealth and subject to few constitutional constraints (Dear, Fusty 1998:55). Muller (1997) observes that in the course of continuing corporate suburbanization more and more functions essential for corporate control are located in the suburbs, thus making new suburban business centres into “corporate control points on the transnational networks.” In fact, the global connectedness of the suburban nodes is viewed by some as a necessary condition in order for a city to achieve a global status (Sassen 1995).

Thus it seems that outer areas of contemporary North American cities have not only become places where “most of the people live and work and where most economic activities, especially fast-growing sectors, are located” (Bunting, Filion 1996) within the North American city and North America in general, but also have “now evolved into a self-sufficient urban entity, containing its own major economic and cultural activities, that is no longer an appendage to the central city” (Muller 1981:4). There is an increasing understanding among urban scholars that these changes in the structure and role of the outer city have implications for overall urban form and structure. This understanding is broadly captured in the term “postmodern urban process,” “in which the urban periphery organizes the centre within the context of global capitalism” (Dear, Flusty 1998: 65; Relph 2001).

Postmodern urban development is a complex phenomenon that comprises changes in urban form, structure, and function. The result is often compared and contrasted with modern urban development; more specifically, postmodern urban development is considered its antithesis. Postmodern urban development should be considered in the context of wider social and economic processes of postmodern turn (Ley 2000:622-3).

As postmodernity itself is seen as consisting of various interrelated “layers” and “scales”, it is hard to give a simple and at the same time comprehensive definition of postmodern urban development. One of the attempts at developing such a definition is found in Dear and Flusty (1998). Ley (2000) identified broad changes in North American society summarized as “post-Fordism,” “post-industrial society,” “urban spectacle,” and “culture of consumption” as elements of postmodern urbanism. The City of Los Angeles is often seen as a “condensed” spatial expression of the post-modern urbanism in North America (Davies 1992; Soja 1996).

1.2. Conceptualization of the Postmodern Urban Form and Structure in Urban Geography

Some geographers view the present situation as “a radical new discontinuity” in the process of urban development (Bowen, Kimble 1997) that results in “a radical break in the way cities develop” (Dear, Flusty 1998: 50; Norton 2001: 322). Others argue in favour of treating what is occurring now as simply another stage in urban development under capitalism (Badcock 1984; Scott 1988; Harvey 1989). Regardless of the differences in opinion with respect to its ontological nature, a number of concepts and models have been put forward that describe various aspects of postmodern urban form and structure.

These can be loosely divided into two groups. Concepts and models in the first group, including those of the urban field (Friedmann, Miller 1965), the regional city (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991), and the dispersed city (Bourne 1991; Bunting, Filion 1996) put more emphasis on deconcentration and decentralization of urban functions across space. They present a modern metropolitan

area as a region where urban functions and activities are widely distributed and are present at many locations (Fujii, Hartshorn 1995). The locations are linked by flows of material objects and information. The high density of the linkages between the locations constitutes a necessary condition for the existence of a dispersed urban form (Friedmann, Miller 1965; Bryant et al. 1982). Generally, it is assumed that the dispersed city has a more densely developed core area where command and control functions are concentrated (Soja 1989) and which receives the largest flows of goods, people, and information (Bryant et al. 1982). Over time, however, as deconcentration and transportation and communications become more and more efficient, a metropolitan area should become increasingly homogeneous.

The second group consists of theoretical constructs emphasizing the polycentricity of late twentieth-century urban development such as the multiple nuclei model (Harris, Ullman 1945), the urban realms model (Hartshorn, Muller, 1989; Vance 1990), and the galactic city concept (Yeates 1998 a). These theories are based on the assumption that deconcentration of urban functions should necessarily be coupled with their reconcentration and reagglomeration (Muller 1981; Scott 1988). Initially, locations where reconcentration occurs contain only few functions and activities, but with time they tend to develop into minicities that challenge the centrality of the metropolitan core area (Muller 1981, 1997; Dear, Flusty 1998), which is often seen as declining (Muller 1981). Eventually, the metropolitan area is divided into separate realms, boundaries of which are defined by commutersheds, labour, and consumer markets around each of the large suburban nodes. Each of the nodes is assumed to have the same bundle of functions and to be self-contained (Hartshorn, Muller 1989; Vance 1990; Fujii, Hartshorn 1995); therefore, few cross-connections exist between them (Fujii, Hartshorn

1995). On the other hand, initial nodes could become highly specialized in certain functions. In these cases, over time, metropolitan areas come to resemble a “gaming board” where urban realms are connected to each other based on their functions (Dear, Flusty 1998). The former core area becomes just one of the places on the board, albeit one where command and control functions often are concentrated.

The concepts and models of both groups were put forward as alternatives to the monocentric views of the city, which until recently were considered, if implicitly, to be universally applicable within the North American urban context. However, in the true spirit of postmodernism, proponents of the new constructs do not claim universality of their application. In recognition of the value of multiple points of view, it is, therefore, appropriate to consider place of these new constructs in terms of real-world geography. Several questions can be asked in this regard. Have the old constructs completely lost their utility in describing contemporary urban structure? If the new constructs are of equal theoretical value, is there any conceptual relationship between old and new constructs? If a map of postmodern urban development were created for North America using these new constructs as markers, what would it look? In other words, do models and constructs put forward to describe postmodern urban development adequately describe current urban form and structure across national contexts of both Canada and the United States; do they adequately describe urban form and structure across all levels of urban hierarchy?

As has been previously mentioned, the constructs describing postmodern urban form and structure are seen to be replacing ones that described the city as “an organic accretion around a central, organizing core” (Dear, Flusty 1998: 65), i.e., the concentric

zone and sector models¹. No consensus has yet been reached, however, with regard to how the processes of deconcentration and multinucleation of urban form and structure are conceptually related. Some researchers present evidence in support of the view that a polycentric urban form is an intermediate stage between a monocentric pattern and a dispersed pattern of urban development (Bourne 1991; Newman, Kenworthy 1992; Gordon, Richardson 1996). Others consider dispersion as a stage preceding multinucleation (Erickson 1983; Hartshorn, Muller 1989). Still others find both processes coexisting in time and space with the resulting urban form and structure being quite different from that described by either dispersed or polycentric city models (Fujii, Hartshorn 1995).

On the other hand, although Dear and Flusty (1998:65) argue that “by now it is clear that the most influential of existing urban models are no longer tenable as *a guide* to contemporary urbanism,” evidence that these models retain a certain amount of empirical validity cannot be ignored. Dear and Flusty (1998) themselves admit that as late as 1992 a concentric-ring pattern resurfaced in the study done by Davis (1992) on “the ecology of fear” in Los Angeles. When Bunting and Filion (1996) analysed the social geography of Kitchener-Waterloo CMA, a prototypical Canadian dispersed city, they found that distribution of social status characteristics of households followed a combination of concentric and sectoral patterns, and distribution of the characteristics that describe households in terms of their place in the life cycle followed a concentric pattern within that CMA. To explain the persistence of these traditional patterns in urban

¹ The multiple nuclei model of Harris and Ullman (1945) occupies a position somewhere in the middle of the discontinuity in the conceptualization of urban form and structure as it allows for the development of various landuses around each core, but also is regarded as a monocentric model recognizing only one organizing centre, the CBD (Fujii, Hartshorn 1995: 682)

structure, they referred to a combination of localized accessibility and place-specific factors, such as the structure of the housing sector inherited from previous periods of urban development, dynamics of aging of housing units, and practices of residential development.

The majority of new as well as old constructs describing form and structure of North American cities result from analyses of the US metropolitan areas, the regional city and the dispersed city models developed by Canadian urban geographers being among the few exceptions. The concentric zone model was proposed by Burgess (1925) based on his observations of the distribution of different land uses in the Chicago of the 1920s; Hoyt arrived at his sector model following analysis of rental and housing data for 142 US cities. The origins of the majority of more recently developed models and concepts of urban form and structure can be traced to research on Los Angeles and the southern California region (Dear, Flusty 1998). For example, the urban realms construct was originally developed by Vance (1964) to reflect the pattern of development in the 1950s in the San Francisco Bay Area, while the gaming board urban structure proposed by Dear and Flusty (1998) is essentially a “Los Angeles model” (Norton 2001: 322). In fact, Los Angeles and the southern California region are seen as representing a quintessential postmodern urban space in the United States (Scott 1988; Soja 1989; Dear, Flusty 1998), just as Chicago in the 1920s represented a quintessential modern urban space. In addition, it is evident that all the theoretical constructs describing form and structure of the North American city, including those developed within both Canadian and American contexts, are based on data generated from observations of large metropolitan areas at the top of urban hierarchy. It is logical, therefore, to inquire to what extent the description of the “turning of the city inside out” (Badcock 1984) that

was presented in the first section of this chapter applies morphologically and functionally to cities at the lower level of urban hierarchy in both Canadian and American contexts.

1.3. Research Approach and Objectives of the Study

This research presents an attempt to “geolocate” post modern urban development within Canadian urban space using changes in the form and structure¹ of the rural-urban fringe areas as a diagnostic tool. The main argument to be presented herein is that conceptualizations of postmodern urban form and structure, and particularly their treatment in the urban geographic literature, mask the high level of diversity occurring across the Canadian urban hierarchy. The point of departure for the theoretical framework is based on the link between the process of urban development and urban form and structure. A number of urban geographers working within various paradigms have linked urban development to “a complex set of processes that operate within the broader fabric of the society” (Johnson 1974: 4). Contributions to urban geography (Friedmann, Miller 1965; Walker 1981; Bryant et al. 1982; Gottdiener 1985; Coppack 1988a, b; Scott 1988; Bryant, Coppack 1991) have traced the emerging postmodern urban form and structure to recent socio-economic, political, and cultural changes summarized variously as “post-industrial society,” “a shift in the regime of capital accumulation,” “globalization,” and “restructuring.” However, it has been recognized that the specific manner in which these changes are expressed spatially is geographically and historically contingent (Pred 1984, Massey 1995).

¹ Following Bauer Wurster (1973: 45), urban form is defined as “the physical pattern of land use, population distribution, and service networks;” and urban structure is defined as “the spatial organization of human activities and interrelationships.”

In this research, the structure and form of Canadian urban areas are examined at two geographic scales — national and regional. It is believed that “a synthetic approach, which stretches across the twin poles of structure and agency” (Gottodiener 1985:218) provides the best foundation for examining the process of urban development at several geographic scales. However, as such examination could be relatively wide in scope, presented here analysis is more compositional in nature and focuses on general trends in postmodern urban development within the Canadian context.

The character of this research is exploratory, so no specific hypotheses are being put forward. However, it is expected that variation in urban structure of Canadian cities should follow the combination of two patterns — a difference in urban structure among regions in Canada and a difference in urban structure according to the position of cities within the urban hierarchy. This research addresses the following objectives:

1. To contribute to an understanding of the complex economic, political, social, spatial, and demographic processes that shape urban areas of Canada, focusing particularly on their rural-urban fringes;
2. To assess the current trends in the Canadian urban process using the structure of rural-urban fringe areas as a diagnostic tool;
3. To examine how socio-economic context influences the structure of the rural-urban fringe and its role in internal urban structure;
4. To examine how socio-economic context influences the relationship between the rural-urban fringe and the urban core; and
5. To create a typology of Canadian rural-urban fringes.

Including the introduction, the thesis is organized into seven chapters. The two chapters following the introduction provide a review of the literature on which this

research is founded. Chapter 2 provides an account of current views regarding the definition and delimitation of the rural-urban fringe in North America in general and in Canada in particular. Chapter 3 is dedicated to the general theoretical foundation of this project. In its first section, literature dealing with postmodern urban development in North American context is reviewed and analysed in order to establish factors and forces that are important for this process. Based on this analysis, the second section argues that urban development in general, and postmodern development in particular, is uneven and contextual in terms of the resulting spatial patterns. This section posits that although the neo-classical economic and structural approaches to urban geography represent, respectively, more common and more theoretically developed frameworks for analysis of urban form and structure, propositions of the structuration theory significantly enrich our understanding of the unevenness and contextuality of the process of urban development and the resulting spatial patterns. The third section presents a framework for a analysis of the spatial distribution of postmodern urban development in Canada incorporating the three following elements — broad structuring processes, local agency, and the nature of the local areas. Chapter 3 concludes with an overview of the current context of urban development in Canada.

Chapter 4 describes the two-stage methodology employed in this project. At the first stage, demographic, economic, and social characteristics of Census Subdivisions (CSDs) within the CMA and Census Agglomeration (CA) boundaries were statistically analysed. The objective at this stage was to distinguish between urban core and fringe areas within Canadian metropolitan areas with subsequent creation of a classification of rural-urban fringes. This stage concentrated on the form of the Canadian fringe areas presented through factorial geography. The second stage was dedicated to exploring

structural links between the rural-urban fringe CSDs and the rest of the urban area. The objective at this stage was to find out what role each of the identified types of fringe areas plays within a metropolis. To achieve this, activity spaces of households and personal networks of residents were studied by surveying samples of households in CSDs exemplary of each of the three types of rural-urban fringe areas that emerged at the first stage of the analysis. Results of the analysis and further discussion are presented in chapters 5 and 6. Chapter 7 concludes the thesis and suggests further directions for research.

CHAPTER 2: RURAL-URBAN FRINGE: TERMINOLOGY AND DEFINITION

The urban fringe, as David Thomas observed, has been with us since urban civilization first emerged and settlements gradually began to expand at the expense of the surrounding rural land (Thomas 1974: 17). However, rural-urban fringe became the focus of more intense attention in the urban planning, sociological, and geographic research during the 1940s through the early 1970s, especially in the North American literature, where the most vigorous attempts at defining fringe areas were made during this time. These attempts were prompted by the growing visibility of the fringe areas, when outward expansion came to dominate urban development almost worldwide and particularly in the United States, where this process moved ahead at an unprecedented pace. This chapter reviews and discusses a number of the representative attempts made between and including the 1940s and 1990s at defining the rural-urban fringe.

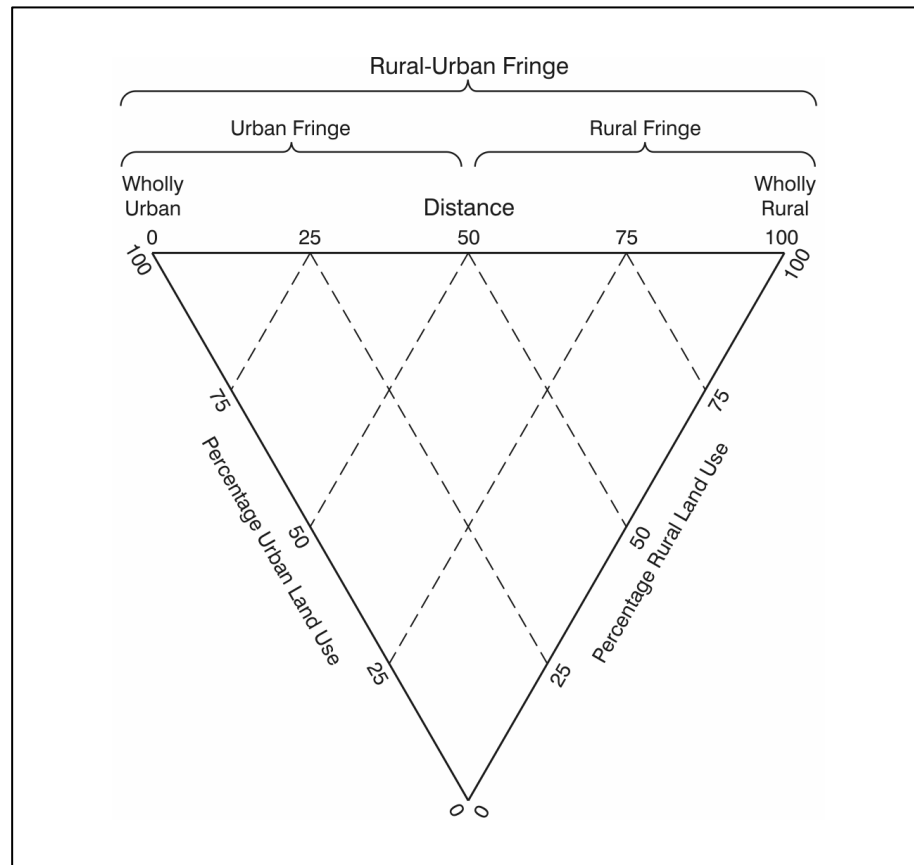
2.1. Approaches to Defining the Rural-Urban Fringe

The term “urban fringe” was coined by T. L. Smith who, in a 1937 study of composition and changes of Louisiana population, used the term to signify “the built-up area just outside the corporate limits of the city” (Pryor 1968). The most vigorous attempts at defining fringe areas were made shortly after the term’s introduction, during the period extending roughly from the 1940s to the early 1970s. During this period, the objective of the studies was usually to identify the best criteria for

defining and delimiting fringe areas as well as their component parts. In a paper on development of the rural-urban fringe around Indianapolis (a paper now considered one of the first formative papers in the field [Thomas 1974]), Wehrwein (1942:218) described the fringe areas as “the areas of transition between well recognized urban land uses and the area devoted to agriculture.” The extent of the fringe was much smaller than either the city trade area or its commutershed. The most common method used to delimit the fringe zone at the time was based on observing land uses and their transition. According to Wehrwein, the following three characteristics of fringes were most important in distinguishing them from the rest of the city. First, residential development was carried out by land agents and speculators who acted independently from each other. Often the supply of building lots exceeded the demand, which led to a patchy pattern of development or, as it is known now, *urban sprawl*. Second, rural-urban fringe areas were characterized by the proliferation of private spaces, especially with regard to recreational uses. Finally, the fringe was said to be still occupied by the uses that represented “urban overspill” — wholesale oil storage units, junk yards, landfills, cemeteries, etc.

Another often-cited important work of that period is that of Pryor (1968), who looked for ways to resolve the seeming inconsistency of the definitions proposed to that time. An improved definition, he thought, should provide a logical link between theories of urban invasion on one hand and practical techniques for the delineation of the fringe boundaries on the other. After reviewing approximately 60 case studies of various fringe areas and identifying their common elements, Pryor grouped them into two categories – those that relied upon structural components (e.g., location, population density) and those based on functional components (e.g., land use, employment). However, none of the definitions “successfully integrated these

Figure 2.1 Delimitation of Rural-Urban Fringe According to Prior (1968)
Source: Thomas 1974: 17



components of the fringe neither with theory nor with practical delineation techniques” (Pryor 1968: 10). His own definition of the rural-urban fringe put emphasis on the characteristics of transition that, when combined with other characteristics such as land use, demographics, or social make-up, would allow for qualitative delimitation of the fringe zone and its internal structure (Figure 2.1).

Johnson’s work (1970, 1974), which is probably less known than contributions by Wehrwein and Pryor, provided interesting insights into the concept of rural-urban fringe. In his introduction to a collection of papers dedicated to suburban growth, Johnson highlighted the importance of recognizing that form and structure of the rural-urban fringe changes within the context of wider socio-economic processes

(Johnson 1974). In his brief account of the history of rural-urban fringe development in North America, Johnson (1974) observed that the fringes of pre-industrial and early industrial cities were narrow and easy to delimit as they constituted “tidemarks” around the edges of cities. These zones were inhabited by various disadvantaged groups, some perhaps employed in noxious industries located there. Clearly, fringes were secondary to the central city where social, political, and economic power was concentrated. With industrialization the level and, especially, the rate of development at the fringe significantly increased. Most of the development was located in areas that offered environmental amenities and was residential in nature, catering to the upper-middle class. Other less picturesque parts of the fringe were occupied by uses of various kinds which, while essential, were not desirable within the main urban area and did not need immediate access to the whole city population (e.g., city dumps, waterworks etc.). At this stage the extent of fringe development was determined by the available means of transportation. Fringe areas continued to be subordinate to the central city, although in some cases people who lived in the rural-urban fringe communities had considerable power in city politics and decision-making.

By the middle of the twentieth century, the development pattern at the fringe became more dispersed. Whereas earlier this residential development had to cluster around the main transportation routes, by 1950 changes in transportation as well as the absence of strict planning controls allowed densities of housing constructed in the suburbs to decrease significantly. This led to a weakening of the ties between the fringe and the central city. As well, Johnson (1974) noted that the pattern of daily activity of fringe residents became less directed towards the central city. New suburban employment, shopping centres, and recreational facilities were stimulating

more complicated patterns of intraurban travel, making the centre of the city only one of many possible desired destinations. Another feature pointed out in the same work was the seasonal changes in the extent of the rural-urban fringe. In those metropolitan centers that had attractive and accessible countryside, the rural-urban fringe could extend up to 160 kilometres during the summer.

The significance of Johnson's work is that he may have been one of the first researchers who accentuated the importance of the relationship between fringe areas and the central city for the definition of the rural-urban fringe. It was this relationship rather than the nominal social or economic characteristics of the fringe that could provide the truly logical link between theories of urbanization and practical techniques of fringe delineation that Pryor (1968) was looking for. It is also interesting to note that Johnson's treatment of the rural-urban fringe is reminiscent of Friedmann and Miller's concept of the urban field which they put forward in 1965, although Johnson (1970, 1974) does not make direct references to this concept.

The emphasis on relationships between the fringe and the central city became a central theme of the research contributions of the 1980s. However, the first to conceptualize this relationship were probably Friedmann and Miller (1965). At the time it was published, their work was predictive rather than descriptive. Based on analysis of urbanization trends in the United States, they foresaw "a new scale of urban living" that would "extend far beyond existing metropolitan cores and penetrate deeply into the periphery," leading to the "change of scale" of urbanization and to the emergence of a "new spatial order" (Friedmann, Miller 1973: 77). They envisioned that the country would eventually be divided into urban areas and, surrounding those, intermetropolitan peripheries. Traditional concepts of the city,

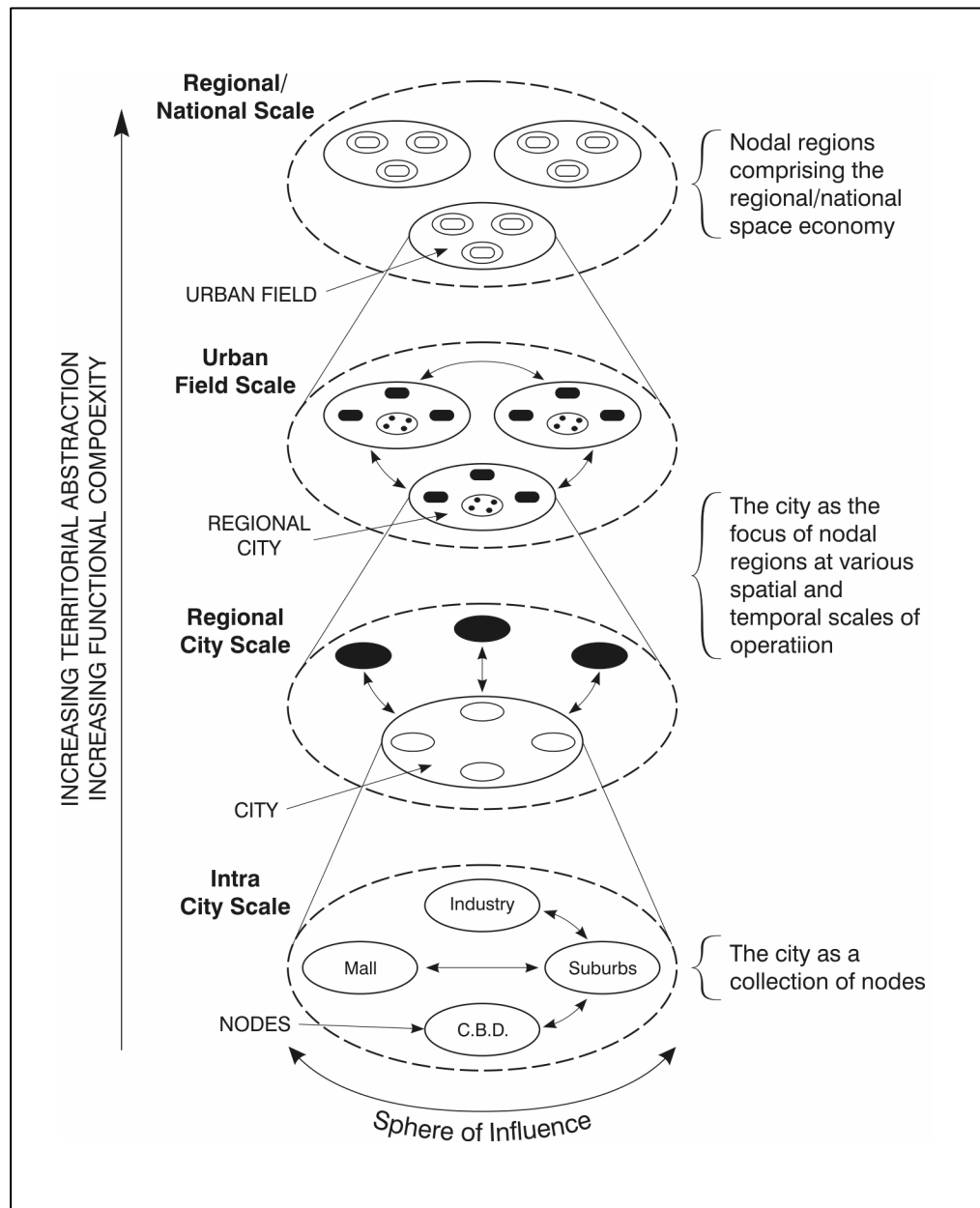
they argued, could not satisfactorily accommodate these developments, and thus a new concept that they called “urban field” was put forward.

The urban field concept is very similar to the concept of a field in physics; that is, a region or space in which a given effect (such as magnetism) exists (Miriam-Webster 2001). The extent of a region of influence is based on the relationships or functional links between the objects within it. This distinguishes the urban field, an explicitly functional region, from all earlier constructs describing urban structure and form, which were organized around the concept of the formal region (Burgess 1925, Hoyt 1939, Harris, Ullman 1945). Further, the concept of urban field acknowledges a continuum of urban influence commencing in the core built-up area and dissipating irregularly outwards as the distance from it increases (Coppack 1988b). However, Friedmann and Miller (1973: 79) emphasized that the urban field gradually would become “a far less focused region than today’s metropolitan area.” In other words, the pattern of the relationships between the core built-up area and smaller urban nodes within the field will change from one of dominance of the core to a more coherent urban structure.

Although Friedmann and Miller did not explicitly distinguish the rural-urban fringe within their urban field framework, their ideas influenced and continue to influence rural-urban fringe studies. In the 1980s, a group of researchers from the University of Waterloo applied the urban field concept to rural-urban fringe research in a Canadian context (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991). Coppack (1988b: 18) noted in this regard that “one of the fundamental strengths of the concept is its ability both to be modeled and to be host to various submodels for its respective components.” Accordingly, the original urban field of

Figure 2.2. Hierarchy of Nodal Regions

Source: Coppack 1998b: 24

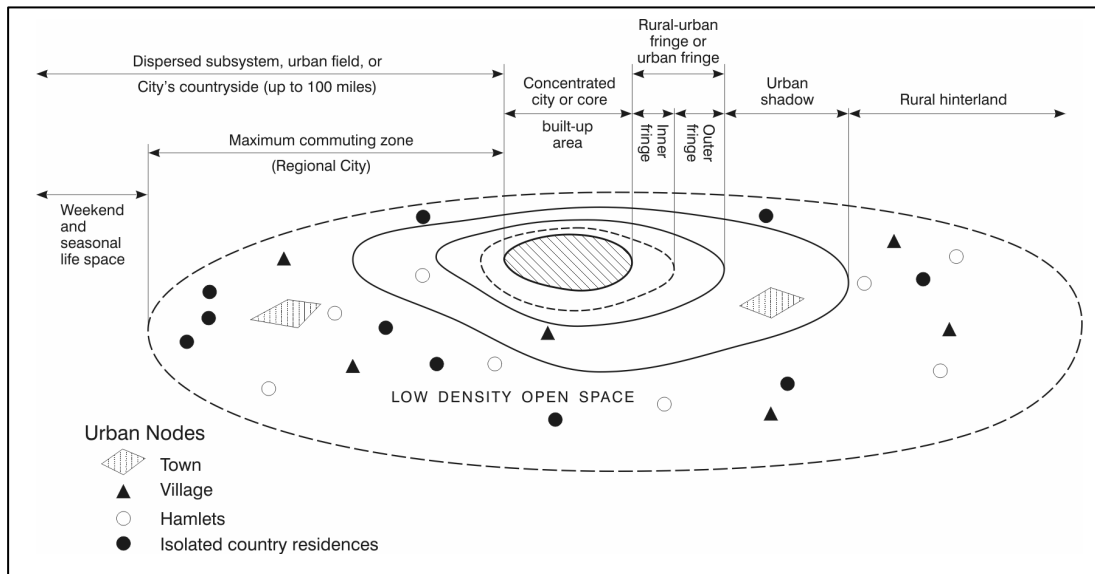


Friedmann and Miller was unpacked into smaller units called “regional cities” which in turn consisted of metropolitan areas and their countrysides (Figure 2.2).

Like the urban field itself (Friedmann, Miller 1965), a regional city is a multidimensional space, organized around function. Both urban field and regional city can be disaggregated into three main dimensions (Coppack 1988b). The first is the dimension of form as represented by a mix of nodes of intensive land use and human activity scattered amidst farmland and undeveloped areas. The second dimension is concerned with the relationships amongst the urban nodes. It exists in two forms, the physical flows of goods and people and the non-physical flows of information and money. The third dimension has to do with the periodicity of the relationships within the urban field and regional city, which could have different rhythms – daily (e.g., commuting), weekly (e.g., recreational shopping), and seasonal (e.g., recreational trips). Life spaces used for different functions could be added as a fourth dimension of urban field and regional city¹. One of the key conditions of the existence of a regional city is the linkages between the nodes of activity. According to Bryant et al. (1982: 10), the density of these linkages is supposed to be sufficiently high that they could be viewed as a “random route network through which accessibility is equally possible in all directions.” They note that although the largest flows are still oriented towards the built-up city core, a complex pattern of movements between the activity nodes located at the edge of the city was becoming more and more prominent.

¹ Bryant et al. (1982) list this as one of the key characteristics of the regional city. However, considering its importance for understanding the nature of the city’s countryside, classifying it as a dimension is appropriate. It is synonymous with the term “environment” used to describe the city’s countryside later in the book.

Figure 2.3. The Form of the Regional City and Urban Field
Source: Bryant, Coppack 1991: 220



The “city’s countryside”¹ is an integral part of the regional city and as such is subject to the same social and economic processes as the regional city as a whole. Therefore, although the city’s countryside of the 1980s could still be described using a broad definition of the rural-urban fringe (Wehrwein 1942), its geography had changed. Bryant et al. conceptualize this geography as a continuum between rural hinterland and urban area divided into several zones (Figure 2.3.). “Inner” and “outer fringe” zones are characterized by a visible transition to urban uses and high levels of urban influences and pressures felt throughout all their component environments. The outer zones of the city’s countryside, referred to as the “urban shadow” and “rural hinterland,” are identified on the basis of links to the central urban area as well as to urban influences and pressures, which may be not so explicit but nevertheless are exerted upon their components. The boundaries of the outer zones tend to fluctuate periodically in response to weekly and seasonal flows within the regional city.

¹ Here the term used by Bryant et al. is synonymous to a broadly defined “fringe area.”

Bryant et al. (1982) stressed that this representation of the rural-urban fringe is ideal or hypothetical. In reality, as parts of the continuum, individual zones may merge into each other, making any specific geographic definition difficult. Therefore, a successful definition of the fringe zones as well as the fringe or the city's countryside itself should be developed inductively in any specific case (Martin 1975). Furthermore, a successful definition should employ several key variables, for which threshold values could be identified. Hence various approaches to defining and delimiting the rural-urban fringe could be valid, "as long as the criteria are made explicit in each study" so "we can evaluate [those criteria] for what they are" (Bryant et al. 1982: 14).

Bryant et al. (1982) point to another "idealization" in their model of the rural-urban fringe; that is, that not all the identified zones "would occur around all urban centers in all directions" (Bryant et al. 1982: 14). First, the physical environment may influence the extent and composition of the fringe. Second, planning controls and land use regulations may have the same effect (Edmonton Metropolitan Regional Planning Commission 1991). Finally, unevenness of fringe development follows from the proposition that the regional city as a settlement form came into existence in the broader context of changes within the society, specifically the shift from industrial to post-industrial society. These changes are not expressed uniformly across geographic space, and certainly their specific influence is not "equal in all directions" (Bryant et al. 1982: 14). Therefore, the rural-urban fringe often appears as "a discontinuous spatial phenomenon around most cities" (Bryant et al. 1982: 14).

The regional city concept developed by the "University of Waterloo School" is undoubtedly a marked contribution to rural-urban fringe studies, as well as to urban geography in general. It represents an attempt to anchor the concept of the rural-

urban fringe within the general context of urban development, which in turn was linked to broader socio-economic processes. Specifically, the concept linked rural-urban fringe development to transition from an industrial to a post-industrial society expressed in development of “new needs” in society, the changing nature of communications technology, and the changing nature of production technology (Bryant, Coppack 1991). Although this explanation of rural-urban fringe development could be regarded as somewhat simplistic compared to the more comprehensive frameworks presented by Whitehand (1974, 1987) and Walker (1981)¹, it is safe to suggest that so far it is the only conceptual framework that allows for modeling of the rural-urban fringe form and structure within a broader context of urban form and structure. Finally, it provides a multiple-criteria framework for defining and delimiting the rural-urban fringe which is flexible enough to be adapted to particular situations on the ground.

While efforts undertaken during the 1980s appear to provide a satisfactory answer to the “quest for a definition” in rural-urban fringe studies, in the research done in the 1990s works dealing with issues of definition and delimitation of the fringe are virtually absent. Also, during the 1990s the number of studies focused narrowly on the rural-urban fringe and issues specific to this area decreased considerably. Most of the studies undertaken during this decade looked at particular characteristics of the fringe in broader socio-economic context (e.g., Evenden, Walker 1993), at forms of development in the rural-urban fringe areas and their characteristics (e.g., Beauregard 1995, Conrad 1996, Miller 1996), at the role of the rural-urban fringe in the internal urban structure (e.g., Muller 1997), and at

¹ Whitehand (1974, 1987) linked the observed morphology of rural-urban fringe belts around British cities to the theory of building cycles and bid rents. Walker (1981) saw suburban development as part of general logic of urbanisation under capitalism.

comparisons between fringes of different metropolitan areas (e.g., Patterson 1993, Beesley 1999). Numerous studies used the concept of rural-urban fringe in analyses of various social, economic and environmental processes and phenomena. Some of these works, especially those in the latter category, apart from invoking the term did not seem to contain any definition at all. Those that did relied on a variety of approaches and definitions. In Canadian literature, the majority of studies were using either the regional city concept and related definition of the fringe sub-areas (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991) or a definition of the rural-urban fringe developed by Statistics Canada in the context of CA/CMA definition (Statistics Canada 1999: 183-95). Often, the former is used for a conceptual definition of the fringe and its components and the latter for delimitation of the extent of the fringe and testing of the proposed hypotheses in a deductive manner (Bryant, Coppack 1991; Patterson 1993).

2.2. Statistics Canada's Definition of Rural-Urban Fringe

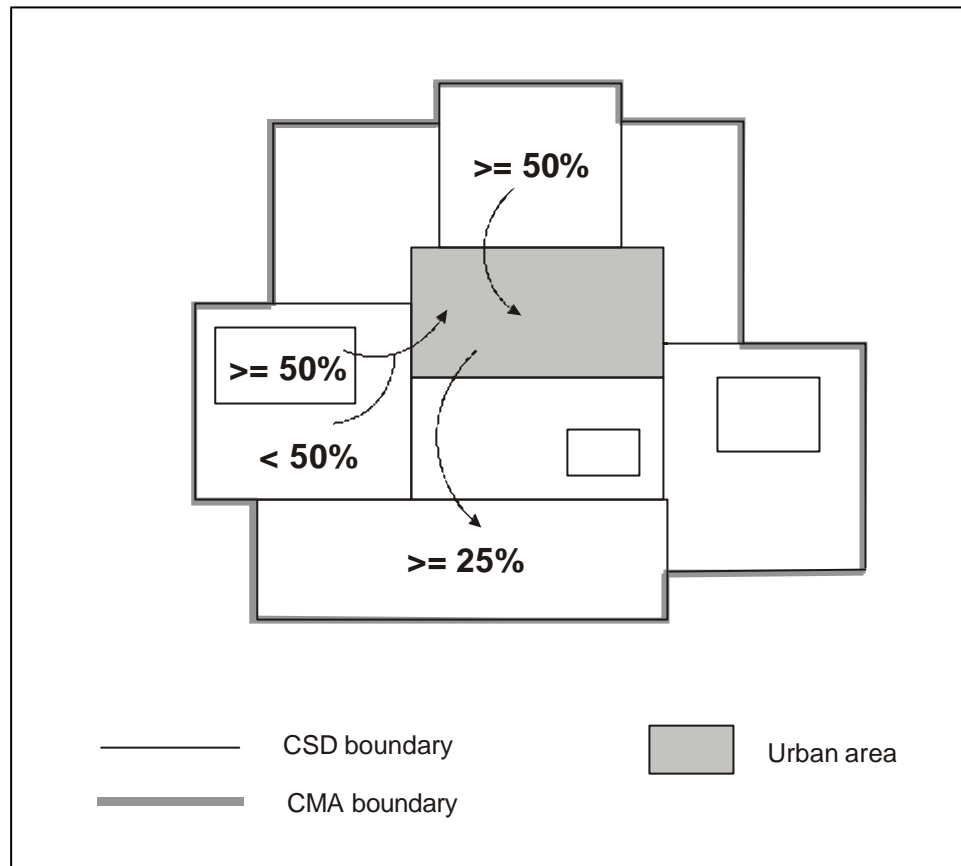
Treatment of the rural-urban fringe by Statistics Canada deserves further attention here. Statistics Canada defines rural-urban fringe in the context of extended urban area definitions that were introduced in 1941 and have since undergone a number of adjustments to reflect the increasing scale of urbanization in Canada. The overall concept for delineating these geographic areas is one of “a large urban area together with adjacent urban and rural areas that have a high degree of social and economic integration with this urban area” (Statistics Canada 1999: 183). Collectively these are termed “metropolitan areas” and are distinguished from non-metropolitan urban areas as well as from rural areas outside their boundaries. Two principal types of metropolitan areas presently used by Statistics Canada are the CA

and CMA. They are delineated using the same set of rules and differ only in size: CAs are organized around cores with populations of between 10, 000 and 99, 999, while CMAs are formed around cores with populations of 100,000 and more.

Both types of areas are delineated using census subdivisions (CSDs), a geographic unit that corresponds to municipalities or their equivalents, as building blocks. The extent of metropolitan areas is defined on the bases of several parameters, the most important of which are forward and backward commuting (Figure 2.4). According to McNiven et al (2000: 2), commuter flows reflect the connections to other areas. Because people tend to seek and use services in those places where they work, the distribution of service providers and facilities will generally mirror that pattern of function. Statistics Canada uses place of work instead of commuter flow data to derive CMA/CA boundaries. Place of work data are closely related to the data on commuter flows but are easier and less expensive to collect on a national scale (McNiven et al 2000: 3).

For forward commuting, i.e. commuting to an urban core for work, the threshold is set to at least 50 percent of the employed labour force of a CSD, given a minimum of 100 commuters. For reverse commuting, i.e., commuting from an urban core to work, the threshold is set to at least 25 percent of the labour force working in the CSD, given a minimum of 100 commuters. Thus, although defined on the basis of a commutershed, CMA and CA boundaries do not usually include all of this area (Patterson 1993). In 1986, two concepts of “consolidated metropolitan areas” were introduced. Consolidated CAs and CMAs represented a next level of complexity and integration within the Canadian urban system. A consolidated CA or CMA is a grouping of several CAs or one CMA and one or more CAs that are socially and economically integrated as indicated by commuter flows between them (Statistics

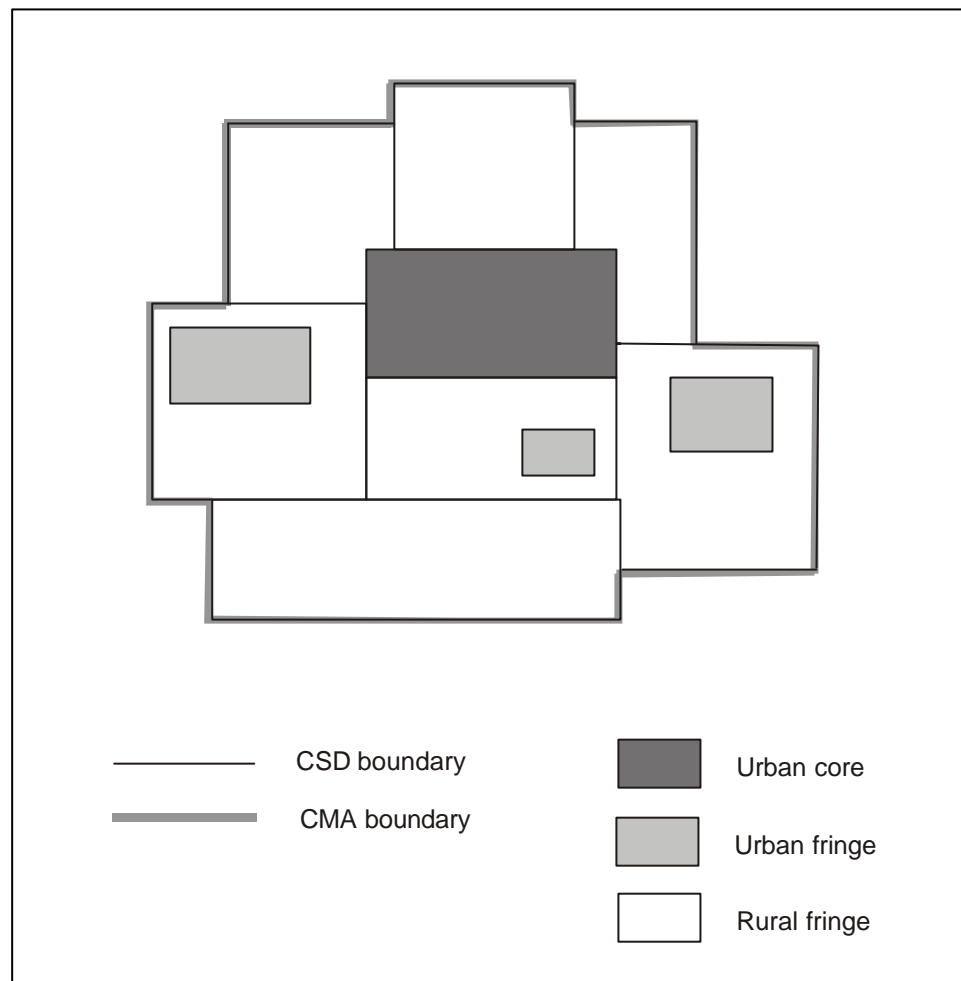
Figure 2.4. Statistics Canada Definition of Metropolitan Areas (CAs and CMAs)
Source: Statistics Canada 1999: 183-190



Canada 1999: 184). The threshold value in this case is set to at least 35 percent of employed labour force living in the smaller metropolitan area within a Consolidated CMA or CA.

A CMA or CA is made up of an urban core and an outlying area consisting of urban and rural fringe areas (Figure 2.5). The urban core is a large urban area around which a CA or CMA is organized containing the major proportion the total population of a metropolitan area. The urban fringe is defined by Statistic Canada as urbanized nodes within a metropolitan area that are not contiguous to the urban core. The remainder of the area that is neither a part of the urban core nor of the urban fringe is classified as the rural fringe. Rural fringes may contain estate lots and

Figure 2.5. Component Parts of CA and CMA
Source: Statistics Canada 1999: 183-90



agricultural, undeveloped, and non-developable lands (Rambeau, Todd 2000).

Compositions of metropolitan areas could vary: while presence of an urban core is essential, some areas may not have urban or rural fringe parts.

According to Patterson (1993: 8), the CMA/CA concept comes closest to the concept of the regional city. However, it seems that the concept of the consolidated metropolitan area corresponds more closely than does the former to the concept of the regional city. It is true that in all metropolitan area definitions currently used by Statistics Canada, the extent of a metropolitan area is defined on the basis of

functional relationships existing between its components where forward and reverse commuting flows are used as a measure of such relationships. Furthermore, all definitions recognize the multinodal character of urban structure. However, whereas CMA and CA definitions include only vertical relationships between the urban core and other parts of an area, the consolidated area definition is based on lateral relationships between component CMAs or CAs, where none of the components is viewed as dominant. It should be noted that, if compared in extent, metropolitan areas as defined by Statistics Canada would be smaller than corresponding regional cities due to the fact that these former areas include only certain portions of commutersheds and overall are delimited on the basis of only one type of relationship between their parts.

The limited spatial extent of metropolitan areas was addressed in a new concept of Census Metropolitan Area and Census Agglomeration Influence Zones (MIZ) that was recently developed by the Geography Division of Statistics Canada (Rambeau, Todd 2000). The concept applies to all CSDs within Canada and shows the influence of CMAs and CAs on them as measured by commuter flows based on the assumption that commuter flows are the only required measurement of economic and social integration between areas (Morrill et al. 1995). Using commuter flow data, the relative influence of an urban centre on a rural area (or any related area) can be noted by the number of commuters living in an area and commuting to the urban core. However, in contrast to CMA/CA delineation, the MIZs do not represent the extent of the metropolitan influence of any individual urban core, but rather recognise multiple centres of attraction where a CSD appears to be within influence zones of several metropolitan areas (McNiven et al. 2000).

So far as treatment of the rural-urban fringe is concerned, there is less similarity between Statistics Canada metropolitan area definitions and the regional city concept than in the case of the CMA/CA and consolidated CMA/CA concepts. Statistics Canada identifies two broad components within the fringe, urban nodes and the rural remainder, which provides a coarser, more generalized structure compared to the four zones of the regional city model. This generalization is understandable, given that the boundaries of the urban shadow and rural hinterland are delimited on the basis of urban influences and pressures, which are difficult to measure and which tend to fluctuate periodically in response to weekly and seasonal flows within the regional city. It is safe to suggest that the outer portions of metropolitan areas as defined by Statistics Canada would at least cover the inner fringe and outer fringe zones of corresponding regional cities.

2.3. Relationship between the Concepts of Rural-Urban Fringe and Suburb

Before considering factors that influence development of the rural-urban fringe, one more conceptual issue needs to be clarified, namely the difference between the “rural-urban fringe” and the “suburb.” These are distinct (Evenden, Walker 1993) but related concepts (Thomas 1974), which explains why corresponding terms have often been used interchangeably in the literature creating much confusion (Thomas 1974). Suburbs may have existed as long as fringes. In his book *Economics of Cities and Suburbs*, Bogart (1998: 178) provides a passage from a letter written to the King of Persia in 539 BC that describes what is in essence a suburban lifestyle. Suburban development became a recognisable social, geographic, and cultural phenomenon in England soon after the beginning of the Industrial Revolution. Fishman (1987: 27) characterized it as a “collective creation of the

bourgeois elite in the late eighteenth-century London.” Social, economic, and cultural factors that contributed to that creation are quite extensively described elsewhere (Muller 1981; Walker 1981; Fishman 1987; Harvey 1989). In a short period of time, a suburban way of life spread into other countries, although its adoption was not uniform everywhere. Without exaggeration it can be said it was “implemented” in North America with such success that “even most careful students of American suburbia have assumed that suburbanization was ‘made in the USA’ ” (Fishman 1987: 43).

The classic notion of suburbia is that of a low-density middle-class residential enclave located at the edge of a city in an area of considerable amenity. In reality, although this type of suburb initially was prominent, suburbs of Anglo-American cities have always been diverse in terms of land use and social composition. There is evidence that numerous working-class suburbs existed in the nineteenth and early twentieth centuries in Britain (Thorns 1972; Turkington 1999) and the United States (Muller 1981; Harris 1999). Also, not all suburbs were residential. Muller (1981: 37) observed that by 1920 dispersal of industry was widespread in the large US cities. Mass-scale assembly-line producers requiring huge outlying railside plants quickly come to dominate the suburban economic landscape. According to Harris (1999: 94), observers recognized two main types of suburbs in the United States; the one affluent and residential, and the other industrial and working class. In Britain, a number of working-class suburbs were developed between 1919 and 1939 (Turkington 1999). These suburbs differed from the middle-class type in that they were built by local governments while the former were products of private developers (Thorns 1972:85).

Overall, the nature of suburban development seems to follow a certain trajectory that can be traced through the usage of the word itself and through the

literary accounts of suburban development (Harris, Larkham 1999: 5-6). For example, suburbs of American cities before the nineteenth century were portrayed as areas that "possessed a decidedly unattractive image, being dominated by such nuisance activities as brothels, noxious industries, garbage dumps, and the shacks of the poor and other social outcasts" (Muller 1981: 23). This differs considerably from a description of a classic upper-class suburb built in the 1870s in the village of Chestnut Hill near Philadelphia (Fishman 1987: 145): "The pattern of tree-shaded streets, broad open lawns, and substantial houses set back from the sidewalks was a pattern of prosperity, family life, and union with the nature . . ." Yet another image is conveyed by the description of Levittown, Pennsylvania, a typical suburb of the 1950s that consisted of 17,000 identical houses, situated on relatively small lots, had a higher density of development, and was affordable to a very broadly defined middle-class population (Yeates 1998a: 219).

It seems that trajectories of North American suburban development by and large parallel those of the rural-urban fringes. So where are suburbs located in relation to the rural-urban fringe? The literature provides a variety of opinions on this matter. Wehrwein (1942) identified speculative residential development as one of the characteristics of the rural-urban fringe. Pryor (1968) divided rural-urban fringes into urban and rural zones based on the density of occupied dwellings and suggested that in the urban zone this density should be higher than the medium density for the fringe overall. Johnson (1974) explicitly located suburban development within the rural-urban fringe, whereas Russwurm (1977) has described the fringe as a zone of rural countryside extending beyond the continuous suburbs. Harris and Larkham (1999: 5) defined the early twentieth-century suburb as "a socially-desirable residential area, one which had developed at a relatively low density at the urban

fringe.” Jackson (1985), describing contemporary suburban development, included all types of areas found at or near the changing urban fringe in the definition of a suburb.

In general, suburban development is a result of an extension of the urbanized area into the surrounding countryside, inside or outside the administrative boundaries of the city (Linteau 1987). Accordingly, a suburb could refer to any kind of a settlement or development at the periphery of a large city (Fishman 1987). Moreover, since the rural-urban fringe could be most generally defined as the city’s countryside, i.e., an area around a city, any kind of development could be part of the rural-urban fringe. Hence we could consider suburbs as nodes of urban uses within the rural-urban fringe. These nodes can be of two types: (1) newly developed residential subdivisions, edge cities, or suburban downtowns, or (2) small towns that fall within the influence zones of metropolitan areas as the latter expand. We would expect to find most of the suburban nodes relatively closer to the edges of the core areas.

Recently the notion of exurban development has been introduced, or rather reintroduced (Muller 1981)¹, into the urban geography and planning literature. One of the current views of exurbs describes them as “suburbs of the suburbs” that essentially represent expansion of the urban field (Davis et al. 1994; Sanchez, Nelson 1994). Their growth is supported by suburbanization of employment. Davis et al. (1994) identify two different types of exurban settlements. The first type, called “rural exurbia,” includes large tracts of land developed into hobby farms, country estates, and acreages. This type of development is characterised by population densities lower than those in urban and suburban areas and a high level of dispersion.

¹ He described early rail suburbs as “exurbs” in today’s terminology. Also often in the 1970s all residential development at the fringe was loosely defined as exurban (Johnson 1974).

The second type comprises exurban small towns. The difference between these latter and suburban small towns would be in their distances from the core of a metropolitan area and/or strength of relationships between small towns and the core. Exurban small towns would be expected to be found further away from the metropolitan core than would be suburban towns. Exurban rural development theoretically could be found anywhere within the rural-urban fringe, although it should constitute the dominant type of development farther away from the urban core than the suburban development.

2.4. Conclusion

A review of the literature presented in this chapter reveals, to paraphrase Martin (1975: 23), that to precisely define and delimit the rural-urban fringe is quite problematic. This can be attributed to several factors, one of which is the transitional nature of the fringe (Martin 1975; Bryant et al. 1982; FritzSimons 1983; Edmonton Metropolitan Regional Planning Commission 1991). Although the rural-urban fringe is a permanent element of the city, its boundaries continually change. Over time this zone is displaced outward, with areas previously within the fringe becoming urban by nature and, in many cases, by definition through incorporation within municipal boundaries. Furthermore, boundaries between the urban core and the fringe on one side and the fringe and surrounding rural area on the other should be thought of not as lines, but rather as bands of various widths. Earlier models of the form and structure of the rural-urban fringe implied that a clear distinction exists between these three elements, a proposition based on the idea of rural-urban dichotomy (Coppack 1988b: 6). While such a model could be appropriate for more compact cities of the pre-automobile era, subsequent extension of urban space (Friedmann,

Miller 1965) resulted in the transition from urban to rural uses becoming more of a continuum than a dichotomy (Davies, Yeates 1992; Pond, Yeates 1993, 1994).

Finally, it has been demonstrated that the extent of the fringe areas tends to fluctuate periodically in response to the changes in physical and non-physical links between the urban core and parts of the surrounding countryside (Bryant et al. 1982).

In addition to the boundary issues, changes in other characteristics of this part of the city, such as nature of land use and demographic, social, and economic characteristics occur on a continual basis (Marchand, Charland 1992). For example, the view of residential development at the fringe as homogenous “settings for rearing families, the learning of property and political relations” (Evenden, Walker 1993: 234) organized around particular consumption patterns and traditional family structure indisputably has now lost its relevance. Consequently, the ways in which the fringe areas are defined and delimited need to be adjusted to accommodate a patchwork of socially and economically diverse places and spaces (Muller 1981; Bryant, Coppack 1991; Evenden, Walker 1993; Law, Wolsch 1993)¹.

Explanation of the continuous change in the characteristics of the rural-urban fringe lies in the fact that the rural-urban fringe is not a separate entity, but is one of the parts of an “urban organism” and as such is subject to the same forces that “operate in a variety of ways throughout the whole urban area” (Johnson 1974: 4). Theoretical contributions to urban geography made during the 1980s (Walker 1981; Bryant et al. 1982; Whitehand 1987; Coppack et al. 1988; Harvey 1989; Bryant, Coppack 1991) placed development of the rural-urban fringe within the general process of urban development and thus linked it to a variety of broad factors, the

¹ Some literature (for example, Evenden, Walker 1993) suggests that what is observed currently is not the matter of real change but rather changes in predominant conceptualization of suburban and exurban spaces.

nature of which depended on the theoretical affiliation of the proponents. For example, Harvey (1981, 1989) demonstrated that suburbanization and deconcentration arise logically and inevitably in the process of the circulation and accumulation of capital. This proposition was further developed by Walker (1981), who identified spatial differentiation, deconcentration, and temporal dynamics of capital accumulation as the three major driving forces behind modern suburbanization. Whitehand (1974, 1987), following a Conzenian tradition of analysing urban landscape within historical context, developed a model that linked rural-urban fringe development and the resulting morphology of rural-urban fringes to building cycles, i.e., dynamics of capital accumulation, via examination of changes in bid-rent relationships between residential and institutional uses. Friedmann and Miller (1965), as well as the researchers of the University of Waterloo school, related deconcentration of urban space to economic, social, and technological changes summarised under the term “post-industrial society” (Bell 1973), and particularly to “increased real incomes, leisure and mobility” (Coppack 1988a: 39).

The changing nature of the rural-urban fringe creates a paradoxical situation reminiscent of an “endless loop” process in computer programming. Definition and delimitation of the fringe areas should be based on parameters that are unique for these areas and remain constant over time (Martin 1975). However, these parameters are impossible to set because characteristics of the fringe areas constantly change, thus rendering any set parameters quickly obsolete. It seems that an approach to defining and delimiting the rural-urban fringe should possess a great degree of inclusiveness and flexibility in order to resolve this situation. It should take into account that the rural-urban fringe “is an abstraction of reality” (Martin 1975: 30)

and, therefore, any attempt at its definition and delimitation is inevitably subjective. To date, most of the attempts at definition and delimitation of the fringe are undertaken for specific practical purposes, e.g., for planning the extent of future residential development or conservation measures. Notwithstanding, these definitions constitute valid representations of the rural-urban fringe, “as long as the criteria are made explicit in each study” so “we can evaluate [those criteria] for what they are” (Bryant et al. 1982: 14) and should not be seen as antithetical to each other.

Following the conceptualization of the regional city by the University of Waterloo School (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991), the form and structure of the rural-urban fringe could be defined in terms of a number of broad dimensions together comprising a framework for development of definitions in each specific case. The dimensions could include but not be limited to the environment; nature of land use; demographic, social, and economic characteristics of the population; administrative; political; etc. For each dimension, the relative importance of and need for inclusion should be decided in each particular case. After a decision on the number of dimensions is made, these dimensions are to be operationalized by choosing several key variables and setting threshold values for each variable.

The dimension describing the relationship between rural-urban fringe and urban core, however, has a special place within this frame work. This dimension not only provides means for more accurate delimitation of the extent of rural-urban fringe areas but also is an important link to the models and concepts describing post-modern urban form discussed in the introductory chapter. Defining and delimiting rural-urban fringe areas according to the extent and nature of the relationships that exist between them and the urban core is based on the view of the whole urban area

as a functional region. While other dimensions based on the view of the rural-urban fringe as a formal region are important for understanding the form and structure of fringe areas, the relationships dimension allows for a more precise as well as more complete delimitation of their extents, especially if periodicity of flows is taken into account (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991).

Furthermore, notwithstanding differences in conceptualization of urban form and structure, functional relationships between parts of the city constitute important elements in both groups of models and concepts dealing with postmodern urban development. Essentially, it is the nature of these relationships that differentiates modern and postmodern urban form and structure. Various conceptualizations of modern urban form and structure emphasized the dominance of center and therefore all the relationships within an urban area were invariably perceived as centripetal with flows converging on the urban core. Alternatively, recently proposed conceptualizations of postmodern urban form and structure place an emphasis on the relationships within or/and between peripheral areas of the city. Both groups of constructs — those emphasizing dispersion and those emphasizing multinucleation — do not treat urban core as a dominant node in the overall matrix of the relationships within an urban area.

One of the disadvantages of a multidimensional approach to defining and delimiting the rural-urban fringe is that operationalizing several dimensions could present difficulties for a small-budget study. Obtaining data necessary to describe several dimensions could also often be difficult for reasons other than affordability. Data availability would be less of a problem for a case study involving one or few urban areas. However, it becomes a significant issue if a large number of cities are to be analysed. This research is not so much concerned with defining and delimiting

fringe areas as with developing a classification of these areas that would allow one to “geolocate” postmodern urban development within the Canadian urban space.

Consequently, given the geographic scope of the study, it is necessary to find an existing definition of the rural-urban fringe that would best satisfy the requirements of flexibility and multidimensionality and provide an acceptable delimitation of the fringe area boundaries.

The Statistics Canada definition of the rural-urban fringe in the context of the extended urban area concept provides a suitable option for the purposes of this research. The level of generalisation combined with the transparency of the criteria on which it is based makes it possible to apply this definition consistently to urban areas across Canada. In terms of criteria, Statistics Canada’s view of metropolitan areas puts emphasis on centripetal links between urban core and peripheral areas relying on commuter flows as a surrogate measure of these relationships. It must be noted, however, that conceptually this definition is based on the broader view of urban space as a functional region similar to that described by the regional city concept. A more serious limitation of this definition lies in the fact that it employs the CSD, a rather large unit of census geography, as a building block. This potentially may result in underbounding of fringe areas in highly urbanized regions such as southern Ontario, as well as overbounding of urban cores. The latter is often the case in Prairie metropolitan areas where core municipalities include large tracts earmarked for future development but presently occupied by typical fringe or even rural uses.

CHAPTER 3: THE RURAL-URBAN FRINGE IN THE CONTEXT OF URBAN DEVELOPMENT

The previous chapter established the development of rural-urban fringes as part of a more general process of urban development. Placing the rural-urban fringe into the context of urban development allows an understanding of the continuous change in the characteristics of this part of the city and, based on that understanding, suggests an approach to defining and delimiting rural-urban fringe areas independent of a particular time or place. Building on an understanding that urban development itself takes place within the broader socio-economic context, this chapter attempts to uncover and describe factors and forces that lead to the development of rural-urban fringes characteristic of postmodern urban form.

A number of contributions to urban geography (Friedmann, Miller 1965; Walker 1981; Bryant et al 1982; Gottdiener 1985; Coppack 1988a, b; Scott 1988; Bryant, Coppack 1991) have traced the emerging postmodern urban form and structure to recent socio-economic, political, and cultural changes summarized variously as “post-industrial society,” “a shift in the regime of capital accumulation,” “globalization,” and “restructuring.” A more specific objective of this chapter is to show that these changes are not expressed uniformly across space and to enquire into the role of the factors and forces of postmodern development that have produced uneven spatial distribution of postmodern urban form and structure.

Furthermore, this chapter argues that the way these changes are articulated in particular places and regions depends upon actions of people, formal and informal collectivities, and institutions found there (Giddens 1984) as well as historical geographies of these places and regions (Pred 1984; Massey 1995). An interaction between the general processes active in the society and local properties of places and regions produces a pattern of urban development in general, and rural-urban fringe development in particular, that is uneven and contextual in nature. The chapter concludes with an outline of the analytical framework used in the empirical part of the research dealing with the distribution of postmodern urban form and structure across urban space of Canada.

3.1. Factors and Forces of Postmodern Urban Development

A number of contributions to urban geography have dealt with the recent changes in the form and structure of North American cities (Friedmann, Miller 1965; Walker 1981; Bryant et al. 1982; Gottdiener 1985; Coppack 1988a, b; Scott 1988; Bryant, Coppack 1991). Depending on the theoretical perspective, these contributions emphasise different factors as major forces behind the changes. However, one of the common themes running through all of them is that contemporary urban development should be examined within the wider framework of the changes within North American society summarized variously as “post-industrial society,” “a shift in the regime of capital accumulation”, “globalization,” and “restructuring”

3.1.1. Treatment of Factors and Forces of Postmodern Urban Development within the Neoclassical Economic Framework: The University of Waterloo School

Members of the University of Waterloo School following Friedmann and Miller (1965), place primary emphasis on technological changes characteristic of the post-industrial society (Bell 1973) that altered the lifestyles of metropolitan populations and resulted in “the increasing attractiveness of the periphery” (Friedmann, Miller 1973 : 81) as major factors in the emergence of the extended urban life-space or urban field. Specifically, the processes which give rise to the urban field “are born in the incubator of post-industrial society and relate primarily to the behavioural, motivational and attitudinal transformation occurring in that societal metamorphosis” (Coppack 1988a: 30). These processes, interconnected cumulatively and causally, can be loosely classified into three groups: those associated with demographic changes and urbanization, those associated with post-industrial society, and those associated specifically with urban field dynamics (Coppack 1988a). Urbanization and concomitant “demographic transition”¹ are seen as logical outcomes of economic development in the contemporary developed world (Bryant et al. 1982: 6). This point of view argues that together with the shift in employment structure from primary and manufacturing activities towards service, administrative, and (more recently) environmentally-oriented activities characteristic

¹ Here demographic transition includes two components: (1) long-term changes in population dynamics as outlined in the basic demographic transition model; and (2) location and movement of population (Coppack 1988a:34). The latter historically consisted of movement of rural population into urban areas. However, recently this movement was eclipsed, if not superseded, by dispersion of urban population into rural areas or exurbanisation.

of “post-industrial” society, urbanization and demographic transition resulted in increased mobility, better communication technology, wider leisure possibilities, and greater environmental concerns (Bryant et al. 1982:10). Transition from industrial to post-industrial society has also been characterized by the growing importance of knowledge as capital, increasing openness in the economic system, advances in communications technology, and the growth of a whole host of new consumer “needs” predicated on increased real incomes, leisure time, and mobility. These changes have affected patterns of interaction by which human activities are organized and society is formed and changed spatial extent of these patterns, thus resulting in the development of an extended urban life-space (Bryant, Coppack 1991:211).

Urban field development is predicated on “the pull exerted by the increased attractiveness of the field’s resources — space, scenery and communities that remain from earlier periods of settlement and preserve a measure of historical integrity and interest” (Friedmann, Miller 1965:315). Changing conditions surrounding accessibility have played “a significant permissive role” (Bryant et al. 1982: 16) in relation to urban field development in North America. In Canada, the development of track transportation and the supporting public investment in highway infrastructure has been critical to the dispersal of industrial and commercial activities to suburban locations and smaller towns and cities found in the city’s countryside of larger metropolitan centres. But it was the development and rapid diffusion of the private automobile that was the primary cause behind the scattered residential development prevalent in the city’s countryside in the 1950s and 1960s (Bryant, Coppack 1991:212). In addition, new and rapidly evolving forms of

communication have radically altered both lifestyles and relationships between residence and work-place for some people (Bryant, Coppack 1991: 213).

Interaction between the increasing accessibility of the metropolitan periphery and other economic, social, and cultural factors such as individual rights and desires, changes in life styles, and direction of public policy on planning and development controls have been important in determining the specific structures that develop at the rural-urban fringe. For example, a trade-off between accessibility and transportation costs is seen, in part, as being responsible for “ribbon” or “strip” development along the major highways of many cities. A combination of the search for cheap land and landowners’ attempts to realize capital gains in the value of land has been largely responsible for “leapfrogging” resulting in the dispersion of urban uses. In making a decision on location for a home, households and individuals may be motivated not only by perceived low costs of living in the countryside but also by a desire for “wholesome” country living in an environment free of the crime and social problems characteristic of cities. The level of dispersion urban uses have achieved currently in North America would have been impossible without the encouragement of the political and regulatory environment. Efforts to plan and manage urban development in the majority of cases are undertaken at the municipal level despite the fact that urban development has long become regional in scale. In some cases, municipalities that comprise a metropolitan area compete with each other to attract certain types of development (Bryant et al. 1982: 16–8).

3.1.2. Treatment of Factors and Forces of Postmodern Urban Development within the Framework of Structuralism

3.1.2.1. Richard Walker

Richard Walker (1981), an advocate of the structural approach, finds an explanation for the American-style suburban expansion in the general logic of capital accumulation, which not only provides the means to support suburban expansion, but virtually dictates that expansion. He argues that from a geographical point of view, modern suburbanization arises from the three universal characteristics of capitalist urbanization: spatial differentiation, decentralisation, and periodic changes in the process of urban development. These general processes of urbanization have been at work at least since the capitalist revolution transformed American (and Canadian) cities in the nineteenth century and have become, in absolute terms, more pronounced over time (Walker 1981: 384).

Spatial differentiation is a product of development of the social division of labour under capitalism. The latter is translated into the former by the drive to rationalize production, consumption, and circulation in cost and revenue terms. As the individual units of economic activity move to their respective areas of the city, they frequently group together to form functional “districts which generate the “large-grain” spatial differentiation of the city. Political factors also contribute to the large grain spatial differentiation of activities within cities. In this regard, and especially in the United States, the state played and still plays an essential role in locational differentiation. “The possibility of escaping political control, on everything from smoke-ordinances to zoning decisions, by seeking out ‘friendly’ jurisdictions or even drawing up new ones, has been fundamental to spatial

segregation and the suburbanization process in US cities” (Walker 1981:388-9).

Walker argues that although development of transportation and communication networks plays a central role in spatial differentiation of urban space, they do not create it, but rather provide the possibility of separation.

Residential use arises as a result of the separation between production and consumption spheres, i.e., between work and home, in the process of the social division of labour. In turn, divisions within the residential sphere are the result of the structuring of society into classes. Class structure sorts people not only according to their relation to the means of production but also according to income, leisure time, etc., factors which are translated into spatial forms. Walker identifies three main aspects of this translation that correspond to the three dimensions of the division of labour in space between production and consumption: the employment linkage, the pursuit of consumption, and the reproduction of labour power (Walker 1981:390). While the employment linkage essentially sets limits for spatial distribution of various groups of people based on the nature of their employment, a differentiated mode of consumption is directly responsible for American-style suburbanization. Walker suggests that during the 1970s “increasing dependence on collective consumption goods provided by the State and state regulation of private activities in the interest of the collectivity” significantly contributed to the patterns of residential segregation in the US cities, resulting in the emergence of “balkanized” political units at the local level (Walker 1981:391).¹ In addition, suburbanization could be

¹ This phenomenon is closely linked to the social differentiation of consumption. Walker argues that in the United States differentiated mode of consumption took spatial form, which is epitomized in suburbanization (Walker 1981: 391). The mode of consumption organised around space is “socialized” in its nature. It bound to give

seen as “the particular cultural solution to the problem of class reproduction” hinging on the idealization and reinforcement of middle-class life-style and values (Walker 1981: 392-3).

On the other hand, the property circuit of capital reinforces and actively creates differentiation of both residential and non-residential spaces. Promoting residential differentiation allows developers and real-estate agents to avoid unnecessary risks associated with estimating demand, to increase sales, to secure the maximum level of differential rents, and to lower costs of housing construction. On their part, homeowners reinforce the existing segregation patterns in order to preserve and enhance investment in their property. Walker notes (1981:394) that “in the American context . . . the pursuit of gain from property is so much part of the culture that one cannot reasonably expect anyone to resist the flux of the market. . . . Out of all of this comes a logic of conservatism toward land-use change and good reason for the mutual defense of community space.” The state, particularly in the United States, has played an essential role “as promoter of residential segregation” through the support of property developers and promotion of land values. Similar logic operates with respect to non-residential land uses.

The process of decentralization, according to Walker (1981: 395), “rests on three pillars” including generalization of capital, push-pull forces between the center and periphery with capital working at both ends, and the way the property circuit of

rise to the spaces of collective consumption, such as an array of class, and later life-style, neighbourhoods. Maintenance of this highly differentiated yet collective in nature mode of consumption, according to Walker, is highly dependent on collective consumption goods provided by the state. Therefore, “designer” governments play important role in the maintenance of the patterns of differentiated collective consumption and spatial segregation.

capital propels the whole process. Decentralization of land uses arises partly out of the dissolution of forces of aggregation and partly out of repulsion from the center. Residential decentralisation followed the same logic as, and was intimately interrelated with, residential segregation. Initially, “the demand for the fringe” was generated among the industrial bourgeoisie in response to the growing concentration of productive activities and associated districts of the working class. The realisation of this demand was made possible by “a loose employment linkage, due to growing affluence, less direct need to supervise business, and improved transit” (Walker 1981: 396-7). Moreover, suburbanization made it possible to “constrict the socially differentiated and defensible landscapes” necessary for the reproduction of capitalist social relations, albeit making possible a certain degree of flexibility and change. Working-class communities were underrepresented in the American suburbs during the nineteenth and beginning of the twentieth century. When the working classes have suburbanized they have typically been pursuing employment rather than the suburban dream.

Mass decentralization of residential spaces, more or less regardless of class, became possible only with the dispersal of production and circulation activities as a whole. The latter was the result of “the historical process by which capital becomes more ‘generalized’, or universal, in space” (Walker 1981:399). Dispersal of manufacturing led the way, with other functions, such as retail and offices, joining the decentralisation movement relatively recently, around the 1960s and 1970s. At the turn of the twentieth century, emergence of large national corporations, development of telephone communication, railroad networks and intra-urban means of public transit, labour-saving innovations, and provision of infrastructure and

housing in general created the potential for dispersion of industry. The “compulsion to decentralise,” as Walker (1981:400) describes it, was produced by the growing obsolescence of the built environment and congestion in the inner cities, as well as by the desire “to escape from a geographically concentrated working class in the industrial centres” in an effort to improve control over the conditions of production. Walker (1981: 401) argues that “a similar logic of decentralization appears to have operated up to the present, with successive waves of industrial concentration, improvements in transportation-communication networks, rapid extension of the general urban infrastructure, and intensified class conflict, followed by waves of factory dispersal.” Often, local governments engage in intensive competition to attract desirable industries. Considering the circulation of capital, decentralisation was not only profitable but the activities in the property circuit of the circulation of capital actually created and exaggerated demand for suburban decentralization via land speculation, channelling capital flows and state support for both (Walker 1981:402).

Finally, the suburbanization process is linked to the temporal dynamics of capital accumulation (Walker 1981:405–9). In general, creation of the built environment under capitalism is characterised by “waves of growth which reflect the use-value ensemble of their period, but also contribute their own forces by virtue of the mediation of the property circuit.” Hence, American-style suburbanization should be considered not only in the context of the fundamental structural relations of capitalism, but also with regards to its relation to “the specific growth ensembles,” particularly the current suburban expansion vis-à-vis the previous “urban solution” in the form of a concentrated industrial city. The latter proposition

leads Walker to a conclusion that, although the general logic of capitalist accumulation does dictate certain trends in the urban process such as segregation and dispersion of uses, the way these trends are realised across a national scale are spatially and historically contingent.

3.1.2.2. Michael Gottdiener

Michael Gottdiener (1985) sees the deconcentrated metropolis as a “phenomenal form of space correlated with Late Capitalism” (Gottdiener 1985: 229), the emergence of which is not a simple consequence of the social restructuring, but rather represents a dialectical relationship where “the hegemony of Late Capitalist relations requires the restructuring of spaces as much as the latter depends on the social forces of the former” (Gottdiener 1985:230). Although “the nature of metropolitan development” is dependent on technology, it is as much dependent on “the growing power of oligopolistic corporations, state bureaucracies, and many other aspects of the new sociospatial relations” (Gottdiener 1985:229). The process of “regionwide deconcentration” that characterises the spatial pattern of Late Capitalism involves “both agglomeration and decentralization dispersed on an expanding regional scale” (Gottdiener 1985: 229). Deconcentration constitutes one of the trends characteristic of the sociospatial transformations at the national scale associated with Late Capitalism, the other one being a regional shift of the center of urban growth and economic and political power from the Northwest and Midwest of the United States to the Sunbelt states.

Gottdiener’s analysis of this dialectical relationship begins with an analysis of the transformation of rural society. He argues that the new relations of production

and technological innovations brought about by Late Capitalism have “thoroughly modified the agricultural process and . . . the social basis of rural life” (Gottdiener 1985:231), resulting in a moving away from small family farms toward agribusiness with a concomitant decline in the importance of small rural towns. One of the results of this process has been “freeing up land for speculation or urban development” (Gottdiener 1985:234), especially in the Frostbelt, where small farmers are unable to compete with large commercial agricultural enterprises. Small rural towns whose economies previously were based on the needs of small family farms underwent restructuring into “agribusiness centres characterised by a much more limited array of people-oriented services” (Gottdiener 1985:235).

Gottdiener further argues that, although economic processes are important for the deconcentration of urban space, “the leading edge” of sociospatial changes under Late Capitalism is constituted by “the articulation between state intervention and the secondary circuit of capital” represented by the real-estate sector (Gottdiener 1985:236). He suggests that the mass suburbanization that took place in the United States after the Second World War was first of all suburbanization of homeownership and was “essentially a product of the real estate and construction industries’ shift to supplying massive amounts of single-family suburban housing to consumers” (Gottdiener 1985:242), which would not have been possible without “active state intervention” (Gottdiener 1985:243). Furthermore, the state-real estate alliance has “been largely responsible for the growth of suburban industry in all areas of the United States” (Gottdiener 1985:251), although this would have not been possible without underlying changes in the nature of capitalist enterprise, namely the emergence of multinational corporations. In both cases, i.e., residential and

industrial suburbanization, the activities of state-real estate alliances are uncoordinated and unplanned, leading to the unbalanced growth within and among metropolitan regions known as urban sprawl. Interaction between state and real estate sector is especially evident at the local level, where “local government activities, including planning efforts, zoning, and building code regulation, are all highly politicized in favor of real estate interests” (Gottdiener 1985:247).

Gottdiener underscores the fact that the spatial transformation characteristic of Late Capitalism operates across the national, and even global, space. However, the resulting patterns of development and growth are uneven and fragmented. Unevenness of the patterns of growth and development in part stem from “the inherently uncoordinated way in which Late Capitalist growth processes transform society and produce space” and in part from “the differential manner by which surplus value is expropriated” (Gottdiener 1985:260). The shift of the center of growth to the Sunbelt states and metropolitan areas provides an illustration of this. Although “Late Capitalist space penetrated the northeast and north central regions by developing the suburbs on an immense scale” (Gottdiener 1985: 258), the need to escape the built environment laid down during the previous periods, which became “an infrastructural barrier” to the development of new industry (Gottdiener 1985: 159), directed the bulk of development and growth to the previously underdeveloped regions of the South and West of the United States and the formerly underdeveloped areas of the rest of the world. Other major factors behind this shift aiding the accumulation process were “lack of an organized labour force, cheap land, lower taxes, and a local government more receptive to the needs of the industry” (Gottdiener 1985:259). According to Gottdiener, the interventionist state generally

has been as important in shifting the center of growth and development in the United States to the Sunbelt as it has in deconcentrating urban space. He especially mentions “public policies which have stimulated defense spending, agribusiness, and those activities relying on fossil fuel combustion” (Gottdiener 1985:257) actively deployed to aid “a spatial transfer of value from the Northeast and Mid west to the [S]unbelt” (Gottdiener 1985: 258).

3.1.2.3. Allen Scott

Allen Scott (1988) also places development of postmodern urban form and structure into the context of capitalist accumulation, but focuses on the recent changes in industrial organization and division of labour as the main factors behind it¹. He argues that industrialization has always been important for urban development under capitalism, contrary to the claims of those who conceptualize a transition to a “post-industrial” society and “post-industrial” cities. Although the contemporary stage of capitalism is undeniably different from earlier forms by “its greatly expanded dependence on white-collar workers, its burgeoning business and personal service functions, the massive increases in banking and financial operations . . . and the greatly extended flows of information,” these factors “do not signify the passing away of capitalism as an organised system of commodity production” (Scott 1988: 7). In short, late capitalist industrialisation remains organised according to the same logic that governed all the previous stages. Rather than entering into a phase of

¹ Scott argues that, due to urban restructuring, the operation of the production system has become one of the central issues of the urban problematic. However, he points out that although the “production system creates powerful forces” that influence urban development, many aspects of the social life “have no simple one-to-one relationship to the production system” (1982:2–8).

deindustrialisation, American society seems to be going through “reorganisation and restructuring within existing large agglomerations of capital and labour, combined with much new agglomeration at selected locations elsewhere” (Scott 1988: 25).

Scott begins his analysis of the reorganization and restructuring of the American economy, and the spatial patterns that are created as a result, by looking at the macroeconomic principles of commodity production that govern industrial organization and the division of labour. He argues that regional and urban growth hinge on changes in the efficiency of external economies of scale that are created in the process of agglomeration of vertically disintegrated small firms relative to that of economies of scope which accrue when production process undergoes integration within few relatively large production units. Specifically, when costs of external transactional relations are lower compared to those of internal transactional relations “in the context of variable scale effects and their expression in production costs and market prices” (Scott 1988:41), “spatially convergent production processes linked through webs of extended transactional relations” (Scott 1988:60) give rise to concentrated regional and urban growth. On the other hand, technological and organizational changes in the production process toward generalisation of labour create “a precondition for locational dispersal to occur” (Scott 1981:43). Scott notes that, in many cases, both patterns can be found within the same region and even within the same industrial sectors. The logic of transactional structures tends to “push small interdependent plants into focal locations [within a metropolis], while the combined effects of land and labour costs help to keep larger plants in peripheral areas” (Scott 1988: 188).

These processes provide a general but partial and abstract framework for understanding urban spatial patterns of American contemporary cities. In order for this framework to attain explanatory power sufficient to deal with the recent restructuring and reorganization of American industrial and urban space, Scott argues, it is necessary to consider “local labour markets and the way they respond to and restructure the locational impacts of the purely organizational dynamics of the production system” (Scott 1988:188). The structure of local labour markets to a large degree is dependent on the nature of labour relations existing in an area, which consist of “an ensemble of habits, norms, work rules, legal arrangements, and so on that define the conditions of work and the role of the worker in the labour process” (Scott 1988: 119). Labour relations frequently are fraught with considerable strain and antagonism and are “endemically subject to renegotiation and reconstruction through the sociospatial action of the different agents” taking part in these relations (Scott 1988: 120), especially in times of internal or external crises. Scott observes that in contemporary urban America, such crises are often triggered “by technological and organizational change brought on by management in its perpetual search, spurred by competition, for lower costs and higher profits” (Scott 1988: 139). Renegotiation of labour relations and industrial change affect and transform the organization of local labour markets as well as the internal structure of the metropolitan space, although the details of these transformations are highly dependent on local circumstances such as “the consciousness and levels of political mobilization of the different participants involved in the local labour market” (Scott 1988: 158).

Scott suggests that recent changes in both form and structure of American metropolitan areas can be viewed as a result of a combination of three strategies comprising elements of industrial, technological, and organizational change as well as renegotiation of labour relations. One of the strategies adopted by industrial capital, namely the decentralization of industry to peripheral areas, was made possible by changes in organization and technology that allowed for dramatically decreased costs and demand for labour. Another strategy was to initiate new industrial growth centres “in areas without any previous history of major industrialisation or union organising” (Scott 1988:139), such as the new high-technology industrial complexes in the Sunbelt. Finally, certain changes in organization and technology allowed for tapping into a previously unused labour pool, including women and minorities, with or without changes in location of units of production. One of the consequences of the implementation of these strategies was polarization and even segmentation of labour markets into managerial and professional jobs at the top and unskilled, low-wage blue-collar jobs at the bottom. According to Scott (1988: 160), Orange Country, California, could be taken as “a paradigmatic example of the new patterns of industrialization and urbanization that are now being laid down on the American economic landscape,” patterns characterised by transaction-intensive economies, deeply segmented local labour markets and regressive labour relations, and high-technology production systems associated with federal defence and space expenditures.

3.1.2.4. Rachel Law and Jennifer Wolch

Rachel Law and Jennifer Wolch (1993: 165) see restructuring of social reproduction as “a point of entry in an analysis of urban change” directed towards “an understanding of transformation in urban form and activity patterns in the U.S.” They also suggest that focusing on restructuring of social reproduction allows for incorporating into the analysis changes that are driven by extra-economic structural forces such as demographic change. Law and Wolch (1993) identify four components that constitute the basis for social reproduction — the economy, the state, the community, and the household — the restructuring of which contributes to new activity patterns in time and space. They regard the “fragmentation of monolithic social institutions and their replacement by a multiplicity of alternatives . . . and blurring of the boundaries between times and spaces that were sharply delineated in the preceding period” as a common theme running through the restructuring of these four components (Law, Wolch 1993: 198–9). Changes in urban form and activity patterns in Los Angeles are used to illustrate these propositions, although Law and Wolch recognise that there are certain differences between individual American cities in the degree to which, and particular ways in which, these changes are expressed.

Law and Wolch trace these changes in the economic organization in the United States to the 1960s, when the decline in profit rates became quite noticeable. By the late 1970s, “elements of what has been called a new ‘regime of accumulation’ (and its accompanying social and political ‘mode of regulation’) were becoming clear” (Law, Wolch 1993: 167). These elements included increased flexibility of circulation of capital associated with an unprecedented concentration of

capital within relatively few transnational corporations, which effectively became command-and-control centres of the global economy; increased flexibility of the production process and employment practices; and corresponding increases in flexibility of consumption. According to Law and Wolch, the most important outcomes of these broader changes for the US labour markets were the shift to the predominance of service-sector employment, the extension of subcontracting arrangements, and the growth of flexible employment practices, which in turn resulted in polarization and segmentation of the labour force with a “more complex and differentiated set of segments than before” (Law, Wolch 1993: 170). As a result, “workers [were] less able to rely on their own jobs as secure and adequate sources of income to support themselves and their children” and “the ability to rely on other sources [such as household economy and state support became] ever more important” (Law, Wolch 1993: 171). But this was complicated by cutbacks in the welfare activities of the state.

Restructuring of households in general followed “long-standing demographic and social trends” (Law, Wolch 1993: 171). The outcomes of these trends included a decrease in “the stereotypical” nuclear families and an increase in diversity of household arrangements that included a large number of one-person households and (female-headed) single-parent households. Diversity in the household structure was matched by diversity in household activity patterns. Law and Wolch (1993: 172) argue that the most important shift in the activity patterns of households was due to the increased participation of married women in the paid labour force, which, they argue, has fractured “the economic basis of marriage” (Law, Wolch 1993: 174). Female-headed households tend to be among those in poverty not only because of

the persistent gender gap in wages but also due to “the heavy unremitting demands for time and energy which fall upon the single parent” (Law, Wolch 1993: 174).

During the 1970s and 1980s, the United States, together with the majority of developed countries, shifted their governing practices toward a neo-liberal paradigm (Bakker 1996). Policy measures and institutional actions were implemented that were aimed at reducing commitment to the welfare state (Knight, Joseph 1999) by “re-privatizing” or eliminating many maintenance and caring activities that were public responsibilities during the previous Keynesian regime of accumulation. In the United States, where social welfare expenditures were traditionally the sphere of the federal government, cuts in spending implemented in the late 1970s and 1980s primarily affected income support for the poor (Law, Wolch 1993: 175). Cuts in federal spending were accompanied by “downloading” of responsibility for many programs to state and local governments, many of which lacked fiscal resources to make up the shortfall. In turn, state and local governments re-delegated those responsibilities to the private sector and to voluntary organizations. Even as the number of support programs was reduced and eligibility requirements were tightened, the number of poor households increased and new groups in need of government support, such as people with AIDS, appeared.

Restructuring of urban residential communities is seen by Law and Wolch (1993: 177–8) as affected by two trends: a more self-conscious, clearly defined segmenting and a greater use of lifestyle and consumer identity as the basis for the formation of community. On the one hand, specialized places have been constructed to serve particular consumer groups, e.g., wealthy retirees or gay couples. Sorting of people into these places is facilitated by marketing as well as by exclusion of

unwanted residents. On the other hand, concentration of financial capital has stimulated the creation of global consumer markets that are not sensitive to local identities. Consequently, existing communities within urban areas, Law and Wolch argue, find themselves subject to social and political fragmentation. Paradoxically, this may also give rise, sometimes simultaneously, to new opportunity for coalescence.

Law and Wolch (1993: 181) identify several general trends in the restructuring of social reproduction in the United States which they see as complex outcomes of the restructuring of the economy, household structure, state and community. They argue that these trends “affect the daily activity patterns of different groups defined by class and gender” and thus “generate new uses of space and forms of urban built environment”(Law, Wolch 1993: 181). For example, polarization of earnings and household incomes has been translated into polarization of day-to-day experiences of people. On the national job market, a significant number of well-paying jobs in the manufacturing sectors have effectively been replaced by jobs in the service sector; these latter are sharply divided into low-skill low-wage jobs concentrated predominantly in the consumer service sector and high-skill well-paid jobs located mostly in the producer-service sector. One of the results of this polarization has been a “reversal” of the spatial proximity patterns observed traditionally within the modern Fordist city. Instead of high-income earners living furthest from the nodes of employment and travelling to work each day and blue-collar neighbourhoods tending to locate in relative proximity to industrial zones, in the postmodern metropolis, high-income earners tend to locate close to the sites of their

employment, which has contributed to the emergence of suburban employment nodes (edge cities) and of the gentrifying areas within the inner city.

Another broad trend, the incorporation of women into the labour force, may have altered urban space in several ways (Law, Wolch 1993: 188). First, it has resulted in a transformation of the nature of single-family suburban communities since women entering the labour force ceased to be full-time housewives whose unpaid volunteer services were essential for functioning of suburban communities. Additionally, female employment is linked to the “diversification” of household composition, and therefore of residential choices. Law and Wolch (1993: 189) suggest that currently two types of households are predominant — dual-earner households without children and households headed by a single employed mother. The former share many consumption patterns with single-person households, but they are more likely to be gentrifiers due to higher household incomes. In the United States, female-headed households are more likely to be low-income and therefore are most commonly found in the central cities of metropolitan areas or in mature suburbs. Their location choices are determined by the need for urban services such as public transportation, and accessibility to services such as child care.

Restructuring of the state by decreasing social services led to increases in the numbers of the working poor and marginalization of certain population groups such as adults with disabilities, those suffering from temporary unemployment, and single mothers with small children (Law, Wolch 1993: 185–8). Decreases in state support effectively increased the number of people competing for low-skill, low-wage jobs, while at the same time putting even these unpopular employment opportunities out of reach for many people within these socially vulnerable groups. Spatially, low-

skill, low-wage employment tends to be concentrated in the inner areas of American cities. However, the number of people who are willing and capable of taking such jobs is much higher than the number jobs available, making the inner city an area of concentrated unemployment. Law and Wolch suggest that growth of the marginalized population has resulted in a dramatic rise in homelessness, informal and illegal economic activities, and conflicts over use of public space in most American inner cities.

Law and Wolch (1993: 194–7) also argue that employment options alternative to full-time, permanent employment have directly and indirectly (via changes in the domestic division of labour) affected temporal patterns of activities and therefore of the use of urban space. With the widespread implementation of flexible employment arrangements, distinction between times of work and personal life has been eroded on societal as well as personal levels. This has resulted in a more varied range of work schedules and different commuting patterns. In addition, pace of activity during hours of work has been intensified. The end result, according to Law and Wolch, has been intrusion of work into domestic life and transformation of home into a site of work. Under these circumstances, many workers, especially women in professional occupations who have children, may be inclined to choose self-employment as an option that offers a greater degree of control over time. In part, this explains increases in the number of self-employed in the urban work force.

3.2. Unevenness and Contextuality of Urban Development

Contributions to urban geography dealing with factors and forces of post-modern urban development reviewed here represent two frameworks of analysis

based respectively on neo-classical economics and structural or Marxist approaches to human geography. Consequently, although they view postmodern urban development as embedded within a logic of wider social and economic processes, not surprisingly these contributions uncover different mechanisms that relate urban development to the wider socio-economic context and attribute importance to different factors within that context. Despite their differences, however, contributions in both groups share another common theme acknowledging that post-modern urban development, as urban development in general, is geographically and historically contingent and therefore unevenly expressed across space.

3.2.1. Arguments from the Neo-Classical Economic Point of View

Neo-classical economic approaches to human and urban geography have been criticised because of the assumption that spatial patterns result directly from people's choices based on their preferences and attitudes (Dear, Scott 1981; Harvey 1989; Cloke et al. 1991; Peet 1998). It has been argued that this approach completely ignores "the economic and political constraints imposed upon spatial patterns" which find their expression as "inequalities between different groups of people living in very different circumstances, in terms, for instance, of housing conditions and quality of local environment" (Cloke et al. 1991:28). For instance, in analysing changes in the urban form and structure that took place during the twentieth century, the neo-classical economics approach assigns technological change a pre-eminent role as a causal factor (Gottdiener 1985: 44–5). Benefits of advances in transportation and communications, especially the recent advances associated with post-industrial society, are assumed to be equally accessible to all members within

urban communities: “. . . the post industrial society is defined by the quality of life as measured by the services and amenities — health, education, recreation and the arts — which are now deemed desirable and possible for everyone.” (Bell 1973: 127)

Although some researchers acknowledge that economic and technological changes may “have radically altered the life-styles” of only “some people” (Bryant, Coppack 1991: 213), namely members of “professional and business elite groups” (Friedmann, Miller 1973: 86), these statements usually are not further elaborated. The same is true regarding the treatment of inter-urban and inter-regional differences. Although differences are acknowledged, for example when considering the differences between “small or isolated” and large and established urban centres with respect to the form and structure of rural-urban fringes (Bryant, Coppack 1991: 217), these differences are treated as marginal within the conceptual framework and are not significantly elaborated upon.

These arguments, however, do not diminish the insights into the development of rural-urban fringes, as well as into their form and structure, provided by the University of Waterloo School (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991), which was founded largely upon neoclassical economics. With regards to unevenness and contextuality of rural-urban fringe development, research generated by the School underscores the role of the physical environment as a factor responsible for differences between rural-urban fringes of various Canadian metropolitan areas. Bryant et al. (1982: 14) observed that “the full sequence of [zones within the rural-urban fringe (Fig. 2.3)] does not occur around all centres or even in all directions,” because natural barriers could preclude development as in the

case of the Halifax CMA, where land development outside of the urban core is hindered by the predominantly hard rock environment (Millward 2002). Bryant et al. add that “particularly strict planning controls” or certain land-tenure patterns “may have the same effect,” limiting the extent and internal structure of the rural-urban fringe (Bryant et al. 1982: 14). The latter is the case in cities of the Great Plains in the United States and Canada, which “often have much more distinct edges” (Bryant et al. 1982: 14). Additionally, the regional city form may not develop to the full extent “around isolated or relatively small urban centres such as Regina, Saskatoon, or Saint John’s” (Bryant, Coppack 1991:217).

3.2.2. Arguments from the Structural Point of View

3.2.2.1. General Patterns of Temporal and Spatial Dynamics of Urban Development under Capitalism

A structural framework places urban development “within the wider structure and logic of capitalism” (Dear, Scott 1981:6). Production of the urban environment under capitalism is linked to the process of accumulation (Harvey 1981, 1989), the principal structuring force or “powerhouse” of capitalism (Baccock 1984: 65). More specifically, the built environment is created as a fixed capital of production and consumption funds resulting from the operation of the secondary circuit of capital circulation (Harvey 1981, Walker 1981). Although investment into the built environment is motivated by the opportunities to appropriate both economic rent from created property as well as profits from its construction, these alone do not constitute sufficient conditions for a steady flow of funds through the property portion of the secondary circuit of capital. For this “switching” (Harvey 1981:97) to

occur, the economy in general should be in a relatively developed state, i.e., there should be the potential for overaccumulation in the primary circuit.

Interaction between accumulation of capital and other structuring factors such as land and labour markets, class struggle, the state, etc., (Edel 1981; Walker 1981; Gottdiener 1985; Scott 1988; Harvey 1989) creates a pattern of capitalist development that is uneven in both spatial and temporal terms (Smith 1984; 1990). Historically, owing to its dialectical nature, development of capitalism expresses itself in the form of cycles or waves, where longer periods of growth are followed by shorter periods of crisis and stagnation (Edel 1981). Consequently, social and economic history is divided into distinct stages, also dubbed “regimes” or “modes of accumulation” (Scott 1988; Law, Wolch 1993), characterized by specific “growth ensembles” (Walker 1981:405). Urban development has been shown to follow so-called “long waves” of fifteen to twenty-five years in duration (Kuznets 1961), where distinct “waves of urbanization” essentially follow the dynamics of changes in modes of accumulation and the associated patterns of investment in the built environment (Walker 1981:408). The built environment is “long lived, difficult to alter, spatially immobile, and requires large investments” (Harvey 1981:105), and therefore it tends to outlive the mode of accumulation that created it. It is these propositions that allowed Walker (1981:405-9) to conclude that trends that comprise postmodern urban process in the United States should be expected to be expressed unevenly across the national space. He observed that “American cities of varying age embrace different histories,” and as such older cities, especially in the Northeast, tend to “contain contradictory past and present,” whereas newer cities in

the Southwest “are almost wholly suburban,” since postmodern urban form and structure are more dominant in these cities (Walker 1981:407).

The pattern of creation of urban environment is uneven not only in temporal terms, but in spatial terms as well. The crises generated by the contradictory nature of capitalist accumulation are resolved not only by “switching of the allocation of capital from one sector of economy to another,” but also “by switching the flows of capital from one place to another” (Harvey 1981: 102). By this process, the spatial division of labour, which initially is based upon differentiation in natural conditions, is deepened and becomes increasingly linked to the conditions and level of socio-economic development (Smith 1990). Moreover, even during relatively stable periods in the process of capital accumulation, social differentiation based on a social division of labour (another structural component of society) produces increasingly specialized and differentiated spaces (Harvey 1989; Smith 1990). Although Smith (1990: 150) argues that the most evolved pattern of uneven development occurs at the urban scale, uneven development at the national and global scales linked to the geographic switching of larger flows of capital have also been documented (Whitehand 1987; Harvey 1989).

3.2.2.2. The Role of Labour Markets and the State in Uneven and Contextual Patterns of Urban Development

Within this general framework that establishes temporal and spatial dynamics of capitalist development, several aspects deserve further attention. According to Scott (1988), labour markets are an important factor contributing to the unevenness of postmodern urban development in the United States and at the global scale. He

suggests that, currently, the structure of local labour markets has become probably the most crucial determinant in the process of geographical switching of capital. Recent changes in the organization and technology of production process have allowed for dramatic decreases in cost and demand for labour, especially the skilled segment of labour (Castells 1987). This, and unprecedented generalization and concentration of capital within relatively few transnational corporations (Thrift 1995; Feagin, Smith 1998), have made possible locating units of production virtually anywhere in the world. Under these circumstances, places, regions, or even countries “without any previous history of major industrialization or union organizing” (Scott 1988: 139) may be given preference as sites of new industrial growth. This largely explains why Sunbelt states in general, and Southern California in particular, are seen as paradigmatic examples of “new patterns of industrialization and urbanization” (Scott 1988: 160).

Walker, and especially Gottdiener, emphasise the role that all levels of the state play in the process of postmodern urban development in the United States. Walker views the state as “an instrument to serve capital’s ends” (Badcock 1984: 69) and as essential to the switching of capital to the secondary circuit. He observes that in the United States, “local governments in the twentieth century have been converted into specialists in land development” (Walker 1981:404) who are more interested in “stabilization and promotion of land values” (Walker 1981:394) than in comprehensive urban planning. Therefore, local government has constituted and still constitutes “an essential factor” of location differentiation and segregation of land uses that is “fundamental to suburbanization process in the US cities” (Walker 1981: 388). He argues that governments at the federal and the state levels consciously

sustained suburbanization by providing more general and indirect support to the property circuit via highway construction, mortgage-insurance and housing subsidies, tax benefits, and grants-in-aid to local governments for the support of capital investment and urban renewal (Walker 1981:404).

Gottdiener, who assigns the leading role in the sociospatial changes characteristic of postmodern urban development in the United States to the relationship that exists between the state and the real-estate sector of capital, argues that “the articulation between state intervention and the secondary circuit of capital” (Gottdiener 1985:236) directly contributes to the unevenness of postmodern urban development. At the local level, the activities of state-real estate alliances are uncoordinated and unplanned and therefore their outcomes are highly dependent on the local context. Thus, in the relatively less developed regions of the United States, local government has been more receptive to the needs of capital. Policies and programs of the federal government not only enabled deconcentration at the national scale but also contributed to unevenness in the development and growth that ensued, by promoting “a spatial transfer of value” (Gottdiener 1985:258) from the North to the South and Southwest of the United States.

In general, within a structural framework the state is considered an important factor contributing to the contextuality of social development under capitalism. Although specifics of the nature of the state under capitalism are subject to various interpretations (Clark, Scott 1981; Badcock 1984: 68—9; Smart 1994), all agree that the state is a structure necessary for regulation in the areas of production, consumption, and social control (Dear, Scott 1981:8). The role of the state varies considerably among different countries, as do the ways in which its functions are

organized (Edel 1981:28). This contributes to the coarse differentiation of space at the global level. With regard to recent economic and political changes at the global level, it has been argued that the state represents a structure that transmits the processes and forces of capitalism active at the global scale down to national, regional, and local scales, as well as shapes the everyday perceptions of these processes and forces at those “closer” levels (Le Heron et al. 1992). At the same time, the state itself, more specifically its form and functions, are undergoing changes affected by restructuring and globalization (Law, Wolch 1993). Whereas the post-World War Two phase in capitalist development was partly sustained by state funding of consumption in the form of health, education, and welfare, the present period of restructuring is characterised by the state’s retreat from an active supportive and regulatory role in favour of a facilitative form of intervention (Jessop 1982; Gottdiener 1985). Given its variability as a structure, particular ways in which the state influences and is influenced by restructuring and globalization would be highly contextual at all levels of government.

This in turn brings up the question of whether the state in Canada is implicated in postmodern urban development in the same way as it is in the United States. Goldberg and Mercer (1986) have argued that, notwithstanding the apparent and real similarities between the Canadian and the American political systems, there are “fundamental differences in political structure, culture and functioning” (Goldberg, Mercer 1986: 114). For instance, although both countries have a federal system of government, the United States has a much more highly centralized form of federalism with a more powerful federal government. In Canada provincial governments have substantial control over urban affairs, education, and resource

management. Consequently, input into urban affairs by the Canadian federal government is weak compared to that of the American federal government: "Direct federal input into urban transportation is lacking in Canada . . . So are the massive federal urban subsidies and direct transfers to local governments and developers which have come to typify so much of U.S. urban . . . development" (Goldberg, Mercer 1986:124). This situation, according to Goldberg and Mercer, results in Canadian cities having "a different urban form" (Goldberg, Mercer 1986:143) compared to those of their American counterparts; namely, Canadian cities are more compact and have demographically and economically stronger core areas. Recent studies (Mercer 1999; Mercer, England 2000) found that these differences persist, but at the same time there is a certain degree of convergence between the two countries in urban form and structure with regards to dispersion and inner-city decline.

On the other hand, in Canada municipalities are constitutionally under the control of the province in which they are situated, and their powers are essentially determined by that province. Compared to the position of local governments in the United States, Canadian local governments have historically been in a legally inferior position and continue to be the level of government at which the foremost responsibility is "regulating, servicing, and taxing" the built environment (Sancton 2000: 426–7). However, specifics of municipal functions and responsibilities will vary from province to province (Smart 1994: 567). This represents a stark contrast the United States where the ideology and practice of local autonomy results in a proliferation of small municipalities and special-purpose districts that "can be seen as virtual private extensions of small population groups" (Goldberg, Mercer 1986:

143). Consequently, the levels of residential segregation and differentiation in Canadian cities are lower compared to those of US cities due to the lower level of fragmentation of government at the local level. Moreover, due to differences in political process and in attitudes towards government, Canadian provinces have been much more successful in the imposition of regional metropolitan governments via amalgamation than have American states (Sancton 2000).

3.2.3. Contribution of Structuration Theory to the Conceptualisation of Urban Development as Uneven and Contextual

3.2.3.1. Limitations of the Neo-Classical Economic and Structural Approaches to Urban Development

Approaches to postmodern urban development reviewed thus far have explicitly placed urban process within a broader context of economic, social, political, and cultural processes that operate within the society. These approaches place emphasis on a variety of specific forces and factors while recognizing that the way these forces are articulated and the resulting spatial patterns are not uniform across the space. Not incidentally, contributions from the structural perspective, which is founded in historical materialism “wherein human beings and social life are considered with regard to their broader relationship to prevailing social conditions of the day” (Cloke et al. 1991:30), occupy a prominent place in the literature that has been reviewed. Analysis of unevenness and contextuality of the post-modern urban development based solely on “the dominant socio-structural forces” (Gottdiener 1985: 195) leaves out, however, a very important factor contributing to the urban process, namely agency. In general, agency is defined as “the actions and motives of

human actors in the practice of social conduct” (Gregory 2000:349). It has been argued that structural approaches to human geography put too much emphasis on “the causal significance of structural forces (e.g., contradictions or disruptions in the capital accumulation process) at the relative expense of human agency in their explanations of urban and regional change” (Chounard 1997: 365)¹.

3.2.3.2. Conceptualisation of the Relationship between Structure and Agency

The relationship between structure and agency as categories of analysis, and their relative importance, have been a subject of intense debate in human geography as well as in sociology (Thrift 1983; Knorr-Cetina 1988; Cloke et al 1991; Chounard 1997). One of the outcomes of these debates was a realization that an explanation of human action needs to be connected with the properties of social institutions as structures (Giddens 1976: 69). Structuration theory, to which Giddens (1984) was a main contributor, was developed as an attempt to find a middle ground between “on the one hand, determinism of the structural view and, on the other hand, the idealism and hyperindividualism of some non-structural approaches” (Duncan 1985: 178). At the center of structuration theory is the principle of the duality of structure (and agency), by which Giddens meant “that social structures are both constituted by human agency, and yet at the same time are the very medium of this construction” (Thompson 1989: 57). A duality of structure is developed by Giddens through the treatment of agency and structure, which is somewhat different

¹ Although, by the early 1980s, significant advances had been made in conceptualizing linkages between agency and structure in Marxist geography (Chounard 1997: 366).

from traditional treatments of these concepts in both structural and humanist frameworks.

Agency is seen as the knowing actions of “knowledgeable human subjects rather than autonomic response to any transhistorical logic or functional imperative,” so that the “production and reproduction of social life is a skilled accomplishment” (Moos, Dear 1986: 231). Giddens conceptualized agency as “motivated by the individual who is liable constantly to examine what he or she is doing” through reflexive monitoring (Cloke et al. 1991: 99); reflexive monitoring provides a feedback necessary for the external and internal rationalization and motivation of action (Thompson 1989: 71). However, not all the actions are consciously motivated and acknowledged. Giddens suggested that action is linked to the structure through primarily unintended consequences of acts that may become the unacknowledged conditions of future acts (Thompson 1989: 71–2), where the structure is conceptualized as consisting of rules and resources. In pursuing some course of action the agent draws upon the rules and resources which comprise structure, thereby reproducing unintentionally the structural conditions of further acts. Consequently, structures have only virtual existence and are distinguished from social systems that constitute “a patterning of social relations across time and space based on reproduced behaviour” (Phipps 2000: 1809) and are manifested as a visible pattern (Fielding 1988).

3.2.3.3. Implications of Structure-Agency Duality for the Production of Social Space

The constitution of society or its structuration, and by extension the production of space, is a contextual process since it depends on the “production of the social interaction . . . always and everywhere a contingent accomplishment of knowledgeable social actors” (Giddens 1981: 27). However, some general principles of how society and its spatial representation are constituted can be identified. Giddens proposed two possible processes that structure society socially and spatially — social integration and system integration (Giddens 1984). Social integration takes place when people are engaged in routine day-to-day activities that bring them together, whereas system integration occurs through time-space distancing where relations are stretched across time and space and participants do not need actually to be co-present. Some of these practices could become “widespread among the members of community and society” and “deeply sedimented in time-space,” giving rise to institutions (Giddens 1979: 80). Articulation between time-space routinization and distancing produces a pattern of “regionalization of resources in particular locales which intersect with a mosaic of human contexts to construct everyday social reality” (Moos, Dear 1986: 239; also Giddens 1984: Chapter 3). This pattern will vary in character according not only to the way in which localized time-space organization is ordered as such but also within more deeply sedimented social systems (Cloke et al. 1991: 113).

Propositions regarding regionalization essentially allow conceptualisation of contingent outcomes that are associated with agency in geographical terms (Thrift 1983; Saunders 1989; Dear, Moos 1986; Moos, Dear 1986). Furthermore, the

structuration framework provides a theoretical ground for conceptualizing the interconnectivity between the micro-worlds of face-to-face interaction and the macro-worlds of systems subject to time-space distancing (Giddens 1985). For example, Allan Pred (1984) developed a theory of structuration as “a place-bound process” (Pred 1984:283) via integration of propositions of structuration theory and time-geography of Hägerstrand (1975). The point of departure of this integration is that the process of structuration could be viewed as “spelled out by the intersection of individual paths with institutional projects¹ occurring at specific temporal and spatial locations” (Pred 1984:282). Therefore place could be viewed as a complex historically contingent process where all of its various components are “ceaselessly becoming one another” (Pred 1984:282).

One of the components of place as a historically contingent process, according to Pred, is the spatial and social division of labour. Social and spatial divisions of labour arise because people cannot participate in all, even the most important, activities within a place, and also because activities, however important, cannot be distributed uniformly across space. A similar idea can be found in Gregory (1994: 117): “Structures of social relations put in place the grid of social interdependencies within which the capacity of people to act — “to make a difference” — is distributed unevenly and asymmetrically. These bonds are as much spatial as they are social.” Within any given place, certain institutional projects are dominant in terms of the demands they place on daily paths and life paths of individuals, and therefore they constitute the most visible path-projects within the local spatial structure. Pred

¹ A project is defined as “an entire series of tasks necessary to the completion of any goal-oriented behaviour” (Pred 1981: 236).

argues that “in most places and times, dominant institutional projects have been identical with local material production and distribution or with operation of a locally dominant mode of production” (Pred 1984: 283). The institutional production and distribution projects therefore are the foremost means of the place-bound structuration process. At the same time, these projects are themselves the outcome of the previous practices, culture, and resulting knowledge and experience of local agents.

With the increase of the time-space distancing (Giddens 1981), in industrialized countries “the production and distribution projects occurring within a local area are directly or indirectly connected to the dialectics of more macro-level structuration processes” such as “the locational decisions made by job-providing institutions in conjunction with investment, purchasing, and subcontracting activity” (Pred 1984: 283). Therefore, the specific combination of production and distribution projects occurring within a place is a result of the historical succession of investment made there as a part of wider national and international divisions of labour, as well as of the sequence of economic structural conditions that have affected the survival and scale of those local placements of capital (Pred 1984: 284). This proposition concerning historical contingency of social and spatial structures found further development in the works of Doreen Massey (1978, 1984, 1995), who attempted to synthesize the structural and structuration frameworks.

Massey argued that “an understanding of spatial variations in social, political, and economic change was particularly important” (Painter 2000: 456). She further argued that geographical patterns are more than a simple spatial distribution of phenomena. They are “underlain by and can be approached through” the structures

and processes on which they are based (Massey 1995: 66). In her work, Massey focused on the patterns and changes in employment in Great Britain during the recent restructuring, which she saw as a direct expression of changes in the relations of production. She underscored the fact that although capitalist production in general, and relations of production in particular, “can be organized geographically in a variety of ways,” academic research tends to “assume that the form of organization identified in a particular study is replicated in all other parts of the economy” (Massey 1995:67). Within an individual country, social relations and social structure can vary quite dramatically, which is what really constitutes the sources of the unevenness of development. Furthermore, spatial structures develop through social processes that are conflictual in nature, i.e., they are “established, reinforced, combated and changed” through actions of people involved in these processes on a day-to-day basis, which creates particular local combinations.

The distribution of social relations and different social groups over space are in part a product of historical dynamics of these processes. In turn, they determine the future patterns of development as they operate as location factors in subsequent periods of investment (Massey 1984:118–9). Therefore, places could be viewed as “products of long and varied histories” where “different economic activities and forms of social organization have come and gone, lingered on, and later died away” (Massey 1984: 117). Consequently, “spatial structures of different kinds can be viewed historically as emerging in a succession in which each is superimposed upon, and combined with, the effects of the spatial structures which came before” (Massey 1995: 120). Configuration of a spatial structure at particular time will depend on the existing character of the area and the nature of the new round of investment entering

the area. However, local social and spatial structure should be seen not only as unique to places but also as part of broader spatial divisions of labour and, therefore, are embedded in wider spatial structures.

3.3. Towards a Framework for Analysis of the Spatial Distribution of Post-Modern Urban Form in Canada

A review of the literature on factors of post modern urban development in North America suggests that the most comprehensive and explicit treatment of post modern urban development is found within the structural perspective. This perspective emphasizes the role of factors structuring capitalist society as forces behind urban development in general and treats postmodern urban development as its stage. Special importance is attributed to social division of labour, structure of labour markets, and state intervention. It is recognized that the way these factors find expression in the spatial structure is uneven because it is contextual. However, although the notion of contextuality of urban development is present in the analysis undertaken from the structural perspective, the causal significance in most cases rests with the structural processes themselves.

The review has also suggested that structuration theory significantly enriches our understanding of the contextuality of urban development. Its propositions allow one to see broad structuring processes active in the society as constituted through actions of people as they go about their day-to-day activities in complex and varied environments (Duncan, Savage 1991: 158). These environments do not necessarily have hard and fixed boundaries but for the purposes of analysis could be defined as places or regions at sub-national spatial scale (Painter 2000:456). More specifically,

configurations of daily and life paths, into which activities of people are organized and around which spatial structures are formed, are influenced by history and human geography of places, which are seen as sedimentation of previous practices, conflicts, culture, and the resulting knowledge and experience of people (Pred 1984). At the same time, broader structuring processes can be seen as a set of social relations objectively existing at the scale of wider divisions of labour. As these processes interact with the local social and spatial structures, they change them and are, in turn, being changed. In the end, local spatial structures will depend not only on the existing character of the local area but also on the nature of global influences it experiences (Massey 1995). Therefore, it seems that in order to grasp spatial patterns of postmodern urban development, it is necessary to consider the interactions between broad structuring processes (summarised as globalization and restructuring), local agency, and the nature of the local areas (i.e., various aspects of their geography and history).

Applying this approach, however, one runs into an issue of scale. The three components of the framework outlined above are expressed and, therefore, are analysed “at different levels of hierarchy of spatial scales” (Cox, Mair 1991: 200). Agency, when defined as everyday experience, is traditionally equated with local scale (Taylor 1982), whereas conceptualisations of structure are more varied and flexible. A structural approach treats structures as abstract categories that describe major organizing forces of capitalism which penetrate the society, i.e., exist at all spatial scales (Edel 1981; Harvey 1989). However, as Harvey argued, they are better investigated “using a bird’s eye view,” that is, at a relatively broad and aggregated scale (Harvey 1989: 1–4). Pred (1984) distinguished between a “place-bound”

structuration, whereby individual paths intersect with institutional projects, and “macro-level structuration processes,” to which local areas are connected via locational decisions by the decision-making institutions outside them as part of wider national and international divisions of labour. Taylor (1982) distinguished between political and economic structures and associated them, respectively, with the national and global scales. Cox and Mair (1991) argued that locality could be conceptualized in terms of two related meanings — as localised social structure and as an agent. Finally, history and human geography of an area present more flexible concepts and could be applied to and analysed at any spatial scale.

It has been suggested that the empirical observation of a structurationist duality between agency and structure is difficult to implement and is probably more practical to analyse at the level of an individual whose ethnographic data through time are available (Gregson 1989; Phipps 2000). To overcome this, Giddens (1979: 80–1) introduced the notion of bracketing, which is a way of applying structuration theory at any scale without giving undue prominence to either the system or the agent. This method does not place agent or system in a superior position in analysis, but rather integrates both areas of concern even though the focus may be on one or the other (Moos, Dear 1986:242). Therefore, two separate levels of analysis are possible: contextual analysis of agency-institution interactions in production of the social reality and compositional analysis dealing with the structural properties that affect the interactions between agency and institutions (Moos, Dear 1986: 243–4).

This research is concerned with the general pattern of postmodern urban development within the national space of Canada. Therefore, it is logical that analysis will be more compositional in nature and will focus on general structural

processes of globalization and restructuring and the ways these are played out in the Canadian context. It has been observed that restructuring of the capitalist mode of production is a complex phenomenon consisting of many intertwined processes, and any scholarly account of it is inevitably limited and simplified (Le Heron et al. 1992). This research adopts the treatment of restructuring presented by Law and Wolch (1993: 165), i.e., it focuses on the restructuring of social reproduction as “a point of entry in an analysis of urban change” directed towards “an understanding of transformation in urban form and activity patterns.” Focusing on restructuring of social reproduction also allows inclusion into the analysis of changes that are driven by extra-economic structural forces such as demographic change. This treatment of restructuring is used to analyse the changes in the patterns of social reproduction and urban form and structure in Canadian cities, bearing in mind that the way restructuring is expressed across space will inevitably be specific to a Canadian context.

3.4. Context of Postmodern Urban Development in Canada

For the purposes of this research, the context of postmodern urban development can be described in terms of several broad components that set Canada apart from the United States — nature of economy, patterns of regional differentiation within the country including differentiation within the urban system, and the role of the state. First, Canada can be seen as occupying “a unique place in the world” by being simultaneously “a western, advanced country, yet sharing many features with the Third World” (Laxer 1991: xvi—xvii). The country’s economy is often considered to be one of the youngest among developed economies. Although

the general pattern of development is similar to that of the neighbouring United States with both economies sharing colonial origins, in Canada the frontier-staple period of economic development lasted longer than in the United States, continuing up to the 1930s (Yeates 1998a). Economies of some regions of the country still rely to a great degree on the export of natural resources. In fact, primary commodities and primary manufactures dominate Canada's overall exports (Britton 1996: 7).

In earlier periods in Canadian history, economic growth was based on British capital, which was mostly invested into resource extraction industries with only some manufacturing capacity developed in central Canada by the beginning of the twentieth century (Norcliffe 2001). The period of industrial capitalism began in Canada as late as the Second World War, coinciding with switching in both the source and destination of foreign direct investment. During that time, funds were coming mostly from the United States and going primarily into the development of the secondary sector. This period of industrial development was rather short and did not lead to the establishment of mature industrial production across the country. However, that did not prevent the Canadian economy from entering the stage of global capitalism between the 1960s and 1970s. Consequently, the domestic economy represents an apparent paradox: although primary industries still account for a significant share of production in many regions of the country (Hayter, Barnes 2001), there is also a highly diversified service sector located primarily in southern Ontario, southern Québec, and other regional urban nodes such as Calgary and Vancouver. According to Shrecker (1992), strong growth experienced in the Canadian economy in the 1980s was largely a result of the selling off of natural resources in order to finance expanding imports of manufacturing goods.

Second, Canada is a country with a highly expressed regional differentiation (Savoie 1986; Coulombe 1997; Bone 2000) which could be conceptualised at a series of scales. Savoie (1986) discusses three possible ways of defining regions within Canada: where regional boundaries correspond to provincial boundaries, where two or even several provinces are grouped together to form major “natural” regions, and where regions are defined at a subprovincial scale following historical or political conventions, e.g., the Gaspé region in eastern Québec or the Northern Ontario region. He notes that all three ways to delineate regions have their limitations. For example, grouping several provinces into one natural region masks the important differences that exist between individual provinces, whereas treating individual provinces as homogenous regions “masks substantial subprovincial differences in economic well-being” (Savoie 1986: 166). Therefore the choice of particular scale at which to study regional differentiation in Canada should depend upon the purposes of the study.

Regional differentiation in Canada can be measured and expressed using various frames of reference. For example, economic disparity among the regions is commonly assessed using various indicators such as income per capita and unemployment rate. Coulombe (1997) observes that in Canada, inter-provincial disparities in terms of per capita production are nearly twice as great as in the bordering American states but that per capita income levels in these regions of the two countries are much closer. Part of the per capita income convergence between Canadian regions can be attributed to inter-regional redistribution via “fiscal federalism” and the taxation system (e.g., through equalization payments to provinces). According to Savoie (1986: 187), “Ontario, British Columbia, and

Alberta consistently lead the way” in terms of economic development, while the four Atlantic provinces and eastern Québec not only trail other provinces in the great majority of economic indicators, but also have the highest concentration of population in the dependent age brackets. This pattern of economic disparity among Canadian provinces remains for the most part unchanged today (Statistics Canada 2001) and is often described in terms of a “heartland-periphery dichotomy” within the spatial structure of the Canadian economy (Britton 1996: 8). Within this framework, the southern regions of Ontario and Québec are seen as the core of the country with the rest of the regions possessing peripheral characteristics.

Another feature that sets Canada apart from the United States is the extent of state intervention. Davis (1996: 380) describes the structure and spatial organization of Canada’s economy as “being shaped by its institutions.” Although during the 1980s there appeared to be “a significant reordering of the political landscape, including limited privatization . . . and the curtailment of inter-provincial transfer payments between the ‘have’ and ‘have-not’ regions” (Bourne, Olvet 1995: 11), the role of the state remains quite prominent in all aspects of Canadian public life, including its direct involvement in the economy. The public sector occupies an important place in the employment and income structures of all provinces and plays a dominant role in several (Davis 1996: 388). For example, in 1986, in Atlantic Canada and the territories, one-third of employment and 40 percent of wages were provided by the public sector.

Moreover, Rose and Villeneuve (1993) found that in Canada, tertiarization of the economy is grounded mostly in public and parapublic services. There is a long history of state involvement in transportation (Davis 1996) as well as the more

recent formation of crown corporations in the communications sector, which have significantly influenced the tertiary employment structure in the Canadian economy. Additionally, provincial governments expanded greatly in the 1960s and 1970s as they received greater control of health, education, and welfare, thus increasing the demand for tertiary employment in these sectors (although the effects varied among provinces).

Therefore some effects of neo-liberal socio-economic restructuring, a crucial factor in postmodern urban development, may be less pronounced in Canada than in the United States. According to Badcock (1997), the extent of government involvement in the economy as well as relatively strong unions probably account for a dampening of the tendency toward polarization in the labour market in Canada. Moreover, the policy of “fiscal federalism and the taxation system work to decrease socio-economic disparities between the provinces and broader regions within the country (Coulombe 1997), thereby at least partially decreasing the unevenness in spatial patterns of restructuring.

National and regional contexts are critical to understanding urban as well as rural-urban fringe differentiation embedded within the core-periphery regional pattern (McCann, Simmons 2000). Core regions of the country, and particularly those in Ontario, have more mature urban structures in comparison to those in the periphery. The two largest metropolitan areas of Canada, Toronto and Montréal, are located respectively in southern Ontario and Québec. Furthermore, cities in the core regions of the country tend to have more diversified economies, which allows for the establishment of dense networks of economic, demographic, and political linkages within those regions (Bourne, Olvet 1995). The peripheral regions, on the other

hand, contain fewer and usually smaller cities, with resource-based economies linked to mostly external regions (McCann, Simons 2000). Among hinterland regions, the four Atlantic provinces have the weakest urban structures (Savoie 1986).

Several studies (Ray 1971; Forward 1984) found that cities located in different regions of Canada are distinctive based on a number of economic, demographic, and cultural characteristics. However, it has also been noted that, in terms of economic development, standard indicators for major urban centres tend to show less disparity than do the regional averages (Savoie 1987). Bourne (1999) warned against excessive generalization of the recent changes in regional patterns of urban development. The resulting unevenness of urban development is more complex than simple inter-regional differences, and rapidly growing cities can be found in declining regions and declining areas in both the US Sunbelt and the Canadian heartland (Bourne 1999: 184).

3.5. Conclusion

Intensive development at the fringes of North American cities is considered one of the hallmarks of postmodern urban process. Although some theorists argue that this process is radically different from all the previous history of North American urban development and that the factors and forces that influence it, therefore, are quite distinct, the review of literature presented in this chapter provides some grounds for an alternative point of view. In particular, contributions to urban geography by the adherents of the structural approach, which appears to provide the most explicit and comprehensive treatment of postmodern urban

development, provide strong conceptual and empirical evidence that links this development to the general logic of urban development under capitalism. Similarly, although it is perhaps easy to regard current developments at the North American rural-urban fringe as phenomena in themselves, it is important to remind ourselves that the rural-urban fringe is one of the elements of a complex “urban organism.” Its development, although in its current stage quite distinct from the previous patterns, is nevertheless part of a more general process of urban development.

Urban development is a complex process with a multitude of factors affecting and influencing its course in space and history. This chapter provided a critical review of theoretical contributions addressing these factors and, based on this review, proposed a conceptual framework for analysis of the spatial patterns of postmodern urban form in Canada. Two arguments were put forward and discussed. First, it has been argued that the way these factors find expression in the spatial structure is uneven. This is supported to some extent by the propositions found in the neoclassical approach regarding the effects that physical environment, urban planning, land ownership patterns, and position of a city within the urban hierarchy have on urban form and structure (Bryant et al. 1982; Coppack et al. 1988; Bryant, Coppack 1991). A structural approach provides a more detailed elaboration of the proposition of unevenness of urban development, whereby it is linked to the general pattern of capitalist development which is uneven in both spatial and temporal terms (Edel 1981; Walker 1981; Gottdiener 1985; Scott 1988; Harvey 1989). Several factors are identified as particularly important for understanding the unevenness of postmodern urban development, e.g., social division of labour, structure of labour markets, and state intervention.

The second argument put forward in this chapter is that urban development is uneven because it is contextual in nature. Context of urban development can be conceptualised in several ways. The original formulation of structuration theory (Giddens 1976, 1981, 1984) presents broad structuring processes as constituted through actions of people and, at the same time, as a medium and means of this construction (Duncan 1985; Duncan, Savage 1991). Therefore, human agency within a particular place represents one of the contextual factors that, in a way, define the expression of broad socio-economic, political, and other structuring processes in that place. On other hand, configurations of daily and life paths, into which activities of people are organized, are influenced by the history and geography of places (Pred 1984). Therefore, it seems that in order to grasp spatial patterns of urban development in general and postmodern urban development in particular, it is necessary to consider the interactions between broad structuring processes, summarised as globalization and restructuring, local agency, and the nature of the local areas, i.e., various aspects of their geography and history.

The proposed framework straddles several levels “of hierarchy of spatial scales” (Cox, Mair 1991: 200), which could be viewed as an advantage or liability depending upon the objectives of the analysis. On the one hand, the framework makes it practical to explore the process of “place-based structuration” (Pred 1984). However, this becomes problematic if the analysis is set at a relatively broad and aggregate scale because the study of one of the elements, agency, is possible primarily at a local scale. Without ignoring the importance of agency as a factor contributing to unevenness and contextuality of urban development, this research

employs a compositional approach to the analysis of postmodern urban development in Canada, an approach that is based on the notion of bracketing (Giddens 1979: 80–1).

The analysis focuses on general structural processes of globalization and restructuring and the ways these are played out in the context of Canada. The treatment of restructuring used in the analysis is adopted from Law and Wolch (1993: 165), who used the restructuring of social reproduction as “a point of entry in an analysis of urban change” directed towards “an understanding of transformation in urban form and activity patterns.” It is suggested that at the national scale the interaction between three broad contextual factors — nature of economy, patterns of regional differentiation within the country, and the role of the state — would result in restructuring and post-modern urban development being expressed differently in Canada compared to the United States. It is reasonable to expect that patterns of postmodern urban development, and particularly form and structure of rural-urban fringe areas, would vary between the regions within Canada. It is also reasonable to suggest that these patterns would vary according to the positions of cities within the urban hierarchy.

CHAPTER 4: METHODOLOGY

Focusing on the socio-economic and demographic effects of restructuring in Canadian metropolitan areas, this research employs a two-stage methodology. At the first stage, selected demographic and socio-economic characteristics of Census Subdivisions (CSDs) within the boundaries of 25 Census Metropolitan Areas (CMAs) and 112 Census Agglomerations (CAs)¹ were statistically analysed. The objective at this stage was to uncover the dimensions of variation within the Canadian urban system and the corresponding spatial pattern of variation among Canadian metropolitan areas. A factorial ecology approach used at this stage allowed for an examination of the form and social structure of Canadian metropolitan areas and for a distinction to be made between urban cores and rural-urban fringes in order to classify the latter. The second stage explored characteristics of the rural-urban fringe areas representing each category of the classification created at the previous stage, as well as examination of the links between the rural-urban fringe CSDs and the rest of the urban metropolitan areas to which they belonged. The objective at this stage was to examine how socio-economic context influences the structure of the rural-urban fringe and its role in the larger metropolises. This was achieved by an in-depth description of the geography and history of exemplars of rural-urban fringe areas. An exploration of the roles play within the larger

¹ The numbers and boundaries of the CMAs and CAs are given based on data from the 1996 Census of Population.

metropolises was accomplished by investigating the personal networks and life spaces of residents through a mailed random sample survey of 300 households in three rural-urban fringe CSDs and a subsequent statistical analysis of the collected data.

4.1. Stage 1: Development of a Classification of Rural-Urban Fringe Areas

This stage explored the form and structure of Canadian metropolitan areas in general and rural-urban fringes in particular by looking at the contemporary social ecology of these areas. First, basic dimensions of the economic and social make-up of all census subdivisions (CSDs) within Canadian metropolitan areas were identified using factor analysis of various demographic, economic, and social variables. Then, CSDs were classified based on the relative cohesiveness of these characteristics using hierarchical clustering.

Factorial ecology, a quantitative approach to the study of urban social structure based on factor analysis, is “the latest and, to date the most effective multivariate research tool used by sociologists and geographers to study the urban mosaic” (Randall, Viaud 1994:742). One of the strengths of this approach, as is the case with social area analysis, is that it is based on the assumption that the social structure of a city cannot be understood in isolation but rather should be considered in the context of the society as a whole. This assumption is appealing in that it provides a possibility for a link to broader social theory via the concepts of social differentiation, residential differentiation, and division of labour (Massey 1984; Massey, Meagan 1989; Massey 1995). That quantitative methods in general and factorial ecology in particular complement the more theoretically grounded humanistic and structuralist approaches has been confirmed by a

number of studies. In their introduction to a study of 24 Canadian CMAs, Davies and Murdie (1991) noted that while humanistic and structuralist frameworks are indispensable for studying social processes such as gentrification, quantitative methods allow us to explore “the broad social variability in cities” (Davies, Murdie 1991:56). Warf (1990: 76) argued that “a social ecology firmly wedded to a coherent understanding of the production process and informed by structuration theory can shed light on the multiple connections between neighborhoods and the division of labor, including themes such as spatiality of ethnicity, invasion and succession, intergenerational sociospatial mobility, and the family life-cycle.” Another appealing feature of factorial ecology is that it allows us to “distil” dimensions of urban social structure (Davies, Herbert 1993) from a data set with a large number of variables rather than imposing predetermined constructs as with social area analysis (Shevky, Williams 1949; Shevky, Bell 1955).

The data set used at this stage of the analysis contained 224 variables derived from 1996 and 1991 digital profiles of CSDs available from Statistics Canada (Statistics Canada 1991a, 1991b, 1998e). Of these, 119 variables represented demographic and social characteristics included in the 1996 digital profile of CSDs and 105 variables represented the changes in these characteristics over the five-year period from 1991 to 1996 and were calculated using the 1991 and 1996 digital profiles of CSDs. It has been noted that “the results of factor analysis depend strongly on the variables used in the analysis” and “a carefully designed variable selection strategy is therefore of overwhelming importance” (Randall, Viaud 1994:744). The 119 demographic and social variables were selected for analysis from all the variables available in the 1996 digital profile of CSDs based on Law and Wolch’s (1993) conceptualization as well as

on other literature on urban restructuring in North American cities. Appendix A contains a full list of variables initially included in the analysis. A conscious attempt was made to include as many characteristics related to the emerging structure of the North American post-industrial city as possible, though without exaggerating any particular group of characteristics and avoiding redundancy within groups. Another objective of compiling this data set was to test the relevance of these characteristics, derived largely from studies dealing with large metropolitan areas in the United States, for the current Canadian context. The 1991–1996 change variables were calculated for all the variables in the dataset definitions of which were consistent in the CSD profiles for both 1991 and 1996 in an attempt to amplify the most significant characteristics.

Census subdivisions were used as geographic units of analysis. The CSD is the general term applied to municipalities (as determined by provincial legislation) or their equivalent (e.g., Indian reserves, Indian settlements, and unorganized territories). In Newfoundland, Nova Scotia, and British Columbia, this term also describes geographic areas that have been created by Statistics Canada in cooperation with the provinces as equivalents for municipalities for the purposes of statistical data dissemination (Statistics Canada 1999: 196–7). Therefore the size of CSDs does not depend on their populations as is the case with enumeration areas (EAs) and census tracts (CTs). Choice of CSDs, rather than EAs or CTs, as the units of analysis used in this study was based on the analytical capacity of the Statistical Package for the Social Sciences (SPSS) software as well as the computational capacity of computer hardware used to perform factor and cluster analyses, and could be considered as one of the methodological limitations of this research. However, considering that many EAs within CMA/CA boundaries have populations below established threshold values specified by Statistics Canada for data

disclosure, and that the suppressed data are included in the appropriate higher aggregate subtotals and totals (Statistics Canada 1999: 357–8)¹, there should not be a significant decrease in the validity of results. Also, CSDs were selected over CTs as the unit of geography in this research because the analysis included all CMAs and CAs identified by Statistics Canada (Statistics Canada 1999, Appendix N), only some of which are tracted, i.e., divided into census tracts.

Records for the CSDs within CMA and CA boundaries were extracted from the 1991 and 1996 digital profiles in ArcView GIS using the 1996 CMA/CA digital boundary file (Statistics Canada 1996a) to ensure consistency in the number of CSDs analysed. Between 1991 and 1996, no significant changes occurred in the number and boundaries of CSDs and CMA/CAs that could have affected the accuracy of the analysis (Statistics Canada 1999). As a result, the data matrix used in the analysis at this stage contained 234 variables and 1,053 records. Although this part of the study focuses on developing a classification of rural-urban fringe areas of Canadian cities, urban core CSDs were included in the data matrix. Given the overall exploratory nature of the study, inclusion of the entire area within CMA/CA boundaries seemed not only appropriate but necessary to ensure that the resulting classification was as unbiased as possible. In this case, rural-urban fringe areas would not be distinguished on the basis of some pre-defined criteria but instead would emerge as a category during the analysis. Variables selected for analysis were standardized as percentages of corresponding totals where appropriate. Distributions of the variables have been checked for normality and

¹ According to confidentiality requirements, for all the areas with population less than certain threshold values, certain categories of data (such as income distributions and related statistics) or all data are suppressed. For a detailed description of the suppression rules see Statistics Canada 1999, Appendix O.

were normalized if necessary. The number of missing values was calculated for each case, and cases that had more than four values missing¹ (13.9 percent of the initial data set; for the frequency distribution of missing values see Table 4.1) were excluded from the analysis.

Principal axis factoring (PAF) was chosen as the method for extracting the dimensions of variation within the data set rather than the more commonly used principal component analysis (PCA) because PAF treats the unique variance in the data set separately and is superior to PCA in its ability to identify inter-relationships between variables (Johnston 1986). Separate treatment of the unique variance in the data set was particularly important for this study as many variables used in the analysis had a sufficient amount of “noise” in their distributions due to data suppression and random rounding procedures implemented by Statistics Canada to ensure the confidentiality of individual responses, as well as due to trivial non-systematic and systematic errors in the census data². Promax oblique rotation was selected as the rotation method for several reasons. First, use of oblique rotation avoids artificial imposition of orthogonal axes on the data set (Davies, Murdie 1991). Second, extra information may be provided by the correlations among the factors, which permits a more sensible representation of the interrelationships among the basic dimensions of variation present in the data set (Randall, Viaud 1994: 154). Third, the promax rotation technique was found to provide a very close fit to intuitive graphical solutions while requiring less time and resources than other oblique rotation techniques with comparable solution recovery capabilities (Rummel 1970). The actual factor analysis of the data set was preceded by “screening,”

¹ See footnote on page 97.

² See footnote on page 97.

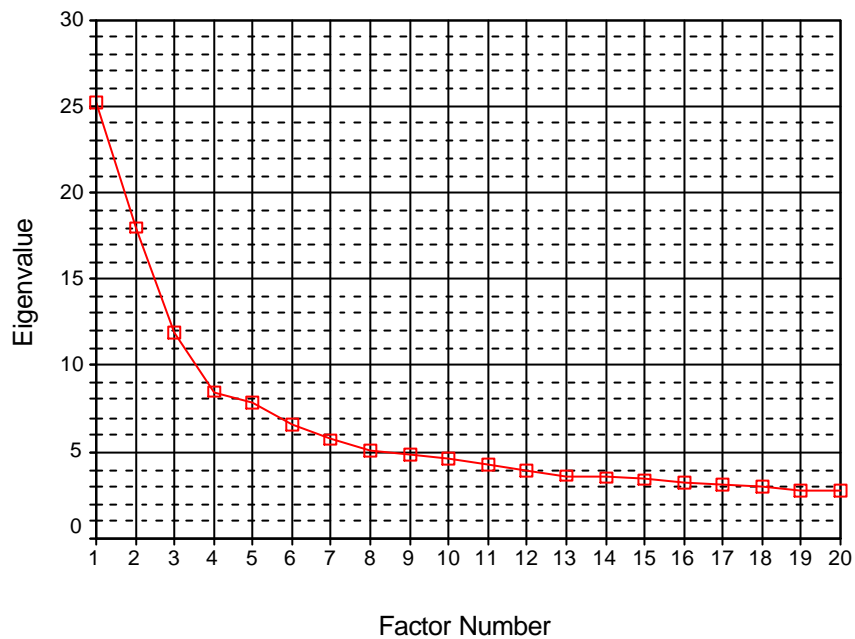
Table 4.1. Frequency Distribution of Missing Values

Source: Compiled by author

Number of Missing Values	Frequency	Percent	Valid Percent	Cumulative Percent
0	724	68.76	68.76	68.76
1	29	2.75	2.75	71.51
3	75	7.12	7.12	78.63
4	79	7.50	7.50	86.13
101	36	3.42	3.42	89.55
102	9	0.85	0.85	90.41
104	8	0.76	0.76	91.17
105	3	0.28	0.28	91.45
198	1	0.09	0.09	91.55
216	1	0.09	0.09	91.64
245	77	7.31	7.31	98.96
246	3	0.28	0.28	99.24
248	2	0.19	0.19	99.43
249	6	0.57	0.57	100.00
Total	1,053	100.00	100.00	

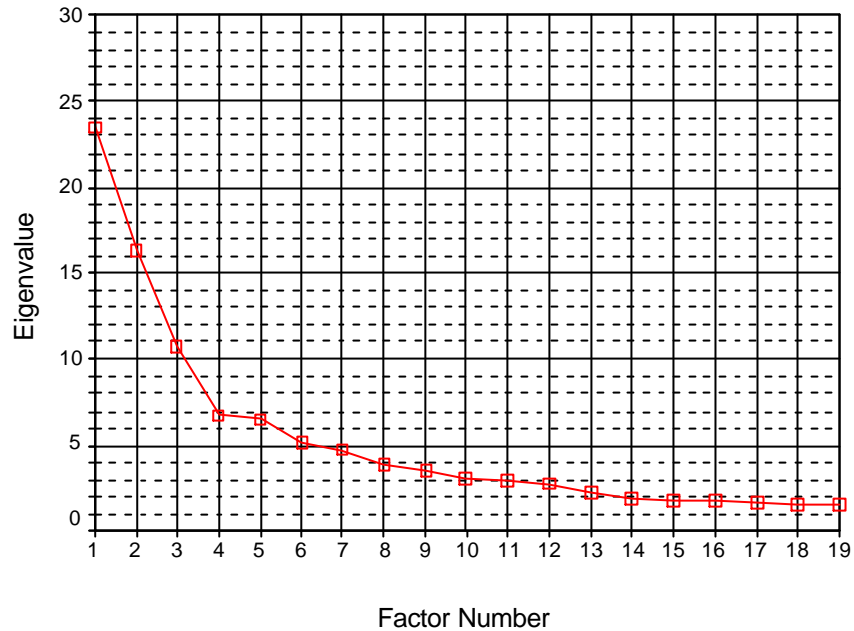
where a series of PAF extractions were applied to the data set to reduce the number of variables based on their communalities. The screening included two sets of two consequent PAF extractions. In the first set of PAF extractions, initially 55 factors with eigenvalues above 1.00 were extracted. After the analysis of the scree-plot (Fig. 4.1), the number of factors was reduced to 10. Another PAF was run on the data set to recover the a 10-factor solution. Variables were screened on the basis of communalities obtained in this ten-factor solution, and all the variables with communalities lower than 0.3 ($N = 88$,

Figure 4.1. Scree-Plot of the Preliminary PAF 1 Results
Source: Compiled by author



mostly variables describing 1991–1996 change) were excluded from further analysis. In both PAF extractions, missing values were replaced by means. A second set of preliminary PAF extractions was applied to the data set that now contained 907 cases and 146 variables, with the objective of further reducing the number of variables based on values of their communalities and loadings. First, a PAF was run to extract all the factors with eigenvalues above 1.00. A scree-plot of the factor eigenvalues was analysed (Fig. 4.2) and the number of factors was reduced to 9. Another PAF was then applied, and 9 factors were extracted. In both instances, missing values were replaced by means. All variables that had communalities lower than 0.4 and loadings on all the factors extracted in the 9-factor solution lower than 0.4 were excluded from further analysis. At

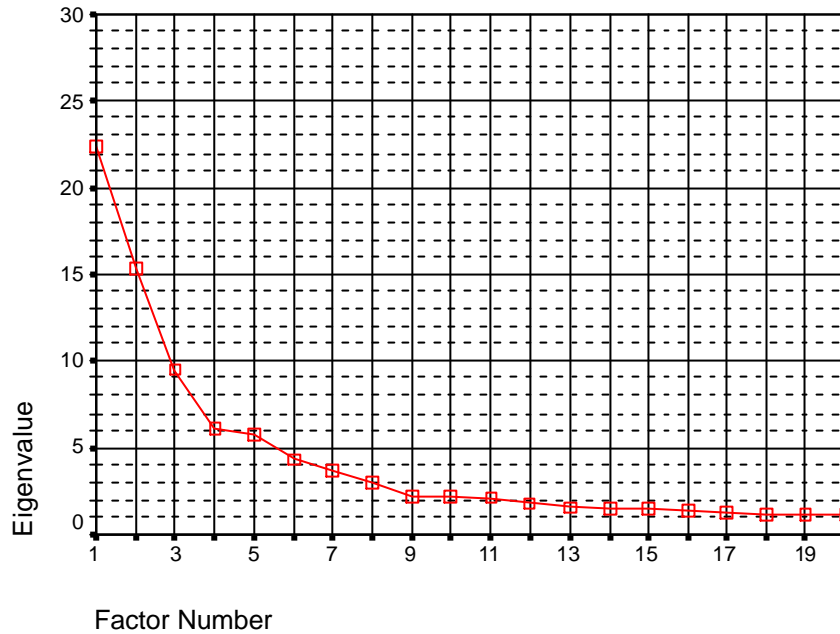
Figure 4.2. Scree-Plot of the Preliminary PAF 2 Results
Source: Compiled by author



this point the data set was reduced to 907 cases and 115 variables. Principal axis factoring followed by the Promax rotation ($k=2$) was applied to this reduced data set containing 907 cases and 115 variables. Once again, missing values were replaced by means. An 11-factor solution was selected on the basis of the scree-plot (Fig. 4.3). Variable loadings on the factors in the structure matrix were analysed and factor descriptions developed.

Factor scores for each of the 907 cases were calculated using the regression method, which is most applicable to the PAF technique (Rummel 1970). These scores were then subjected to hierarchical clustering. The hierarchical method of cluster analysis is agglomerative in nature, i.e., it sequentially merges the most similar cases

Figure 4.3. Scree-Plot of the PAF Results
Source: Compiled by author



producing non-overlapping clusters (Aldenderfer, Blashfield 1984). One of the limitations of this method is that the clusters produced are nested. In other words, each cluster is “subsumed as a member of a larger, more inclusive cluster at a higher level of similarity” (Aldenderfer, Blashfield 1984:37). Hierarchical clustering produces not a finite number of well-defined clusters but rather organizes the data into a hierarchical structure typically represented by a dendrogram. Given this, an iterative clustering method that divides a data set into a predetermined number of well-defined clusters would have been preferable to use for developing a classification in this study. However, the hierarchical clustering method was given preference so as to avoid imposing any

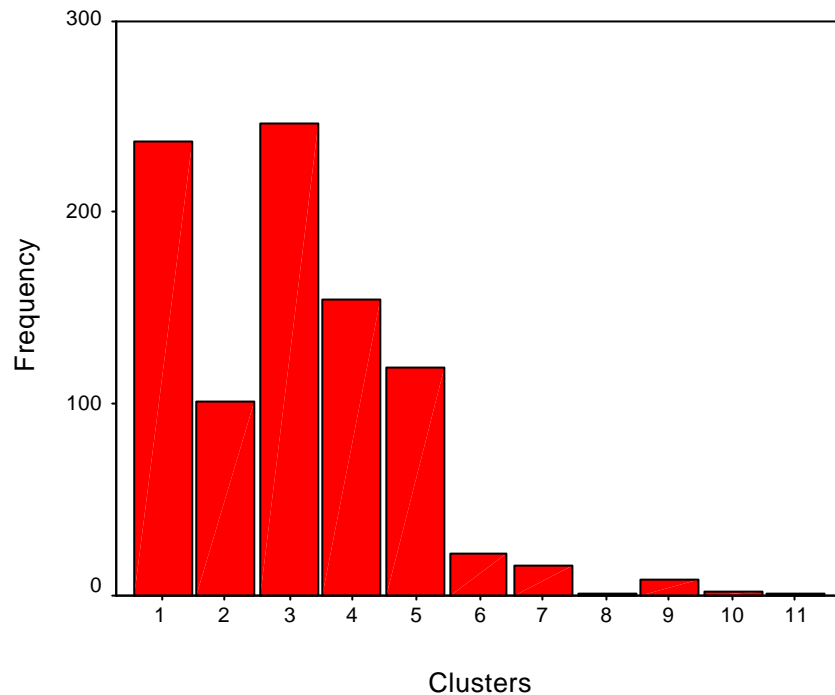
predetermined cluster structure on the data set following the general inductive nature of this stage of the analysis. Additionally, hierarchical agglomerative clustering is helpful in identifying the presence of cases-outliers in the data set (Jang et al. 2002: 371).

To offset the limitations of the hierarchical clustering method, an average form of linkage within clusters was applied. This form of linkage is known for producing a balanced cluster structure (Aldenderfer, Blashfield 1984: 40-5) and is considered to be the best in terms of group recovery (Lorr 1983:101). The squared Euclidean distance was used as a measure of the similarity/dissimilarity between the cases (CSDs) in the data set. This particular method of calculating distance between cases takes into account all the variables in the data set, further ensuring that each member of each cluster has a smaller average dissimilarity with other members of the same cluster than with members of any other cluster (Lorr 1983:88).

The stopping point for the number of clusters was determined by running several analyses with different solutions for cluster membership and then selecting the one that produced the best results in terms of cluster membership. All solutions that contained clusters with membership fewer than five cases were rejected. Another criterion for selecting a cluster solution was that the number of clusters should be more than five. This criterion was based on the assumption that at least one of the recovered clusters should contain CSDs within the CMA/CA cores as they were also included into the data set to eliminate any possible selection bias. An 11-cluster solution was selected based on these criteria. Figure 4.4 provides the cluster membership distribution for this solution.

Initial examination of this cluster structure revealed that the first three clusters with relatively high memberships contained fringe areas around urban cores of CAs and CMAs, the next two with somewhat lower memberships consisted of low-order and

Figure 4.4. Eleven-Cluster Solution Based on the Eleven-Factor Structure
Source: Compiled by author



high-order urban cores respectively, and clusters 6, 7, and 9 with low memberships were made up exclusively of Indian reserves. Clusters 8, 10, and 11 with memberships lower than 5 cases contained Indian reserves with at least one average factor score value significantly beyond the interval of -3 to +3 standard deviations (Table 4.2). It is interesting to note that all cluster solutions examined prior to making the selection of this particular solution had these cases clustered separately in at least one cluster. These cases were considered outliers based on their factor scores as well as their variable values and therefore were excluded from further analysis.

It is necessary to remember that, as opposed to factor analysis, “cluster analysis methods are relatively simple procedures that in most cases are not supported by an

extensive body of statistical reasoning” (Aldenderfer, Blashfield 1984: 14). While there were a number of stopping rules developed for the hierarchical clustering method (Lorr 1983; Aldenderfer, Blashfield 1984), most of them have their limitations in application. Therefore, to obtain a reasonable level of accuracy in the cluster solution, a general knowledge of the potential structure in the data set is necessary. This issue will be addressed in more detail in chapter 6. In addition, to avoid imposing on the data set a number of clusters that may not be valid by other criteria, the rule on how to determine the number of clusters present should be used in conjunction with an appropriate validation procedure (Aldenderfer, Blashfield 1984: 58). The second stage of this analysis, while having its own objectives, also served as a validation step for the obtained typology.

4.2 Stage 2: Study of the Characteristics and Relationships of Exemplar Rural-Urban Fringe Communities

The second stage of this research was dedicated to a detailed study of the CSDs exemplar of each of the identified clusters within rural-urban fringes of Canadian metropolitan areas. This was done in order to examine the influence of the socio-economic context on the structure of the rural-urban fringe areas, on the roles these areas may play within larger metropolises, and on the relationships existing between these areas and corresponding urban cores. Although CSDs within rural-urban fringes comprised six clusters (Clusters 1, 2, 3, 6, 7, and 9), a decision was made to proceed with a detailed analysis of only those comprising Clusters 1, 2, and 3. Clusters 6, 7, and 9 were made up exclusively of Indian reserves, a reasonably thorough study of which requires methods and techniques very different from those that can be employed for

Table 4.2. Clusters Excluded from Further Analysis

Source: Compiled by author

Cluster	Membership	Member CSDs	Factor Scores										
			1	2	3	4	5	6	7	8	9	10	11
8	1	Cold Lake 149A, AB	-2.54	1.56	-2.35	-2.43	-2.32	-1.02	-15.33	-0.29	-5.37	-0.41	2.91
10	2	Kwawkwawapilt 6, Matsqui 4, BC	-1.96	-0.70	6.71	-0.59	-1.07	-0.41	0.42	-5.05	-2.37	0.07	0.17
11	1	Nanaimo River 3, BC	-2.36	0.34	-0.29	-2.03	-3.02	-3.01	-11.31	0.99	-0.10	0.13	-1.49

“mainstream” CSDs in the three other clusters. Although their importance for a complete typology of Canadian rural-urban fringe areas should not be ignored, it is noted that Indian reserves comprised only five percent of the data set.

One CSD was selected from each of the three clusters containing rural-urban fringe areas. The selection was based on an examination of the agglomeration schedule for the eleven-cluster solution based on the eleven-factor structure obtained at the first stage of the analysis to determine which CSDs were grouped first in each of the three clusters. Technically, agglomeration of a cluster in hierarchical clustering always starts with a pair of cases that are most similar to each other, and then cases that are similar to those first grouped are added at each subsequent step of the clustering procedure. For the purposes of this research, the case that was listed first in the schedule was selected to represent the cluster. Conceptually, it was assumed that these cases might be more pure examples of the cluster group, and therefore they may allow us to examine the differences between the groups more effectively. The three CSDs selected for the second stage of the analysis were Stoneham-et-Tewkesbury, Québec CMA; Halifax, Subd. C, Halifax CMA; and East Gwillimbury, Toronto Consolidated CMA.

Emphasis at this stage of the research was on describing the elements of social structure of these areas and on investigating their roles within their associated metropolises. Specifically, at the first stage of the research, investigation of the current patterns of differentiation of urban social space in Canadian metropolitan areas was informed mostly by a structural approach and carried out by means of factorial ecology. However, in the context of this research, global forces were not seen as determining local outcomes but rather as providing a general framework of urban process. Specific local outcomes were assumed to be products of the interaction between global structures,

the previous history of an area, and current local agency. Consequently, the second stage of the research focused more on social structure as “the spatial organization of human activities and interrelationships” (Bauer Wurster 1973: 45). This definition of social structure is close to the notion of “place-based structuration” advanced by Pred (1984). However, it needs to be emphasized that the geographic extent of personal networks of individuals and the activity spaces of households, two elements of the social structure of the selected rural-urban fringe areas that were investigated at this stage, are conceptually distinct from the concepts of time geography incorporated into the place-base structuration framework. In the context of this research, extent of personal networks of individuals and the activity spaces of households can be seen as indicators allowing for assessment of functional relationships existing between urban fringe and urban core areas. The significance of such relationships for the postmodern urban form was discussed in chapter 2.

Personal networks are social networks¹ built around single individuals and therefore are, in a sense, those individuals’ networks (Craven, Wellman 1974). As with personal interactions, personal networks can be differentiated on the basis of the kind of people that take part in them, the type of interaction on which a particular network is based, intensity and regularity of interactions within a network, etc. (Craven, Wellman 1974; Milardo 1989; Bridge 1995; Tindall, Wellman 2001). Usually, urban residents simultaneously are members of multiple networks of various kinds, which could be quite extensive socially and spatially (Tindall, Wellman 2001). This study was limited to the

¹ A social network is defined as a “specific set of linkages among a defined set of persons, with the . . . property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved” (Mitchell 1969: 2).

investigation of the “first-order zone” (Barnes 1969) of personal networks of residents of selected rural-urban fringe areas comprising ties between intimates. Intimates are commonly defined as people who are considered by the individual to be “close,” “important and intimate friends.” or “closest associates outside the household” (Milardo 1989; Tindall, Wellman 2001). Intimates can be considered “anchors for wider network development, and therefore the . . . geographical location of these alter egos is some indication of wider network membership” (Bridge 1995: 267).

In network studies, the designation of intimates is commonly performed by a respondent based on the criterion of closeness as self-defined by respondents. This technique has been criticised for its inability to distinguish active ties from those of a purely affective or sentimental importance (Milardo 1989), thus distorting the geographic extent of personal networks. However, a number of network researchers (Fischer 1982; Tindall, Wellman 2001) have argued that the closeness ranking of the intimates by respondents was the most efficient and reliable way to evaluate the actual significance of relationships. In addition to the closest friends, relatives with whom respondents had the closest or strongest social relationships were considered to be part of the first-order zones of personal networks. Notwithstanding diversity of the membership in the urban residents’ personal networks, kinship has remained an important relationship for most urban residents, although the implications of kinship ties have undoubtedly changed (Craven, Wellman 1974). It has been suggested that kinship relations retain a significant appeal in part because of their availability for assistance in times of need (Law, Wolch 1993; Tindall, Wellman 2001).

Activity space is defined as “all urban locations with which the individual has direct contact as a result of day-to-day activities” (Herbert, Thomas 1992: 274). The

concept of activity space is closely related to similar but broader concepts of action space (Jackle et al. 1976), awareness space (Herbert, Thomas 1992), and social space (Buttimer 1980). Essentially, activity space represents an objective component of the social space of individuals (Buttimer 1980). Everyday-life activities are frequently divided into several spheres of practice, with most literature distinguishing among work, social contacts, shopping, personal arrangements, and leisure activities, which together define the geometry, size, and inherent structure of activity spaces (Schnell, Yoav 2001; Schönfelder, Axhausen 2003). Additionally, spatial characteristics of a person's action space have been linked to individual socio-demographic attributes such as gender, age, and education (Buttimer 1980; Eulau, Rothenberg 1986).

The data on personal networks of individuals and activity spaces of household members in the selected CSDs was collected using a mailed survey. The approach to questionnaire development and survey implementation used in this research followed the Total Design Method (TDM) (Dillman 1978). This method represents a comprehensive system with an objective of maximizing response rate while reducing sampling, noncoverage, and measurement errors. It is informed by the social exchange theory according to which “questionnaire recipients are most likely to respond if they expect that the perceived benefits of doing so will outweigh the perceived costs of responding” (Dillman 1991:233). Although the questionnaire development is central to the TDM, all aspects of survey design and implementation are of importance and should be subject to the following considerations: reduction of perceived costs, maximization of perceived rewards, and increasing trust that the promised rewards will be realized (Dillman 1978). The TDM has been proven to consistently produce high response rates for diverse survey populations (Dillman 1991).

The objective of the survey was to determine the spatial extent of personal networks and activity spaces of individuals and households. Therefore the questions were developed in such a way as to satisfy this objective without violating the perceived privacy of respondents or making the task of answering the questions too difficult (Appendix B). It was decided that information about the intersections nearest to the places where certain activities are usually performed would provide locational accuracy sufficient for this study. These questions comprised about one-half of the questionnaire. For the questions dealing with personal networks of the residents, the same approach was taken, supplemented in this case by asking for the names of the cities where respondents' friends and relatives resided. The final section of the questionnaire contained questions on respondents' personal characteristics such as age, gender, family status, number of children, education, and household income. These socio-demographic characteristics were included in order to test for and compare the extent of possible systematic differences in the action spaces of individuals related to these characteristics, as suggested in the literature on action spaces, to those differences in the action spaces related to the cluster membership. Consistent with TDM, questionnaires were designed in the form of a booklet and were printed on coloured paper. To further increase the perceived rewards for potential respondents who participated in the survey, respondents were informed that they could see a report on the results of the study posted on the Web site of the Department of Geography and were provided with the link to this site.

After the questionnaire was developed and approved by the University of Saskatchewan Behavioural Research Ethics Board, it was pre-tested on a small sample ($N = 30$) of households in Dalmeny, a rural-urban fringe community within the Saskatoon CMA with a population of 1,610 (Statistics Canada 2001). The households

were randomly selected using the 2001–2002 telephone book for Saskatoon and area (SaskTel 2001). The pilot survey was mailed out in July 2002. Each mailing used official stationery of the Department of Geography and contained a cover letter hand-signed by the researcher (Appendix C), a questionnaire, and a postage-paid envelope for returning the questionnaire. The pilot survey yielded a 28-percent response rate. The responses were evaluated and the questionnaire was modified on the basis of item nonresponse; however, those changes were minor. For the survey of households in Stoneham-et-Tewkesbury, the final version of the questionnaire and cover letter were translated into French by a professional translator from the Association of Translators and Interpreters of Saskatchewan

For the actual survey, the sample consisted of 300 households randomly selected for each of three exemplar CSDs using the most current telephone books available at the time of the survey (Bell ActiMedia 2002; Bell Canada 2002; Aliant Telecom 2002). This method, although the one most commonly used by researchers, had several limitations. First, this research uses Statistics Canada's standard census geography with CSDs as geographic units of analysis. However, in telephone books, listings are grouped according to different service areas, which are in most cases smaller than CSDs but cover several communities. The Québec CMA was an exception; its White Pages listings referenced to actual CSDs within the metropolitan area (Bell ActiMedia 2002). For the other two CMAs, Halifax and Toronto, when smaller rural communities fell within the service area that included a larger urban community, the listings for the former and latter were included in the same section of the telephone book with no actual addresses given for listings. Consequently, some communities had to be omitted from the survey sample

frame. The list of the communities that were included in the survey sample of each of the three representative CSDs is provided in Table 4.3.

The survey was mailed out in two batches, each covering one-half of the sample (150 households) for each CSD. The first batch was mailed out in September 2002. This was followed by a reminder mailed three weeks after the initial mailing to those households in the sample that had not returned the questionnaires. Reminder mailings contained a reminder letter (Appendix D) signed by the researcher, a replacement questionnaire, and another postage-paid envelope. The second batch of questionnaires was mailed out in December 2002 with mailings following the same format as for the first batch. To increase the response rate to a desired minimum of 30 percent without increasing the sample size, it was decided to precede the reminder mailing for this batch with telephone calls to the households in the sample that had not yet returned the questionnaires. It was assumed that personal contact with the researcher, even if only via the telephone, would increase the response rate. In addition, this step decreased the overall cost of the survey, as replacement questionnaires were mailed only to those potential respondents who clearly expressed a willingness to complete them.

It is interesting to note that adding telephone calls to the survey procedure increased the response rate for Halifax, Subd. C, Halifax CMA by approximately ten percentage points. On average, residents of this CSD seemed to respond more to the personal contact with the researcher than to contact via mail alone. On the other hand, residents of East Gwillimbury, Toronto Consolidated CMA, with the highest pre-telephone call response rate, were not predisposed to a higher rate of response after a telephone call. The lowest increase in response rate from the reminder telephone calls was for Stoneham-et-Tewkesbury, Québec CMA. This may be explained by the fact that

residents of this area were contacted not by the researcher but rather by a Francophone-speaking assistant. Although the assistant undoubtedly made an honest effort to communicate the message to the residents, the absence of a personal connection to the project probably made the calls seem more formal and abstract to the respondents.

Responses to the survey continued for about one month after the reminder telephone calls for the second batch of mailings were made, and the data collection for this stage of the research project was considered to be completed in early March 2003. A response rate of over thirty percent was achieved for all three census subdivisions (Table 4.3). The total number of responses received was 237. All the data on personal networks and activity spaces collected at this stage were treated not only as components of the social structure of the three CSDs, but also as physical and non-physical links that exist between the CSDs and the rest of the corresponding metropolitan areas (Coppack 1988b), as well as areas outside of the metropolitan boundaries.

After the data collection was completed, all survey responses were entered into a database. The data that described locations of places where respondents conducted their banking, shopping etc., were verified against current road maps and most current telephone books to eliminate any misinterpretations of the responses by the researcher. Responses were then geocoded using GeoPinpoint software (DMTI Spatial Inc. 2001). The location of childcare facilities was excluded from the database because of the small number of the related responses in all three CSDs. The highest level of formal education category had to be excluded from the database due to an inconsistency between the categories in English and French versions of the questionnaires. Next, the geocoded locations of places where respondents conducted their day-to-day activities were classified and coded in ArcView GIS 3.2 (ESRI 1992-1999) according to whether they

Table 4.3. Communities Included in the Survey Sample Frame¹*Source: Compiled by author*

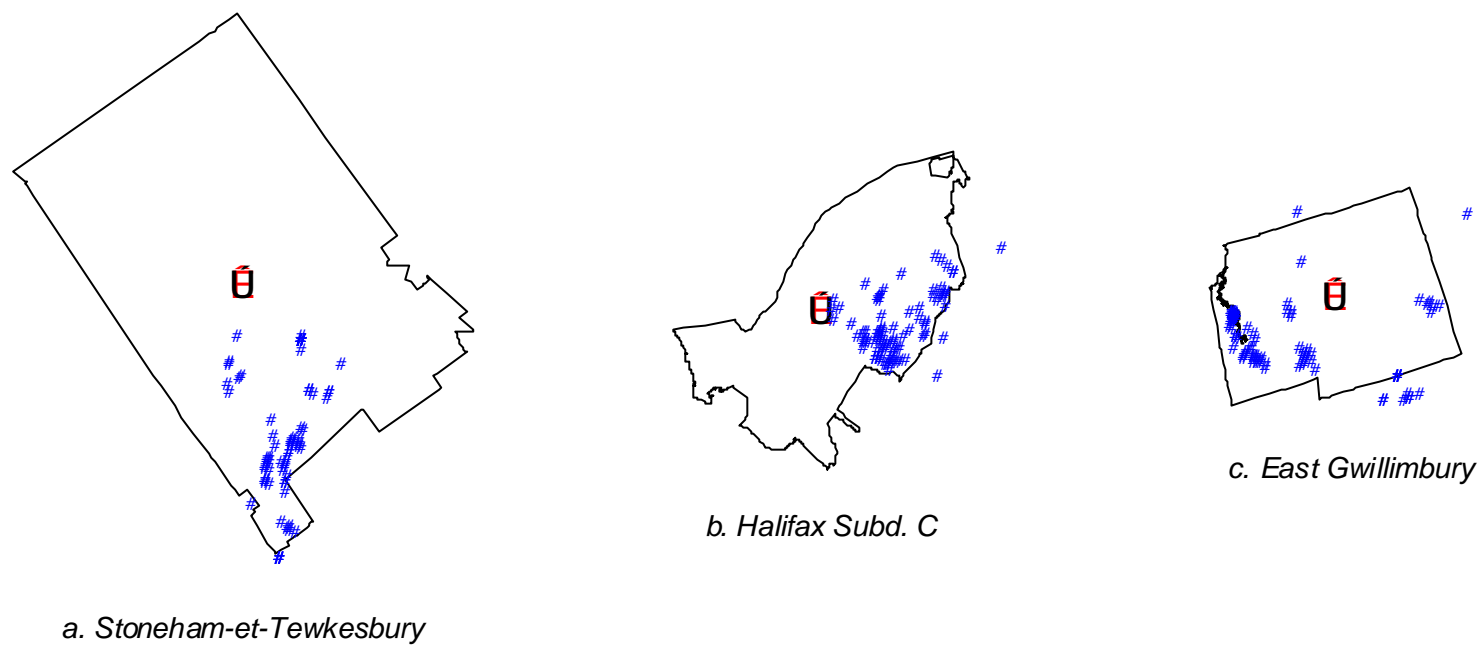
CSD	Total Number of Households	Communities	Response Rate, %	Number of Responses
East Gwillimbury, Toronto CCMA	6,120	Holland Landing Mount Albert Queensville River Drive Park Sharon West Franklin	32.7	79
Halifax, Subdivision C., Halifax CMA	16,715	Beaverbank Fall River Fletcher's Lake Grand Lake Kinsac Lucasville Oakfield Sackville Wellington Windsor Junction	31.8	82
Stoneham-et-Tewkesbury, Québec CMA	1,785	Stoneham-et-Tewkesbury	33.0	76

¹ Communities within each CSD that were surveyed are shown in bold.

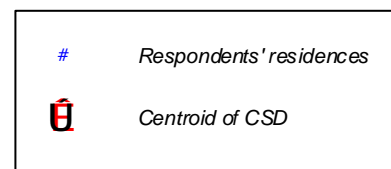
were within the boundaries of the same CSD, in another rural-urban fringe CSD, or within urban core boundaries. Direct distance measures were judged impossible to use for two reasons. First, although the exact locations of the homes of respondents were known in most cases, it was not possible to use these data in the calculation of distances to the geocoded locations of places where respondents conducted their day-to-day activities using ArcView GIS because of the way this desktop GIS package resolves spatial relationships. Instead, centroids of the CSDs would have been used, which would have resulted in a loss of information. Second, even if calculated using CSD centroids, these distances would have been distorted by the size and shape of the specific CSD and the size and shape of the CMA it is part of (Fig. 4.5). For example, residents of the largest CSD by area, in this case Stoneham-et-Tewkesbury, would normally be expected to travel longer distances to shop and obtain services than would residents of the smallest CSD, East Gwillimbury. Therefore using the data on distances would result in erroneous conclusions about the differences in activity space and personal networks of residents among the CSDs.

One of the objectives at this stage of the research was to make inferences about the roles these areas play within their respective metropolises on the basis of descriptions of the social structure of the CSDs exemplifying each of the identified types of rural-urban fringe areas. Additionally, this stage of the research served as a validation of the typology of rural-urban fringe areas obtained in the first stage of the research. Specifically, for the typology to be of any utility, it was necessary to demonstrate that the types of the rural-urban fringe areas were significantly different from each other based on the data on the activity spaces of their residents and that it was therefore possible to predict the cluster membership of a rural-urban fringe area based on this data.

Figure 4.5. Relative Size and Shape of the Three CSDs Selected for Analysis at the Second Stage
Source: Compiled by author



10 0 10 20 Kilometers



Descriptive statistics generally provide a useful, albeit simple, means of characterising data sets (Ebdon 1985: 22) and are commonly used as a first step in many analyses. Central tendency measures were calculated for spatial (e.g., extent of action spaces and personal networks) and aspatial (e.g., socio-demographic characteristics) data collected via the mailed surveys for each of the three rural-urban fringe CSDs using the SPSS software. Although these measures allow the differences between the CSDs to be seen, they do not show the significance of these differences. In order to establish that the CSDs representing the three types of rural-urban fringe areas are significantly different, the degree of variance within each group should be statistically compared to the degree of variance between the groups.

Although the best approach to analysing variance in a data set containing two or more dependent variables for a common set of factors is to use multivariate procedures such as MANOVA or discriminant analysis (Hair et al. 1992), the nature of the variables in the data set noticeably limited the choice of a suitable procedure. The data set consisted of ordinal (e.g., recoded distance variables) and nominal variables (e.g., variables characterising respondents), therefore making impossible the use of most multivariate procedures (which are based on the assumptions of multivariate normality of data). Instead, the analysis of variance in the data set was carried out with two sets of non-parametric procedures available in the SPSS. First, all cases in the data set were subjected to crosstabulation analysis to determine the significance of each variable for the overall between-group differences. The Crosstabulation module of the SPSS forms two-way and multiway tables and provides a variety of tests and measures of association for two-way tables. The structure of the table and whether categories are ordered determine what test or measure of association to use (SPSS Inc. 1989–2001). In this

case, a Goodman and Kruskal's lambda statistic measuring the proportional reduction in error that is achieved when membership of a category of one variable is used to predict category membership on the other variable was considered the most appropriate statistical test (Field 2000:62). This statistic is not chi-square-based, and therefore is more reliable in situations where more than 20 percent of the cells in the cross-tabulations matrix have expected frequencies of less than 5 (Bridge 1995:274), as was the case in this analysis. Second, similar to post-hoc tests conducted following ANOVA and MANOVA to determine differences between individual samples, groups of cases for each of the three CSDs representing the three types of rural-urban fringes areas were compared to each other on a variable-by-variable basis using the Kolmogorov-Smirnov test for two independent samples. This test examines whether two samples come from the same distribution and is sensitive to any type of difference in the two distributions – shape, location, etc. The test is based on the largest difference between the two cumulative distributions (SPSS Inc. 1989–2001).

Finally, a combination of those variables that showed significant association with the rural-urban fringe area type in the crosstabulation analysis was tested for the ability to predict group membership of cases using a multinomial logistic regression procedure. Logistic regression can be viewed as a non-parametric equivalent of discriminant analysis, except that the data do not have to be normally distributed (SPSS Inc. 1989–2001). The ability of the constructed model to predict membership of cases in one of three types of rural-urban fringe areas was assessed based on the results of the likelihood ratio test of the constructed model against one in which all the parameter coefficients were 0, the goodness-of-fit test, and the value of the pseudo- R^2 statistic.

CHAPTER 5: CLASSIFICATION OF CANADIAN RURAL-URBAN FRINGE AREAS

This chapter presents the results of the first stage of analysis, where form and structure of Canadian rural-urban fringes were explored by looking at the social ecology of these areas. The objectives of this stage were to distinguish between urban core and rural-urban fringes within Canadian metropolitan areas and to create a typology of rural-urban fringe areas. To achieve this, basic dimensions of the social make-up of all CSDs within Canadian metropolitan areas were determined using factor analysis of various demographic and social variables. Hierarchical clustering was used to classify the metropolitan CSDs based on the degree of expression of these characteristics.

5.1. Basic Dimensions of Variation among Metropolitan Census Subdivisions

The data set containing 907 cases and 115 variables was subject to principal axis factoring followed by the Promax rotation ($k=2$). An eleven-factor solution was judged to best represent and interpret the underlying structure of the data set on the basis of the scree-plot (Fig. 4.3). Only variables with loadings plus or minus 0.4 were used to interpret the factor structure. The cut-off value for the communalities was also set at 0.4 and variables below this level were removed from the analysis. Exceptions to this last rule were permitted in cases where variable loadings exceeded ± 0.50 and communalities were no lower than 0.30. Such variables were retained to interpret the axes. Only two of

Table 5.1. Total Variance Explained by the Eleven-Factor Structure
Source: Compiled by author

Factor	Extraction Sums of Squared Loadings			Rotation
	Eigenvalue	% of Variance	Cumulative %	Eigenvalue
1	22.02	19.15	19.15	19.11
2	15.07	13.11	32.25	13.67
3	9.13	7.94	40.19	12.21
4	5.65	4.92	45.11	7.08
5	5.41	4.70	49.81	7.12
6	3.96	3.45	53.26	6.47
7	3.24	2.81	56.07	5.62
8	2.71	2.36	58.43	4.10
9	1.88	1.64	60.06	5.09
10	1.76	1.53	61.59	4.53
11	1.68	1.46	63.05	3.08

115 variables fell into this category. The factor structure thus obtained accounted for 63 percent of the original variance found in the data set (Table 5.1).

The first factor accounted for 19.15 percent of the variance in the data set with approximately forty variables loading highly on it (Table 5.1). All income, and especially employment income, variables¹, educational attainment variables, variables describing employment in tertiary and quaternary service sectors, and variables describing professionals in white-collar occupations had large positive loadings. In terms of housing characteristics, variables describing high-cost accommodations and housing stock in good condition had the largest positive loadings, and *the major repairs* variable

¹ All variables are from 1996 census of population unless otherwise noted.

that describes housing in poor condition had the largest negative loading. Variables describing housing ownership had higher loadings than those describing rental accommodations. Overall this factor was associated with variables describing high social status, and particularly the segment of population that is described as “professionals” in the literature on social polarization (Dicken, Lloyd 1981; Rose, Villeneuve 1993; Beach, Slotsve 1996). It is interesting to note that the variable *percentage of visible minority population* also loaded highly on this factor. This could be explained by the changes in the characteristics of immigrants coming to Canada, which currently include a higher proportion of immigrants from non-European, mostly Asian, countries of origin with skilled-worker and business-class components constituting a growing percentage of total immigration (Ley 1999). At the same time, *percentage of Aboriginal population* loaded negatively on this factor, supporting the assumption of continued marginalization of this group found in the literature (Drost et al. 1995; Drieger 1999).

The second factor accounted for 13.7 percent of the total variance in the data set (Table 5.1). This factor was associated with variables describing various aspects of general disadvantage (Appendix E). Variables describing family arrangements alternative to traditional husband-and-wife families and variables describing the elderly population loaded highly on this factor. Examination of variable loadings shows that low socio-economic status is not uniquely associated with unemployment. High positive loadings of such variables as *percentage of males and females with place of work in the CSD of residence* suggest that the nature of a job, defines socio-economic status. Additionally, high loadings of the variables that describe the population not in the labour force suggest an association between low socio-economic status and age. This factor was also highly associated with variables describing low-quality housing accommodations in

rental property, and housing that required more than 30 percent of household income. Two variables describing residential mobility, *percentage of the population who had moved from one residence to another within last year and in the last five years*, had positive loadings on the factor, which suggests that there is an association between socio-economic status and residential mobility.

The third factor accounted for 12.2 percent of total variance in the data set (Table 5.1). This factor clearly emerged as a dimension describing family life cycle, and particularly the stage of completed family (Appendix E). The presence of this dimension is not surprising considering that those aged between 40 and 50 years constitute the largest population cohort in Canada (Statistics Canada 1997a).

The fourth factor accounted for 7.1 percent of the total variance in the data set (Table 5.1). It was associated with variables describing change in the nature of employment and employment income between 1991 and 1996 (Appendix E). Specifically, variables describing the percentage change in overall employment income, change in the average employment income by labour force activity (full-time vs. part-year or part-time employment) for both men and women, and changes in the average total incomes of men and women between 1991 and 1996 had high positive loadings on this factor. To better understand this dimension, it would be useful to look at the directional changes in full-time and part-time employment and employment income in Canada as a whole over this period of time.

According to Statistics Canada (1998c), when calculated in constant 1995 dollars, average total per capita income of the population decreased by six percent between 1990

and 1995¹. In 1995, the average income of men was 7.8 percent lower than their average income in 1990, and correspondingly for women real income declined 2.1 percent from 1990 levels. In the same period, employment income, which constitutes on average the largest component of the total income of individuals, declined 2.6 percent in real terms (i.e., corrected for inflation). Although the number of people who worked increased slightly (~0.8%) in 1995 compared to 1990 (Statistics Canada 1998d), the proportion of full-year, full-time workers declined by four percent for men and by one percent for women (Statistics Canada 1998d). At the same time, there was a large increase (~20%) in the number of individuals who worked for a full year on a part-time basis. Disaggregated by gender, this increase constituted 28 percent for men and 16 percent for women. Although the increase in this category was smaller for women, they were still more likely than men to work full-year, part-time in 1995. Twelve percent of female workers reported working full-year, part-time in 1995, compared to 4 percent of male workers.

Employment income by labour force activity mirrors somewhat the trends in employment between 1990 and 1995. In 1995, men who worked full-time reported a decrease in earnings of 1.6 percent in real terms from 1990 (Statistics Canada 1998b). However, the average earnings of women in the same employment category increased by 3.6 percent. Earnings of women who worked part-year or part-time also increased by 1.2 percent, with men in the same employment category reporting a 6.8 percent decrease in their earnings. However, average earnings of women still continue to be below those

¹ Income and employment data are reported for a period ending with the last full year before the actual census is taken.

of men. In 1995, women who worked full-year, full-time earned on average 71 cents for each dollar earned by their male counterparts.

In short, between the 1991 and 1996 censuses there was a significant shift toward flexible employment and a decrease in the traditional full-time/full-year employment arrangements. For men, increases in part-year and/or part-time employment were on average higher, and corresponding decreases in full-year/full-time employment were also higher, than for women. However, women were still more likely to be employed part-time or part-year than men. In terms of changes in income, total income of the population on average declined in real terms between the censuses. Real income of women declined less than that of men, and the former experienced even slight increases in employment income in absolute terms for both full-time and part-time employment arrangements. These differences most likely represent a continuing trend in “bridging the gap” in earnings of men and women evident not only in Canada but in developed countries in general.

Two important comments need to be made at this point. First, the analysis of Statistics Canada’s income and labour force activity trends presented above is based on constant 1995 dollar calculations, i.e., income from the previous 1991 census has been adjusted for changes in the price of goods and services using the Consumer Price Index (Statistics Canada 1998b). Among all income variables included in profiles released by Statistics Canada for public use, only one variable, Constant Dollar Income, is subjected to such adjustments. All other income variables are reported in dollars at that particular census year. Therefore, the income variable changes captured in this data set are the changes in absolute incomes between 1991 and 1996.

Second, since Factor 4 is extracted from a particular data set, it describes changes in labour force activity and corresponding changes in the employment incomes of individuals for metropolitan areas rather than for general trends nationally. Although the majority of the Canadian population resides in metropolitan areas, it could not be expected that changes in labour force activity and income would be the same at both these scales of geography. Given this, averages across the entire data set were calculated for the variables associated with Factor 4 and are presented in Tables 5.2 and 5.3. Calculations presented in Table 5.2 show that over this period of time, absolute income values have on average increased for all types of labour force activity for both genders. The change in the average employment income of females employed full-year or full-time was slightly higher than for males in this employment category. For part-year or part-time employment, changes in average total income are virtually the same for both genders. An overview of the labour force activity average values (Table 5.2) shows that metropolitan trends are similar to the overall national pattern described above. Considering the values of variable loadings on this factor (Appendix E), it could be suggested that “female” variables, and particularly “female” income variables, are more important for this dimension. For example, all three “female” income variables that were associated with Factor 4 had loadings above 0.6, compared to only one out of three “male” income variables. This probably reflects the trend toward closing the gap in earnings between men and women, although it is not clear how factor scores could be interpreted in this regard.

Overall, providing that average values presented in Tables 5.2 and 5.3 correspond to zero scores on Factor 4, positive scores on this dimension should mean increases above the metropolitan average in employment and total incomes for both genders and

Table 5.2. Changes in the Absolute Total and Employment Income Values, 1991–1996

Source: Compiled by author

			Change in average employment income of males, worked full-year, full- time, \$, 1991–1996	Change in average employment income of females, worked full- year, full-time, \$, 1991–1996	Change in average employment income of males, worked part-year or part-time, \$, 1991–1996	Change in average employment income of females, worked part- year or part- time, \$, 1991–1996	Change in average total income of males 15+, \$, 1991–1996	Change in average total income of females 15+, \$, 1991–1996	Employment income change, %, 1991–1996
All metropolitan CSDs	<i>N</i>	Valid	904	907	902	907	902	907	907
		Missing	3	0	5	0	5	0	0
	<i>Mean</i>		16,497.60	18,623.7138	10,860.48	6,572.701	4,854.65	4,045.829	9.63
	<i>Minimum</i>		-8,977.17	-6,959	-9,315.00	-4,258	-9,376.50	-5,958	-28.00
	<i>Maximum</i>		92,514.60	46,269	49,019.00	49,855	39,497.76	28,260	93.00
Cluster 1	<i>N</i>	Valid	235	237	235	237	234	237	237
		Missing	2	0	2	0	3	0	0
	<i>Mean</i>		15,556.30	18,204.85	8,892.77	5,926.07	3,510.02	3,289.08	8.55
	<i>Minimum</i>		-7,086.00	.00	-7,025.33	-2,273.67	-9,376.50	-5,958.00	-28.00
	<i>Maximum</i>		70,834.00	41,229.00	43,904.00	18,511.00	28,637.00	23,838.00	87.00
Cluster 2	<i>N</i>	Valid	100	101	100	101	100	101	101
		Missing	1	0	1	0	1	0	0
	<i>Mean</i>		15,889.71	15,367.69	13,124.85	5,991.39	6,126.96	4,404.95	7.69
	<i>Minimum</i>		-8,977.17	-6,959.00	-3,687.00	-3,424.00	-8,948.00	-5,749.00	-13.00
	<i>Maximum</i>		92,514.60	45,011.20	49,019.00	18,912.18	39,497.76	20,117.00	91.00
Cluster 3	<i>N</i>	Valid	247	247	245	247	246	247	247
		Missing	0	0	2	0	1	0	0
	<i>Mean</i>		17,840.09	21,457.35	12,967.59	77,74.92	6,575.54	5,381.71	13.20
	<i>Minimum</i>		-2,370.75	.00	-9,315.00	-42,58.00	-7,265.00	-2,922.00	-22.00
	<i>Maximum</i>		88,363.00	46,269.00	45,628.00	49,855.00	38,917.00	28,260.00	93.00

Table 5.2. (continued)

			Change in average employment income of males, worked full-year, full- time, \$, 1991–1996	Change in average employment income of females, worked full- year, full-time, \$, 1991–1996	Change in average employment income of males, worked part-year or part-time, \$, 1991–1996	Change in average employment income of females, worked part- year or part- time, \$, 1991–1996	Change in average total income of males 15+, \$, 1991–1996	Change in average total income of females 15+, \$, 1991–1996	Employment income change, %, 1991–1996
Cluster 4	<i>N</i>	Valid	154	154	154	154	154	154	154
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		17,573.15	19,784.47	10,664.31	5,943.17	4,520.74	4,520.74	6.86
	<i>Minimum</i>		-6,063.00	.00	-677.00	-494.00	-7,556.00	-7,556.00	-14.00
	<i>Maximum</i>		48,876.00	35,023.00	36,563.00	13,839.53	19,492.00	19,492.00	64.20
Cluster 5	<i>N</i>	Valid	119	119	119	119	119	119	119
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		14,911.27	17,175.39	10,228.77	6,972.01	2,970.61	2,864.67	5.05
	<i>Minimum</i>		-2,778.50	.00	-2,240.50	.00	-6,970.00	-4,186.00	-8.00
	<i>Maximum</i>		39,110.00	35,417.00	27,453.00	16,106.00	16,098.00	13,164.00	49.00
Cluster 6	<i>N</i>	Valid	22	22	22	22	22	22	22
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		23,140.64	20,815.96	10,298.59	8,027.86	7,076.93	7,234.16	36.37
	<i>Minimum</i>		.00	.00	-539.00	.00	-1895.00	-51.00	-9.00
	<i>Maximum</i>		38,444.00	28,993.00	15,916.00	11,673.00	23,042.00	14,985.00	76.00
Cluster 7	<i>N</i>	Valid	15	15	15	15	15	15	15
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		.00	.00	.00	.00	.00	.00	.00
	<i>Minimum</i>		.00	.00	.00	.00	.00	.00	.00
	<i>Maximum</i>		.00	.00	.00	.00	.00	.00	.00

Table 5.2. (continued)

		Change in average employment income of males, worked full-year, full- time, \$, 1991–1996	Change in average employment income of females, worked full- year, full-time, \$, 1991–1996	Change in average employment income of males, worked part-year or part-time, \$, 1991–1996	Change in average employment income of females, worked part- year or part- time, \$, 1991–1996	Change in average total income of males 15+, \$, 1991–1996	Change in average total income of females 15+, \$, 1991–1996	Employment income change, %, 1991–1996
Cluster 9	<i>N</i>	Valid	8	8	8	8	8	8
		Missing	0	0	0	0	0	0
	<i>Mean</i>		34,103.63	22,053.25	15,160.50	10,828.73	15,045.70	9,175.12
	<i>Minimum</i>		11,965.00	.00	10,687.00	5,799.00	7,273.00	-392.00
	<i>Maximum</i>		59,561.00	30,663.00	17,767.00	16,242.00	23,705.00	19,055.00
								47.00

Table 5.3. Changes in the nature of employment, 1991–1996

Source: Compiled by author

			Males, worked full-year or full-time, percentage change 1991–1996	Females, worked full- year or full- time, percentage change 1991–1996	Males, worked part-year or part-time, percentage change, 1991–1996	Males, worked part-year or part-time, 1996	Females, worked part- year or part- time, percentage change 1991–1996	Females, worked part- year or part- time, 1996	Government transfer payments, % 1996
All metropolitan CSDs	<i>N</i>	Valid	907	907	907	907	907	907	907
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		2.33	4.50	5.13	11.25	4.69	12.20	14.71
	<i>Minimum</i>		-10.88	-8.90	-16.20	.00	-7.61	.00	.00
	<i>Maximum</i>		26.12	17.66	28.41	28.41	23.52	23.52	56.00
Cluster 1	<i>N</i>	Valid	237	237	237	237	237	237	237
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		2.59	4.57	4.60	12.61	4.78	11.96	15.97
	<i>Minimum</i>		-10.88	-1.69	-16.20	.00	-7.61	.00	.00
	<i>Maximum</i>		19.70	13.56	23.15	23.15	18.72	20.58	46.00
Cluster 2	<i>N</i>	Valid	101	101	101	101	101	101	101
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		-.055	2.35	4.13	10.76	2.40	13.60	8.65
	<i>Minimum</i>		-6.85	-4.55	-.58	.00	-3.22	.00	.00
	<i>Maximum</i>		20.43	14.27	13.81	17.64	19.23	19.24	17.00
Cluster 3	<i>N</i>	Valid	247	247	247	247	247	247	247
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		3.83	6.16	6.39	11.27	6.03	13.01	12.10
	<i>Minimum</i>		-9.14	-6.02	-9.45	.00	-6.43	.00	.00
	<i>Maximum</i>		26.12	17.66	24.19	24.19	23.52	23.52	28.00

Table 5.3. (continued)

			Males, worked full-year or full-time, percentage change 1991–1996	Females, worked full- year or full- time, percentage change 1991–1996	Males, worked part-year or part-time, percentage change, 1991–1996	Males, worked part-year or part-time, 1996	Females, worked part- year or part- time, percentage change 1991–1996	Females, worked part year or part- time, 1996	Government transfer payments, % 1996
Cluster 4	<i>N</i>	Valid	154	154	154	154	154	154	154
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		1.83	4.50	4.66	11.02	3.96	12.53	16.62
	<i>Minimum</i>		-5.19	-2.30	-5.74	.00	-2.43	.00	.00
	<i>Maximum</i>		20.16	10.86	28.41	28.41	19.32	19.32	37.00
Cluster 5	<i>N</i>	Valid	119	119	119	119	119	119	119
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		.73	3.23	4.07	10.74	4.09	11.87	17.18
	<i>Minimum</i>		-6.54	-8.90	-9.53	.00	-.63	.00	.00
	<i>Maximum</i>		11.32	12.00	13.06	17.69	13.53	16.75	56.00
Cluster 6	<i>N</i>	Valid	22	22	22	22	22	22	22
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		5.94	4.97	12.42	12.68	9.41	9.41	33.73
	<i>Minimum</i>		2.51	2.36	4.19	4.19	2.51	2.51	21.00
	<i>Maximum</i>		12.10	9.77	17.93	17.93	15.94	15.94	48.00
Cluster 7	<i>N</i>	Valid	15	15	15	15	15	15	15
		Missing	0	0	0	0	0	0	0
	<i>Mean</i>		.00	.00	.00	.00	.00	.00	.00
	<i>Minimum</i>		.00	.00	.00	.00	.00	.00	.00
	<i>Maximum</i>		.00	.00	.00	.00	.00	.00	.00

Table 5.3. (continued)

		Males, worked full-year or full-time, percentage change 1991–1996	Females, worked full-year or full-time, percentage change 1991–1996	Males, worked part-year or part-time, percentage change, 1991–1996	Males, worked part-year or part-time, 1996	Females, worked part-year or part-time, percentage change 1991–1996	Females, worked part-year or part-time, 1996	Government transfer payments, % 1996
Cluster 9	<i>N</i>	Valid	8	8	8	8	8	8
		Missing	0	0	0	0	0	0
	<i>Mean</i>		7.31	6.63	10.75	10.75	10.02	31.25
	<i>Minimum</i>		2.05	1.74	8.85	8.85	6.46	24.00
	<i>Maximum</i>		9.90	12.40	13.00	13.00	12.58	40.00

above metropolitan average values in the labour force activity change patterns. Negative scores would mean decreases below metropolitan average in employment and total income and below the metropolitan average values in the labour force activity change patterns.

The fifth factor accounted for 7.1 percent of the total variance in the data set (Table 5.1). It was associated with variables describing low social status, albeit in a different way than those associated with Factor 2 (Appendix E). Variables that had high positive loadings on this factor described the low-income population; those for whom government transfer payments made up a significant part of the total income; those holding part-time jobs mostly in processing, manufacturing, and utilities; and those with less than a grade 9 education. This population resided in older housing secured either through ownership or rental arrangements, although a variable describing ownership had a higher loading compared to the one describing rental arrangements.

The sixth factor accounted for 6.5 percent of the total variance in the data set (Table 5.1) and represented a mobility status dimension (Appendix E). Variables that had the largest positive loadings on this factor described a population that moved to the present place of residence from out of the province within the past year or the past five years. The largest negative loadings belonged to variables describing singles, population with low educational attainment, and percentage change in population with low educational attainment between 1991 and 1996. According to Statistics Canada (1998a), interprovincial migrants constituted only 3.4 percent of the population who reported changing address of residence between 1991 and 1996. However, those with university degrees were far more mobile than the overall population. Furthermore, interprovincial migration was often related to labour market opportunities. On the other hand, analysis

of the census data at the national level showed that for people who did not complete high school, it has become more difficult to find a job (Statistics Canada 1998a). This segment of the population had the lowest labour-force participation rate and the highest increase in unemployment rate between 1991 and 1996 among the groups with various levels of educational attainment. Additionally, there was an overall decline in the proportion of the population that had not completed high school. It is interesting to find that mobility status was related to marital status. Based on the variable loadings, married people were more likely than singles to be movers in general and interprovincial migrants in particular.

The seventh factor accounted for 5.6 percent of the total variance in the data set (Table 5.1). This factor clearly emerged as describing the change in family size between 1991 and 1996 (Appendix E). Again, to more fully understand the nature of this dimension, it is useful to look at how the size of families changed over this period of time in Canada as a whole. According to an analysis of census data at the national level (Statistics Canada 1997b), average family size remained the same, at 3.1 persons. There was a 6.4 percent increase in the number of never-married sons and daughters at home during this period. Analysis of the data for metropolitan CSDs showed that on average there was no change in the average number of never-married sons and/or daughters at home per census family and in the average number of persons per census family between 1991 and 1996. Percentage of economic families with 5 or more persons declined slightly (~1 percent). However, the average number of persons per economic family remained the same. In subsequent analysis, therefore, it could be assumed that CSDs that scored positively on this dimension experienced an increase in average family

size, those that scored negatively experienced a decrease in average family size, and those that scored around zero experienced no change in average family size.

The eighth factor accounted for 4.1 percent of the total variance in the data set (Table 5.1). This factor was associated with variables describing young, pre-family population in the labour force (Appendix E). The ninth, tenth, and eleventh factors accounted for, respectively, 5.1 percent, 4.5 percent and 3.1 percent of the total variance in the data set (Table 5.1) and were associated with variables describing declining areas, population commuting to a place of work in a different CSD, and population employed in agriculture and related services, respectively (Appendix E).

5.2 Discussion

This part of the research was dedicated to an identification of the general dimensions of the variation within Canadian metropolitan areas at the level of census subdivisions. It addressed the first of the thesis objectives set out in Chapter 1: to contribute to an understanding of the complex economic, political, social, and demographic processes that shape urban areas of Canada, focusing particularly on their rural-urban fringes. Essentially, this part of the analysis provides a link between the literature on factors of postmodern urban development reviewed in Chapter 3 and the models and concepts describing postmodern urban form and structure. At the same time, distilling the dimensions of the economic and social make-up of Canadian metropolitan areas provided a foundation for the construction of the typology of the rural-urban fringe areas that would reflect the current context of Canadian urban development.

Extraction of eleven general dimensions of the variation within Canadian metropolitan areas confirms “the greater social complexity of contemporary society” in

Canada that finds its reflection in more intricate spatial patterns (Davies, Murdie 1991: 60). Some of these dimensions can be related to the socio-economic changes associated with the shift from Fordism to the regime of flexible accumulation, such as High Socio-Economic Status (Professionals), Low Socio-Economic Status I (Disadvantaged), Employment Income Change and Low Socio-Economic Status II (Working Poor). However, clearly not all of the extracted dimensions can be related to these changes. The presence of some of the other dimensions can be explained by different components of the broader context of urban development. For example, such factors as Life Cycle (Retirees and “empty-nesters”), Family Size Change, and possibly Labour Force could only be linked to the demographic changes set in motion after the World War Two (Bourne, Rose 2001) and to the related changes in household and family composition (Beaujot, Kerr 2004). A third group of factors including Declining Areas, Commuters, and Employment in Agriculture and Related Services could probably be linked to the general nature and dynamics of urban development in North America. This diversity of the sources of variation of the urban space in Canada only underscores the importance of diverse factors that together constitute a broader socio-economic context for the interpretation of observed spatial patterns. However, judging from the order of the extraction and the amount of variation individual factors account for in the data set, the results of the analysis suggest a relative higher importance of the dimensions associated with socio-economic restructuring.

Specificity of how general socio-economic processes of restructuring are expressed in Canada can be seen in both the nature of the extracted dimensions and the order of their extraction. The first of the extracted dimensions suggests that in Canada high economic and social status in general are related to employment in quaternary

industries, such business services, finance, real estate and insurance, and natural and applied sciences, which is consistent with the general trends described in the literature on restructuring. This dimension is juxtaposed against not one, but two distinctive dimensions describing low socio-economic status. Relative importance of the corresponding factors suggests that, at least between 1991 and 1996, general disadvantage related to circumstances of life (such as age or family composition), rather than the securing of employment, contributed more to the construction of low socio-economic status. This could be seen as additional evidence of complexity in the broader context of urban development, since the second and third dimensions of variation in socio-economic metropolitan space are essentially products of the interaction between socio-economic processes of restructuring and more general demographic changes.

The relationship between ethnicity and low socio-economic status constitutes another distinguishing feature of the urban space in Canada. While in the United States, low socio-economic status is strongly associated with membership in particular ethnic groups, especially in urban areas (Massey, Denton 1989; Moore, Laramore 1990; Jargowsky 1996), membership in these ethnic groups could not be used as a predictor of low socio-economic status in the Canadian context. The factor structure obtained suggests a strong association between the presence of visible minority population and high socio-economic status, at least at the level of census subdivisions. This could be explained by historical differences in racial and ethnic discrimination between the two countries as well as by the fact that the majority of the visible minority population now residing in Canada consists of relatively recent immigrants possessing high social capital (Ley 1999). In Canada, being Aboriginal is associated with low socio-economic status to a greater degree than is membership in any other ethnic group (Levitte 2003).

It was expected that the variables describing change in economic, social, and demographic characteristics between 1991 and 1996 would play an important part in the resulting dimensions of variation of urban space within Canadian metropolitan areas. However, the majority of the dimensions were made up of variables from the 1996 census data with only two of the extracted factors describing changes between 1991 and 1996, Employment Income Change and Family Size Change. This is probably related to the fact that the most rapid and dramatic period of restructuring in North America took place between the 1970s and 1980s. By the 1990s restructuring had lost its momentum, and therefore little change could be detected within the relatively short period of five years. On the other hand, this could be evidence in support of an argument that Canada trails behind the United States with regard to the changes in economic structure (Beach, Slotsve 1996). Also, the relative insignificance of the 1991–1996 change variables among the identified dimensions of variation within Canadian metropolitan urban space could point to the mitigation of the effects of restructuring on Canadian society due to the interventionist policies of the state, particularly at the federal level.

Finally, it is necessary to note that insights provided by this analysis of the dimensions of variation within Canadian metropolitan space are limited to the spatial patterns observed at the level of census subdivisions, a rather large unit of census geography. This limits the opportunity for comparison with other research on Canadian and American urban areas that used similar methodology, as most of it was done at the level of census tracts (Davies, Murdie 1991, 1993, 1994; Driedger 1999).

5.3. Classification of the Metropolitan Census Subdivisions

The eleven common factors extracted by factor analysis were further used as clustering variables, and the 907 CSDs within 25 CMAs and 112 CAs were classified according to their Z-scores on each of the factors. Factor scores for each CSD were calculated using the regression method, which gives the best results in conjunction with the principal axis factoring technique used for factor extraction (Rummel 1970). The scores were then subject to the hierarchical agglomeration cluster analysis in SPSS 10.0 using the average linkage method based on squared Euclidean distance. The stopping point for the number of clusters was determined by running a number of analyses with different solutions for cluster membership and selecting the one that produced the most meaningful results in terms of cluster membership.

An eleven-cluster solution was judged to best reflect the structure within the data set. Figure 4.4 provides the cluster membership distribution for this solution. Initial examination of this cluster structure revealed that Clusters 1, 2, and 3, which together comprised 65 percent of the data set, consisted of fringe areas around urban cores of CAs and CMAs. Clusters 4 and 5, which had somewhat lower memberships and accounted collectively for 30 percent of the data set, consisted of urban core CSDs. Clusters 6, 7, and 9 had even lower memberships (5 percent of the data set) and were exclusively made up of Indian reserves. Clusters 8, 10, and 11 had fewer than 5 geographic cases each and contained Indian reserves with at least one average factor score value significantly beyond the interval of $[-3:+3]$ standard deviations (Table 4.2). All cluster solutions examined before selecting the eleven-cluster solution had these cases clustered separately in at least one cluster. Therefore, based on their factor scores

and variable values¹, these cases were considered outliers and were excluded from further analysis. For the remaining eight clusters, average scores on each of the eleven factors were calculated. The rest of this section provides a description of these clusters based on their average factor scores and geographic characteristics of the CSDs in each cluster.

The first of the extracted clusters contained 30 percent of the data set and consisted of fringe areas found mostly around metropolitan areas in Eastern Canada (Figures 5.1a, b, and c). In fact, 216 of 237 (91%) of the CSDs in this cluster were located in Atlantic Canada or Québec. Members of this cluster were characterized by above-average score on Factors 5 (Low Social Status II), 8 (Labour Force), 9 (Declining Areas) and 10 (Commuters) (Fig. 5.2). Among these, the average score on Factor 5 describing the working poor had the highest positive score (Table 5.4). The rest of the average factor scores were negative, with the scores on Factor 6 (Mobility Status) and 11 (Agriculture and Related Services) being the lowest. This cluster had the highest positive average score on Factors 5 and 8 among all eight clusters.

Above average score on Factor 8 (Labour Force) and negative average score on Factor 3 describing the retired population and completed families suggest that the population in fringe areas of this type would be somewhat younger than the national average. A negative average score on Factor 7 (Family Size Change) of -0.28 suggests that CSDs in this group experienced a slight decrease in family size accompanied by a slight decrease in the number of large economic families between 1991 and 1996.

¹ Most of the original 234 variables were standardized as percentages of corresponding totals where appropriate. Cases in Clusters 8, 10, and 11 had at least two variable values around ± 200 percent.

Figure 5.1a. Distribution of the Identified Types of Metropolitan CSDs: Eastern Canada, Québec, and Ontario

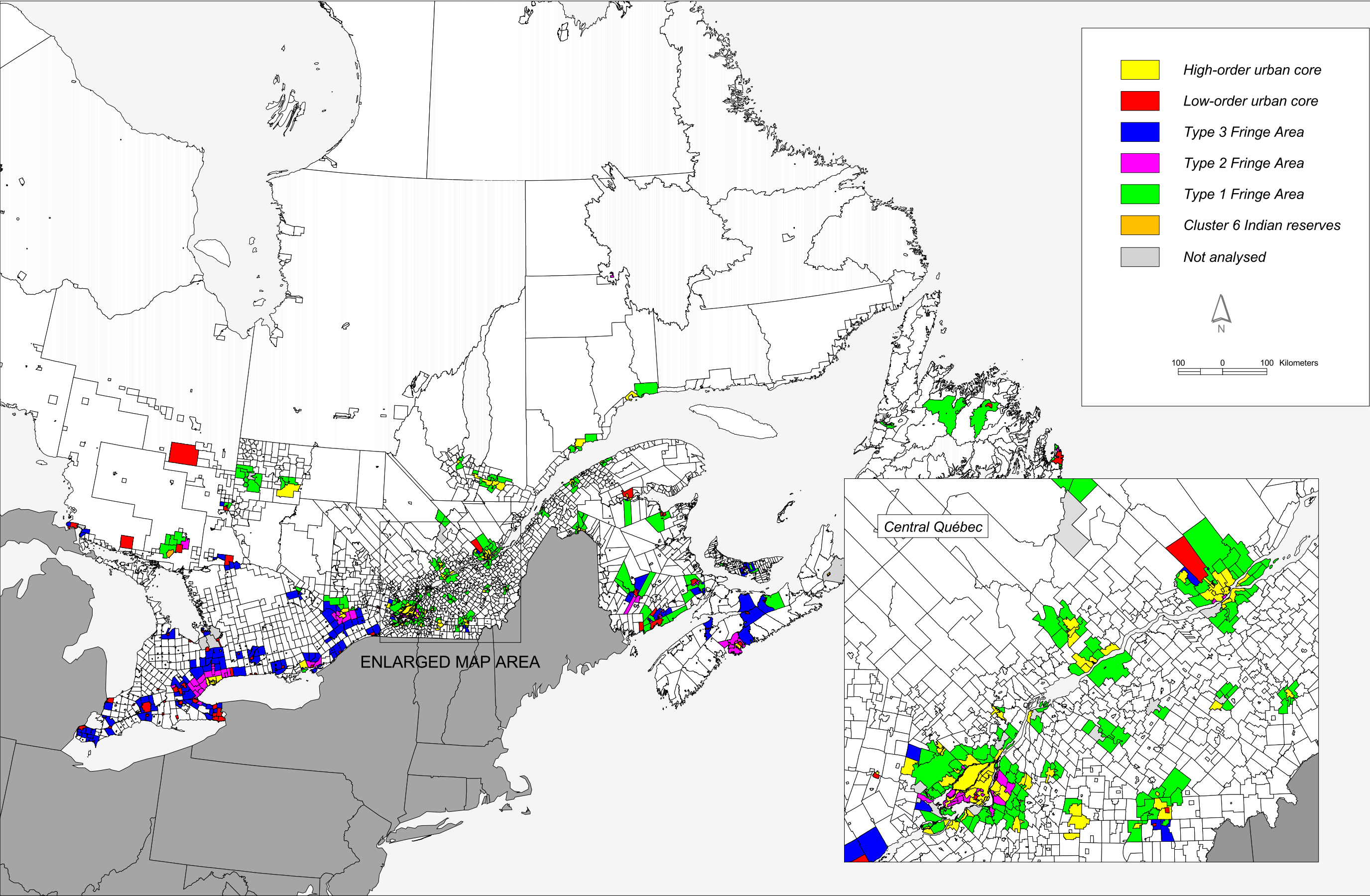


Figure 5.1b. Distribution of the Identified Types of Metropolitan CSDs: Central Canada

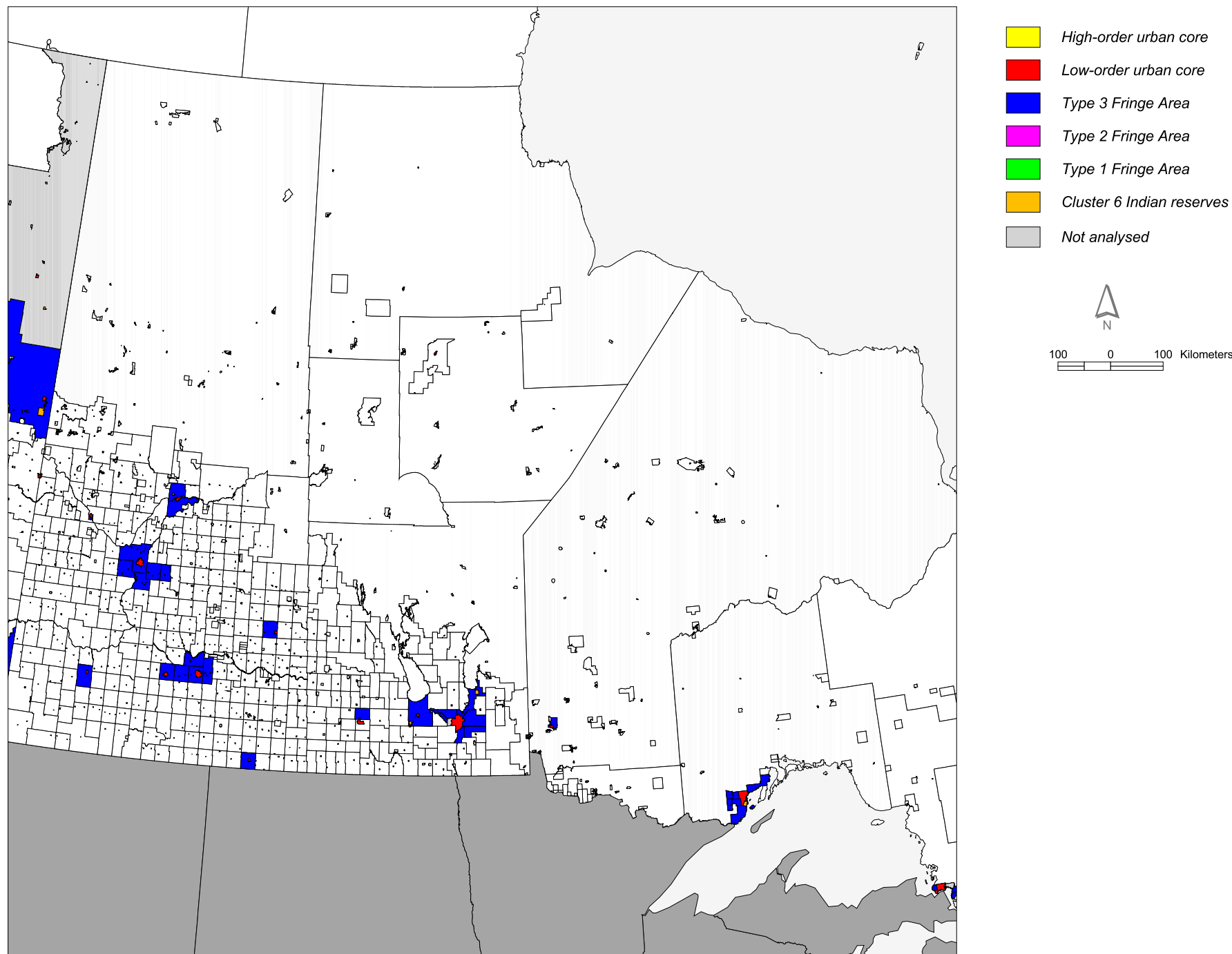
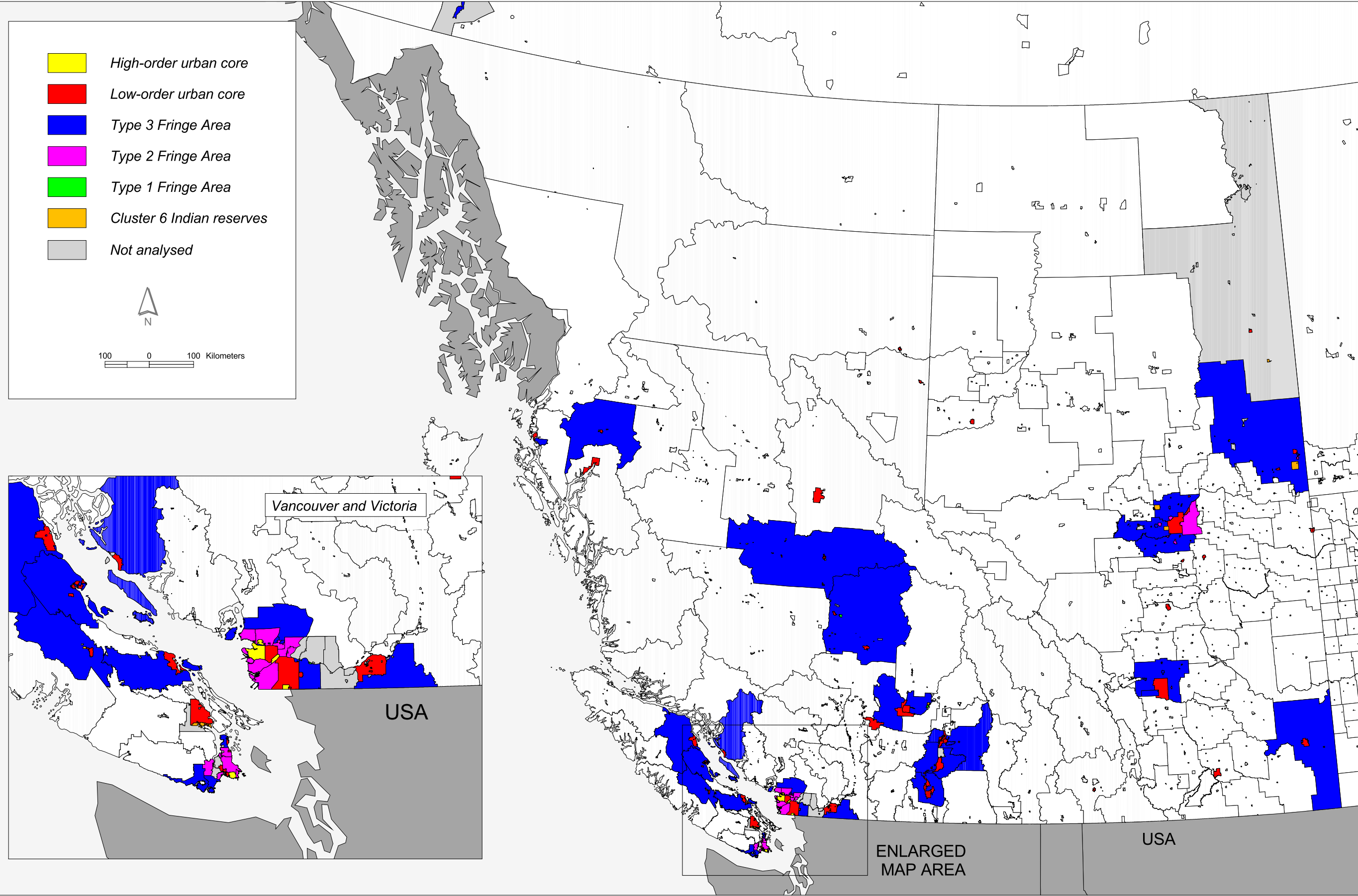


Figure 5.1c. Distribution of the Identified Types of Metropolitan CSDs: Western Canada



Based on the average score on Factor 5, these areas would tend to have a higher than average proportion of the population holding low-paying part-time jobs and employed in processing, manufacturing, and utilities, as well as a lower than average proportion of the population holding higher-paid jobs and employed in business services, finance, and insurance industries. The fact that this cluster had the highest overall positive score on Factor 5 further allows us to assume that fringe areas of this type should have the highest proportion of employed in these sectors compared to other fringe and urban core CSDs. The negative average score on Factor 11 suggests that these CSDs, in comparison to all metropolitan CSDs, had a lower than average percentage of the population employed in agriculture and related services. However, although the proportion of the population that depends on social assistance to make ends meet would be rather high, the overall level of disadvantage should be below the all-metropolitan average judging from the negative average score on Factor 2, Low Social Status I.

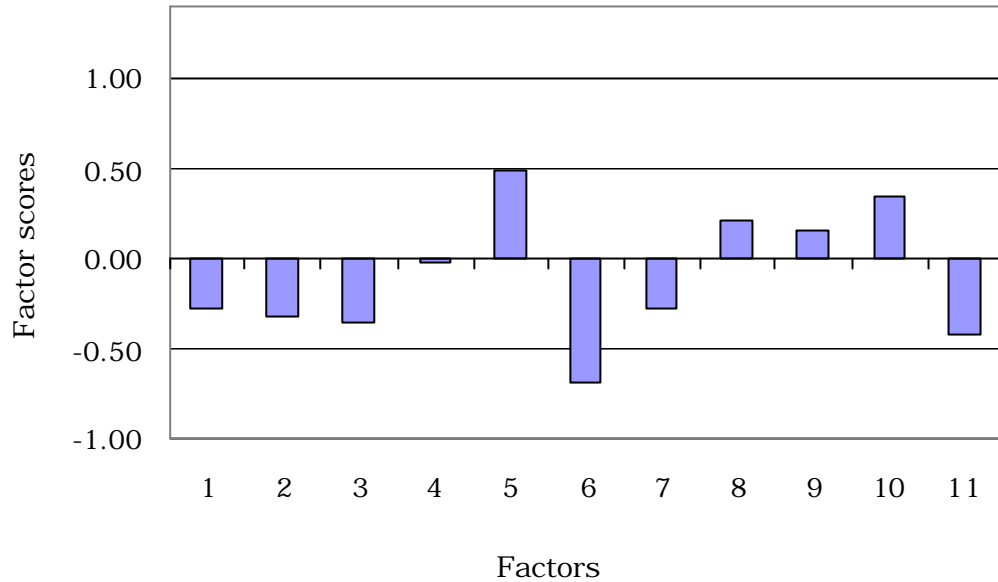
According to the negative average score on Factor 6 (Mobility Status) and positive average score on Factor 9 (Declining Areas), these areas experienced a relatively low in-migration of population from other areas and possibly even had an absolute decline in population. This would probably be accompanied by decreases in the construction of new housing and as a result an increased proportion of older housing stock. The average score on Factor 4 (Employment and Income Change) was very close to zero (-0.02), which could be interpreted as the changes in income and labour force activity between 1991 and 1996 generally conforming to those at the all-metropolitan scale (Tables 5.2 and 5.3). Census subdivisions in this cluster differed from the all-metropolitan pattern in that in 1996 these CSDs had a slightly higher percentage of males than females

Table 5.4. Average Factor Scores for the Extracted Clusters

Source: Compiled by author

Cluster	Membership	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
<i>Cluster 1</i>	237	-0.28	-0.32	-0.35	-0.02	0.48	-0.69	-0.28	0.22	0.16	0.35	-0.42
<i>Cluster 2</i>	101	1.20	-0.46	-0.18	-0.24	-0.54	0.49	0.18	0.10	0.30	0.25	-0.47
<i>Cluster 3</i>	247	0.10	-0.76	0.08	0.34	-0.13	0.30	0.07	0.01	-0.19	0.09	0.73
<i>Cluster 4</i>	154	-0.09	0.90	0.38	-0.16	0.11	0.89	0.18	-0.25	0.12	-0.64	0.21
<i>Cluster 5</i>	119	0.18	1.31	0.42	-0.31	0.22	-0.33	0.38	0.22	0.48	0.46	-0.35
<i>Cluster 6</i>	22	-1.63	0.29	-1.49	1.23	-0.84	-1.41	-0.82	-1.57	-1.71	-2.95	-1.09
<i>Cluster 7</i>	15	-2.47	0.42	-1.82	-1.91	-2.81	-1.73	0.18	0.15	-1.72	-1.57	0.17
<i>Cluster 8</i>	1	-2.54	1.56	-2.35	-2.43	-2.32	-1.02	-15.33	-0.29	-5.37	-0.41	2.91
<i>Cluster 9</i>	8	-0.97	0.28	2.83	1.53	-0.60	0.48	-0.25	-1.21	-3.09	0.36	-0.63
<i>Cluster 10</i>	2	-1.96	-0.70	6.71	-0.59	-1.07	-0.41	0.42	-5.05	-2.37	0.07	0.17
<i>Cluster 11</i>	1	-2.36	0.34	-0.29	-2.03	-3.02	-3.01	-11.31	0.99	-0.10	0.13	-1.49

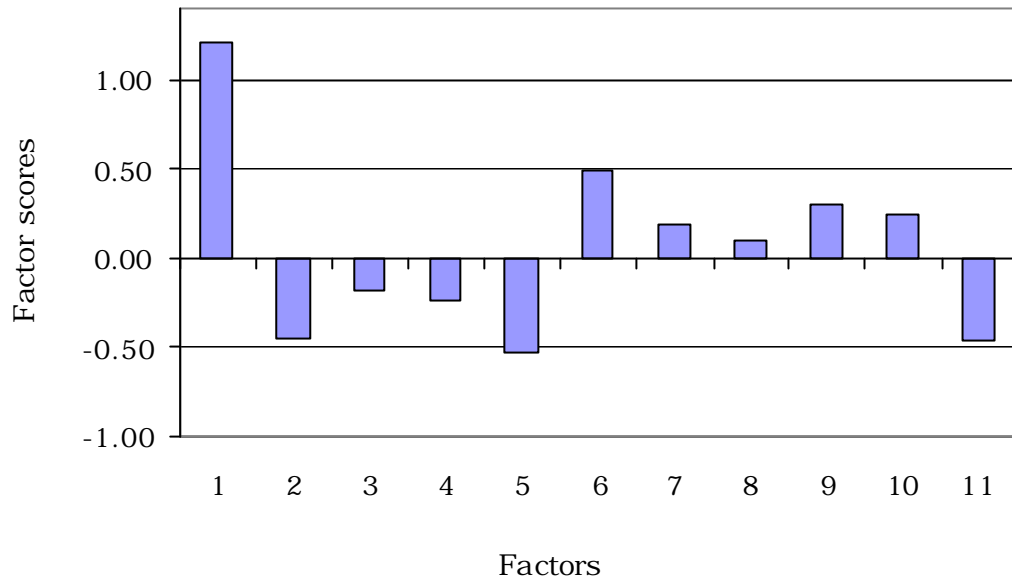
Figure 5.2. Average Factor Scores for Cluster 1
Source: Compiled by author



employed part-year or part-time (Table 5.3) and a lower relative increase in employment income and total income for both males and females.

Cluster 2 contained 11 percent of the data set and consisted of fringe areas located immediately around high-order urban cores throughout Canada (Figures 5.1a, b, and c). Specifically this cluster contained 7 CSDs in Newfoundland, 1 in Prince Edward Island, 5 in Nova Scotia, 11 in New Brunswick, 25 in Québec, 28 in Ontario, 3 in Saskatchewan, 8 in Alberta, and 13 in British Columbia. Members of this cluster were characterized by above-average scores on Factors 1 (High Social status), 6 (Mobility Status), 7 (Family Size Change), 8 (Labour Force), 9 (Declining Areas), and 10 (Commuters) (Fig. 5.2). Among these, the average score on Factor 1 describing high social status associated with high-end white-collar employment had the highest positive score (Table 5.4). The lowest negative factor scores for this cluster were on Factors 5

Figure 5.3. Average Factor Scores for Cluster 2
Source: Compiled by author



(Low Social Status II) and 2 (Low Social Status I). This cluster had the highest average positive score on Factor 1 among all eight clusters (Table 5.4).

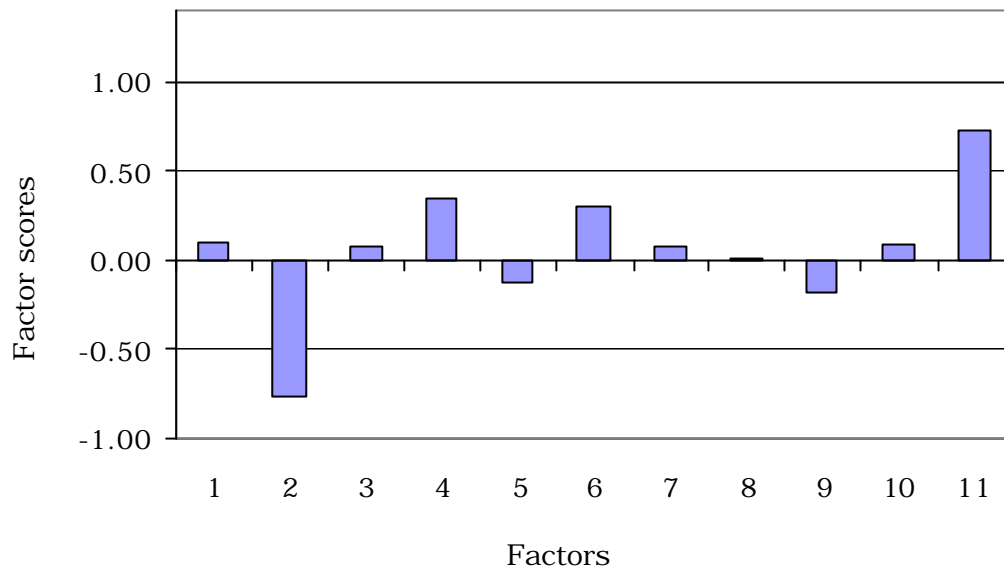
The most distinctive characteristic of the CSDs grouped into Cluster 2 was their association with the dimension describing high social status arising from the nature of employment rather than simply from high economic status defined by income. In comparison to all metropolitan CSDs, these areas tended to have a higher than average proportion of the labour force employed in white-collar occupations in the quaternary sectors such as business services, finance, real estate and insurance, and natural and applied sciences. In terms of age, population of these areas on average would be older than that of fringe areas grouped in Cluster 1 and closer to the retirement age as suggested by average scores on Factors 3 (Life Cycle) and 8 (Labour Force). Based on

the average score on Factor 7 (Family Size Change), CSDs in this cluster had not experienced any significant change in family size or in the number of large economic families between 1991 and 1996. These CSDs were characterized by a relatively high population turnover and possibly also a slight decline in population between 1991 and 1996 as suggested by positive scores on both Factor 6 (Mobility Status) and Factor 9 (Declining Areas).

Surprisingly, notwithstanding the strong association with high social status, these fringe areas experienced increases in employment and total income in absolute terms that were lower than average for all metropolitan CSDs (Tables 5.2 and 5.3). The difference between absolute increases in total income of males and females was greater than for all metropolitan CSDs, with those of males being higher than the overall average. The same difference was observed between increases in the absolute average employment income for men and women working part-year or part-time, whereas no difference existed between increases in absolute average income for those working full-year or full-time (Table 5.2). Cluster 2 was the only cluster of CSDs that experienced a decline in the proportion of males working full-year or full-time (Table 5.3). The proportion of those working part-year or part-time was higher than the metropolitan average value for women and lower for men. In fact, these areas had the highest proportion of female part-year or/and part-time employment overall. Also in 1996 households in these CSDs had the lowest level of government transfer payments as a share of total income.

Cluster 3 accounted for 27 percent of the data set and was made up of CSDs found either immediately around low-order urban cores or in the outer fringes surrounding high-order urban cores throughout Canada (Figures 5.1a, b, and c). Ontario CSDs

Figure 5.4. Average Factor Scores for Cluster 3
Source: Compiled by author



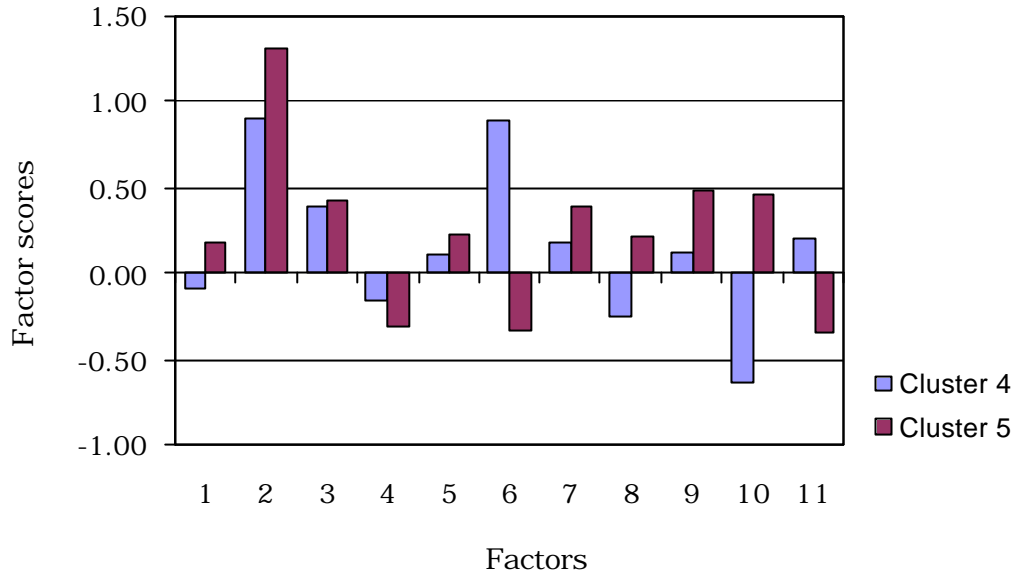
comprised 44 percent of this cluster’s membership, in part reflecting general urbanization patterns in Canada. Census subdivisions in this cluster were characterized by above-average scores on Factors 1 (High Social Status), 4 (Employment and Income Change), 6 (Mobility Status), and 11 (Agriculture and Related Services), with Factor 11 having the highest positive score for this cluster (Fig. 5.3) and the highest among all eight clusters (Table 5.5). Only three scores were negative for this cluster, those on Factors 2 (Low Social Status I), 5 (Low Social status II), and 9 (Declining areas). The score on Factor 2 (-0.76) was the lowest among all eight clusters (Table 5.4). The scores on the rest of the factors were close to zero.

Average score on Factor 2 suggest that fringe areas in Cluster 3 had the lowest proportion of population who could be described as disadvantaged among all

metropolitan CSDs. Another distinguishing characteristic of areas in this cluster was a high proportion of people employed in agriculture and related services. This, together with the distribution of cities across Canada, could further explain why the majority of the CSDs grouped in this cluster were found in southern Ontario, British Columbia, Saskatchewan, and Alberta. In terms of age distribution, population in these areas was most likely around the national average judging from the scores on Factors 3 and 8. Although not closely associated with high social status, as the 0.10 score on Factor 1 shows, CSDs in this cluster fared relatively well economically between 1991 and 1996, having a positive score on Factor 4 (Employment and Income Change). Their populations experienced above average increases in total incomes and employment incomes in relative terms for both genders (Table 5.2). The proportion of income defined as employment income increased 13.2 percent compared to a 9.0 percent increase for all metropolitan CSDs. Employment also increased for both genders in both types of labour force activity, full-year full-time and part-year part-time employment; however, for women these increases were higher and especially so in the full-year, full-time category (Table 5.3). Notwithstanding, in 1996 a higher proportion of women than men was employed part-year or part-time. Also, increases in total income in absolute terms were lower for women than for men. Based on the scores on Factors 6 and 9, between 1991 and 1996 CSDs in this cluster experienced an increase in population, possibly combined with increases in construction of new housing and, as a result, an increased proportion of newer housing stock.

The next two extracted clusters consisted of urban core CSDs. Cluster 4 accounting for 17 percent of the data set comprised mostly low-order urban cores

Figure 5.5. Average Factor Scores for Clusters 4 and 5
Source: Compiled by author



(Figures 5.1a, b, and c). However, it also included high-order cities such as Winnipeg, Edmonton, and Calgary, and smaller towns, villages, and reserves located in the rural-urban fringe and not immediately adjacent to core areas. Cluster 5 containing 13 percent of the areas consisted mostly of high-order urban core CSDs but also included some low-order urban core areas (Figures 5.1a, b, and c). It is interesting to note that CSDs in Atlantic Canada and Québec comprised 82 percent of the membership of Cluster 5 and only 14 percent of the membership of Cluster 4. Extraction of these clusters was secondary to this analysis, the main objective of which was to develop a classification of rural-urban fringe areas of Canadian cities. Inclusion of all CSDs in the data matrix allowed the elimination of bias in determining beforehand which areas within CMA/CA boundaries were part of the rural-urban fringe and which were not.

Average factor scores for these clusters displayed a very similar pattern (Table 5.4 and Fig. 5.4). Census subdivisions grouped in both clusters had positive scores on Factors 2 (Low Social Status I), 3 (Life Cycle), 5 (Low Social Status II), 7 (Family Size Change), and 9 (Declining Areas) and negative score on Factor 4 (Employment and Income Change). All of these scores consistently deviated more from the average for Cluster 5. Areas grouped in Cluster 4 scored above average on Factors 6 (Mobility Status) and 11 (Agriculture and Related Services) and below average on Factors 1 (High Social Status), 8 (Labour Force), and 10 (Commuters), with areas grouped in Cluster 5 having this pattern reversed. Among all eight extracted clusters, Cluster 4 CSDs had the highest positive average score on Factor 6 and Cluster 5 CSDs had the highest positive average scores on five factors (2, 7, 8, 9, and 10) (Table 5.4).

Census subdivisions grouped in Clusters 4 and 5 differed from the rest of the metropolitan CSDs in the proportion of the population defined as having low social status. Both groups of places scored higher on Factor 2 (Low Social Status I) than on Factor 5 (Low Social Status II), suggesting that a larger proportion of people had their low social status defined by circumstances of life such as age, disability, or family arrangements rather than presence or absence of employment income (Table 5.4 and Fig. 5.4). Census subdivisions grouped in Cluster 5 had a higher proportion of the disadvantaged than those grouped in Cluster 4. At the same time, CSDs in Cluster 5 had a higher average score on Factor 1 associated with high social status than areas in Cluster 4 where the factor scores were average (Table 5.4 and Fig. 5.4).

In terms of family arrangements, places in Clusters 4 and 5 seem to be described by two contradictory characteristics. On the one hand, based on the average score on Factor 3 (Life Cycle), these CSDs contained a sizeable proportion of the elderly in

completed families. The population in Cluster 4 CSDs was possibly older than that of the CSDs in Cluster 5, considering the negative score on Factor 8 (Labour Force) for Cluster 4. On the other hand, both groups of CSDs experienced increases in average family size and number of large economic families between 1991 and 1996, as shown by score on Factor 7 (Family Size Change). Areas grouped in Cluster 5 had the highest increases in the average family size and numbers of large economic families among all metropolitan CSDs. Areas in these two clusters also scored above average on Factor 9, describing areas with old housing and decreases in population between 1991 and 1996, with CSDs grouped in Cluster 5 having much higher average factor score on this factor (Table 5.4).

Census subdivisions in both clusters also experienced increases in total and employment incomes of individuals in absolute terms between 1991 and 1996 that were below the all-metropolitan average, although again CSDs comprising Cluster 5 had average score on Factor 4 (Employment and Income Change) that were almost one-half lower than those comprising Cluster 4. It seems that in Cluster 4 areas, females were affected more than males in terms of the size of employment income increases. However, total income increased on par with the average for all metropolitan CSDs for both genders in the Cluster 4 areas (Table 5.2). Share of employment income in the total income of individuals increased about 7 percent compared to an almost 10 percent increase for all metropolitan CSDs. At the same time, for the CSDs in Cluster 5, the share of employment income in the total income of individuals increased 5 percent, which was about two times lower than the increase for all metropolitan CSDs. These CSDs had increases in the total incomes of individuals in absolute terms almost two times lower than average increases for all metropolitan CSDs. Increases in male full-

time or full-year employment were significantly lower for the CSDs in both clusters, with Cluster 5 areas again affected more than those in Cluster 4 (Table 5.3).

The main differences between the CSDs in Cluster 4 and Cluster 5 were in scores on Factors 6 (Mobility Status), 8 (Labour Force), 10 (Commuters), and 11 (Agriculture and Related Services). Areas grouped into Cluster 4 had an above-average score on Factor 6, which suggests a quite high mobility status of the population. In fact, this cluster had the highest positive score on Factor 6 among all eight clusters. Cluster 5 CSDs scored below average on this factor, suggesting low mobility of the population in these areas. The opposite signs for scores on Factor 8 for these two clusters, negative for Cluster 4 and positive for Cluster 5, are likely to be a reflection of the average age of the populations in these areas with the population of Cluster 4 CSDs on average being older. Cluster 5 had a positive score (and the highest positive score overall) on Factor 10, whereas Cluster 4 scored negatively, suggesting that reverse commuting is more likely to be a characteristic of high-order than of low-order urban cores. And, finally, Cluster 4 CSDs contained an above-average share of employment in agriculture and related services while CSDs grouped in Cluster 5 had a below average share of employment in these sectors compared to other metropolitan CSDs.

The next three extracted clusters had low memberships and consisted exclusively of Indian reserves (Figures 5.1a, b, and c)¹. Cluster 6 was made up of 22 reserves; 12 in Nova Scotia, 1 in New Brunswick, 3 in Québec, 3 in Ontario, 2 in Manitoba, 4 in Alberta, and 5 in British Columbia. Reserves in this cluster were characterized by the prevalence of negative average factor scores. Only two average scores were positive –

¹ Because of the small size of these CSDs, most of the Indian reserves, with exception of some large reserves in Cluster 6, cannot be distinguished on the maps.

Figure 5.6. Average Factor Scores for Cluster 6
Source: Compiled by author

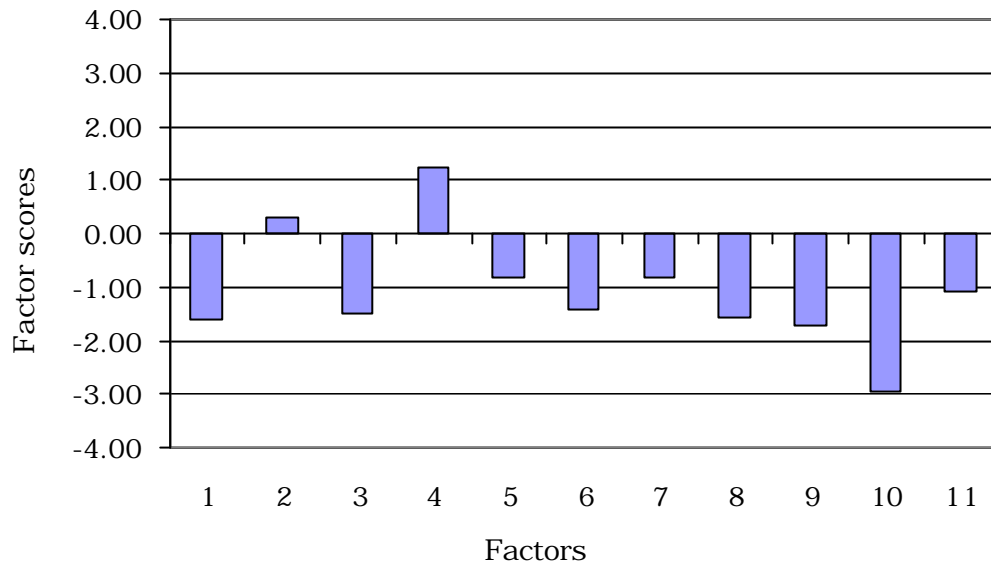


Figure 5.7. Average Factor Scores for Cluster 7
Source: Compiled by author

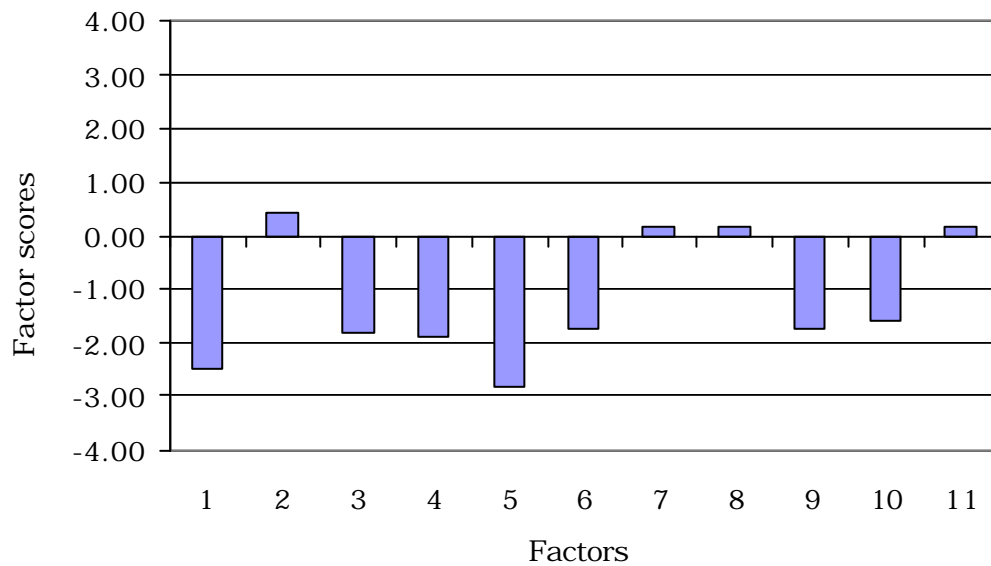
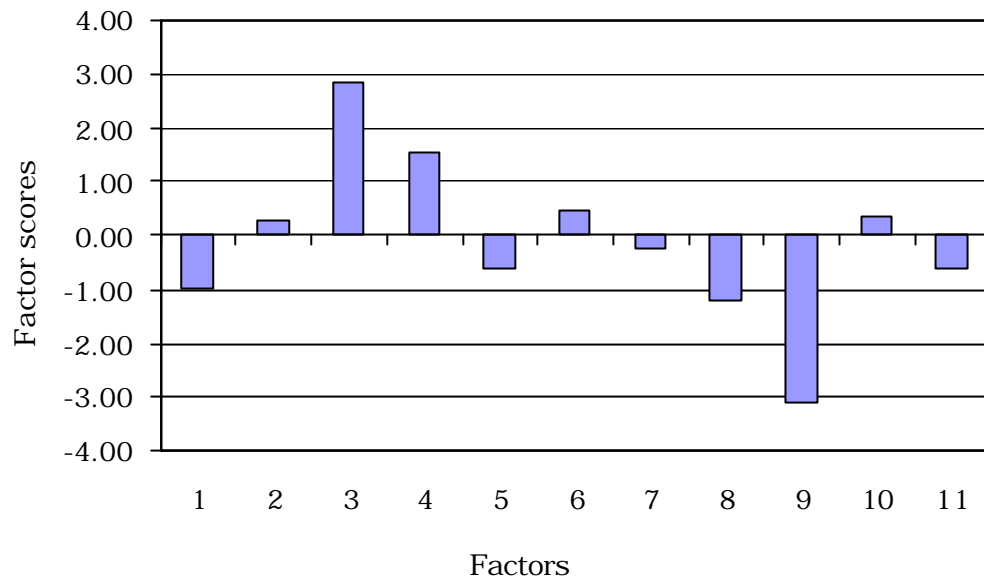


Figure 5.8. Average Factor Scores for Cluster 9
Source: Compiled by author



on Factors 2 (Low Social Status I) and 4 (Employment and income change) (Table 5.4 and Fig. 5.5). Among negative factor scores, the average score on Factor 10 (Commuters) was the lowest. Overall, CSDs in this cluster scored on average the lowest on Factors 7 (Family Size Change), 8 (Labour Force), 10 (Commuters), and 11 (Agriculture and Related Services) among all eight clusters.

Cluster 7 comprised 15 Indian reserves located in Western Canada, predominantly in British Columbia. Most of the average factor scores for this cluster were also negative (Table 5.4 and Fig. 5.6), as in the case of Cluster 6. Indian reserves grouped in Cluster 7 had the average score on Factor 5 (Low Social Status II) the lowest among the three clusters comprised of Indian reserves. Overall, CSDs in this cluster scored on average the lowest among all clusters on Factors 1 (High Social Status), 3 (Life Cycle), 4

(Employment and Income Change), 5 (Low Social Status II), and 6 (Mobility Status). Only four average scores were positive for this cluster, those on Factors 2 (Low Social Status I), 7 (Family Size Change), 8 (Labour Force), and 11 (Agriculture and Related Services) with the score on Factor 2 being the highest among all average factor scores for this cluster (Table 5.4).

Cluster 9 consisted of eight Indian reserves located in British Columbia. Census subdivisions in this cluster were characterized by above-average scores on Factors 2 (Low Social status), 3 (Life Cycle), 4 (Employment and Income Change), 6 (Mobility Status), and 10 (Commuters), with average score on Factor 3 being the highest for this cluster (Fig. 5.7). Two of these positive scores, those on Factors 3 and 4, were the highest overall (Table 5.4). The rest of the average factor scores were negative, with the score on Factor 9 (Declining Areas) being the lowest for this cluster and overall for all eight extracted clusters (Table 5.4).

More detailed analysis of the average factor scores as well as original variable values for reserves that made up Clusters 6, 7, and 9 showed that extreme negative values of some average factor scores may have resulted from random rounding and confidentiality procedures routinely implemented by Statistics Canada to protect the privacy of individuals who live in small or sparsely populated areas (Statistics Canada 1999: 357–8). Six out of twenty-two reserves included in Cluster 6 and all reserves in Cluster 7 had total populations of under 250 in both 1991 and 1996, a cut-off number set by Statistics Canada for disclosure of income data and related statistics. Consequently, values for variables describing income and related employment characteristics were replaced with zeros for these areas (Tables 5.2 and 5.3).

Additionally, Statistics Canada implements *cell suppression*, a procedure where the minimum acceptable value for a cell is specified and all cell values below the designated cut-off are deleted and replaced with zeros (Statistics Canada 1999: 358). Although cut-off cell values are not disclosed for any of the census variables, this procedure could be responsible for “zeroing out” of variables related to low income population for reserves in all three clusters, given that none of the Cluster 9 reserves had populations less than 250 people in either 1991 or 1996. Another procedure to insure confidentiality, *random rounding*, results in small numbers (lower than 10) being randomly rounded to zero. For example, a review of the variables describing employment showed that a number of 1991 variable values for all three clusters had zero values, which could have been the result of random rounding. This most likely explains very high relative increases in employment income of males and females in Clusters 6 and 9 who worked full-year or full-time (Table 5.2), resulting in a high average score of Factor 4 (Employment and Income Change). In the same manner, random rounding of all the data related to sector of employment and occupation of the population for these reserves could explain very low negative scores on Factor 5 (Low Social Status II) and possibly Factor 1 (High Social Status).

However, it would be wrong to treat areas included in these three clusters as outliers because of their “atypical” average factor score patterns. First, for random rounding to render variable values zero, these values should be quite low. It is quite likely that some of the employment and income values for these CSDs were indeed close to zero, especially those for 1991. This would explain why full-year/full-time employment income changed much more for Clusters 6 and 9 CSDs than for metropolitan CSDs in other clusters between 1991 and 1996. This assumption is

supported by the change in the share of employment income in the total income of individuals, a variable whose values have not been suppressed (Table 5.2). Second, although all low-social-status-related variable values have been suppressed, reserves in all three clusters still scored above average on Factor 2 (Low Social Status I), a dimension describing disadvantage not related to the absence or presence of employment and employment income. The assumption that these CSDs had a significant proportion of disadvantaged population is supported by the high share of government transfer payments in the total income of individuals in 1996 for Clusters 6 and 9 (Table 5.3).

Clusters 6, 7, and 9 seem to contain areas that have several characteristics in common. First, all of them have below-average scores on Factor 1, a dimension describing high social status related to the nature of employment, i.e., employment in professional occupations and in the quaternary sector. Second, all three clusters scored above average on Factor 2, a dimension describing low social status arising from social (family arrangements) and demographic (age) rather than economic reasons. The social nature of disadvantage in these areas is further confirmed by the negative scores on Factor 5, a dimension describing population in low-paying occupations or industries. Negative scores on Factor 9 (Declining Areas) suggest increases in population, their extreme values possibly explained by suppressed values of income-related variables as well as an inverse relationship between this factor and the variable *percentage of Aboriginal population* (Appendix E).

Although all three groups of reserves come across as economically and socially disadvantaged, those comprising Cluster 7 seem to be the most disadvantaged. These CSDs had a somewhat younger population than did the reserves in the two other clusters, as suggested by scores on Factors 3 (Life Cycle) and 8 (Labour Force). Indian

Table 5.5. Distribution of Indian Reserves among Extracted Clusters
Source: Compiled by author

Cluster	Number of reserves	Location of the reserves
1	9	BC (8), ON (1)
2	0	
3	11	BC (7), ON (2), AB (1), NB (1)
4	6	BC (3), AB (2), NB (1)
5	1	BC
6	22	BC (5), AB (4), NS (4), ON (3), QC (3), MB (2), NB (1)
7	15	BC (11), SK (2), AB (1), MB (1)
9	8	BC (8)

reserves grouped in Cluster 7 had seen a slight increase in family size and number of large economic families between 1991 and 1996, whereas reserves in Clusters 6 and 9 experienced decreases, especially those in Cluster 6 (Table 5.4). On the other hand, households on reserves that made up Cluster 9 were better off economically than those on the reserves in the two other clusters. The populations in the communities that were part of those clusters saw quite high relative increases in income and employment between 1991 and 1996 for both genders, as shown by this cluster's average score on Factor 4 (Employment and Income Change). It is possible that the residents of these CSDs derived their employment income by working off-reserve, an assumption based on a positive score on Factor 10 (Commuters). According to the scores on Factors 6 and 9,

reserves in this cluster would have experienced increases in population between 1991 and 1996, possibly due to in-migration.

It needs to be noted that Indian reserves were not grouped exclusively into Clusters 6, 7, and 9 (Table 5.5). However, these three clusters contained 59 percent of all the reserves in the data set that were available for analysis¹.

5.4. Discussion

Factorial ecology is considered one of the most effective among presently existing quantitative methods employed in the study of differentiation within urban social space (Davies, Murdie 1993; Randall, Viaud 1994). It could be argued though that its strengths lie more in the identification of social dimensions of variation rather than in the identification of spatial patterns. If a factorial ecology approach is implemented without any modifications, patterns of spatial variation corresponding to each of the identified dimensions are mapped separately according to the distribution of the factor scores across the geographic units of analysis. Spatial patterns obtained this way are relatively easy to interpret if the number of the extracted dimensions is small, as it was in the studies done in the late 1960s and 1970s (Borukhov et al. 1979; Hamm et al. 1988). However, with increases in the number of identified dimensions, the task of interpretation may become overwhelming. As patterns of differentiation of urban space in the developed world become more complex (Davies, Murdie 1991), many researchers have tried to increase the utility of the factorial ecology approach in recognition and measurement of these patterns (Heikkila 1992). Integration of factor scores via cluster

¹ Initially the data set contained 174 Indian reserves, 98 of which have been excluded from the analysis at an early stage of analysis due to the large number of missing values.

analysis represents one of the techniques significantly increasing the utility of factorial ecology with regards to identification and interpretation of spatial patterns (Davies 1984; Davies, Murdie 1993).

The analysis described earlier in this chapter used factor scores to produce homogenous social regions (Davies, Murdie 1993: 56) within the multidimensional social space created by the interaction between broad socio-economic processes, agency represented at this level of aggregation mostly by federal and provincial state, and the “natural” characteristics of these areas. The regions were identified at the level of census subdivisions and then evaluated against the Statistics Canada classification of the intra-metropolitan space discussed in Chapter 2 in order to develop a typology of rural-urban fringe areas. As was noted earlier, Statistics Canada differentiates between urban core and rural-urban fringe areas in the context of the broader concept of metropolitan space (Statistics Canada 1999). However, it defines the spatial extent of this space more conservatively compared to other concepts of the extended urban space found in the literature. Therefore, relying on the Statistics Canada definition may have excluded from the analysis some parts of the rural-urban fringe that did not fall within metropolitan boundaries, thus potentially decreasing the amount of variation in the observed spatial pattern.

On the other hand, the scale of analysis, i.e., all of the Canadian CMAs and CAs, makes the analysis at the level of census subdivisions an imperative, which leads to the additional loss in the amount of variation detected within the urban space. This loss is especially significant in the case of urban cores, as illustrated by the results of the analysis. Patterns of differentiation identified within Canadian metropolitan space consisted of six types of rural-urban fringe areas and only two of urban cores. The

typology of urban core areas in this analysis generally mirrored the position that these metropolitan areas occupy within the Canadian urban hierarchy. Specifically, two types of urban cores were identified — high-order and low-order. It is possible, however, that the differences in the degree of variation among urban cores and among rural-urban fringe areas could reflect the fact that there is indeed more variation among rural-urban fringes of Canadian metropolitan areas than among urban cores. This, however, does not mean that rural-urban fringe areas exhibit more spatial and social diversity within the boundaries of each individual area.

Rural-urban fringe areas were classified into six types, three of which comprised exclusively Indian reserves located within metropolitan boundaries in Atlantic and Western Canada. Although communities in these three groups shared several characteristics and generally appeared to be economically and socially disadvantaged, the differences among these areas were sufficient to allow them to be grouped separately. The three clusters contained 59 percent of all the Indian reserves in the data set, while the rest were grouped with economically and socially better-off “mainstream” rural-urban fringe areas. The presence of Indian reserves in the fringes of Canadian metropolitan areas has received little attention in the urban geographic literature (Peters 2001). Aboriginal communities in Canada are widely considered to have a significantly lower standard of living compared to the rest of the Canadian population (Levitte 2003: 58), which is often portrayed as a condition uniform across all Canadian Aboriginal population (Drost et al. 1995). Results of this research show that, notwithstanding much similarity in historic and cultural context, recent socio-economic changes have had different impacts on Canadian Aboriginal communities found within metropolitan boundaries. Not only do they seem to experience different degrees of economic and

social disadvantage, but also some of these Aboriginal communities have economic and social characteristics quite similar to those of the surrounding non-Aboriginal communities.

Variation between the “mainstream” rural-urban fringe areas seems to follow two axes. The first axis of variation mirrors the regional location of the fringe areas within Canada. While areas of the second and third types were found throughout Canada, incidence of rural-urban fringe CSDs comprising the first type were limited to Atlantic Canada and Québec, where they were found around both high- and low-order urban cores. In these areas: (1) the proportion of the population employed in processing, manufacturing, and utilities and holding low-paying part-time jobs (i.e., the so-called working poor) was the highest among all metropolitan CSDs, including both fringe and urban core areas; (2) the proportion of the population employed in business services, finance, and insurance industries and holding high-paid jobs was below average for all areas within metropolitan boundaries; and (3) the proportion of population aged 15 and over whose educational attainment did not exceed grade 9 was above average for all areas within metropolitan boundaries. When factoring in inflation, employment income of the population within these rural-urban fringe areas actually declined between 1991 and 1996.

The presence of rural-urban fringe areas of this type in the typology created in the analysis could be related to the outcomes of restructuring and globalization in Atlantic Canada and Québec. Economies of these eastern regions were traditionally organized around resource-harvesting primary industries and manufacturing, both of which were adversely affected by several changes in the structure of world markets such as the creation of the continent-wide market as a result of the implementation of North

American Free Trade Agreement (NAFTA) and liberalization of world trade in general. These changes resulted both in decreases in prices and in demand for a number of commodities such as coal, lumber, and various ores (DRI 1994; Savoie 1999). At the same time, some renewable resources became scarce due to overexploitation, as in the case of ground-fish stocks. Many employers had to close their operations located in eastern Canada or introduce labour-saving technologies. Compared to other Canadian regions whose economies also contained significant share of resource extraction and manufacturing, e.g., British Columbia and Ontario, the economy of the Atlantic provinces was less diversified, with its secondary and tertiary sectors closely tied to resource extraction (DRI 1994). Job losses sustained by Atlantic provinces were largely unmitigated due to both the particular demographic and skill structure of the labour force and the paucity of alternative employment opportunities. The situation in the province of Québec, while not as severe from an economic point of view, was exacerbated by a history of political instability (Germain, Rose 2000).

The second axis of variation distinguishes between the other two types of rural-urban fringe areas based on the type of urban cores they were associated with. Fringe CSDs of the second type were found primarily around high-order urban cores throughout Canada. In addition to being found immediately adjacent to urban cores of cities occupying the upper level of the Canadian urban hierarchy, over 50 percent of rural-urban fringe areas in this group are found in Ontario and south-central Québec, historically the economic core of the country (Savoie 1986). These areas are set apart from other metropolitan census subdivisions by the high proportion of the population employed holding white-collar positions in quaternary industries. These areas are characterised by the small proportion of the population that could be categorised as

economically or socially disadvantaged. These areas also receive the lowest level of government transfer payments measured as a proportion of the total income of individuals.

Rural-urban fringe areas comprising the third type were found throughout Canada either in the outer fringes surrounding high-order urban cores or immediately around low-order urban cores. Most of the rural-urban fringe areas in Manitoba, Saskatchewan, Alberta, and British Columbia belong to this group. While the second of the identified groups of rural-urban fringe areas includes mature suburban development, areas of the third type correspond more to a traditional definition of the rural-urban fringe (Wehrvein 1942; Pryor 1968); they have the highest proportion of people employed in agriculture and related services among the three types of fringe areas. The spatial distribution of rural-urban fringe areas of this type follows the general pattern of urbanization in Canada, with about 40 percent of the census subdivisions in this group located in Ontario, the province with the highest urbanization rate in the country (Savoie 1987; Bourne, Rose 2001). Rural-urban fringe areas of this type were characterized by the lowest proportion of socially and economically disadvantaged population among the three types of fringe areas, as well as an above-average proportion of population employed in white-collar occupations in quaternary industries. This is most likely related to exurban development that is taking place in these areas. Even accounting for inflation, population of these rural-urban fringe areas saw increases in their employment incomes between 1991 and 1996.

CHAPTER 6: CHARACTERISTICS AND RELATIONSHIPS OF EXEMPLAR RURAL-URBAN FRINGE CENSUS SUBDIVISIONS

Chapter 6 presents results of the second stage of the analysis, two objectives of which were to examine the influence of the socio-economic context on the structure of the rural-urban fringe areas and the roles that these areas may play within the larger metropolises, and to examine the influence of the context on the relationships existing between these areas and the corresponding urban cores. Emphasis in this part of the research was on describing elements of the social structure of the selected rural-urban fringe CSDs and on investigating the roles of these areas within their associated metropolises. In the context of this analysis, social structure was defined as “the spatial organization of human activities and interrelationships” (Bauer Wurster 1973: 45) and two of its elements — geographic extent of personal networks of individuals and activity spaces of households — were examined. This stage of the research also served as a validation step for the typology of the rural-urban fringe CSDs developed at the first stage. For the typology to have any utility, it was necessary to demonstrate that the types of rural-urban fringe CSDs identified were significantly different from each other based on the data collected on the activity spaces and personal networks. Therefore, it might be possible to predict the type of a rural-urban fringe CSD from the characteristics of the residents’ activity spaces and personal networks.

Although six of the total eleven clusters produced by cluster analysis were comprised of rural-urban fringe CSDs, a decision was made to limit the analysis at the second stage to only those in Clusters 1, 2, and 3. The other three clusters (6, 7, and 9) contained exclusively Indian reserves located in the rural-urban fringes of CAs and CMAs, a reasonably thorough study of which would have required methods and techniques different from those that could be employed for “mainstream” CSDs in the three other clusters. Without diminishing their importance for a typology of Canadian rural-urban fringe areas, it should be noted that these CSDs comprised only 5 percent of the data set. Consequently, one exemplar CSD was selected from each of the three clusters containing the most commonly found rural-urban fringe areas, based on the order the cases were agglomerated into groups during clustering. Cases that appeared first in the agglomeration schedule for each cluster were selected as prototypes for their respective groups. The following three CSDs were selected for the second stage of the analysis: Stoneham-et-Tewkesbury, Québec CMA as an exemplar area for Cluster 1; Halifax, Subd. C, Halifax CMA as an exemplar area for Cluster 2; and East Gwillimbury, Toronto Consolidated CMA as an exemplar area for Cluster 3 (Table 6.1).

This chapter begins with the description of the history and geography of these three rural-urban fringe areas gleaned from various sources, which helps “to set the stage” for results of the analysis of the social structure of these areas that follows.

Table 6.1. Census Subdivisions Selected as Exemplar Cases for Each of the Identified
Types of Rural-Urban Fringe Areas
Source: Compiled by author

Cluster	Label	Membership	Exemplar CSDs
1	Fringe areas around metropolitan areas in Atlantic Canada and Québec	237	Stoneham-et-Tewkesbury, Québec CMA
2	Fringe areas around high-order urban cores	101	Halifax, Subd. C, Halifax CMA
3	Fringe areas around low-order urban cores Outer fringes of high-order urban cores	247	East Gwillimbury, Toronto CCMA
4	Low-order urban cores	154	Regina, Regina CMA
5	High-order urban cores	119	Charlesbourg, Québec CMA
6	Indian reserves in the fringes of metropolitan areas around Canada	22	Fishers Grant 24, New Glasgow CA
7	Indian reserves in the fringes of metropolitan areas in Western Canada	15	White Cap 94, Saskatoon CMA
8	Indian reserves in the fringes of metropolitan areas in BC	8	Penticton 1, Penticton CA

6.1 Description of the rural-urban fringe CSDs exemplar for Clusters 1, 2, and 3

6.1.1 Cluster 1: Stoneham-et-Tewkesbury, Québec CMA

The majority of the rural-urban fringe CSDs grouped in Cluster 1 are located in Atlantic Canada and Québec. Compared to other fringe and urban core areas, these areas were characterized by the highest proportion of the so-called “working poor,” a labour force employed in processing, manufacturing, and utilities and holding low-paying part-time jobs. The proportion of the labour force employed in business services, finance, and insurance industries and holding high-paid jobs was below average for all metropolitan CSDs while the proportion of population aged 15 and over whose educational attainment did not exceed grade 9 was greater than in other clusters. These characteristics are not surprising, considering that Eastern Canada has not fared well in the economic and political climate of the past three decades. Until recently, the economy of the Atlantic provinces, “the oldest Canadian hinterland” (Bickerton 1990), was organized around resource-harvesting primary industries (DRI 1994: 3) that were particularly affected by the restructuring and recession of the 1980s and early 1990s (ACOA 1994). A relative decline in world prices of natural resources made competing with cheaper exports from Southern Ontario, the United States, and developing countries such as Brazil and China problematic for the region’s companies, many of which, even before this time, had to rely on federal subsidies to survive (Bone 2000: 394–439). Overall demand for raw commodities has also declined as the introduction of new technologies and environmental priorities changed how resources are used (DRI 1994: 3). In addition, some resources became scarce due to overexploitation, as in the case of ground-fish stocks, resulting in massive job losses in the fishing industry. As more value-added manufacturing sectors were never firmly established in the region, there appeared few

alternative employment opportunities for a largely unskilled, male labour force that suffers high levels of sporadic unemployment. Consequently, between 1981 and 2001, the four Atlantic provinces had the highest levels of unemployment among all Canadian provinces (Statistics Canada 1998d, 2003e).

The economic downturn in the province of Québec was brought about by a different set of factors. As opposed to the situation in Atlantic Canada, a strong manufacturing sector developed in Québec during the late nineteenth and most of the twentieth century. Presently, Québec contains part of Canada's manufacturing belt, which extends from Windsor to Québec City. However, until recently by and large manufacturing in Québec comprised mostly traditional labour-intensive industries, such as textile and automobile manufacturing (Germain, Rose 2000). Creation of the continent-wide market as a result of NAFTA, as well as liberalization of world trade in general, forced these sectors to restructure in order to be able to compete in the new economic climate. Demands for higher efficiency of production resulted in a significant decline in employment in Québec's primary and secondary sectors, dramatically increasing the province's unemployment rate to a level above the national average during the past twenty years (Statistics Canada 1998d, 2003e). Compared to the Atlantic Provinces, Québec has been relatively more successful in adjusting its sectorial composition to the conditions of a globalized economy. However, these efforts were hindered by an unstable political situation in the province during the 1970s, 1980s, and early 1990s.

In addition to unemployment rates above the national average, Atlantic Canada and the province of Québec share several other trends. The first one is high levels of out-

migration¹, which makes economic adjustment more difficult since loss of population triggers a cycle of economic decline and also makes delivery of public services more expensive, notwithstanding transfer payments from the federal government. Second, although the employment structure of both regions, as in most of Canada, has come to be dominated by the service sector, the majority of the service jobs in the two eastern regions are low-skilled and low-paying jobs in sectors such as hospitality, tourism and related industries (Lamarche 1993). Such jobs have been traditionally perceived as “female” and are, in fact, primarily occupied by women (Lamarche 1993). Therefore, the service sector provides few alternative employment opportunities for the male population, who may have lost their jobs in the primary and secondary sectors as a result of restructuring. Third, although federal funds allocated for regional development substantially decreased during the 1990s, public sector employment occupies an important place in the economy of both regions. In both the Atlantic provinces and Québec, public services constitute the second-largest service sector employer (Bone 2000).

Stoneham-et-Tewkesbury is a census subdivision located in the northern outer fringe of the Québec CMA (Fig 6.1). Although one of the largest CSDs in the province of Québec, covering 684.9 square kilometres, it is sparsely populated for the most part. In 2001, the population of Stoneham-et-Tewkesbury was only 5,266 people (Statistics Canada 2003d), the majority of whom reside in its southern part in the villages of Stoneham, Tewkesbury, Saint-Adolphe, Labrecque, and Barrière-de-Stoneham. First

¹ The province of Quebec, and particularly its cities, lost a substantial proportion of its anglophone population between the 1970s and early 1990s. Many of the Anglophones left for political reasons, whereas population loss in Atlantic provinces was due to the lack of employment opportunities.

Figure 6.1. Location of Cantons-Unis of Stoneham-et-Tewkesbury
Source: Compiled by author; Statistics Canada 1996a, 1996b



European settlement of the area dates back to 1792 (Stoneham Tourism 2003). In 1855, the municipality was designated as Cantons-Unis de Stoneham-et-Tewkesbury with approximately 25 families of English, Scottish, and Irish descent residing in the area. Most of the French-speaking residents arrived in the middle of the nineteenth century and settled mainly in the Tewkesbury area. Presently 96 percent of the population residing in the Cantons-Unis are francophone (Statistics Canada 2003d).

Until the mid-1970s, the economy of Stoneham-et-Tewkesbury revolved around logging and wood processing (Municipalité des Cantons-Unis de Stoneham-et-Tewkesbury 2001). While still present, the logging industry has lost its importance as a

foundation of the economy to tourism and recreation during the past twenty years.

Owing to its location at the foot of the Laurentian Mountains, Stoneham-et-Tewkesbury has become a year-round playground for the Greater Québec area as well as for tourists from all over the world (Tourism Stoneham 2003).

6.1.2 Cluster 2: Subdivision C of Halifax County, Halifax CMA

Cluster 2 comprised rural-urban fringe areas located immediately around high-order urban cores throughout Canada. What sets this group of CSDs apart is their association with the dimension describing high social status arising from the nature of employment rather than simply from high economic status as defined by income. According to the results of the first stage of the analysis, among all metropolitan CSDs, these areas tend to have the highest proportion of population employed in white-colour occupations in quaternary industries. These same areas contain a low proportion of population that could be characterised as economically and socially disadvantaged and receives the lowest share of government transfer payments in the total income of individuals. Over 50 percent of rural-urban fringe areas in this group are found in Ontario and south-central Québec, the economic core of the country. The fact that an exemplar CSD for this group is a part of the rural-urban fringe of a CMA in Atlantic Canada provides strong evidence of the contextual character of urban process.

Although Atlantic Canada is commonly seen as a “downward transitional region” (Bone 2000:396), in fact its economy presently consists of two segments — a large resource-oriented segment found in rural areas and small urban centres and an emerging “new economy” segment associated with larger urban centers (Lamarche 1993; Beaudin, Breau 2001). The latter is in part a result of continuing efforts at regional economic

development at the federal, provincial, and local levels of government. In particular, in the 1970s, federal intervention into the Atlantic region's economy took the form of incentives offered to companies willing to locate in the region. In the 1980s, federal intervention was geared toward creating an economic environment necessary for growth by investing in job-training programs, technology development and transfer, as well as into creation of physical infrastructure (Bickerton 1990; DRI 1994: 4). By the 1990s, the Atlantic region ranked first within Canada regarding the costs of doing business in every industry, which was attributed not only to low labour and land acquisition costs but also to highly developed telecommunications and business services (KPMG 1997).

Urbanized areas, especially large centers of the "Maritime Belt" (Bickerton 1990), were in a better position to benefit from the federal regional economic development assistance due to their having sufficient institutional capacity and more diversified economies, whereas rural and semi-rural areas ended up largely relying on equalization payments and unemployment insurance payments (Bickerton 1990; Beaudin, Breau 2001). Large urban centres in the Atlantic region, actually were able not only to survive the downturn in the regional economy, but "to capitalize on the changes in Canadian and global economy and respond to their demands" (Beaudin, Breau 2001: 18).

The current economic success of Halifax CMA¹ (Greater Halifax Partnership 2004), the major urban centre in the Maritimes region, stems in part from the ability of municipal governments in the region to adopt a region-wide approach to development planning and management. The economy of the Halifax metropolitan region, which has

¹ Before 1996, Halifax CMA consisted of the four municipal units — the cities of Halifax and Dartmouth, the town of Bedford, and the Municipality of the County of Halifax. In 1996, municipal units of the CMA amalgamated to form the Halifax Regional Municipality.

developed around defence and port functions (Millward 1993), did not experience much growth and development prior to the 1960s (Millward, Dickey 1994). Land development outside of the urban core was hindered by a predominantly hard rock environment (Millward 2002), and economic growth was constrained by dependence of the existing industries on the access to the harbour and railway lines (Millward, Dickey 1994:755). The first detailed attempt at regional land-use planning and management, the Halifax Region Housing Survey conducted between 1960 and 1963, and subsequent activity of the Metropolitan Area Planning Committee coincided with, and were facilitated by, federal and provincial assistance for infrastructure development. Part of these efforts was directed towards establishment of planned industrial parks, which came to define the recent economic development patterns in the metropolitan region (Dann 2000). Initially intended as a top-down planning tool to guide the suburbanization of established conventional industries, industrial parks increasingly became a means to attract new knowledge-intensive industries (Millward, Dickey 1994:761).

Subdivision C of Halifax County¹ comprises the north-eastern part of the rural-urban fringe surrounding the core communities of Halifax, Dartmouth, and Bedford (Fig. 6.2), covering 376.8 square kilometres. In 2001, the population of the area was 55,765 (Statistics Canada 2003c) with the majority of the people residing in communities in the southern part of the subdivision. Until the 1960s, the area was sparsely settled and virtually undeveloped, with the exception of several small settlements organized around farming (Millward 2002: 34). Based on the degree of environmental limitations, the Halifax Region Housing Survey identified the Sackville area as one of the two areas suitable for residential development. The first planned

¹ Dissolved as an administrative unit in 1996.

Figure 6.2. Location of the Subdivision C of Halifax County
Source: Compiled by author; Statistics Canada 1996a, 1996b



satellite community of Sackville Lakes, designed to house 20,000 people, was developed by the provincial Department of Housing between 1967 and 1990 (Millward 2002: 38). The second smaller community of Millwood was developed for 6,000 in the 1980s in the Middle Sackville area. Additional, mostly private, residential development was encouraged during the 1980s by the establishment of Burnside Industrial Park within a short commuting distance along Highway 101. Construction of the new International Airport and adjacent Aerotech Industrial Park combined with the scenic Lakeland environment made the communities of Waverley, Fall River, and Wellington Junction and in general the land along Highway 102 attractive for less dense exurban, also

predominantly private, development. At the same time, two smaller industrial parks were established within the subdivision — Sackville Industrial Park of mixed industrial-business type completed in 1981 (Nova Scotia Business Inc. 2003) and Hammonds Plains Road housing manufacturing and construction firms in 1988 (Millward 1994).

6.1.3 Cluster 3: The Town of East Gwillimbury, Toronto CMA

Cluster 3 was made up of CSDs found either immediately around low-order urban cores or in the outer fringes surrounding high-order urban cores throughout Canada. The spatial distribution of rural-urban fringe areas of this type follows the general pattern of urbanization in Canada, with about 40 percent of the census subdivisions in this group located in Ontario, the province with the highest urbanization rate in the country (Savoie 1986; Bone 2000). While the second cluster of rural-urban fringe areas contains mostly mature suburban development, areas of the third type correspond more to a traditional definition of the rural-urban fringe, having the highest proportion of people employed in agriculture and related services among the three types of the fringe areas.

A CSD exemplar of this cluster, the Town of East Gwillimbury, is located in the northern part of York Region, just a 30-minute drive north of Toronto (Fig 6.3), encompassing an area of about 245 square kilometres (Town of East Gwillimbury 2004). In 2001, its population was 20,555 (Statistics Canada 2003a). The official Town's Web site describes it as "a balanced community with the assets of both an urban and rural area," where urban areas are "separated from each other by farms, forests, countryside residences, and recreational areas" (Town of East Gwillimbury 2004). Urban areas within the Town's boundaries include Holland Landing, Queensville, Mount Albert, River Drive Park, and Sharon. Among them, Holland Landing is the largest containing

Figure 6.3. Location of the Town of East Gwillimbury
Source: Compiled by author; Statistics Canada 1996a, 1996b

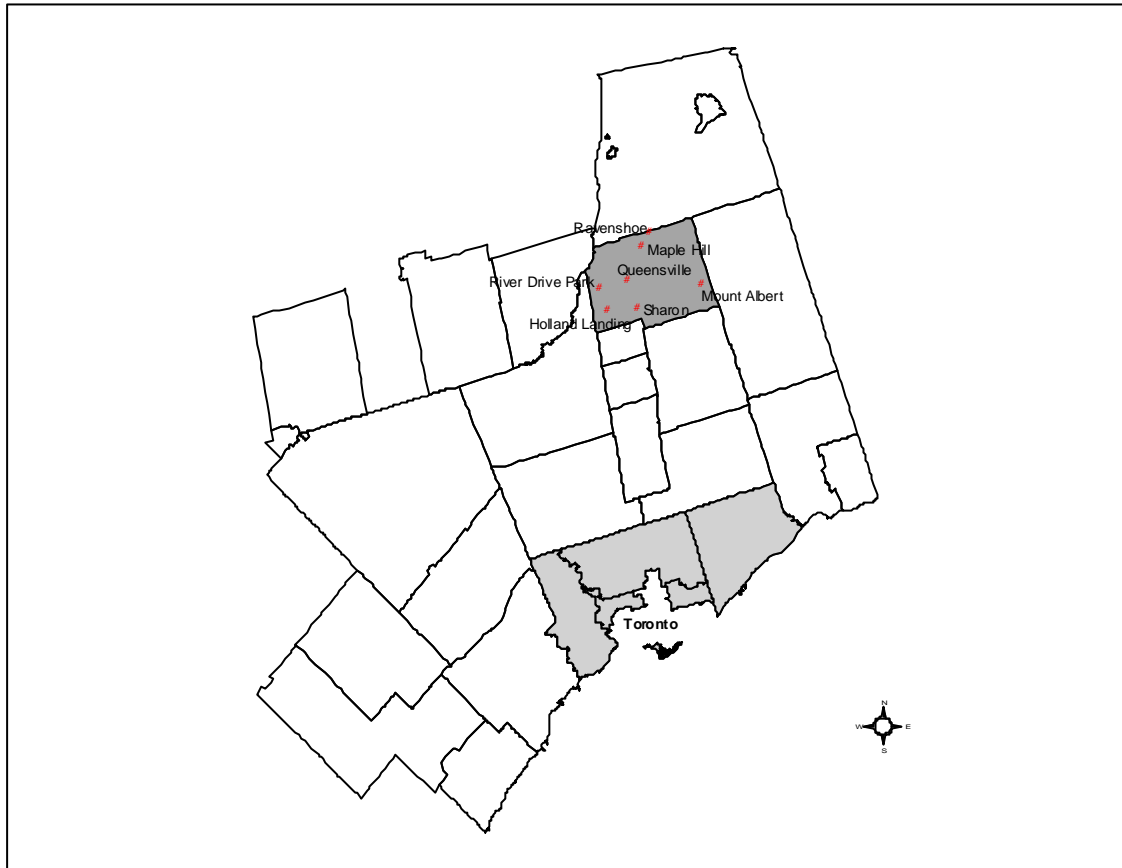
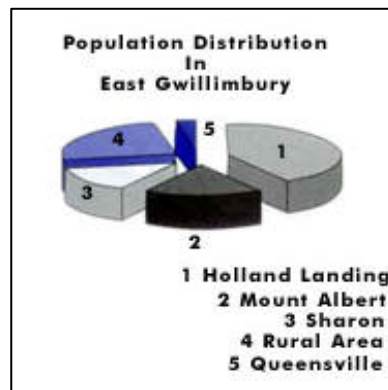


Figure 6.4. Distribution of Population in the Town of East Gwillimbury
Source: York Region's Virtual Community Resource Centre 2004



about 40 percent of the total Town's population (Fig. 6.4). Early settlement of the area dates back to the late 1700s. The Town of East Gwillimbury was incorporated as an administrative unit in 1850. Many of the first settlers belonged to the two groups — United Empire Loyalists and Quakers — and were attracted to the area by grants of land or the opportunity to practice their faith in peace.

At present, manufacturing, mainly of office furniture and concrete products, constitutes the major employment sector of the Town's economy, employing close to 30 percent of its labour force (York Region's Virtual Community Resource Centre 2004). Primary industries, including agriculture and sand and gravel extraction, is the second-largest sector, accounting for little over 20 percent of employment followed by recreation and related food and personal services employing about 15 percent of the Town's labour force. Overall, economic development of East Gwillimbury follows general trends for York Region, one of the fastest-growing regions of the Toronto CMA (Regional Municipality of York 2003). For example, between 1998 and 2001, employers with 30 or more full-time employees in 1998 experienced an overall employment increase of 65 percent (York Region's Virtual Community Resource Centre 2004). In 2002, transportation and warehousing was the fastest-growing employment sector, showing an over 50 percent increase. The municipal government in East Gwillimbury takes an active part in managing and planning of further growth and development within the Town. In co-operation with the private sector, it facilitated establishment of several business parks and commercial centres in the area. Business parks are mostly oriented toward the needs of established sectors such as manufacturing and transportation.

6.2 Analysis of the Activity Spaces and Personal Networks of Households

Residing in Exemplar Census Subdivisions

This section describes results of the analysis of the data collected in the three exemplar CSDs via the mail survey. Variables describing activity spaces obtained from responses to the survey were placed into three groups based on the perceived periodicity of trips to locations where members of the households conducted various activities. For example, trips to the primary place of work were assumed to be occurring daily, and therefore location of the place of work was considered a good indicator of the extent of the daily activity spaces of the households in the exemplar CSDs. Similarly, locations of the most commonly visited grocery store, bank, or favourite restaurant were used as indicators of the extent of the weekly activity spaces and so on. It is necessary to stress that grouping of the collected variables in this manner is largely intuitive and therefore not absolute. However, a similar approach to grouping the relationships within the urban field and regional city based on their periodicity has been employed by Coppack (1988b) and Bryant, Russwurm and McLellan (1982). In addition, data on the maximum extent of the activity spaces of households was obtained from the answers to Question 11a (Appendix B). Assessment of spatial characteristics of the activity spaces were supplemented by two aspatial variables describing, respectively, frequency of seasonal trips obtained from the answers to Question 10 and the purpose of travel to the most distance place which was considered to be a proxy for the maximum extent of the activity spaces, obtained from the answers to Question 11b.

Variables used to describe personal networks of the residents included volume and geographic range. Volume refers to the number of friends and relatives listed by the respondents (Bridge 1995:270), i.e., the total volume of the “first-order zone” of a

personal network. Possible values for this variable ranged between 0, if a person listed no data regarding location of residences of friends and relatives, and 6, in which case Questions 13 and 14 were answered completely (Appendix B). Network volume provides information on “potential resource-gathering capabilities of a person, whether these resources be emotional, practical, or convivial” (Bridge 1995:270), and serves as one of the basic measures in network studies. In this analysis, however, measuring the overall volume of personal networks of the residents was supplementary to determining their geographic range, which provides a measure of the spatial extent of personal networks.

Geocoded locations of places where friends and relatives of the respondents reside were classified and coded according to their location in relation to the CSD of respondent’s residence (Bridge 1995:273). Friends and relatives residing within the same CSD scored 0, those who resided in another rural-urban fringe area of the same CMA scored 2, and so on, with scores increasing with the increase in the relative distance. The range of each network was calculated by summing up all the scores. Also, geographic ranges were calculated separately for networks comprising friends and relatives respectively. The larger the network range values, the greater the spatial extent of personal networks they indicate. In addition to these variables, Question 15 (Appendix B) allowed us to identify the closest and strongest relationships in emotional terms within personal networks of respondents.

6.2.1. Central Tendency Measures

To describe the social structure of the three exemplar CSDs, central tendency measures were calculated for spatial data describing the extent of action spaces and

personal networks as well as aspatial data on socio-demographic characteristics of the survey respondents. Table 6.2 presents modal values for variables measured on nominal and ordinal scales and average values for variables measured on an interval scale, the latter category including only variables describing volume and geographic range of personal networks of respondents.

6.2.1.1. Description of Activity Spaces of Households in Exemplar Census Subdivisions

All three types of activity spaces of the households residing in Stoneham-et-Tewkesbury were most commonly oriented toward the urban core of the Québec CMA. The majority of the respondents from this rural-urban fringe area indicated the urban core of the CMA as the location of their primary place of work (77 percent), the location of their favourite restaurant (84 percent), and as a destination for shopping for clothing and household items such as furniture and large appliances (both 99 percent) (Table 6.3). The proportion of respondents who traveled to the CMA's centre to visit a family doctor (61 percent) or to take a vehicle for servicing (68 percent) was somewhat lower but still included well over half of the respondents. In the case of major grocery shopping trips and banking, slightly over fifty percent of the respondents indicated city centre locations as their most common destination, and about forty-five percent indicated locations within Stoneham-et-Tewkesbury.

Thus, if location of place of work is taken as an indicator, daily activity spaces of the majority of households in Stoneham-et-Tewkesbury were most likely directed toward the urban core. Weekly activities, especially of more universal kind such as grocery shopping and banking, tended to be conducted more within the CSDs of

Table 6.2. Central Tendency Measures for the Three Exemplar Census Subdivisions
Source: Compiled by author

Variables		Measures of central tendency		
		Stoneham-et-Tewkesbury	Halifax, Subd. C	East Gwillimbury
Activity Spaces	DAILY: WORKPLACE	Urban Core	Urban core	Other fringe CSD
	WEEKLY: BANKING, GROCERIES, RESTAURANT	Urban core	Within the same CSD	Other fringe CSD
	MONTHLY OR MORE: CLOTHING, FURNITURE, GARAGE, DOCTOR	Urban core	Within the same CSD or Urban core	Other fringe CSD
	MAXIMUM EXTENT	Within province	Canada	Within province
	PURPOSE OF TRAVEL TO MOST DISTANT PLACE	Vacation	Visiting family or relatives	Vacation
	FREQUENCY OF LEISURE TRIPS	1 to 5 times per year	1 to 5 times per year	1 to 5 times per year
Networks	RANGE OF RELATIVES NETWORK	4.03	7.37	5.77
	RANGE OF FRIENDS NETWORK	4.47	3.24	4.33
	OVERALL NETWORK VOLUME	4.83	5.43	5.47
	OVERALL NETWORK RANGE	8.50	10.61	10.10
	CLOSEST RELATIONSHIP	“My spouse or partner”	“My spouse or partner”	“My spouse or partner”
Characteristics of Respondents and Households	AGE	24-44 years	45-64 years	45-64 years
	GENDER	Male	Male	Male
	MARITAL STATUS	Married or living common law	Married or living common law	Married or living common law
	NUMBER OF CHILDREN AT HOME	None	None	None
	TYPE OF WORKPLACE	Outside home at one location	Outside home at one location	Outside home at one location
	HOUSEHOLD INCOME	\$50,000 - \$69,999	\$50,000 - \$69,999	\$30,000 - \$49,999
	LENGTH OF RESIDENCY	Over 10 years	Over 10 years	Over 10 years

residence, but still slightly over half of the households traveled to the centre of the CMA. Trips to a favourite restaurant stand out in this regard with the overwhelming majority of the respondents indicating locations in the CMA's centre, which probably can be explained by cultural factors that influence consumer preferences in this case. The centre of the CMA was a prevalent destination for activities that were assumed to be conducted once a month or less frequently, including visits to family doctor, car maintenance, or trips to purchase clothing and furniture.

The maximum extent of the activity spaces of households residing in Stoneham-et-Tewkesbury did not exceed that of the Province of Québec (Table 6.2). Vacation was the most common reason for taking the trip to a place most distant from the place of residence within the past year. This reason was given by close to 50 percent of the respondents (Table 6.3).

Activity spaces of the households residing in Subdivision C of Halifax County were more centered on the CSD of their residence, compared to activity spaces of the households in the other two rural-urban fringe CSDs (Table 6.2). Although 62 percent of the respondents indicated locations in the City of Halifax or City of Dartmouth, the CMA's core, as their primary place of work, Halifax, Subdivision C had the highest among the three CSDs proportion of respondents (26 percent) working within the CSD of residence (Table 6.3). Close to 61 percent of the respondents from this rural-urban fringe area gave locations within Halifax, Subdivision C as places where they most commonly shop for groceries, and about 87 percent gave locations within their CSD of residence as places where they conduct personal banking. The proportion of the residents whose family doctor's office is located in the CSD of their residence was about 46 percent, which comprised the highest proportion among the three rural-urban fringe

Table 6.3. Frequency Distribution of Values for Variables Describing Activity Spaces, Personal Networks, and Characteristics of Respondents for the Exemplar CSDs

Activity Spaces

			Cluster		
			1	2	3
DAILY	Place of work	Within the same CSD, %	15.9	25.8	16.4
		Other fringe CSD, %	1.6	7.6	59.0
		Urban core CSD, %	77.8	62.1	21.3
		Other, %	4.8	4.5	3.2
WEEKLY	Banking	Within the same CSD, %	45.3	60.8	3.8
		Other fringe CSD, %	2.7	13.9	93.7
		Urban core CSD, %	52.1	22.8	2.5
	Groceries	Within the same CSD, %	45.9	86.6	10.3
		Other fringe CSD, %	2.7	8.5	89.7
		Urban core CSD, %	51.4	3.7	0.0
	Restaurant	Within the same CSD, %	7.5	38.9	18.1
		Other fringe CSD, %	9.0	12.5	73.6
		Urban core CSD, %	83.6	48.6	6.9
MONTHLY	Clothing	Within the same CSD, %	1.3	33.3	2.6
		Other fringe CSD, %	0.0	23.5	96.2
		Urban core CSD, %	98.7	43.2	1.3
	Doctor	Within the same CSD, %	21.7	45.7	9.2
		Other fringe CSD, %	15.9	24.7	82.9
		Urban core CSD, %	60.9	28.4	6.6
	Furniture	Other, %	1.4	1.2	1.3
		Within the same CSD, %	0.0	24.7	9.5
		Other fringe CSD, %	0.0	2.5	85.1
	Garage	Urban core CSD, %	98.6	71.6	2.7
		Other, %	1.4	1.2	2.7
		Within the same CSD, %	22.5	42.5	35.1
		Other fringe CSD, %	8.5	9.6	60.8
		Urban core CSD, %	67.6	42.5	4.1
Maximum Extent		Other, %	1.4	5.5	0.0
		Same CMA, %	0.0	1.2	2.6
		Same province, %	49.3	19.8	38.5
		Canada, %	20.5	46.9	19.2
		USA, %	15.1	19.8	21.8
		Mexico or Cuba, %	6.8	3.7	6.4
Purpose of Travel to Most Distant Place		Different continent, %	8.2	8.6	11.5
		Work or business, %	18.4	16.3	7.6
		Visiting family, %	25.0	40.0	22.8
		Vacation, %	55.3	32.5	63.3
Frequency of Leisure Trips		Other, %	1.3	11.3	6.4
		Never, %	21.1	12.8	12.7
		1 to 5 times per year, %	42.1	65.4	45.6
		6 to 12 times per year, %	21.1	9.0	24.1
		More than 12 times per year, %	15.8	12.8	17.7

Table 6.3. Continued

<i>Personal networks</i>		Cluster		
		1	2	3
The Strongest Relationship	Spouse/partner, %	76.0	70.7	56.4
	Relative living nearby, %	5.3	8.5	10.3
	Relative living far away, %	0.0	3.7	5.1
	Friend from workplace, %	4.0	3.7	3.8
	Neighbourhood friend, %	4.0	1.2	1.3
	Special friend, %	9.3	8.5	20.5
	Other, %	1.3	3.7	2.6
<i>Characteristics of respondents</i>		Cluster		
		1	2	3
Age	25-44, %	53.9	36.6	38.0
	45-64, %	40.8	53.7	51.9
	65 and older, %	5.3	9.8	10.1
Gender	Male, %	65.8	62.2	58.2
	Female, %	34.2	37.8	41.8
Marital Status	Single, %	5.3	0.0	7.6
	Married/living common law, %	80.3	91.4	79.7
	Divorced/separated, %	13.2	6.2	6.3
	Widowed, %	1.3	2.5	6.3
Children Under 18 at Home	None, %	54.7	58.5	57.7
	1 child, %	17.3	15.0	15.4
	2 to 3 children, %	25.3	23.8	24.2
	4 or more children, %	2.7	2.5	2.6
Household Income	< \$29,999, %	13.7	10.0	6.6
	\$30,000 - \$49,999, %	23.3	17.5	25.0
	\$50,000 - \$69,999, %	27.7	30.0	11.8
	\$70,000 - \$89,999, %	23.3	16.3	21.1
	\$90,000 - \$109,999, %	5.5	10.0	15.8
	> \$110,000, %	6.8	16.3	19.7
Type of Workplace	Outside home at one location, %	63.2	65.9	50.6
	From home, %	3.9	4.9	7.6
	Outside home at more than one location, %	19.7	11.0	22.8
	Not employed, %	13.2	18.3	19.0
Length of Residency in the Community	Less than 1 year, %	3.9	1.2	0.0
	1 to 2 years, %	11.8	0.0	5.1
	Between 2 and 5 years, %	21.1	14.6	13.9
	5 to 10 years, %	22.4	31.7	16.5
	Over 10 years, %	40.8	52.4	64.6

Source: Compiled by author

CSDs for this variable (Table 6.3). Only in the case of shopping trips, the purpose of which was purchasing large appliances and furniture, was the CMA centre indicated as the most common destination by the majority of respondents (72 percent).

In short, daily activity spaces of households residing in Subdivision C of Halifax County were most likely to be oriented toward the core area of the Halifax CMA ; however, the proportion of those who conducted their daily activities within the CSD of their residence was the highest among the three rural-urban fringe areas. Activities assumed to be undertaken on a weekly basis, with the exception of eating out, were most likely to be conducted within the CSD of the residence. In the case of the location of a favourite restaurant, about 39 percent of the respondents indicated locations within Halifax, Subdivision C, compared to 49 percent giving a location within the core area of the CMA. Activities assumed to be undertaken on a monthly basis or less frequently could take place either mostly within the CSD of residence or in the CMA core. However, the proportion of households that rely on the CMA core for satisfying these needs is considerably lower compared to those of the other two rural-urban fringe areas, and is close to the proportion of households that undertake these activities within the CSD of residence. In fact, among the three rural-urban fringe CSDs, Halifax, Subdivision C had the highest proportion of households that conducted all of the analysed activities within the CSD of residence (Table 6.3).

Activity spaces of households residing in Subdivision C of Halifax County most commonly extended as far as other provinces (Table 6.2), with about 47 percent of the respondents indicating locations within Canada as the most distant place they have

visited within the past year (Table 6.3). The most common reason given for taking the trip was visiting family or relatives (40 percent), followed by vacation (33 percent) (Table 6.3).

The town of East Gwillimbury stands out among the three rural-urban fringe CSDs because the activity spaces of its residents were overwhelmingly directed toward the neighbouring town of Newmarket, a rural-urban fringe area of the second type. However, the proportion of respondents indicating other rural-urban fringe areas as the locations of their places of work was the lowest among all of the analysed activities, about 59 percent (Table 6.3). For all other activities, the proportion of respondents giving another rural-urban fringe area as the location where an activity was conducted was, in most cases, well above 60 percent. It is interesting to note that very few respondents residing in East Gwillimbury indicated the core of Toronto CMA as a location of any of the analysed activities. The only exception was the primary place of work, for which 21 percent of the respondents gave locations within the CMA core.

For East Gwillimbury, the frequency distribution of responses to the question about the maximum extent of the activity spaces produced a less clear pattern than in the other two rural-urban fringe areas. The most common response, indicating places within the province of Ontario as the most distant place they have visited within the past year, comprised only 38 percent of total responses. The next largest group of responses (22 percent) indicated places in the USA as the maximum extent of their activity spaces. The most common reason for taking the trip was vacation given by 63 percent of the respondents (Table 6.3).

6.2.1.2. Description of the Geographic Extent of Personal Networks of Individuals in Exemplar Census Subdivisions

Personal networks of the respondents residing in Stoneham-et-Tewkesbury had on average lesser volume and geographic range compared to those of residents in the two other rural-urban fringe CSDs (Table 6.2). This difference was more evident for the geographic extent of the overall networks that included both friends and relatives than for the volume of the overall networks. For all three rural-urban fringe CSDs, volume of personal networks of residents was around five of a maximum value of six. Residents of Stoneham-et-Tewkesbury not only had personal networks “tighter” in terms of their geographic extent, but also, when treated separately, their networks made up of either friends or relatives had almost an identical geographic range close to four (Table 6.2). On the other hand, for the residents of Halifax, Subdivision C and East Gwillimbury, networks made up of friends were spatially tighter compared to those made up of relatives. Of all the three rural-urban fringe areas, residents in the Subdivision C of Halifax Country on average tended to have the most spatially extensive personal networks. This was primarily because of the wider extent of the networks made up of relatives, whereas networks made up of friends were the tightest among the three CSDs.

The difference in the network volume and geographic range between Stoneham-et-Tewkesbury and the other two rural-urban fringe CSDs can probably be explained by a distinct francophone culture existing in the province of Québec and by the relative cultural and demographic isolation of this region from the rest of Canada. It is interesting to note that about 20 percent of all respondents from Stoneham-et-Tewkesbury explicitly indicated in their answers the equivalence of sets of friends and relatives, which was unique to this rural-urban fringe area.

Respondents from all three surveyed CSDs indicated their spouse or partner as the closest and strongest relationship in emotional terms within first order zones of their personal networks (Table 6.3). However, identification of a spouse or partner as the closest and strongest relationship was relatively more common for residents of Stoneham-et-Tewkesbury (76 percent of respondents) and least common for residents of East Gwillimbury (56 percent of all respondents), for whom a friend who is neither a neighbour nor a person with whom they worked was the second most common response to this question (21 percent of all respondents).

6.2.1.3 Description of the Socio-Demographic Characteristics of Survey

Respondents in Exemplar Census Subdivisions

Characteristics of respondents appear to be quite similar across all three rural-urban fringe areas (Table 6.2). In all three CSDs, the majority of residents who responded to the survey were male, married, or living in a common-law relationship, had no children under 18 living in the same household, had only one primary place of work, and had lived in the community of residence for more than ten years.

Comparison between characteristics of respondents collected in the survey and statistical profiles of respective census subdivisions (Statistics Canada 2003a, c, and d) showed that, except for Stoneham-et-Tewkesbury, the age group between 45 and 64 years was overrepresented, the age group between 25 and 44 years was underrepresented, and younger ages were not represented at all in the collected samples (Table 6.4). Participation of males and females in the survey mostly reflected the proportion of males and females in the populations of the respective CSDs with the exception of Subdivision C of Halifax County, where males were more likely to

Table 6.4. Comparison between Data Collected via Mail Survey and Data from Statistics Canada Community Profiles

Source: Compiled by author

		CSD					
		Stoneham-et-Tewkesbury		Halifax Subdivision C		East Gwillimbury	
		Survey	Profile	Survey	Profile	Survey	Profile
Age		0.0	31.2	0.0	35.7	0.0	34.6
	25-44, %	53.9	34.9	36.6	34.5	38.0	29.7
	45-64, %	40.8	26.8	53.7	24.0	51.9	26.9
	65 and older, %	5.3	7.0	9.8	5.7	10.1	8.8
Gender	Male, %	65.8	52.6	62.2	49.4	58.2	50.7
	Female, %	34.2	47.3	37.8	50.7	41.8	49.3
Marital status	Single, %	5.3	35.5	0.0	20.8	7.6	20.9
	Married/living common law, %	80.3	53.0	91.4	51.1	79.7	52.7
	Divorced/separated, %	13.2	8.2	6.2	4.6	6.3	4.4
	Widowed, %	1.3	2.6	2.5	2.6	6.3	3.0
Children Under 18 at Home ¹	None, %	54.7	–	58.5	--	57.7	--
	1 child, %	17.3	–	15.0	--	15.4	--
	2 to 3 children, %	25.3	–	23.8	--	24.2	--
	4 or more children, %	2.7	–	2.5	--	2.6	--
Median Household Income, \$		50,000 - 69,999	47,682	50,000 - 69,999	58,344	70,000 - 89,999	76,099
Type of Workplace ²	Outside home at one location, %	63.2	41.9	65.9	44.3	50.6	44.8
	From home, %	3.9	2.7	4.9	2.8	7.6	5.7
	Outside home at more than one location, %	19.7	5.1	11.0	5.1	22.8	6.4
	Not employed, %	13.2	–	18.3	--	19.0	--

¹ Not available from Community Profiles (Statistics Canada 2003a, c, and d)

² This variable does not have a direct equivalent in Community Profiles (Statistics Canada 2003a, c, and d)

respond although they constituted a smaller proportion of the CSD's population compared to that of females. With the exception of singles, who were underrepresented, family status options were represented in the survey samples fairly well. It was not possible to relate *the number of children under 18 living in the same household* variable in the survey samples to the Statistics Canada data, as this variable is not included into the community profiles.

Although the majority of respondents indicated that they had no children age 18 or younger living in the same household, the proportion of such responses was somewhat smaller in Stoneham-et-Tewkesbury compared to that of the other two rural-urban fringe CSDs (Table 6.3). Place of work status frequencies generally followed the distribution in the community profiles, with the majority being those who were employed, working at one primary location (Table 6.4). The *not employed* category of the *place of work* variable collected in the survey combined responses from several categories used by Statistics Canada (such as *not in the labour force* and *unemployed*) to describe labour force and therefore could not be directly compared to any of the variables in the community profiles.

The *income* variable collected in the survey presented confusing information. In only one out of three communities, Halifax, Subdivision C, was the household income indicated by a majority of respondents close to the median household income for the CSD given by Statistics Canada in the respective community profile (Tables 6.2 and 6.3). Median income calculated for Stoneham-et-Tewkesbury based on the survey responses was above the figure given in the community profile, and the majority of respondents in East Gwillimbury indicated household incomes well below both the median household income figure given by Statistics Canada in the community profile

and the median calculated based on survey responses. The majority of the respondents in all three communities stated that they had resided in the area for over ten years (Table 6.2). However, this response was the highest in East Gwillimbury (65 percent) and the lowest in Stoneham-et-Tewkesbury (41 percent), where the majority of the population had actually been living in the area for ten years or less at the time of the survey.

It should be noted that collecting characteristics of the respondents was secondary to the main objectives of the survey and that this stage of the research in general was primarily concerned with the spatial extent of personal networks of individuals and activity spaces of households within the three exemplar rural-urban fringe CSDs as a means to investigate their roles within their associated metropolises. These variables were included in the survey to provide data on factors that have been shown to have an effect on the spatial extent of personal networks and activity spaces (Buttimer 1980; Eulau, Rothenberg 1986). These data allowed assessing the influence they could have on spatial characteristics of activity spaces of households and personal networks of individuals of the exemplar rural-urban fringe CSDs compared to the cluster membership of those CSDs according to the constructed typology.

6.2.2. Significance of the Collected Variables for Between-Group Differences

The significance of each of the collected variables (Table 6.2) for the overall between-group differences was determined by running crosstabulations of the cluster first stage of the research, with membership determined for the three exemplar rural-urban fringe CSDs as a result of variables describing activity spaces of households and personal networks of residents of these CSDs using a Goodman and Kruskal's lambda

Table 6.5. Results of Crosstabulation Analysis with Cluster Membership as Dependent Variable
Source: Compiled by author

		Goodman -Kruskal's lambda	Approx. signi ficance
Activity Spaces	WORKPLACE	0.339	0.000*
	BANKING	0.545	0.000*
	GROCERIES	0.645	0.000*
	RESTAURANT	0.475	0.000*
	CLOTHING	0.623	0.000*
	FURNITURE	0.517	0.000*
	GARAGE	0.375	0.000*
	DOCTOR	0.434	0.000*
	MAXIMUM EXTENT	0.172	0.000*
	PURPOSE OF TRAVEL TO MOST DISTANT PLACE	0.161	0.013*
	FREQUENCY OF LEISURE TRIPS	0.136	0.046*
Personal Networks	RANGE OF NETWORK OF RELATIVES	0.258	0.001*
	RANGE OF NETWORK OF FRIENDS	0.316	0.000*
	VOLUME	0.077	0.032*
	OVERALL RANGE	0.310	0.000*
	THE STRONGEST RELATONSHIP	0.085	0.078
Characteristics of Respondents and Households	AGE	0.071	0.190
	GENDER	0.013	0.803
	MARITAL STATUS	0.090	0.007
	NUMBER OF CHILDREN AT HOME	0.007	0.903
	TYPE OF WORKPLACE	0.71	0.069
	LENGTH OF RESIDENCY	0.148	0.046*
	HOUSEHOLD INCOME	0.114	0.133

* Significant at $\alpha = 0.05$

statistic. A possible range of values for this statistic is between 0 and 1. A value of 0 means that the independent variable (in this case one of the variables describing activity spaces and personal networks) could not be used for predicting values of the dependent variable (cluster membership); a value of 1 variable (Bridge 1995: 274).

Crosstabulation results presented in Table 6.5 show that, among the three groups of variables, variables describing activity spaces of households and variables describing spatial extent of personal networks of residents had a statistically significant association with the cluster membership. With the exception of *length of residency*, variables describing characteristics of the respondents did not show a statistically significant association with the cluster membership. The *length of residency* variable showed a statistically significant but weak association ($\lambda = 0.148$). Based on the lambda values, variables describing spatial extent of activity spaces of the households were much more strongly associated with the cluster membership than were the aspatial variables in this group (i.e., purpose of travel to the most distant place and frequency of leisure trips). In fact, these variables had the strongest statistically significant association with the cluster membership among all variables included in the analysis. Association between the variables describing spatial extents of the personal networks of individuals residing in the exemplar rural-urban fringe areas and cluster membership was a good deal weaker, with lambda reaching the maximum value of 0.316 compared to 0.645 for the first group of variables.

To assess the influence that socio-demographic attributes of respondents and their households could have on the characteristics of activity spaces of households and personal networks, variables describing characteristics of the respondents and their

Table 6.6a. Kolmogorov-Smirnov Comparisons between Stoneham-et-Tewkesbury and Halifax, Subdivision C¹

Source: Compiled by author

		Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Activity Spaces	WORKPLACE	0.910	0.391
	BANKING	1.655	0.008
	GROCERIES	2.898	0.000
	RESTAURANT	2.060	0.000
	CLOTHING	3.474	0.000
	FURNITURE	1.683	0.007
	GARAGE	1.264	0.082
	DOCTOR	1.995	0.001
	MAXIMUM EXTENT	1.755	0.004
	PURPOSE OF TRAVEL TO MOST DISTANT PLACE	0.801	0.543
	FREQUENCY OF LEISURE TRIPS	0.934	0.348
Personal Networks	RANGE OF NETWORK OF RELATIVES	1.967	0.001
	RANGE OF NETWORK OF FRIENDS	1.941	0.001
	VOLUME	0.899	0.394
	OVERALL RANGE	1.207	0.108
	THE STRONGEST RELATONSHIP	0.330	1.000
Characteristics of Respondents and Households	AGE	1.090	0.185
	GENDER	0.226	1.000
	MARITAL STATUS	0.365	0.999
	NUMBER OF CHILDREN AT HOME	0.254	1.000
	TYPE OF WORKPLACE	0.322	1.000
	HOUSEHOLD INCOME	0.860	0.450
	LENGTH OF RESIDENCY	1.318	0.062

¹ Variables with significance $\alpha=0.05$ and higher are shown in bold.

Table 6.6b. Kolmogorov-Smirnov Comparisons between Halifax, Subdivision C and East Gwillimbury¹

Source: Compiled by author

		Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Activity Spaces	WORKPLACE	2.369	0.000
	BANKING	3.580	0.000
	GROCERIES	4.826	0.000
	RESTAURANT	2.417	0.000
	CLOTHING	2.643	0.000
	FURNITURE	4.193	0.000
	GARAGE	2.661	0.000
	DOCTOR	2.284	0.000
	MAXIMUM EXTENT	1.263	0.082
	PURPOSE OF TRAVEL TO MOST DISTANT PLACE	1.631	0.010
	FREQUENCY OF LEISURE TRIPS	1.252	0.087
Personal Networks	RANGE OF NETWORK OF RELATIVES	0.976	0.296
	RANGE OF NETWORK OF FRIENDS	1.741	0.005
	VOLUME	0.152	1.000
	OVERALL RANGE	0.922	0.363
	THE STRONGEST RELATONSHIP	0.905	0.385
	AGE	0.088	1.000
Characteristics of Respondents and Households	GENDER	0.252	1.000
	MARITAL STATUS	0.480	0.975
	NUMBER OF CHILDREN AT HOME	0.066	1.000
	TYPE OF WORKPLACE	0.965	0.309
	HOUSEHOLD INCOME	0.879	0.422
	LENGTH OF RESIDENCY	0.769	0.596

¹ Variables with significance $\alpha=0.05$ and higher are shown in bold.

Table 6.6c. Kolmogorov-Smirnov Comparisons between Stoneham-et-Tewkesbury and East Gwillimbury¹

Source: Compiled by author

		Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Activity Spaces	WORKPLACE	3.226	0.000
	BANKING	3.068	0.000
	GROCERIES	3.164	0.000
	RESTAURANT	4.433	0.000
	CLOTHING	6.043	0.000
	FURNITURE	5.734	0.000
	GARAGE	3.910	0.000
	DOCTOR	3.273	0.000
	MAXIMUM EXTENT	0.590	0.877
	PURPOSE OF TRAVEL TO MOST DISTANT PLACE	0.812	0.525
Personal Networks	FREQUENCY OF LEISURE TRIPS	0.522	0.948
	RANGE OF NETWORK OF RELATIVES	1.252	0.087
	RANGE OF NETWORK OF FRIENDS	1.255	0.086
	VOLUME	0.916	0.371
	OVERALL RANGE	1.010	0.260
	THE STRONGEST RELATONSHIP	1.211	0.106
Characteristics of Respondents and Households	AGE	0.994	0.276
	GENDER	0.471	0.980
	MARITAL STATUS	0.312	1.000
	NUMBER OF CHILDREN AT HOME	0.187	1.000
	TYPE OF WORKPLACE	0.780	0.578
	HOUSEHOLD INCOME	1.416	0.036
	LENGTH OF RESIDENCY	1.479	0.025

¹ Variables with significance $\alpha=0.05$ and higher are shown in bold.

households were crosstabulated separately as independent with the rest of the variables in the data set as dependent. Results of these crosstabulations showed little association between variables describing activity spaces of households and personal networks of residents and socio-demographic characteristics of the respondents and their households across the three exemplar rural-urban fringe CSDs. In a few instances, when statistically significant associations were detected, for example between location of a place where respondents conducted their banking and income of their households, the strength of the relationship between the two variables was much weaker than in that case of the relationship between the respective variable and cluster membership ($\lambda = 0.143$ and $\lambda = 0.545$ respectively). Only the relationship between the maximum extent of the activity spaces and household income had statistical strength comparable to the strength of the relationship between the former variable and cluster membership ($\lambda = 0.130$ versus $\lambda = 0.161$).

Kolmogorov-Smirnov tests for two independent samples performed on groups of cases for each of the three CSDs in order to assess the differences between individual samples on a variable-by-variable basis, confirmed that variables describing activity spaces of households had a stronger association with cluster membership than did variables describing spatial extent of personal networks (Tables 6.6a, b and c). The most consistent difference between the samples was in the spatial configuration of weekly and monthly activity spaces of households. Comparison of the location of the primary place of work in relation to the location of households, which served as an indicator of the configuration of daily activity spaces, showed that it was statistically significantly different only between East Gwillimbury and the other two rural-urban fringe CSDs. The location of a garage where the respondents commonly took their vehicle for service,

which was part of a group of variables describing monthly or more temporarily extended activity spaces, was not statistically significantly different for respondents from Stoneham-et-Tewkesbury and those from Halifax, Subdivision C. The maximum extent of activity spaces of households was significantly different between Stoneham-et-Tewkesbury and Halifax, Subdivision C; and the purpose for travel to most distant place during the past year was significantly different between East Gwillimbury and Halifax, Subdivision C.

The configuration and spatial extent of personal networks of residents was not consistently important for differences between the samples (Tables 6.6a, b, and c). Certain characteristics of personal networks, such as the range of networks of relatives and range of networks of friends, differed significantly only between Stoneham-et-Tewkesbury and Halifax, Subdivision C. The range of networks of friends was statistically significant as a difference between East Gwillimbury and Halifax, Subdivision C. Finally, two characteristics of respondents and their households, household income and length of residency, were significantly different between Stoneham-et-Tewkesbury and East-Gwillimbury (Tables 6.6b and c).

6.3. Test of the Ability of the Variables Significant for Between-Group

Differences to Predict Cluster Membership of Cases

A second purpose of this stage of the research was to validate the typology of the rural-urban fringe areas obtained at the first stage by demonstrating that, based on the data collected on activity spaces of households and personal networks of individuals residing in the exemplar CSDs, it is possible to predict a type of a rural-urban fringe CSD. Multinomial logistics regression, a non-parametric equivalent of discriminant

analysis, was used to test the ability of a combination of the variables, which showed significant association with the rural-urban fringe area type in the crosstabulation analysis, to predict group membership of cases. Specifically, variables describing configuration of activity spaces and spatial extent of personal networks, means of which were significantly different across the three groups and for which values of lambda were equal or exceeded 0.3, were included into the model used to predict cluster membership in SPSS. Results of the multinomial logistic regression analysis showed that, using a combination of these variables, it is possible to predict cluster membership of the cases fairly accurately. The model significantly outperformed the null model¹ in predictive power at a confidence level of $\alpha = 0.05$. SPSS calculates two statistics to assess the goodness-of-fit of a multinomial logistic regression model — the Pearson correlation coefficient and deviance statistics. Both of these statistics showed that the constructed model adequately fits the data. Depending upon the measure used, the model accounted for between 60 percent (McFadden pseudo- R^2) and 80 percent (Nagelkerke pseudo- R^2) variation in the data set.

6.4 Discussion

Results of this stage of the research demonstrate that the extent of differences in social structure between the three exemplar CSDs is sufficiently significant to validate their membership in different groups of rural-urban fringe areas, thereby validating the typology of the rural-urban fringe areas created at the first stage. Configuration of activity spaces of households and spatial extent and volume of personal networks of individuals appeared to be the most important predictors of the type of a rural-urban

¹ A model in which all the parameter coefficients are 0.

fringe area at the local (sub-regional) scale. Of these two groups of characteristics, variables describing configuration of activity spaces of the households had a much stronger association with the cluster membership than did those describing the spatial extent and volume of the networks of individuals. Particularly, the most consistent difference between the three CSDs was in spatial configuration of weekly and monthly activity spaces of households. Greater relative importance of the structure of activity spaces of households for predicting rural-urban fringe area types is not accidental, as it can be related directly to overall urban form and structure of the metropolitan area (Friedmann, Miller 1965; Coppack 1988b). Spatial extent and volume of personal networks, although providing useful information about the social structure of an area, are influenced more by the broader social, cultural, and spatial factors, such as the level of urbanization of society, the level of technological development in society, and availability of technological innovation to various social groups within it (Tindall, Wellman 2001), and therefore tend to be more similar across metropolitan areas. Given this, it is interesting to note that residents of Stoneham-et-Tewkesbury on average tended to have personal networks tighter than those of residents of the other two exemplar CSDs. This seems to confirm the existence of a distinct francophone culture in Canada and persistence of its relative isolation from the rest of the country (Porter 1967; Bibby 1990; Germain, Rose 2000).

Configuration of the activity spaces of households in all three exemplar rural-urban fringe areas suggests the existence of strong links between fringes of each of the three types and respective urban cores. The Town of East Gwillimbury, a CSD exemplar of the rural-urban fringe areas of the third type, which exhibited strong links with the adjacent rural-urban fringe CSD of the second type, seems to differ from this trend.

However, this difference may be explained by the fact that East Gwillimbury is located in the outer fringe area of the Toronto CMA. It is reasonable to expect that rural-urban fringe areas of this type, located around low-order urban cores, would exhibit “centripetal” links with urban cores similar to those of the areas in the two other groups. The most important finding here is the absence of “lateral” links between fringe CSDs of the same type, which suggests persistence of centrality and monocentricity in the form and structure of Canadian metropolitan areas.

In the introductory chapter, two main propositions about postmodern urban form and structure were identified based on the review of the concepts and models describing them. It was suggested that these theoretical constructs could be loosely divided into two groups — those that emphasize deconcentration and decentralization of urban functions across space (e.g., the urban field model, the regional city model, and the dispersed city model) and those that emphasize polycentricity of the late twentieth century urban development (e.g., the multiple nuclei model, the urban realms model, and the galactic city concept). Hence, deconcentration and decentralization together with polycentricity could be taken as benchmark characteristics of urban form and structure against which cities could be evaluated with regards to their “postmodernity”.

Results of this research suggest that, out of the three identified types of rural-urban fringe areas, only census subdivisions comprising the second group, which has the smallest membership of the three, show some characteristics of postmodern urban development, including a certain degree of self-sufficiency and independence from their respective urban cores. This independence is mostly related to deconcentration of functions that serve the basics of social reproduction (e.g., grocery stores, banks, health

centres) rather than economic development of those areas, as the configuration of household activity spaces suggests.

Rural-urban fringe areas of this type are mostly associated with urban cores of cities occupying the upper level of the Canadian urban hierarchy. However, position of a city in the urban hierarchy alone cannot be used as a predictor of the degree of postmodernity of urban form and structure. For example, the Montréal CMA, the second largest metropolis in Canada, comparatively to Toronto has significantly fewer rural-urban fringe areas of the urban-realm type and therefore, a structure more centered on urban core (Figures 5.1a, b, and c). On the other hand, the Victoria CMA and the Ottawa CMA, metropolitan areas that occupy lower levels in the Canadian urban hierarchy, have inner fringes made almost completely of rural-urban fringe areas of this type.

This suggests importance of regional and local contexts as dimensions of variation in urban form and structure. Although the majority of rural-urban fringe areas of the second type are found in southern Ontario and southern Québec, together constituting a core region of the country, clusters of these areas are found around urban cores in some other regions (Figures 5.1a, b, and c). Inner fringe areas of the two largest metropolitan areas in southern British Columbia — Vancouver and Victoria — are comprised of the CSDs belonging to the second group. In Atlantic Canada, a significant portion of the fringe around Halifax and Dartmouth consists of the urban-realm type areas. One of the possible explanations of the presence of postmodern elements in the form and structure of metropolitan areas in southern British Columbia could be the beginning of a socio-economic realignment within Canadian urban space similar to the Frostbelt-Sunbelt shift in the United States (Gottdiener 1985; Scott 1988). However, further investigation of this phenomenon is required in order to reach any definitive conclusions.

The case of Halifax provides strong evidence of the importance of the local context for urban development. Although Halifax has a population of about 330,000 (Statistics Canada 2003b) and is located in one of the hinterland regions of Canada, its rural-urban fringe almost exclusively consists of areas with structure close to the urban realms model. This could be explained in part by the fact that, notwithstanding the general downturn in economic development in the Atlantic provinces, large urban centres were in a better position to benefit from the federal regional economic development assistance than were smaller urban centres and rural areas. Several factors could be cited in an attempt to explain why the Halifax CMA enjoyed the greatest economic success among cities in Atlantic Canada. One of the possible explanations is that the Halifax CMA is the largest centre in the Maritimes region and, therefore, its economy simply possesses enough resilience and scope to withstand restructuring. The fate of other large cities located in the resource- and manufacturing-oriented regions in Canada as well as in the United States, however, suggests that there should be other factors at work. It could be suggested that the ability of the municipal governments in the region to adopt a region-wide approach to planning and management of urban development, which is advocated by some researchers as more efficient in terms of resource allocation (Leo 2002), may have boosted the economic and social climates of the metropolitan area.

The two other types of rural-urban fringe areas conform more to the concept of the rural-urban fringe predicated on a monocentric urban form and structure. However, socio-economic characteristics of these areas reveal principal differences in the possible reasons for their dependencies on the respective urban cores. In the case of rural-urban fringe areas of the first type that are found almost exclusively in the Atlantic region and

the province of Québec, this dependency seems to be produced by recent restructuring in the primary and manufacturing sectors that constituted the economic foundations of these regions for the first half of the twentieth century.

Finally, about one-third of all rural-urban fringe areas in Canada belong to the type that corresponds closely to the traditional definition of rural-urban fringe as an area “of transition between well recognized urban land uses and the area devoted to agriculture” (Wehrwein 1942). Their dependence on either urban core areas, if they are located around low-order urban cores, or fringe areas of the second type, if they are located in the outer fringes of the higher-order urban cores, reflects their lower degree of urbanization. In the Prairie provinces and most of British Columbia, regions with economies organized around agriculture and resource extraction and levels of urbanization lower than those in the core region of Canada, fringes of metropolitan areas are exclusively made up by census subdivisions of this type, which suggests that these metropolitan areas might still retain a monocentric structure characteristic of modern urban development.

CHAPTER 7: CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH

7.1. Conclusions

Summarizing urban form and structure in the form of models is a helpful and even necessary exercise that allows one to recognize general trends in the process of urban change. Theoretical constructs such as the urban field or edge city serve as shorthand, iconic representations of reality, easily recognized and understood by audiences with varied levels of knowledge of urban geography. Probably because of this it is often forgotten that no matter how sophisticated a model is, it remains a simplified, scaled-down subjective representation of real-world phenomena. Consequently, theoretical constructs are often applied with no regard for their “interval of confidence”, i.e., the limits of their application.

The process of urban development takes place in a contextual environment and under local conditions that are neither uniform nor consistent (Bourne 1996a). In this regard, Vance (1964:2) aptly noted that: “It may be argued ... that there are certain general processes operating to create generalized structures for cities. Such an argument is valid but incomplete. There are also differences in the impact of the various processes, and occasionally there are peculiar processes not found elsewhere.” Although North American cities share many common features that set them apart from cities in Europe or Australia, “national differences remain important” despite the homogenizing impacts

of globalization (Bourne 1999: 189; also Mercer 1999; Coffey 1994; Coffey, Shearmur 2001). In a 1996 presidential address to the annual meeting of the Canadian Association of Geographers, Larry Bourne noted that in the Canadian urban context the constructs used to generate images of urban Canada historically have been and still “are often provided from ‘elsewhere’ — largely from outside of the discipline of geography and from outside of the country” (Bourne 1996b: 4). He observed that during much of the twentieth century, the dominant images and research styles originating from the United States have often been applied uncritically as points of reference in Canadian urban geography.

This research suggests that models of postmodern urban form and structure, which have developed in the context of the recent socio-economic restructuring taking place in the United States, do not adequately describe the situation in Canada. This critique has been expressed in the Canadian urban geographic literature for some time (Goldberg, Mercer 1986; Linteau 1987; Rose, Villeneuve 1993; Coffey 1994; Rose 1996; Bourne 1999; Mercer 1999; Mercer, England 2000). However, in most cases these observations documenting the uniqueness of Canadian urban process were made with regard to specific features of this process, such as the differences in the degree and nature of gentrification in Canadian and American cities or edge city development. Results of this research suggest that while the current context of urban development in Canada shows certain similarities to that in the United States, i.e., socio-economic polarization as a result of restructuring and changes in family and household composition, it also exhibits some unique features that have important implications for the urban development. For example, being a member of a visible minority is traditionally strongly associated with low-socio economic status in American metropolitan areas (Massey, Denton 1989;

Moore, Laramore 1990; Jargowsky 1996); however, this association does not necessary hold for metropolitan areas in Canada, where, as the results of the analysis at the first stage suggest, membership in this population group is associated with high socio-economic status, at least up until 1996 and at the level of census subdivision. In the Canadian context, Aboriginal ethnicity could be considered as a predictor of low socio-economic status for urban population.

The results of this research suggest that variation in urban form and structure in Canada appears to follow two axes — the regional location of metropolitan areas and their position within the national urban hierarchy. Metropolitan areas that are found at the top of the urban hierarchy are more likely to have rural-urban fringe areas of the urban-realm type. At the same time, the majority of rural-urban fringe areas that have elements of post-modern form and structure were found in the region that has historically been the economic and political core of Canada.

This research suggests that in Canada, influence of the socio-economic context on urban development, particularly on the social structure of rural-urban fringes, the roles they have in the internal structure of metropolitan areas, and their relationships with urban cores, can be observed at two spatial scales — regional and local. Interaction between the historic economic, political, social, and cultural situations in Québec and the Atlantic provinces and more recent socio-economic changes related to restructuring and globalisation have resulted in the rural-urban fringes of the cities located in these two regions being highly dependent on the corresponding urban core areas. In other words, metropolitan areas in Québec and the Atlantic provinces by and large tend to exhibit a monocentric structure regardless of their position in the urban hierarchy. For example, Montréal, located in the province of Québec and the second largest metropolis in

Canada, should be expected to have a structure similar to that of Toronto, which also occupies a position at the top of the Canadian urban hierarchy. However, compared to Toronto, Montréal has significantly fewer rural-urban fringe areas of the urban-realm type, and its structure is more centered on the historic urban core.

The case of Halifax provides strong evidence of the importance of the local context for urban development. Although Halifax has a population of about 330,000 (Statistics Canada 2003b) and is located in one of the hinterland regions of Canada, its rural-urban fringe almost exclusively consists of areas with structure more similar to the urban realms model. Although it is hard to give an exhaustive explanation of this phenomenon without more research into the matter, several possible interrelated factors can be suggested. Because the Halifax CMA is the largest urban centre in Atlantic Canada, it is in the strongest position in economic and institutional terms to benefit from the regional economic development assistance that has been extended to the region for several decades by the federal government. It also appears that this CMA possesses a unique political and social context that, among other things, manifested itself in the ability of the municipal governments in the region to adopt a region-wide approach to development planning and management. Presently, the Halifax CMA is the only metropolitan area in Canada that has adopted a regional form of municipal government within its territory (Sancton 2002).

Finally, results of this research highlighted one of the characteristic features of Canadian metropolitan areas that is often overlooked in urban geographic literature, i.e., the presence of Indian reserves in their fringes (Peters 2001). The rural-urban fringe typology developed at the first stage of the analysis has yielded six distinctive groups of these areas, three of which comprised exclusively Indian reserves. Residents of

Aboriginal communities in Canada are widely considered to have a significantly lower standard of living compared to the rest of the Canadian population (Levitte 2003: 58), which is often portrayed as a condition uniform across all Canadian Aboriginal population (Drost et al. 1995). Although communities in these three groups shared several characteristics and generally appeared to be economically and socially disadvantaged, the differences among these areas were sufficient to allow them to be grouped separately. Moreover, the three clusters contained 59 percent of all the Indian reserves in the data set, while the rest were grouped with economically and socially better-off “mainstream” rural-urban fringe areas. Therefore, notwithstanding much similarity in historic and cultural context, results of this research suggest that recent socio-economic changes have had different impacts on Canadian Aboriginal communities found within metropolitan boundaries. Not only do they seem to experience different degrees of economic and social disadvantage, but some of these Aboriginal communities also have economic and social characteristics quite similar to those of the surrounding non-Aboriginal communities.

7.2 Theoretical and Methodological Contributions

One of the main theoretical contributions of this research to the body of urban geography is an attempt to link the models describing postmodern urban form and structure found in the North American geographic literature with the theoretical contributions dealing with factors and forces of urban development. It has been argued elsewhere that postmodern urban development represents a stage in the broader process of urban development under capitalism, which is a complex process with a multitude of factors affecting and influencing its course in space and history. Emergent postmodern

urban form and structure have been traced to the recent socio-economic, political, and cultural changes summarized variously as “post-industrial society,” “shift in the regime of capital accumulation,” “globalization,” and “restructuring.” The original argument of this research is that the spatial patterns of this development can be analysed utilizing two organising themes — unevenness and contextuality. Essentially, it was argued that patterns of urban development found in space will not conform to any single model or construct due to the variation in the national, regional, and local contexts wherein this development takes place. Context of urban development can be conceptualised in several ways. Propositions of structuration theory (Giddens 1976, 1981, 1984) underscore the role of human agency as a contextual factor, whereas contributions by Pred (1984) and Massey (1984) point to the significance of the history and geography of places for the local outcomes of broad structuring processes. Consequently, a framework suggested for the analysis of the spatial patterns of postmodern urban development in Canada considers the interaction between broad structuring processes, summarised as globalization and restructuring, local agency, and the nature of the local areas, i.e., various aspects of their geography and history.

Another original theoretical contribution of this research is placing the development of rural-urban fringes into the context of a more general process of urban development. Not only did this allow for the use of an approach that defined and delimited rural-urban fringe areas independent of a particular time or place, but it also allowed for the examination of changes in the form and structure of the rural-urban fringe areas as a tool to distinguish between modern and postmodern urban development and to “geolocate” postmodern urban development within national urban space of Canada.

Developing and employing a two-stage research methodology that allowed for data truncation necessary to address the spatial patterns within Canadian urban space constitutes the main methodological contribution of this research. The first stage of the analysis based on the modified factorial ecology approach provided a link between the literature on factors of postmodern urban development reviewed in chapter 3 and the models and concepts describing postmodern urban form and structure. Factorial ecology has been viewed by many researchers as essentially a statistical technique introduced into human geography during the quantitative revolution and therefore, as other statistical techniques, inevitably grounded in the positivistic approach to the discipline. However, the main assumption on which factorial ecology has been founded (Timms 1971), which is that the social structure of a city cannot be understood in isolation but rather should be considered in the context of the society as a whole, provides a possibility for a link to a broader social theory via such concepts as social differentiation, residential differentiation, and the division of labour. In several urban geographic studies, factorial ecology as a method of analysis was informed by the propositions of such broad theoretical approaches to human geography as structuralism, humanism (Murdie, Davies 1991), and structuration theory (Warf 1990).

In this research, investigation of the current patterns of differentiation of the urban social space in Canadian metropolitan areas at the first stage of the analysis was informed mostly by a structural approach and carried out by means of factorial ecology. In order to develop a typology of Canadian rural-urban fringe areas, this research combined factorial ecology with cluster analysis, following suggestions found in Davies and Murdie (1993). Integration of factor scores via cluster analysis significantly increased the utility of factorial ecology with regards to the identification and

interpretation of spatial patterns based on the interaction of a large number of factors at the national scale.

The second stage of the analysis was informed by propositions of structuration theory, specifically by “place-based structuration” (Pred 1984) and locality studies (Massey 1984), although it remained compositional with regards to the main focus of analysis. Although similar, the geographic extent of personal networks of individuals and the activity spaces of households, two elements of the social structure of the selected rural-urban fringe areas that were investigated at this stage, are conceptually distinct from the concepts of time geography incorporated into the place-based structuration framework. The extent of personal networks of individuals and the activity spaces of households could be seen as indicators allowing for assessment of functional relationships existing between urban fringe and urban core areas. The importance of these relationships for the postmodern urban form was discussed in chapter 2. The socio-economic, political, and cultural aspects of the context at the regional and local scales were described in general terms and used in the analysis and interpretation of the social structure of exemplar rural-urban fringe areas.

7.3. Methodological Issues and Limitations

The objectives set out for this research warranted analysis that was exploratory and compositional in nature. Its main aim was to provide a “big picture” that would contribute to an understanding of current trends in Canadian urban development and of the factors that influence this development. Consequently, this research was focused on broad economic, political, social, and demographic processes and spatial patterns of

urban development that could be observed at the national and regional scales. This approach has its advantages as well as limitations.

One of the main methodological limitations of this research is that, although their importance was acknowledged, the local context of current urban development was not investigated in much detail. Geographies and histories of the three exemplar rural-urban fringe areas were explored only briefly whereas local agency, the ways it interacts with broad structuring processes, and implications of this interaction for the urban process were left out of the analysis completely. Another methodological limitation inherent to the broad scale of analysis is that, instead of delimiting rural-urban fringe areas inductively following the multidimensional approach proposed in Chapter 2, a Statistics Canada's delimitations had to be applied. Statistics Canada defines and delimits rural-urban fringe areas in the context of the extended urban area concept. It constitutes the only delimitation method that is consistently applied to the census data across years and regions. This said, this approach to defining and delimiting urban fringe takes into account only population density and major commuter flows leaving out other important dimensions; particularly economic, cultural, political, and administrative characteristics of communities within metropolitan boundaries.

The choice of the CSD as the geographic unit of analysis could be considered as one of the more technical limitations of this research, producing a result in which the data used in the first stage of the analysis are fairly highly aggregated. It could be argued that this essentially limits any future interpretation and application of the results of this research to a broad spatial scale. However, considering that many EAs within CMA/CA boundaries have populations below the established threshold values specified by Statistics Canada for data disclosure and that the suppressed data are included in the

appropriate higher aggregate subtotals and totals (Statistics Canada 1999:357–8), there should not be a significant decrease in the validity of the results. It also needs to be mentioned that the census tract, a unit of geography commonly used in factorial ecology analyses (Davies, Murdie 1991, 1993, 1994; Driedger 1999), because of the balance between the level of aggregation and data disclosure it provides, did not satisfy the requirements of this analysis. Not all Canadian urban space is divided into census tracts. Also, validation of the rural-urban fringe typology produced at this stage by the results of the second stage of the analysis, which relied on data not related to the census of population, suggests that the data and methods employed at the first stage were sufficiently adequate for the objectives set.

For the second stage of the analysis, data were collected via a mailed survey, the sample for which was assembled using telephone directories. Although this method of obtaining household addresses is the one most commonly used in social and geographic research, it has some limitations (Newman, McNeil 1998). A sample assembled using a telephone directory underrepresents those who do not have telephones or prefer to withhold their numbers from public listings. In addition, as a data collection tool, the mailed survey has its own limitations, however thoroughly drafted and executed it might be (Dillman 1978, 1991). Various populations and groups perceive being contacted via mail differently, and that affects not only the response rate but also the type of responses a researcher might receive. For example, individuals whose situation is not favourable or is perceived by them as unfavourable due to financial, physical, or emotional reasons at the time of the contact would be less likely respond to the questioner. Some individuals respond better when contacted by other means, e.g., by telephone, or when the survey is presented using another medium, such as the Internet. In conducting this research, it was

found that residents of the rural-urban fringe area in the Halifax CMA seemed to respond more to the personal contact with the researcher than to a contact via mail alone, while those residing at the fringe of the Toronto CMA showed preference toward more impersonal means of contact such as mail and voice mail.

Comparison between characteristics of respondents collected in the survey and statistical profiles of the respective census subdivisions (Statistics Canada 2003a, c and d) showed that the survey samples deviated in their characteristics from the data obtained in the census of population. In all three exemplar rural-urban fringe areas, the average respondents were middle-aged males, married or living in a common-law relationship, with no children under 18 living in the same household, with only one primary place of work, and who had lived in the community of residence for more than ten years. It could be argued that because a certain group was overrepresented in the collected sample, the results of the second stage of the analysis may have questionable validity. Undoubtedly, among the objectives of this research, the effect the socio-economic context has on the social structure of rural-urban fringe areas, were only partially examined. At the same time, this does not affect the conclusions concerning the validity of the typology of the Canadian rural-urban fringe areas, as the variables describing characteristics of the respondents did not show a statistically significant association with the cluster membership of the exemplar rural-urban fringe CSDs.

7.4. Directions for Future Research

This research was first and foremost exploratory in its nature and its results should be treated as an invitation to further investigation into the subject of the patterns of

postmodern urban development in Canada and in North America rather than definitive findings in this area. Several possible directions for further research could be suggested.

The first stage of the analysis revealed the presence of Indian reserves as rural-urban fringe areas unique to Canadian cities. Although an obvious fact, the presence of Indian reserves at the fringes of Canadian metropolitan areas has received little attention in the urban geographic literature (Peters 2001). Moreover, results of this research suggested that, notwithstanding much similarity in their historic and cultural contexts, recent socio-economic changes have had different impacts on Canadian Aboriginal communities found within metropolitan boundaries. However, the scope of this analysis did not permit a detailed investigation of the identified groups of Indian reserves beyond this initial identification. It would be interesting to expand on these findings and to try to uncover the factors that influence the socio-economic trajectories of Aboriginal communities located within the rural-urban fringes of Canadian metropolitan areas. Such analysis could not only provide a valuable contribution to the knowledge about different development trajectories among Aboriginal communities but also could serve as an empirical application of the theoretical framework suggested in this research for the study of current patterns of urban development in Canada.

It was noted that patterns of urban development uncovered in this research are general rather than specific. Therefore, the question that remains unanswered is whether these patterns are “visible” only at the broad aggregated scale or whether they can be traced all the way back to the local scale. To answer this question, local context, which was defined in this research as comprising local agency and history and geography of areas, should be investigated in more detail. In particular, local institutions are important components of the local agency. They are often seen as playing a vital role in “the

articulation of localities within wider scale processes of economic transformation” (Henry, Pinch 2001: 1169). Local government could be seen as a local institution whose role is especially important with regards to “translating” global influences into tangible patterns inscribed in the landscape.

The role of local government in urban planning and development is quite significant in this regard¹. Although municipal governments in Canada generally lack political autonomy (Smart 1994) and are considered in that respect “creatures of provinces” (Tindal, Nobes Tindal 1995), this level of government possesses substantial socio-economic autonomy. Moreover, it has been argued that the current regime of fiscal austerity seems to provide local governments with “more autonomy over fewer resources” (Smart 1994: 568). Socio-economic autonomy of local governments is particularly evident with regards to control over urban planning and development. Municipal governments act directly to regulate the pace and character of urban growth without having to circumvent constitutional protection of individually vested real property rights, having been delegated the responsibility and authority to regulate land use and urban development by their respective provinces (Goldberg, Mercer 1986: 91-3). To control and manage urban development, they utilize a variety of measures such as zoning (Leo 2002), taxation and other fiscal instruments such as levies (Nowlan 1994), subdivision controls, servicing standards etc. Generally, the range and nature of control and planning measures used by local governments vary from province to province (Goldberg, Mercer 1986; Smart 1994). However, in addition to the formal, legal

¹ Local government includes not only municipalities *per se* but also other various local special purpose bodies (local boards) such as police commissions, health units, conservation authorities etc., which are very hard to precisely classify and number (Tindal, Nobes Tindal 1995: 2).

arrangements, the relationship between municipal and provincial governments is shaped by a number of other political and practical considerations (Tindal, Nobes Tindal 1995: 12).

Socio-economic autonomy is also expressed in that municipalities in Canada, and in North America in general, have always been and remain “entrepreneurial” by nature (Magnuson 1994:543-4). Historically, local governments had to operate within the market economy, responding to its pressures and opportunities. As a consequence, although, in compliance with provincial legislation, most municipalities do prepare a long-term comprehensive land use plans, once these plans are in place, they become open to changes resulting from negotiations between developers and city authorities (Leo 2002: 218-20). It is not a surprising situation “in a government system in which growth . . . translates into tax revenues” and “the ability to attract development affects a whole range of issues at the local level, the quality of services not least among them” (Smart 1994: 738).

As metropolitan areas usually comprise several independent municipalities, region-wide planning “is a thoroughly political [and contested] process and could not be otherwise” (Smith, Bayne 1994: 276). Municipalities at the fringe of metropolitan areas more often than not have vested interests in promoting urban development within their jurisdictions (Smith, Bayne 1994; Leo 2002). It has been argued that recent shifts in planning practices towards the increase in local autonomy and the turn to postmodernism in society in general considerably weaken the region-wide approach to urban planning which in Canada does not have permanent legislative foundation and is

often based on voluntary co-operation between the participating municipalities². In this situation, particular outcomes of planning and control of urban growth would depend upon the characteristics of, objectives set by, and power balance between the municipalities, and especially between local governments of rural and urban areas (Leo 1994; 2002). Specifically, form and structure of rural-urban fringes in part depends upon these factors as well as what particular level of government (provincial, local urban municipality, or local rural municipality) has the jurisdiction over the area defined as the fringe (Edmonton Metropolitan Regional Planning Commission 1991). For example, it has been observed that regional governments have more control over development at the fringes of their respective metropolitan areas and are able to exercise more strict planning measures (Leo 1994; 2002).

Study of the interaction between local political and administrative context and broad structuring processes, summarised as globalization and restructuring, may provide valuable insights into current spatial patterns of urban development. The concept of “institutional thickness” (Amin, Thrift 1995) could be used as a “bridge” between the two scales of analysis. Investigation of the Halifax CMA vis-à-vis other major cities in Atlantic Canada may provide an interesting opportunity for such a study.

² Although provinces can introduce legislation to establish an upper-tier metropolitan governments or amalgamate smaller municipalities into large metropolitan areas governed by single-tier governments (Sancton 2002).

APPENDIX A

List of Variables Initially Selected for Analysis at Stage 1¹

¹ Selection of variables was based on *Scott 1988; Negrey, Zickel 1994; Law, Wolch 1993; Badcock 1997*

Variable	Description
	<i>Demographic</i>
n3	Population percentage change, 1991–1996
n5	Males 0–9, 1996
c1	Males 0–9, population percentage change, 1991–1996
n6	Males 10–14, 1996
c2	Males 10–14, population percentage change, 1991–1996
n7	Males 15–24, 1996
c3	Males 15–24, population percentage change, 1991–1996
n8	Males 25–44, 1996
c4	Males 25–44, population percentage change, 1991–1996
n9	Males 45–64, 1996
c5	Males 45–64, population percentage change, 1991–1996
n10	Males 65+, 1996
c6	Males 65+, population percentage change, 1991–1996
n11	Females 0–9, 1996
c7	Females 0–9, population percentage change, 1991–1996
n12	Females 10–14, 1996
c8	Females 10–14, population percentage change, 1991–1996
n13	Females 15–24, 1996
c9	Females 15–24, population percentage change, 1991–1996
n14	Females 25–44, 1996
c10	Females 25–44, population percentage change, 1991–1996
n15	Females 45–64, 1996
c11	Females 45–64, population percentage change, 1991–1996
n16	Females 65+, 1996
c12	Females 65+, population percentage change, 1991–1996
n18	Number of non-family persons 65+ living alone, 1996
c14	Number of non-family persons 65+ living alone, percentage change, 1991–1996
n19	Movers, mobility status 1 year ago
n20	Intraprovincial migrants, mobility status 1 year ago
n21	Interprovincial migrants, mobility status 1 year ago
n22	Movers, mobility status 5 years ago, 1996
c15	Movers, mobility status 5 years ago, percentage change, 1991–1996
n23	Intraprovincial migrants, mobility status 5 years ago, 1996
c16	Intraprovincial migrants, mobility status 5 years ago, percentage change, 1991–1996
n24	Interprovincial migrants, mobility status 5 years ago, 1996
c17	Interprovincial migrants, mobility status 5 years ago, percentage change, 1991–1996

Variable	Description
	<i>Family</i>
n25	Never married (single), 1996
c18	Never married (single), percentage change, 1991–1996
n26	Legally married (and not separated), 1996
c19	Legally married (and not separated), percentage change, 1991–1996
n27	Divorced, 1996
c20	Divorced, percentage change, 1991–1996
n29	Size of census family, 2 persons, 1996
c21	Size of census family, 2 persons, percentage change, 1991–1996
n30	Size of census family, 3-4 persons, 1996
c22	Size of census family, 3-4 persons, percentage change, 1991–1996
n31	Size of census family, 5 or more persons, 1996
c23	Size of census family, 5+ persons, percentage change, 1991–1996
n32	Husband-wife families without children at home, 1996
c24	Husband-wife families without children at home, percentage change, 1991–1996
n33	Husband-wife families with children at home, 1996
c25	Husband-wife families with children at home, percentage change, 1991–1996
n34	Male-headed single-parent families, 1996
c26	Male-headed single-parent families, percentage change, 1991–1996
n35	Female-headed single-parent families, 1996
c27	Female-headed single-parent families, percentage change, 1991–1996
c28	Average number of never-married sons and/or daughters at home per census family, 1991–1996
c29	Average number of persons per census family, change, 1991–1996
n41	Size of economic family, 5+ persons, 1996
c32	Size of economic family, 5+ persons, percentage change, 1991–1996
c33	Average number of persons per economic family, change, 1991–1996
n43	Husband-wife families with no member in the labour force, 1996
c34	Husband-wife families with no member in the labour force, percentage change, 1991–1996
n44	Husband-wife families with one member in the labour force, 1996
c35	Husband-wife families with one member in the labour force, percentage change, 1991–1996
n45	Husband-wife families with both spouses/partners in the labour force, 1996
c36	Husband-wife families with both spouses/partners in the labour force, percentage change, 1991–1996
n46	Lone-parent families with no member in the labour force, 1996
c37	Lone-parent families with no member in the labour force, percentage change, 1991–1996

Variable	Description
<i>Education</i>	
n196	Population 15 to 24 not attending school, 1996
c105	Population 15 to 24 not attending school, percentage change, 1991–1996
n197	Population 15 and over with educational level of less than grade 9, 1996
c38	Population 15+ with educational level of less than grade 9, percentage change, 1991–1996
n198	Population 15+ with trades certificate or diploma, 1996
c39	Population 15+ with trades certificate or diploma, percentage change, 1991–1996
n199	Population 15+ with educational level of university, 1996
c40	Population 15+ with educational level of university, percentage change, 1991–1996
n200	Males with postsecondary qualifications, 1996
c41	Males with postsecondary qualifications, percentage change, 1991–1996
n201	Females with postsecondary qualifications, 1996
c42	Females with postsecondary qualifications, percentage change, 1991–1996
<i>Households</i>	
n67	1-person households, 1996
c47	1-person households, percentage change, 1991–1996
n69	One-family households, 1996
c48	One-family households, percentage change, 1991–1996
n70	Multiple-family households, 1996
c49	Multiple-family households, percentage change, 1991–1996
c51	Average number of persons in private households, change, 1991–1996
n74	Gross rent spending 30% or more of household income on shelter costs, one-family tenant households
c53	Gross rent spending 30% or more of household income on shelter costs, one-family tenant households, 1991–1996
n76	Owner's major payments spending 30% or more of household income on shelter costs, one-family owner households, 1996
c55	Owner's major payments spending 30% or more of household income on shelter costs, one-family owner households, 1991–1996
<i>Housing</i>	
n48	Single-detached house, 1996
c56	Single-detached house, percentage change, 1991–1996
n49	Apartment buildings, 1996
c57	Apartment buildings, percentage change, 1991–1996
n50	Average number of rooms per dwelling, 1996
c58	Average number of rooms per dwelling, change, 1991–1996
n51	Average number of bedrooms per dwelling, 1996

Variable	Description
c59	Average number of bedrooms per dwelling, change, 1991–1996
n52	Average value of dwelling \$, 1996
c60	Average value of dwelling \$, change, 1991–1996
n53	Owned dwellings, 1996
c61	Owned dwellings, percentage change, 1991–1996
n54	Rented dwellings, 1996
c62	Rented dwellings, percentage change, 1991–1996
n55	Require regular maintenance only, 1996
c63	Require regular maintenance only, percentage change, 1991–1996
n57	Period of construction, before 1946
n58	Period of construction, 1946–1960
n59	Period of construction, 1961–1970
n60	Period of construction, 1971–1980
n61	Period of construction, 1981–1990
n62	Period of construction, 1991–1996
<i>Immigration and ethnicity</i>	
n180	Total Aboriginal population
n181	Total visible minority population
n219	Total immigrant population, 1996
c64	Immigrant population percentage change, 1991–1996
n220	Recent immigrants
n221	Official language minority
<i>Income and labour force activity</i>	
n202	Males, worked full-year, full-time, 1996
c65	Males, worked full-year, full-time, percentage change, 1991–1996
c66	Average employment income of males, worked full-year, full-time, 1991–1996
n204	Males, worked part-year or part-time, 1996
c67	Males, worked part-year or part-time, percentage change, 1991–1996
c68	Average employment income of males, worked part-year or part-time, 1991–1996
n206	Females, worked full-year, full-time, 1996
c69	Females, worked full-year, full-time, percentage change, 1991–1996
c70	Average employment income of females, worked full-year, full-time, 1991–1996
n208	Females, worked part-year or part-time, 1996
c71	Females, worked part-year or part-time, percentage change, 1991–1996
c72	Average employment income of females, worked part-year or part-time, 1991–1996
c73	Employment income %, 1991–1996
n211	Government transfer payments %, 1996

Variable	Description
c74	Government transfer payments %, 1991–1996
c75	Other income %, 1991–1996
c76	Average total income of males 15+, 1991–1996
c77	Average total income of females 15+, 1991–1996
n215	Average family income of male lone-parent families
n216	Average family income of female lone-parent families
n217	Low-income economic families, 1996
c78	Low-income economic families, percentage change, 1991–1996
n218	Low-income population in private households, 1996
c79	Low-income population in private households, percentage change, 1991–1996
n107	Males 15+ in the labour force, 1996
c80	Males 15 years+ in the labour force, percentage change, 1991–1996
n108	Unemployed males 15+, 1996
c81	Unemployed males 15+, percentage change, 1991–1996
n109	Females 15+ in the labour force, 1996
c82	Females 15+ in the labour force, percentage change, 1991–1996
n110	Unemployed females 15+, 1996
c83	Unemployed females 15+, percentage change, 1991–1996
n111	Males 15+ in private households with no children at home in the labour force
n112	Unemployed males 15+ in private households with no children at home
n113	Males 15+ in private households with children at home in the labour force
n114	Unemployed males 15+ in private households with children at home
n117	Females 15+ in private households with no children at home in the labour force, 1996
c84	Females 15+ in private households with no children at home in the labour force, 1991–1996
n118	Unemployed females 15+ in private households with no children at home, 1996
c85	Unemployed females 15+ in private households with no children at home, 1991–1996
n119	Females 15+ in private households with children at home in the labour force, 1996
c86	Females 15+ private households with children at home in the labour force, 1991–1996
n120	Unemployed females 15+ in private households with children at home, 1996
c87	Unemployed females 15+ in private households with children at home, 1991–1996
n123	Agricultural and related service industries, 1996
c88	Agricultural and related service industries, percentage change, 1991–1996

Variable	Description
n124	Primary industries, 1996
c89	Primary industries, percentage change, 1991–1996
n125	Manufacturing and construction, 1996
c90	Manufacturing and construction, percentage change, 1991–1996
n126	Finance and insurance industries, 1996
c91	Finance and insurance industries, percentage change, 1991–1996
n127	Business service industries, 1996
c92	Business service industries, percentage change, 1991–1996
n128	Public service industries, 1996
c93	Public service industries, percentage change, 1991–1996
n129	Accommodation, food, and beverage service industries, 1996
c94	Accommodation, food, and beverage service industries, percentage change, 1991–1996
n130	Males – Specialist managers
n132	Males – Finance and insurance administrative occupations
n133	Males – Clerical occupations in finance and insurance
n134	Males – Natural and applied sciences and related occupations
n140	Males – Sales and service occupations
n144	Males – Occupations unique to processing, manufacturing, and utilities
n145	Females – Specialist managers
n147	Females – Finance and insurance administrative occupations
n148	Females – Clerical occupations in finance and insurance
n149	Females – Natural and applied sciences and related occupations
n155	Females – Sales and service occupations
n159	Females – Occupations unique to processing, manufacturing, and utilities
n160	Males – Employees, 1996
c95	Males – Employees, percentage change, 1991–1996
n161	Males – Self-employed, 1996
c96	Males – Self-employed, percentage change, 1991–1996
n163	Females – Employees, 1996
c97	Females – Employees, percentage change, 1991–1996
n164	Females – Self-employed, 1996
c98	Females – Self-employed, percentage change, 1991–1996
n166	Males – Place of work in CSD of residence, 1996
c99	Males – Place of work in CSD of residence, percentage change, 1991–1996
n167	Males – Place of work in different CSD, 1996
c100	Males - Place of work in different CSD, percentage change, 1991–1996
n168	Males – Place of work at home, 1996
c101	Males – Place of work at home, percentage change, 1991–1996
n170	Females – Place of work in CSD of residence, 1996
c102	Females – Place of work in CSD of residence, percentage change, 1991–1996

Variable	Description
n171	Females – Place of work in different CSD, 1996
c103	Females - Place of work in different CSD, percentage change, 1991–1996
n172	Females – Place of work at home, 1996
c104	Females – Place of work at home, percentage change, 1991–1996
<i>Social</i>	
n182	Males 15+, less than 5 hours of housework
n183	Males 15+, 30 to 59 hours of housework
n184	Females 15+, less than 5 hours of housework
n185	Females 15+, 30 to 59 hours of housework
n186	Males 15+, no hours of childcare
n187	Males 15+, less than 5 hours of childcare
n188	Males 15+, 30 to 59 hours of childcare
n189	Females 15+, no hours of childcare
n190	Females 15+, less than 5 hours of childcare
n191	Females 15+, 30 to 59 hours of childcare
n192	Males 15+, no hours of care to seniors
n193	Males 15+, 10 or more hours of care to seniors
n194	Females 15+, no hours of care to seniors
n195	Females 15+, 10 or more hours of care to seniors

Source: Statistics Canada 1991a, 1991b, 1998e

APPENDIX B

Survey Questionnaire

Life Patterns in the Rural-Urban Fringe

Instructions

Please answer the following questions to the best of your ability as they relate to you rather than anyone else in your household. Return the survey in the enclosed postage-paid reply envelope.

Place of Work

1a. Which of the following best describes your place of work:

Check the most applicable option.

- ☐ I work outside my home primarily at one location (*Go to Question #1b*)
- ☐ I work primarily from home (*Go to Question #2*)
- ☐ I work outside my home at more than one location
(for example, sales or trades person) (*Go to Question #1b*)
- ☐ I am not currently employed (*Go to Question #2*)

1b. In order to allow us to understand your home-to-work travel without identifying you, could you tell us the major intersection nearest to your primary place of work (for example, 1st Street and Main) OR the postal code of your primary place of work:

Intersection of _____ and _____ City or town _____

OR Postal Code _____

1c. For those with a second place of work (all others Go to Question #2), could you tell us the major intersection nearest to your second most important place of work OR the postal code of your second most important place of work:

Intersection of _____ and _____ City or town _____

OR Postal Code _____

Shopping

2. Please provide the street names of the major intersection (for example, 1st St. and Main) OR the name of the shopping mall (for example, Centre Mall) nearest to the store where you most commonly shop for your clothing:

Intersection of _____ and _____ OR _____ Mall

in _____ (village, town or city)

3. Please provide the street names of the major intersection OR the name of the shopping mall nearest to the store where you most commonly shop for household items such as large appliances or furniture:

Intersection of _____ and _____ OR _____ Mall

in _____ (village, town or city)

4. Please provide the street names of the major intersection OR the name of the shopping mall nearest to the store where you most likely go for your major grocery shopping trips:

Intersection of _____ and _____ OR _____ Mall

in _____ (village, town or city)

Services

5. Please provide the street names of the major intersection OR the name of the shopping mall nearest to the bank or credit union where you conduct your personal banking:

Intersection of _____ and _____ OR _____ Mall
in _____ (village, town or city)

6. Please provide the street names of the major intersection OR the name of the shopping mall nearest to the office of your family doctor:

Intersection of _____ and _____ OR _____ Mall
in _____ (village, town or city)

7. Please provide the street names of the major intersection OR the name of the shopping mall nearest to the garage where you usually take your vehicle(s) for service:

Intersection of _____ and _____ OR _____ Mall
in _____ (village, town or city)

8. If you currently use a childcare service outside of your home, please provide the street names of the major intersection nearest to the childcare facility:

Intersection of _____ and _____
in _____ (village, town or city)

Entertainment and Recreation

9. What are the street names of the major intersection nearest your favourite restaurant?

Intersection of _____ and _____
in _____ (village, town or city)

10. How often do you typically leave your community for leisure activities such as camping or staying at a cottage, cabin, chalet or camp?

Check one option only.

- | | |
|--|--|
| <input type="checkbox"/> Never | <input type="checkbox"/> 6 to 12 times per year |
| <input type="checkbox"/> 1 to 5 times per year | <input type="checkbox"/> More than 12 times per year |

11a. In the past year, what is the most distant place you have visited (for any reason)?

Name of place _____ in _____ (country, state or province)

11b. The primary purpose of this trip was:

Check one option only.

- | | |
|---|---|
| <input type="checkbox"/> Work or business | <input type="checkbox"/> Vacation |
| <input type="checkbox"/> Visiting family or relatives | <input type="checkbox"/> Studies, training or education |
| <input type="checkbox"/> Other (please specify) _____ | |

Personal Networks

Now we would like to ask you a few questions about your social contacts and friendship patterns. Once again, none of your answers will allow us to identify your friends or relatives.

13. In no particular order, please provide the city and street names of the major intersections closest to the residences of your three best friends, who are not related to you by blood or marriage:

(a) **First person:** Intersection of _____ and _____
in _____ (village, town or city)

(b) **Second person:** Intersection of _____ and _____
in _____ (village, town or city)

(c) **Third person:** Intersection of _____ and _____
in _____ (village, town or city)

14. Please provide the city and street names of the major intersections closest to the residences of your three relatives with whom you have the closest or strongest social relationships:

(a) **First person:** Intersection of _____ and _____
in _____ (village, town or city)

(b) **Second person:** Intersection of _____ and _____
in _____ (village, town or city)

(c) **Third person:** Intersection of _____ and _____
in _____ (village, town or city)

15. Please complete the following sentence, "If I need personal advice I would most likely turn to ...":

Check one option only.

- | | |
|---|--|
| <input type="checkbox"/> My spouse or partner | <input type="checkbox"/> A neighbourhood friend |
| <input type="checkbox"/> Another relative living nearby | <input type="checkbox"/> A friend who is neither a neighbour
nor is from my workplace |
| <input type="checkbox"/> Another relative living far away | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> A friend from my workplace | |

16. How long have you lived in this community?

Check one option only.

- | | |
|--|--|
| <input type="checkbox"/> Less than 1 year | <input type="checkbox"/> 1 to 2 years |
| <input type="checkbox"/> 5 to 10 years | <input type="checkbox"/> Over 10 years |
| <input type="checkbox"/> More than 2 but less than 5 years | |

Personal Information

These last few questions about your personal characteristics will be used to help us understand some of the earlier responses.

17. To what age group do you belong?

Check one option only.

- ☐ younger than 25 years ☐ 25-44 years ☐ 45-64 years
☐ 65 or older

18. What is your gender?

- ☐ Male ☐ Female

19. What is your current family status?

- ☐ Single ☐ Married or Living Common Law
☐ Divorced or Separated ☐ Widowed

20. How many children under age 18 do you have living with you on a regular basis?

- ☐ None ☐ Two or three children
☐ One child ☐ Four or more children

21. What is the highest level of formal education that you have received?

Check one option only.

- ☐ Less than grade 9
☐ Some high school
☐ High school diploma
☐ Some trade, technical or vocational school, community college, business college
☐ Diploma or certificate from trade, technical or vocational school, community college, business college
☐ Some university
☐ University graduate
☐ University post-graduate

22. What was your approximate household income (before taxes) in 2001?

Check one option only.

- ☐ less than \$29,999
☐ \$30,000 - \$49,999
☐ \$50,000 - \$69,999
☐ \$70,000 - \$89,999
☐ \$90,000 - \$109,999
☐ \$110,000 or over

Thank you for agreeing to participate in this survey. Please enclose this completed survey in the postage-paid envelope and return it as soon as possible. As mentioned in my cover letter, a report based on this survey will be posted at the following website <http://www.usask.ca/geography/index.htm> by October of 2002.

APPENDIX C

Example of the Survey Cover Letter

A. B. Smith
123 Main St.
Upper Sackville, NS B4A3C5

Dear A. B. Smith,

I am a Doctoral student in the Department of Geography at the University of Saskatchewan and am conducting research on the changing structure of Canadian cities. I hope to learn more about the living experiences of people who live in communities near larger cities and have selected a number of places that are representative of different regions and different kinds of urban influence, including your community of Upper Sackville. Your household has been selected as part of a random sample of households in Upper Sackville, using the current telephone book.

I hope you will be able to assist me and to contribute to this research project by completing and returning the enclosed survey in the postage-paid envelope. It should take no more than 10 minutes and consists of general questions about how far you travel to work, to shop, and to entertainment, as well as questions about where you find various kinds of social support.

By returning the completed survey it is understood that you have given your consent for me to use the information for my research. All information provided will remain strictly confidential and will be used only to identify general patterns. No reference will ever be made to you or to other individual respondents. The information provided by you and other survey respondents will be used only in my doctoral dissertation and possibly in journal publications and/or conference presentations based upon the dissertation. This project has been reviewed and approved by the University of Saskatchewan Advisory Committee on Ethics in Behavioural Science Research (May 28, 2002). If you have any questions regarding your rights as a participant, feel free to contact the Office of the Research Services at (306) 966-4053 or consult the Office website <http://www.usask.ca/research/behavrrsc.shtml>.

I very much hope you will agree to participate in this study. Your information makes a valuable contribution and is crucial to developing a meaningful and representative picture of the experiences that people have living in and around large cities. If you wish to see the results of this research, they will be posted on the University of Saskatchewan Geography Department's web site <http://www.usask.ca/geography/index.htm> by October 2002. If you have any questions about this survey or the research project in general, feel free to contact me at (306) 477-3965 or starchen@duke.usask.ca, or my supervisor Dr. Jim Randall, at (306) 966-5678 or jim.randall@usask.ca.

Yours sincerely,

Oksana Starchenko
Ph.D. Candidate
Department of Geography
University of Saskatchewan

APPENDIX D

Example of the Survey Reminder Letter

A. B. Saunders
123 Blue Rd.
West Franklin, NS B4F 1C1

Dear A. B. Saunders,

About three weeks ago you received a questionnaire from me asking you questions about how far you travel to work, to shop, and to entertain, as well as questions about where you find various kinds of social support. This survey is part of my Doctoral research that looks into experiences of people who live in communities near larger Canadian cities. Not only will the results help me finish my program, but they will also improve our understanding of how our cities and towns are changing, for good and bad. If you have already completed the questionnaire and mailed it, I thank you. Otherwise, I would appreciate it if you could take 10 minutes of your time to complete the survey. In case you've misplaced the original, I have enclosed a replacement questionnaire and a reply postage-paid envelope for your convenience. If there is anything I can do to help you further, please feel free to phone me at (306) 477-3665 or e-mail me at starchen@duke.usask.ca. I look forward to hearing from you.

Yours sincerely,

Oksana Starchenko
Ph.D. Candidate
Department of Geography
University of Saskatchewan

APPENDIX E

Dimensions of Socio-Economic Structure of CSDs within Canadian Metropolitan Areas

Variable descriptions	Loading	Extraction
<i>Factor 1: High Social Status (Professionals)</i>		
Average total income of females 15+, 1996	0.91	0.92
Average total income of males 15+, 1996	0.89	0.88
Average employment income of females, worked full-year, full-time, 1996	0.87	0.86
Average employment income of males, worked full-year, full-time, 1996	0.86	0.84
Average employment income of females, worked part-year or part-time, 1996	0.79	0.75
Females, worked full-year, full-time, 1996	0.79	0.74
Average value of dwelling \$, 1996	0.77	0.75
Males, worked full-year, full-time, 1996	0.75	0.81
Average employment income of males, worked part-year or part-time, 1996	0.74	0.66
Population 15+ with educational level of university, 1996	0.73	0.73
Business service industries, 1996	0.72	0.61
Average family income of female lone-parent families, 1996	0.70	0.62
Males – Specialist managers, 1996	0.68	0.51
Females – Specialist managers, 1996	0.67	0.52
Females with postsecondary qualifications, 1996	0.66	0.71
Males with postsecondary qualifications, 1996	0.65	0.68
Males – Natural and applied sciences and related occupations, 1996	0.64	0.46
Females, worked part-year or part-time, 1996	0.63	0.76
Average family income of male lone-parent families, 1996	0.63	0.54
Females – Employees, 1996	0.62	0.62
Finance and insurance industries, 1996	0.62	0.46
Females – Natural and applied sciences and related occupations, 1996	0.58	0.42
Total visible minority population, 1996	0.58	0.53
Require regular maintenance only, 1996	0.53	0.46
Females 15+, less than 5 hours of housework, 1996	0.53	0.50
Females 15+ in private households with no children at home in the labour force, 1996	0.51	0.69
Owner's major payments spending 30% or more of household income on shelter costs, one-family owner households, 1996	0.51	0.58
Males – Clerical occupations in finance and insurance, 1996	0.51	0.39

Variable descriptions	Loading	Extraction
Females 15+, no hours of care to seniors, 1996	0.48	0.63
Males – Self-employed, 1996	0.48	0.60
Females – Self-employed, 1996	0.47	0.47
Husband-wife families with both spouses/partners in the labour force, 1996	0.44	0.82
Apartment buildings, 1996	0.44	0.87
Females – Place of work at home, 1996	0.43	0.49
Gross rent spending 30% or more of household income on shelter costs, one-family tenant households, 1996	0.42	0.84
Average number of rooms per dwelling, 1996	0.41	0.78
Population 15+ with educational level of less than grade 9, 1996	-0.41	0.69
Total Aboriginal population	-0.43	0.65
Major repairs, 1996	-0.52	0.46
<i>Factor 2: Low Social Status I (Disadvantaged)</i>		
Non-family households, 1996	0.80	0.74
Change in gross rent spending 30% or more of household income on shelter costs, one-family tenant households, 1991–1996	0.77	0.75
One-person households, 1996	0.76	0.71
Apartment buildings, 1996	0.74	0.87
Rented dwellings, 1996	0.74	0.75
Non-family persons living alone, 1996	0.71	0.68
Gross rent spending 30% or more of household income on shelter costs, one-family tenant households, 1996	0.66	0.84
Divorced, 1996	0.58	0.51
Movers, mobility status 1 year ago, 1996	0.56	0.61
Females – Place of work in CSD of residence, 1996	0.55	0.69
Female-headed single-parent families, 1996	0.54	0.55
Never married (single), 1996	0.52	0.80
Males – Place of work in CSD of residence, 1996	0.52	0.68
Lone-parent families with no member in the labour force, 1996	0.51	0.42
Movers, mobility status 5 years ago, 1996	0.49	0.65
Number of non-family persons 65+ living alone, 1996	0.43	0.59
Low-income population in private households, 1996	0.41	0.78

Variable descriptions	Loading	Extraction
Husband-wife families with children at home, 1996	-0.44	0.74
Husband-wife families with both spouses/partners in the labour force, 1996	-0.46	0.82
Females – Place of work in different CSD, 1996	-0.51	0.72
Legally married (and not separated), 1996	-0.58	0.92
Males 15+ in private households with children at home in the labour force	-0.62	0.81
Single-detached house, 1996	-0.71	0.65
Average number of rooms per dwelling, 1996	-0.74	0.78
Owned dwellings, 1996	-0.75	0.78
Average number of bedrooms per dwelling, 1996	-0.76	0.76
One-family households, 1996	-0.79	0.72
<i>Factor 3: Life Cycle (Retirees and “Empty-Nester” Families)</i>		
Males 65+, 1996	0.82	0.81
Size of economic family, 2 persons, 1996	0.82	0.78
Size of census family, 2 persons, 1996	0.80	0.78
Females 15+, no hours of childcare, 1996	0.79	0.82
Husband-wife families without children at home, 1996	0.78	0.76
Males 15+, no hours of childcare, 1996	0.76	0.80
Females 65+, 1996	0.72	0.77
Females 45–64, 1996	0.68	0.63
Husband-wife families with no member in the labour force, 1996	0.61	0.60
Number of non-family persons 65+ living alone, 1996	0.56	0.59
Males 45–64, 1996	0.47	0.61
Legally married (and not separated), 1996	0.47	0.92
Non-family persons living alone, 1996	0.46	0.68
Females 15+, no hours of care to seniors, 1996	0.45	0.63
Males 15+, no hours of care to seniors, 1996	0.41	0.57
One-person households, 1996	0.40	0.71
Size of economic family, 5 or more persons, 1996	-0.40	0.55
Size of census family, 3–4 persons, 1996	-0.48	0.58

Variable descriptions	Loading	Extraction
Size of economic family, 3–4 persons, 1996	-0.50	0.53
Males 10–14, 1996	-0.51	0.49
Females 25–44, 1996	-0.51	0.56
Males 15+ in private households with children at home in the labour force, 1996	-0.52	0.81
Males 25–44, 1996	-0.54	0.51
Males 0–9, 1996	-0.62	0.66
Females 0–9, 1996	-0.66	0.65
Husband-wife families with children at home, 1996	-0.67	0.74
<i>Factor 4: Employment Income Change</i>		
Change in average employment income of males, worked full-year, full-time, 1991–1996	0.76	0.63
Females, worked part-year or part-time, percentage change, 1991–1996	0.70	0.55
Change in average employment income of females, worked full-year, full-time, 1991–1996	0.68	0.60
Change in average employment income of females, worked part-year or part-time, 1991–1996	0.68	0.57
Males, worked full-year, full-time, percentage change, 1991–1996	0.67	0.58
Change in average total income of females 15+, 1991–1996	0.65	0.53
Employment income, percentage of total income, 1991–1996	0.61	0.48
Males, worked part-year or part-time, percentage change, 1991–1996	0.61	0.39
Females, worked full-year, full-time, percentage change, 1991–1996	0.59	0.47
Males, worked part-year or part-time, 1996	0.57	0.70
Change in average employment income of males, worked part-year or part-time, 1991–1996	0.56	0.43
Change in average total income of males 15+, 1991–1996	0.54	0.40
Females, worked part-year or part-time, 1996	0.44	0.76
Government transfer payments, %, 1996	0.43	0.78
<i>Factor 5: Low Social Status II (Working Poor)</i>		
Low-income economic families, 1996	0.67	0.74
Low-income population in private households, 1996	0.67	0.78
Government transfer payments, percentage of total income, 1996	0.65	0.78
Males – Occupations unique to processing, manufacturing, and utilities, 1996	0.64	0.44
Males, worked part-year or part-time, 1996	0.58	0.70

Variable descriptions	Loading	Extraction
Females – Occupations unique to processing, manufacturing, and utilities, 1996	0.55	0.47
Owner's major payments spending 30% or more of household income on shelter costs, one-family owner households, 1996	0.53	0.58
Females, worked part-year or part-time, 1996	0.52	0.76
Gross rent spending 30% or more of household income on shelter costs, one-family tenant households, 1996	0.44	0.84
Housing, period of construction, before 1946, 1996	0.43	0.55
Average family income of female lone-parent families, 1996	0.42	0.62
Population 15+ with educational level of less than grade 9, 1996	0.41	0.69
<i>Factor 6: Mobility Status</i>		
Interprovincial migrants, mobility status 5 years ago, 1996	0.70	0.53
Interprovincial migrants, mobility status 1 year ago, 1996	0.61	0.42
Movers, mobility status 5 years ago, 1996	0.46	0.65
Females – Place of work in CSD of residence, 1996	0.46	0.69
Males – Place of work in CSD of residence, 1996	0.45	0.68
Legally married (and not separated), 1996	0.44	0.92
Movers, mobility status 1 year ago, 1996	0.40	0.61
Population age 15 + with educational level of less than grade 9, 1996	-0.46	0.69
Never married (single), 1996	-0.54	0.80
Population age 15 + with educational level of less than grade 9, percentage change, 1991–1996	-0.60	0.58
<i>Factor 7: Family Size change</i>		
Change in average number of persons per census family, 1991–1996	0.95	0.92
Change in average number of never-married sons and/or daughters at home per census family, 1991–1996	0.91	0.86
Change in average number of persons per economic family, 1991–1996	0.79	0.67
Size of economic family, 5+ persons, percentage change, 1991–1996	0.66	0.50
<i>Factor 8: Labour force</i>		
Males 15 years + in private households with no children at home in the labour force, 1996	0.70	0.73
Males – Employees, 1996	0.70	0.68

Variable descriptions	Loading	Extraction
Males 15+, no hours of care to seniors, 1996	0.49	0.57
Females 15+ in private households with no children at home in the labour force, 1996	0.48	0.69
Females – Employees, 1996	0.46	0.62
<i>Factor 9: Declining Areas</i>		
Low-income population in private households, 1996	0.51	0.78
Period of construction, before 1946	0.46	0.55
Total Aboriginal population, 1996	-0.45	0.65
Males 0-9, 1996	-0.47	0.66
Population percentage change, 1991–1996	-0.58	0.45
<i>Factor 10: Commuters</i>		
Males – Place of work in different CSD, 1996	0.57	0.79
Females – Place of work in different CSD, 1996	0.56	0.72
Size of economic family, 5 or more persons, 1996	-0.48	0.55
Total Aboriginal population, 1996	-0.52	0.65
<i>Factor 11: Employment in Agriculture and Related Services</i>		
Percent employed in agricultural and related service industries, 1996	0.55	0.51
Males – Self-employed, 1996	0.49	0.60
Females – Place of work at home, 1996	0.46	0.49
Females – Self-employed, 1996	0.44	0.47

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