# A GEOGRAPHY OF UNEMPLOYMENT IN VANCOUVER CMA

by

PETER L. DANIELS

B.Sc (Hons.) Griffith University, Brisbane, AUSTRALIA.

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

Department of Geography

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

October 14, 1985

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Geography

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date 14 October 1985

Abstract

Widespread and persistent high levels of unemployment now appear to be endemic in many "advanced" economies and are commonly recognized as the major socioeconomic problem (with staggering direct and indirect costs on society and individuals) to be confronted by policy and decision-makers in the incipient form of modern Western society. The province of British Columbia (B.C.) in Canada (which contains the principal study area (the Vancouver C.M.A)) lost over six percent of its employed workforce over the two years between July 1982 and July 1984 and currently (in 1985) has the second highest unemployment rate in the nation with levels well above the OECD average.

This study comprises an attempt to identify the nature and causes of unemployment in 1981 in the major metropolitan area in B.C. (the Vancouver CMA), in addition to an assessment of changes in the characteristics of unemployment during the economic downturn that has vexed the province since 1981. The research methodology is sharply divided into a specific focus on the nature of unemployment, and in particular, the processes underlying intra-urban variations in unemployment rates within the Vancouver CMA on one hand, and a more general analysis of regional trends over the 1970's in one major relevant economic sector (the goods-production industries) on the other. Unfortunately, significant problems are faced in the use of data restricted to the exceptionally low unemployment census year of 1981 and the scope of the investigation is necessarily modest given the complexity of the problem and the resources available.

The urban level analysis is basically a series of tests (including the regression and correlation of aggregated and individual social and spatial data) to ascertain the relevance of the two major hypotheses of intra-urban spatial variations in unemployment. The "trapped" hypothesis stresses the role of space as a direct influence on unemployment probability (often as a perceived joint result of confinement to

certain housing locations within the city and the suburbanization of industrial employment demand). The alternative hypothesis explains the pattern of unemployment rates in terms of the concentration of unemployment upon workers with certain socioeconomic characteristics who occupy geographically distinct sections of the housing market.

From the research results, the role of space in the determination of unemployment probability, within the CMA, appears to be limited. However, there is some evidence that personal characteristics and spatial effects may be simultaneously having some effect on expected unemployment rates and a consideration of spatial separation between labour supply and demand, even within the CMA, may well be important for labour market theory and policy. Hence, the CMA cannot be unequivocally adopted as the appropriate local labour market for all groups of people (divided on the basis of their socioeconomic characteristics and location) in the CMA. The detailed analysis of the personal characteristics of the unemployed has also suggested the high-unemployment probability, in low and high employment demand times, of the lower-skilled and the occupations with the higher proportions of low-skilled workers (generally the manual blue-collar and service occupations).

A preliminary analysis of trends in manufacturing production sector changes throughout the 1970's (at the B.C. regional scale) has been completed as a result of the perceived inadequacy of the urban level focus. Although a resolution on the manufacturing production sector has meant only a partial analysis of employment demand, the goods-production industries have been the central area of focus. This sector has been specifically selected in view of a number of restrictions (including data availability and overall research resource constraints) and in order to test the relevance, in the B.C. context, of some of the processes hypothesized in the literature produced by the prolific radical geographers. Unemployment and production activities are usually important aspects of radical theory on the relation between labour and the restructuring

of capitalism.

The empirical research for this second section is essentially a simple comparison of some major structural characteristics of manufacturing production employment and output in 1971 and 1981 at three geographic scales (based on a core–periphery classification) within the province. Although there is little evidence of the processes hypothesized by the radical geography school, the methodological problems faced are prohibitive and conclusions remain tentative. There is, however, a distinctive trend toward the reduced demand for production labour input. With continued capital–intensification in the face of international competition and reduced world demand; together with the direct effect of reduced output demand in an historical period that appears to involve a rather dramatic redefinition of B.C.'s role in the world economy, the unemployment problem is unlikely to be substantially reduced in the forseeable future without a major absorption of displaced labour into rapidly growing, labour–intensive service industries. "Full" employment policy in the contemporary mode, will probably be ineffectual in the B.C. setting.

## Acknowledgements

The size of this thesis mirrors the academic and emotional support, from faculty, family and friends, that has enabled its completion. From my supervisor, Dr. Ken Denike, the inspiration, guidance, generosity, and understanding has been invaluable and will long be remembered. Without question, Dr. David Ley's knowledge, concern, and clarity have been of immeasurable worth in the latter stages of the thesis development.

Raymon Torchinsky, who must be the most frequently mentioned individual in UBC Geography thesis acknowledgements, has won another forever-indebted fan as a result of his selfless and endless devotion to ameliorating the problems and despairs of distraught thesis writers. To John Butcher, the pain of this thesis has been lightened by your friendship and mirth.

My family, so far away, have fuelled me with continuous love and motivation but I dedicate this thesis and an ocean of thanks to my beloved Jan for her reassuring comfort and empathy, never-ending love and patience and the time and effort dedicated towards the preparation of this thesis.

Table of Contents

I. Introduction ..... 1

II. The Neoclassical Conception of the Labour Market ..... 15

A. The Demand and Supply for Labour in Competitive Markets ..... 17

1. The demand for labour ..... 18

2. The supply of labour ..... 21

3. The interaction of supply and demand for labour ..... 25

B. Constraints on the Perfect Operation of the Labour Market Recognized by Neoclassical Theorists ..... 28

1. Noncompetitive buyers of labour ..... 28

2. Noncompetitive sellers of labour ..... 33

3. Occupational constraints ..... 36

4. Informational barriers ..... 37

5. Geographic separation of supply and demand opportunities ..... 38

C. Unemployment ..... 39

1. The unemployables ..... 41

2. Seasonal unemployment ..... 42

3. Frictional unemployment ..... 42

4. Structural unemployment ..... 42

5. Demand-deficient (cyclical) unemployment ..... 44

D. Macroeconomics, Labour Economics and Unemployment ..... 45

III. The Social and Spatial Structures as Barriers to the Perfect Operation of the Labour Market ..... 48

A. Heterogeneity in the Supply of, and Demand for, Labour ..... 48

1. Internal and external labour markets ..... 49

2. The dual labour market ..... 50

B. Space as an Intervening Variable between the Equilibrium Matching of Labour Supply and Demand ..... 53

1. Weberian industrial location theory ..... 54

2. Critiques of Weberian location theory on labour ..... 57

3. Do "Jobs Follow People" ? ..... 60

C. The Concept of a "Local" Labour Market - Vancouver CMA as the Study Area ..... 63

IV. Analyses of Intra-Urban Spatial Variations in Unemployment ..... 69

A. The Changing Spatial Structure of Industry as a Cause of Unemployment ..... 71

B. Intra-urban Unemployment Differentials from Personal Characteristics of the Residential Labour Supply ..... 78

V. The Decentralization of Industry in the Vancouver CMA ..... 84

A. The Process of Decentralization ..... 84

1. General trends ..... 84

2. The centrifugal forces underlying decentralization ..... 87

B. Intra-Metropolitan Decentralization - The Changing Geography of Industry in the Vancouver CMA ..... 89

VI. RADICAL INTERPRETATIONS: THE RESTRUCTURING OF CAPITAL AND THE LABOUR MARKET ..... 99

A. The Radical Critique of the Neoclassical Labour Market ..... 102

1. The mechanistic, anti-humanist nature of neoclassical approaches ..... 102

2. The ideological nature of neoclassical economics ..... 105

3. Static and narrow conceptions of the economic system ..... 107

4. Equal and free choice in labour market supply decisions ..... 113

5. The value of labour ..... 115

B. The Relationship between Social Processes and the Organization of Space ..... 121

C. The Restructuring of Capital and the Spatial Structure of Industrial Activity ..... 125

1. Strategies which are not directly spatial in character ..... 128

2. Strategies which are directly spatial in character ..... 139

D. Limitations of Radical Theories on the Restructuring of Capital and the Labour Market ..... 148

E. The Restructuring of Capital and the Geography of Unemployment ..... 152

VII. METHODOLOGY ..... 157

A. The Urban Analysis of Unemployment in the Vancouver CMA ..... 159

1. Description of unemployment distribution in 1981 ..... 159

2. Change in the geographic distribution of CMA unemployment over time ..... 164

3. The residential relocation of manufacturing production employees .... 167

4. Geographic variation in umemployment rates for manufacturing production versus other occupations ..... 170

5. The relationship between census tract car ownership levels and unemployment rates ..... 171

6. The relationship between census tract unemployment rates, travel time to the CBD, and socioeconomic characteristics of the census tract population ..... 172

7. Characteristics of the unemployed in Vancouver CMA and the relationship between socioeconomic and housing characteristics of the labour force ..... 183

8. Comparison of CMA and British Columbian unemployment levels for occupations ..... 186

B. The Regional Analysis of Spatial and Structural Changes in Manufacturing Production Activity Employment Demand ..... 187

1. General trends in the spatial and organizational structure of industry in B.C. ..... 189

2. A more detailed look at structural changes and testing the relevance of radical theory in the B.C. context ..... 191

VIII. Results of the Urban Analysis of Unemployment ..... 200

A. Unemployment in Vancouver CMA 1981 ..... 200

B. Changes in the Pattern of Unemployment in the Vancouver CMA Study Area ..... 207

C. The Suburbanization of the Manufacturing Production Labour Force ..... 213

D. Comparison of Intra-Urban Variations in Unemployment Rates of Manufacturing Production Workers with Other Occupations ..... 220

E. Car Ownership Findings ..... 223

F. Results of the Regression Analysis of Total CT Unemployment Rates 1981 ..... 225

1. Stepwise regression of selected personal characteristic variables and travel time to the CBD, on total 1981 unemployment rates .... 226

2. Regression analyses with indices of accessibility to manufacturing production employment zones ..... 237

G. Characteristics of the Unemployed in Vancouver CMA and the Relationship between the Housing Market and the Socioeconomic Characteristics of the CT Labour Force ..... 244

H. Occupational Unemployment in British Columbia ..... 261

IX. Structural and Locational Changes in Manufacturing Production Activity in British Columbia ..... 266

A. General Trends in Manufacturing Production Activity in British Columbia ..... 266

B. Spatial Changes in British Columbias Manufacturing Production Output, Employment, Capital-Intensity and Wages 1971-81 ..... 276

1. Capital intensification in the core ..... 276

2. Capital intensification allowing decentralization ..... 287

3. The relative decentralization of industry to low cost labour areas ... 292

4. The relative decentralization of industrial activity to break the bilateral relations between labour and capital ..... 302

C. Review of Findings ..... 305

X. Discussion of the Urban and Regional Analysis and Implications for Unemployment in the Vancouver CMA and British Columbia ..... 310

A. Evaluation of the Urban Analysis ..... 310

B. Regional Structural Changes in Manufacturing Production Activity and Prospects for Reduced Unemployment in the Province ..... 329

XI. Conclusion ..... 342

BIBLIOGRAPHY ..... 361

APPENDIX A ..... 374

APPENDIX B ..... 378

APPENDIX C ..... 381

## List of Figures


| Figure | Page | Title |
|---|---|---|
| 1.1 | 2 | Unemployment in Canada (Annual Average) 1921 to 1984 and Unemployment in OECD Nations Annual Average 1955 to 1981 |
| 1.2 | 3 | Unemployment Rates for Canada, British Columbia, and Vancouver CMA 1971-1985 |
| 1.3 | 5 | Unemployment Insurance and Welfare Claims in British Columbia 1981-1985 |
| 2.1 | 15 | The Labour Market in the Classical Economic Model |
| 2.2 | 20 | The Firm and Industry Level Labour Demand Curves Under Perfect Competition |
| 2.3 | 22 | Utility Maxmization:Work |
| 2.4 | 22 | Utility Maximzation:No Work |
| 2.5 | 22 | Utility Maximization and Hoursof Work |
| 2.6 | 24 | The Income and Substitution Effects and the Supply Curve for Labour |
| 2.7 | 27 | Labour Market Equilibrium |
| 2.8 | 30 | The Competitive and Monopolistic Labour Demand Schedules |
| 2.9 | 32 | Comparison of Competitive and Monopolistic Labour Markets |

| Figure | Page | Title |
|---|---|---|
| 2.10 | 34 | The Effect of Wage Setting Contracts by Unions |
| 2.11 | 34 | Effect of Supply Limitations by Unions |
| 2.12 | 36 | Minimum Wage Legislation Effect on the Labour Effect |
| 3.1 | 56 | The Effect of a Cheap-Labour Location on the Transport Cost Optimum Location in the Weberian Model |
| 3.2 | 56 | The Assumed Labour Market Conditions at Location "O" and Location "L" in Weber's Model |
| 8.1 | 205 | Occupational Composition of Total Unemployment and Occupational Unemployment Rates |
| 8.2 | 262 | Unemployment (Labour Force-Employed) Comparison Ascending the Occupational-Skill Ladder |
| 9.1 | 266 | Manufacturing Output Value-Added in British Columbia, Vancouver CMA, and the Vancouver "Core" Area 1965-1981 |
| 9.2 | 268 | Manufacturing Production Employment Trends in British Columbia, Vancouver CMA, and Vancouver "Core" Area 1965-1981 |

| Figure | Page | Title |
|---|---|---|
| 9.3 | 271 | Productivity Trends in British Columbia, Vancouver CMA, and Vancouver "Core" Area 1965–1981 |
| 9.4 | 271 | Capital–Intensity Trends in Manufacturing in British Columbia, Vancouver CMA, and the Vancouver "Core" Area 1965–1981 |
| 9.5 | 272 | Hourly Wage Trends in British Columbia, Vancouver CMA, and Vancouver "Core" Area 1965–1981 |
| 9.6 | 275 | Manufacturing Exports from B.C., Percentage of Provincial GDP from Manufacturing Exports, and the Ratio of Manufacturing Shipments to GPP 1971–1983 |
| 10.1 | 322 | Occupational Shifts in the Employed Labour Force in Canada 1950–1983 |

## List of Tables


| Table | Page | Title |
|---|---|---|
| 6.1 | 157 | British Columbia Corporate Profits and Investment Income 1968–1983 |
| 7.1 | 170 | The Occupational Composition of Manufacturing Activity for British Columbia 1981 |
| 7.2 | 176 | Description of Major Personal Characteristic Variables and Coefficients from Correlation with the 1981 Total Unemployment Rate for each Census Tract |
| 7.3 | 179 | Employment Demand CT Description and Weightings Used for Accessibility Indice Calculation |
| 8.1 | 214 | Comparative Suburbanization Rates of Manufacturing Production and Other Workers |
| 8.2 | 224 | Correlation Coefficients with Car Ownership Levels in Census Tracts (CAROWN) |
| 8.3 | 228 | Regression Results for the Analysis of Personal Characteristics, Accessibility to the CBD, and Total Census Tract Unemployment Rates in Vancouver CMA 1981 |
| 8.4 | 241 | Regression Results for the Analysis of Personal Characteristics, Accessibility Indices to Manufacturing Production Employment Zones and Total Census Tract Unemployment Rates in Vancouver CMA |
| 8.5 | 246 | Unemployment Rates and the Composition of Total Unemployment by Occupation in Vancouver CMA (1980–1984) |

| Table | Page | Title |
|---|---|---|
| 8.6 | 248 | Occupational Composition of the Inner and Outer Area of the CMA Labour Force |
| 9.1 | 268 | Distribution of Provincial Manufacturing Production Output and Employment in Vancouver CMA and "Core" Areas 1966 and 1981 |
| 9.2 | 277 | Percentage Increase in Capital-Intensity (1971-1981), Percentage of Industry Output and Employment in the Core, and Wage Rates by Industry 1971 and 1981 |
| 9.3 | 280 | Estimated Total and "Blue Collar" Unionization Levels in Vancouver CMA and the Rest of B.C. |
| 9.4 | 282 | Capital-Intensity Levels for the Three Study Areas in 1971 and 1981 |
| 9.5 | 284 | Growth in Output and Employment for the Three Study Areas (1971-1981) |
| 9.6 | 289 | Capital-Intensification and the Relative Decentralization of Industries from the "Core" Areas |
| 9.7 | 292 | Labour Costs (Wages) as a Proportion of Total Manufacturing Production Costs |
| 9.8 | 299 | Plant Size Comparison Using Median Employment Cohort Size (MECS) Measure for Selected Areas |
| 9.9 | 300 | Plant Size Comparison Using Average Employees Per Plant and Average Output Per Plant Measures - Selected Areas 1981 |

## List of Maps


| Map | Page | Title |
|---|---|---|
| 5.1 | 91 | The Distribution of Manufacturing Production Value-Added Vancouver CMA 1964 and 1981 |
| 5.2 | 92 | The Distribution of Manufacturing Production Employment Vancouver CMA 1964 and 1981 |
| 5.3 | 94 | Industrial Land Use 1955 Vancouver CMA |
| 5.4 | 96 | Industrial Land Use Change 1955-1983 Vancouver CMA |
| 7.1 | 163 | Vancouver CMA UIC Statistical Summary Office Areas 1984 |
| 7.2 | 178 | Major Manufacturing Production Employment Zones of the Vancouver CMA |
| 8.1 | 201 | Vancouver CMA 1981 Unemployment Rates by CT |
| 8.2 | 203 | Vancouver CMA Distribution of Unemployment in Absolute Terms |
| 8.3 | 208 | Vancouver CMA 1961 Unemployment Rates by CT |
| 8.4 | 209 | Vancouver CMA 1971 Unemployment Rates by CT |

| Map | Page | Title |
|---|---|---|
| 8.5 | 216 | 1971 Residential Location of Manufacturing Production Labour Force within Vancouver CMA 1971 |
| 8.6 | 217 | 1981 Residential Location of Manufacturing Production Labour Force within Vancouver CMA 1981 |
| 8.7 | 219 | Distribution of Labour Force with Trades, University, or Non-University Certificate or Diploma |
| 8.8 | 221 | Variation in Unemployment Rates for Manufacturing Production and Non-Manufacturing Production Labour Force - "Inner City" and Suburban Areas Vancouver CMA 1980 and 1984 |
| 8.9 | 239 | 1981 Manufacturing Unemployment Rates for Vancouver CMA at CT Level |
| 8.10 | 248 | Definition of the "Inner City" of the Vancouver CMA |
| 8.11 | 256 | Distribution of Low-Value Housing Vancouver CMA 1984 |
| 8.12 | 257 | Distribution of Labour Force with Education Below Secondary Certificate |
| 9.1 | 296 | Percentage of Total CT Population with English as Mother Tongue Vancouver CMA 1981 |

Chapter I

# INTRODUCTION

Throughout the 1980's, unemployment has probably become the major socioeconomic problem at both the British Columbian provincial and the Canadian federal levels. Recurrent prime coverage of unemployment-related topics in the media and public perception of the severity of this problem ratify the importance attributed to the unemployment problem amongst the host of social and economic ills faced in modern life in Canada.[1] Of course, the unemployment problem is by no means isolated to the Canadian context, but is a pervasive phenomenon occurring in most "advanced" Western economies. The persistently high levels of unemployment experienced in recent years have not been matched since the depression years of the 1930's (see FIGURE 1.1 for a plot of annual average unemployment rates in Canada from 1921 to 1985). Unemployment is expected to exceed 34 million in the OECD nations by 1984 (Kuenstler, P. (1984) p.221).

Perhaps the most disturbing aspect of the rising unemployment levels is the associated longer average duration of unemployment experienced once a labour force member enters the state of unemployment (Dicken, P. & Lloyd, P. (1981) p.150). In British Columbia, the average number of weeks spent unemployed jumped from 13.4 in 1976 to 24.9 in 1985 (Statistics Canada 71-529).

Canada has traditionally had higher unemployment levels than Western Europe because of dispersed markets and seasonality and, over the period 1965-75, an exceptionally rapid growth in the labour force (from demographic characteristics, changes in participation rates, and immigration policy) (Jenness, R. (1977) p.5). However, unemployment rates in Canada and the U.S. declined dramatically in the mid-1960's from large tax cuts in the U.S. and, in 1962, the devaluation of the Canadian dollar.

---

[1]A Gallup Poll in mid-1984 found that 50% of Canadians interviewed felt that the most important problem, at a society-wide level, was unemployment. Inflation was recorded as distant second (with only 27% of the poll vote) (Vancouver Sun (1984a)).

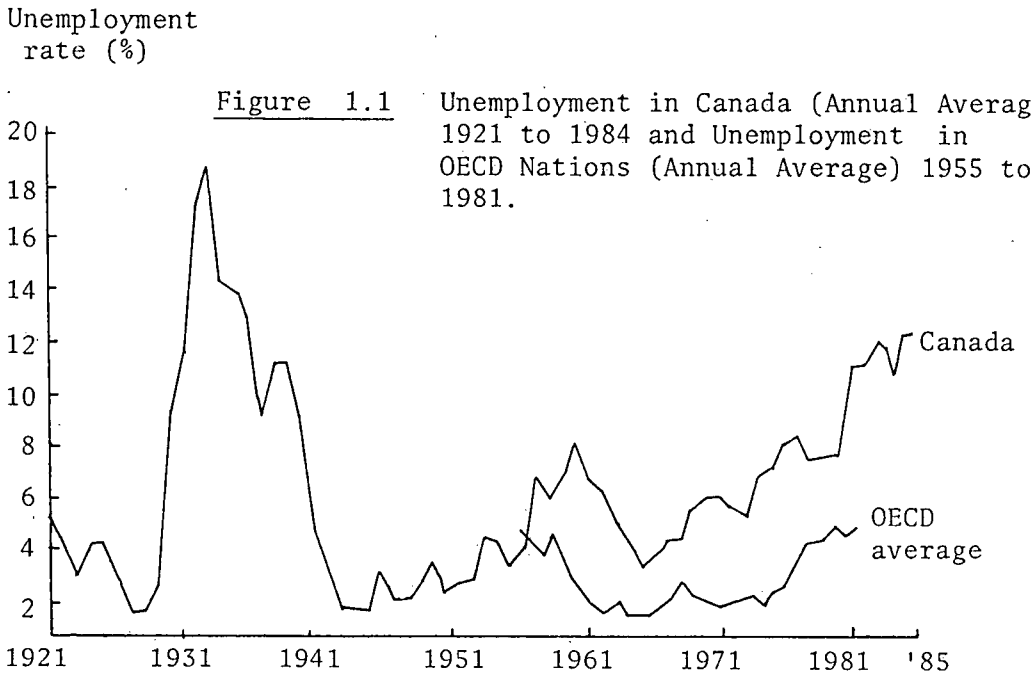



Figure 1.1 Unemployment in Canada (Annual Average) 1921 to 1984 and Unemployment in OECD Nations (Annual Average) 1955 to 1981.

Source: Compiled from Statistics Canada data 71-001 "Labour Force Survey Group".

This was the only period, since the early 1950's, that the Economic Council of Canada's target for national unemployment levels (3%) has been approached (Employment and Immigration Canada (1981) p.10).

From the mid to late 1970's, Canada, British Columbia (B.C.) and the Vancouver CMA (the primary study area), all had unemployment rates that hovered around the six to eight percent level (see FIGURE 1.2). Although a marked increase in unemployment rates after 1981 is obvious at all scales, B.C. has experienced noticeably higher unemployment rates than the Canadian average levels and the CMA figures have usually "followed" the B.C. situation with rates about one percentage point below.[2]

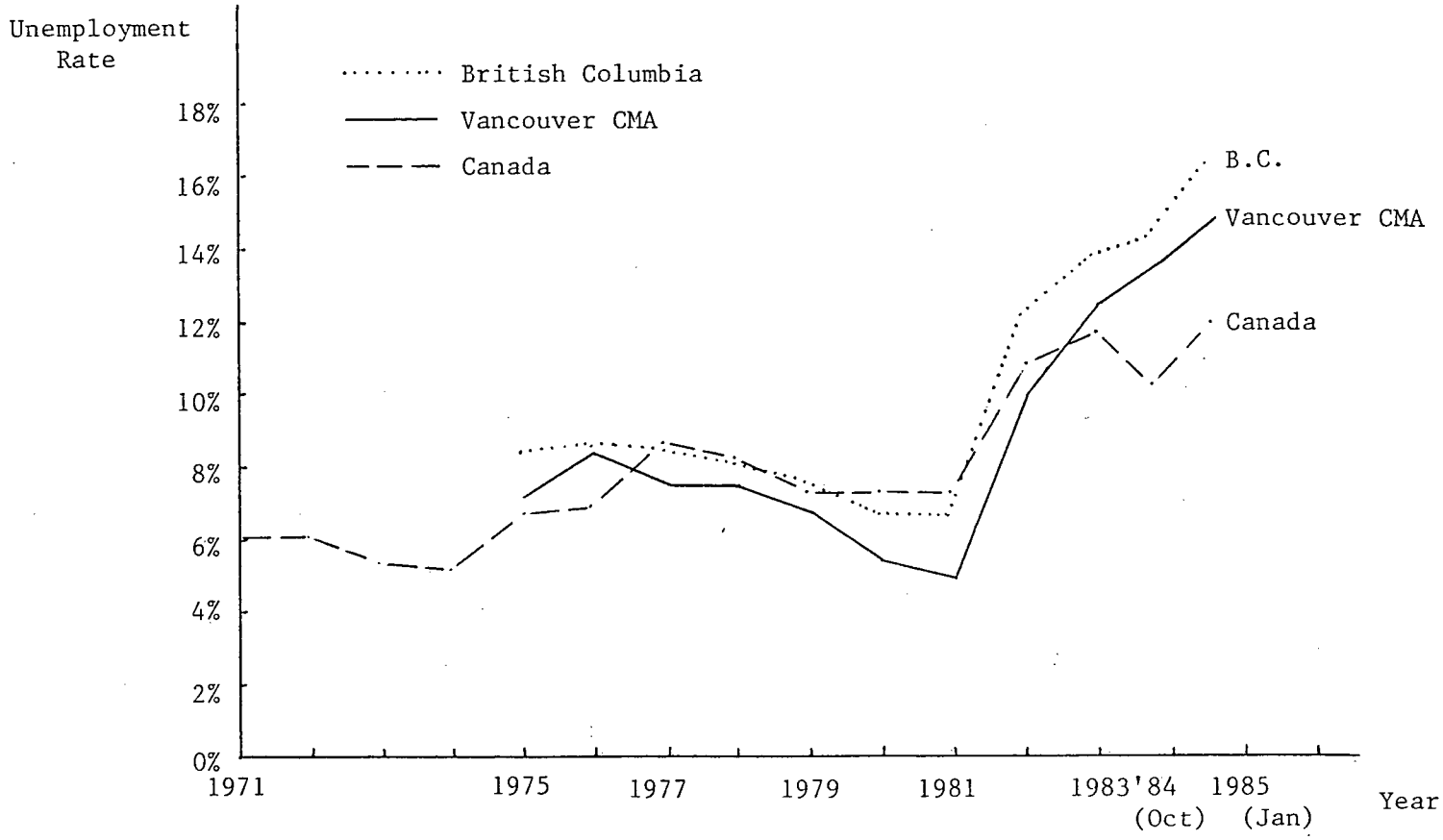
The rapid increase in unemployment in B.C. and the Vancouver CMA began after the exceptionally low unemployment resulting from the boom economic years in the province, 1979-81. There was also a recessionary high unemployment period in the

---

[2]Unemployment rates exclude "discouraged" workers and some researchers feel that the measure underestimates the actual incidence of unemployment or underemployment though, by definition, "discouraged" workers drop out of the labour force.

Figure 1.2 Unemployment Rates for Canada, British Columbia, and Vancouver CMA

1971 - 1985




Source: Statistics Canada. Labour Force Annual Averages. 71-529
Labour Force Survey 71-001

mid-1970's from the slowdown in economic growth, at a global scale, often attributed to OPEC supply-shock effects on world (and hence, B.C.) demand and the after-effects of the Vietnam War on the U.S. and world economies. However, the unemployment growth in the 1980's, in B.C., has been far more severe than in the mid-70's period. Between July 1982 and July 1984, B.C. lost six percent of its employed labour force (Regional Economic Services Branch (1984) p.5). By early 1985, the dismaying unemployment rates for Canada, B.C. and the Vancouver CMA stood at 11.0%, 16.5%, and 15.0% respectively.

These unemployment statistics are derived from the usual source of the official unemployment rates - Statistics Canada's "Labour Force Survey" (71-001). However, the "Labour Force Survey" statistics are calculated monthly on the basis of less than a one percent sample of housholds and include both part-time and full-time work seekers. The unemployment problem in B.C. actually appears worse when the more accurate unemployment totals (and hence rates) derived by adding 1) the number of Unemployment Insurance (U.I.) claimants and 2) the number of people on GAIN (Guaranteed Available Income for Need) excluding seniors and the handicapped, are examined.[3]

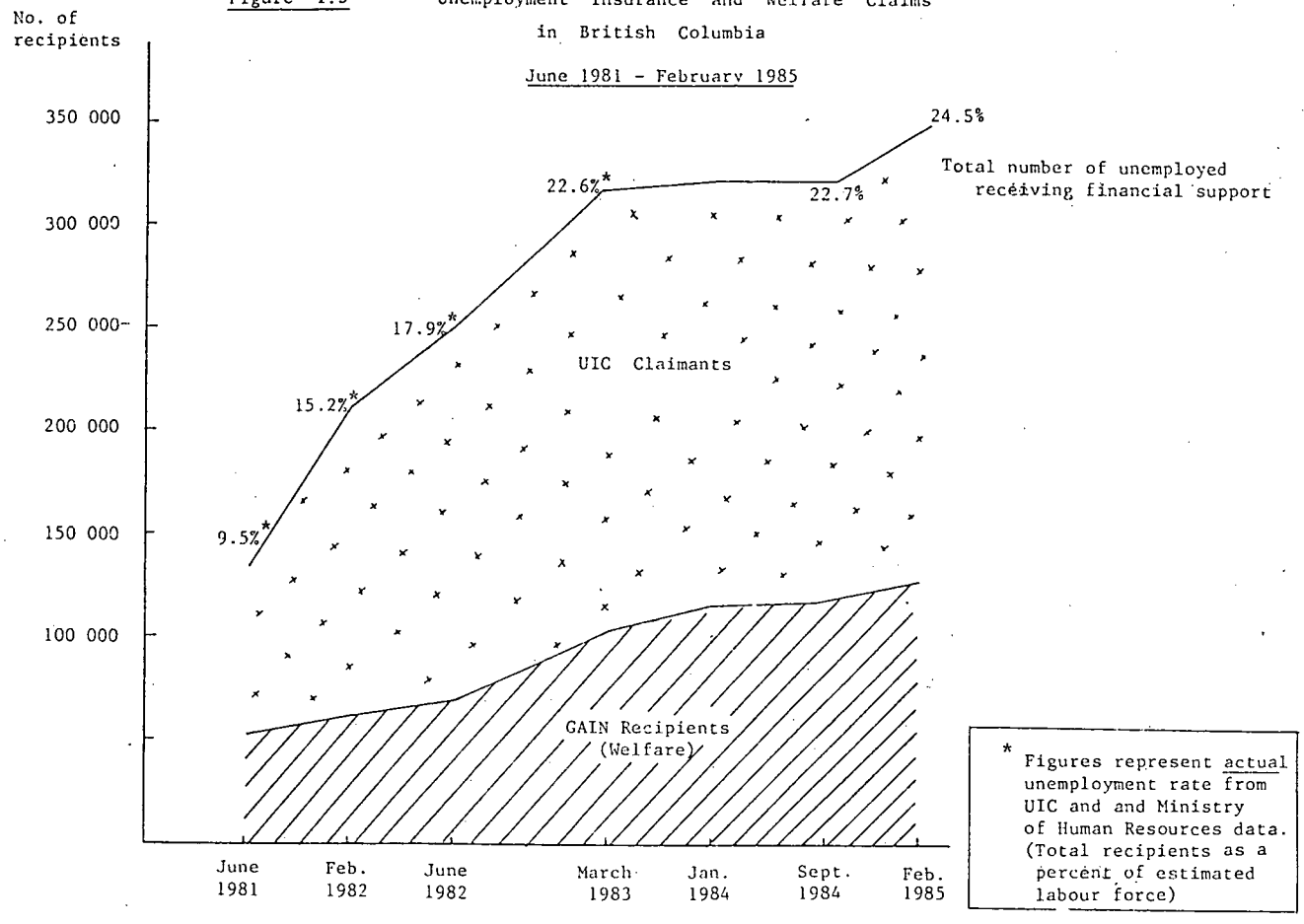
The separate contribution of U.I. claimants and GAIN recipients to the combined total unemployment is shown in FIGURE 1.3. Unfortunately, the two data sets are only comparable at B.C. level. The plot in FIGURE 1.3 indicates that, in February 1985, almost <u>one-quarter</u> of B.C.'s labour force is unemployed and in receipt of unemployment benefits or some kind of work-related welfare. The actual number of unemployed could be higher as those persons who do not receive benefit whilst unemployed (which could be a substantial number for certain groups in the population, such as the unemployed youth) are excluded.

---

[3]The statistics on GAIN recipients (after 1983) from the B.C. Ministry of Human Resources (M.H.R.) are confidential and have not been released publicly (for reasons unknown) and have been issued by special permission of the M.H.R.

Figure 1.3 Unemployment Insurance and Welfare Claims in British Columbia

June 1981 - February 1985




Source: Employment and Immigration Canada vP8840 "U.I. Claimant Summary Statistics". 1980-1984

Ministry of Human Resources (B.C.) Annual Reports for 1981-82 and 1982-83 and more recent data made available personally.

Statistics Canada 71-001 "Labour Force Survey".

There would be some reason to believe that hardship levels would not be as severe as they may appear (given the high unemployment levels and the longer average duration of unemployment) due to the high percentage of working females in family groups and youths who can still be supported by working parents. That is, households would probably still have at least one member working and providing family income. However, the large increase in welfare recipients (which would exclude household members with other members at work) does contradict the suggestion that unemployment in the modern context presents minimal hardship (as is implicitly assumed in the bulk of monetarist economic theory and the concentration on inflation control).[4]

At the aggregated, national level, the costs of unemployment have been calculated as enormous. For example, in the U.K., Thrift (1979, p.126) describes how unemployment, even in the relatively lower unemployment period of 1974–1976, cost $20,000 million in lost tax revenue, payment of benefits, and losses in national income. Just the difference in output expected if the labour "resource" had been fully utilized has been estimated as amounting to hundreds of billions of dollars in the U.S. (and at least 11 to 12% as much in Canada) (Tarshis, L. (1984) p.115). In Canada, social cost accounting techniques have been used to estimate the total social and economic costs of unemployment (between 1970 and 1982) as approximately $76 billion dollars (Denton, R. (1983) p.19). This figure includes direct economic costs (from foregone production and lost wages), lost government revenue, and U.I. payments and estimated social costs of individual unemployment stress-related indicators.

---

[4]The GAIN welfare rates are very low and would not provide a comfortable standard of living. In 1985, single people under 25 years receive $325 monthly, for the first month on welfare increasing to $375 per month after eight months (with many restrictions on possessions and house-sharing arrangements and exhaustion of credit source requirements). Those over 25 years receive $350/month for the first month increasing to $375 per month after eight months (B.C. Ministry of Human Resources (1985)).

At the individual level, costs include the more direct economic impacts on labour force members such as loss of income and the gradual loss of skills as well as the indirect more intangible detrimental social and psychological effects which are often virtually immeasurable (Tarshis, L. (1984) p.115; Thrift, N. (1979) p.126). The alienation and pathological ramifications of prolonged unemployment are often discussed in anecdotal form and are occasionally examined in socio-psychological studies. High unemployment incidence and duration is often linked to mortality, suicide, family breakdown, alcoholism, violent crime, juvenile delinquency, stress-related disease, and mental and prison admissions (Deaton, R. (1983) p.18). Sinfield (1984, p.240) believes that the full social cost of unemployment is not recognized because it falls unequally on the poorer and weaker sections of society.

Work can be perceived as the key means by which an individual's life chances are circumscribed (Dicken, P. & Lloyd, P. (1979) p.128). In a market economy, the individual has to sell his or her labour power for sustenance and participation in consumer society. Work-related income and status are the determinants of the overall form of, and one's position in the social structure. Hence, the nature of work (and of course the lack of work) will be a primary influence on the individual's power and control over resources, perception by other people, and self-esteem. There would be many other broad social processes operating to influence one's life chances and access to social resources (such as education) but none would have such a direct effect upon the immediate life situation of an individual.

As a result of this assumed importance of the labour force activity on the quality of life of members of society (usually a detrimental impact from unemployment), together with the recent high and persistent levels of unemployment, the unemployment problem in the Vancouver CMA has been selected as a relevant and significant topic for investigation in this thesis - at least at the time of the research undertakings.

The general aim of the thesis is to investigate the nature and causes of unemployment in the Vancouver CMA study area. That is, the research is oriented towards a determination of how the differentiation in unemployment characteristics (which can be identified at the intra-urban level) can help in the understanding of the underlying processes causing unemployment. Although a few studies have emerged recently, the intra-urban focus is not the usual scale for the analysis of unemployment. A regional perspective, of considerably less depth, is also provided.

Due to resource constraints and the forbidding complexity of the unemployment problem in general, the investigation will necessarily be limited in nature and the specific nature of the research focus adopted is reflected in the methodological approach utilized.

A distinctly geographic perspective for the analysis of unemployment is also a rather rare and recent approach to the problem. However, geography has been considered as an important basis for unemployment research on two broad criteria.

Firstly, space must provide the ultimate constraint on the matching process between the demand for, and the supply of, labour. Hence, the relative location of labour supply and demand is important for a true understanding and practical application of theory and policy on the labour market operation. The abstracted labour market (an aspatial conceptual entity) must be brought "down to Earth" where space will play a significant role in the supply-demand adjustment process.

Secondly, a geographical study basis is appropriate because spatial units can provide a useful analytic framework for unemployment research. This capability is particularly important when there is a paucity of data of the type required for an evaluation of some specific aspect of the labour market operation (as is the case in this study). In fact, the data base is usually deficient for most types of unemployment research and geostatistical data and statistical inference techniques (based on these units) can help give some idea of the nature of the required missing information. The

benefits to be derived from the use of spatial-based labour market data apply to both the demand and supply of labour.

For the demand for labour, spatial units can be invaluable for monitoring the dynamic form of the organization and spatial structure of economic activity. In relation to the supply of labour, space can provide a basis for analyzing the changing distribution and nature of society (as the "labour force") which would be, at least to some extent, reflected in the urban residential spatial strucure.

The geographic perspective adopted for this study necessitates an explicit recognition of the inherent dangers of geographical determinism (the overemphasis of space as a causal agent) in the formulation of the methodology and the subsequent analysis.

The specific objective of the thesis research is twofold.

The **first** aspect is the major section of the research comprising an investigation of the changing labour supply characteristics and nature of employment demand in the CMA, from a spatial perspective, primarily to assess to what extent job dislocation (the spatial separation of available appropriate labour supply and demand) may contribute to intra-urban unemployment variation (and, by implication, to unemployment in general). This research consists essentially of a series of tests of relevance of the two major hypotheses proposed by theorists as the dominant explanation of intra-urban spatial unemployment variations.

The "demand-side" hypothesis emphasizes the negative effect of the frictions of space (usually greater commuting costs and reduced information dissemination) on the probability of finding, or being able to accept, work. This viewpoint commonly implicates the decentralization process as a cause of observed high inner city unemployment. The suburbanization of industrial activity (and hence, most additional labour demand of this type) is seen to increase the required journey-to-work trip for at least part of the appropriate labour force "entrapped" in the inner city core area

(often low-income) housing. The greater distance to potential work is believed to reduce the ability of these inner city residents to find and accept potential jobs and the resultant differential unemployment probability is held to underlie the mosaic of unevenness for unemployment levels and to be a significant cause of unemployment in the urban setting. Hence, increased distance from potential employment demand would be expected to be associated with higher unemployment levels.[5] Access, mobility and the relative locational changes of employment demand are perceived as major determinants of the pattern of unemployment.

The alternative hypothesis (often termed the "supply-side" thesis) perceives the intra-urban variations in unemployment rates as predominantly a product of other non-spatial factors. The major variables utilized to explain unemployment variations are usually socioeconomic characteristics of the labour force and the differentiated nature of the urban housing market. That is, the personal characteristics of the labour force are thought to determine the probability of unemployment of individual members and the observed pattern is conceived to be a result of residential distribution of people (based on their personal characteristics) to the heterogeneous housing market. Hence, space would reflect the housing distribution of those people with varying unemployment probabilities but would have little or nothing to do with the actual determination of unemployment probability.

Consequently, this analysis is also an investigation of the appropriateness of the usual conceptualization of the CMA as the local labour market or the area within which space should have no effect on the labour market adjustment for any individual or group. Evidence to the contrary would suggest that there is actually a series of discontinuous local labour markets within the CMA geostatistical boundaries. The labour "sub-markets" would be defined by the location and space-time possibilities of sub-groups which would, in turn, probably be a result of the personal characteristics

---

[5]It will be very difficult to assert causality in this study given the aggregated nature of the data utilized.

of labour force members.

Although it is realized that this approach may not necessarily provide the explanation of urban unemployment, it is hoped that it will provide some insight on the underlying processes at work - particularly as a consequence of the accompanying detailed investigation of the changing nature of the occupational, skill and housing characteristics of the unemployed in the CMA.

The need for a search for processes underlying unemployment, in the CMA, operating at levels beyond the urban sphere, has justified the **second** major section of the research which is focused on the B.C. regional level. Broad economic structural changes in the manufacturing production sector have been examined at this wider geographical scale to investigate at least one dimension of the changing nature of labour demand across B.C.[6]

The regional focus on manufacturing production activity and occupations has not been based on an *a priori* conception of the economically vital nature of this sector but is simply provided as a case study of a major sector for which data is available.[7] It is fully realized that the manufacturing industries comprise a declining sector which has probably received too much emphasis in existing theory and research - the service sector may well be having a substantial ameliorative effect on the reduced demand for labour in the goods-production industries.

However, as discussed in subsequent sections of the thesis, the selection of the goods-producing sectors comprises an interesting and relevant study focus for a number

---

[6]The study of manufacturing production activity is operationally divided into three arbitrary geographic levels within the province - the core urban area of the Vancouver CMA, the suburban area of the Vancouver CMA, and the "nonmetropolitan" area of the province.

[7]The "machining", "product fabrication", "processing", "metal fabrication" and "materials handling" occupations in Statistics Canada's labour force and census data have been selected to represent the appropriate sections of the workforce for the comparison and integration with the manufacturing production statistics (also from Statistics Canada) at the sub-provincial level. Although this assumption is by no means completely accurate, the rationale for this choice is reasonably sound (and is explained in detail in the methodological description in Chapter 7).

of reasons including:

1. The manufacturing production sector has a high concentration of low-skilled jobs and is a major potential source of work for these groups which have the highest probability of unemployment. The manufacturing production labour force also has a large share of the pool of unemployed, has had exceptionally high unemployment rates for some time (at least in B.C.) and has experienced one of the highest increases in unemployment levels in recent years in the province.
2. Changes in manufacturing production activity would be closely linked to the process of deindustrialization thought to be a contributor to the contemporary economic woes of many "advanced" economies.
3. Many theorists believe the autonomy of the service sector has been overstated and stress the importance of the role of those services directly linked to secondary activity (Noyelle, T. (1983) p.280). The overall decline of economic activity in B.C., during the 1980's, with the downturn in the resources industries, may provide some evidence of this proposition. However, the necessary link may no longer be as geographically tied with the expansion and integration of the "world" economy (from organizational changes, decreased linkage costs and improved communications technology).

Hence, the first section of the thesis research is designed to evaluate 1) the contribution that a lack of access to "potential" employment opportunity makes to unemployment levels and variations in unemployment rates within the CMA, or alternatively, 2) to what extent unemployment variations within the urban area are a housing effect reflecting broad socioeconomic factors and broad economic structural

changes.

The second goal is to synthesize some of the wealth of literature on the broader structural explanations of unemployment (many of which stress production activity in a key role) and to examine whether there is any evidence of these trends in the B.C. manufacturing production activity context. Radical geography (and associated theory on the role of labour in the restructuring of industry (in which unemployment is usually perceived as a class weapon)) is the major school whose hypothesized processes are investigated in the second major section. This perspective has been selected as the primary field for investigation in view of the mass of literature published in recent times, based on a "neo-Marxian" approach, on labour's role in broad structural changes, and in view of the rather minimal effort to provide empirical instantiation of the existence or outcomes expected from hypothesized processes.

The background literature for the thesis research has been summarized and divided into five chapters. Chapter 2 presents a brief review of the major elements of the neoclassical models of the labour market to illustrate the underlying conceptual framework of most contemporary theory and policy in the "advanced" Western nations. The limited role attributed to space, the perceived nature of labour supply and demand and the associated labour market adjustment process, and the dominant value-orientation of the neoclassical paradigm are major themes of this chapter. Recurrent reference to neoclassical economic-based labour market theory and policy shall be made throughout the discussion following Chapter 2.

Chapter 3 introduces some of the major constraints on the perfect operation of the labour market - many of which are thought to result in unemployment. Social structural and spatial constraints are briefly reviewed. Spatial constraints on labour market adjustment provide the underlying basis for the division of the two alternative hypotheses on intra-urban variations in unemployment and a fairly detailed review of past research and theory on the two major schools of thought is presented in Chapter

4. Chapter 5 is partly empirical in content with an examination of suburbanization of industry (in terms of output and employment) trends in the Vancouver CMA study area since the mid-1950's. The intra-urban decentralization of industry is the *raison d'etre* of the demand-side hypotheses of intra-urban spatial variations in unemployment.

The principal literature review for the second major research section is completed in Chapter 6 which consists of a syntheses of the major radical views on the role of labour in the restructuring of production systems. Unemployment has a key role in many of the radical geography hypotheses.

The balance of the thesis follows the format of most research reports of this type with the exception of a major division of the result findings between Chapters 8 and 9 (summarizing the urban and regional level results respectively). Chapter 7 describes the methodological approach and Chapter 10 is an attempt to integrate the research findings at the two levels and incorporates discussion of some major implications of the study findings. The conclusion provides a quick review of major findings and surmises upon the nature of predominant processes at work and the possible future scenarios faced in the B.C. context.

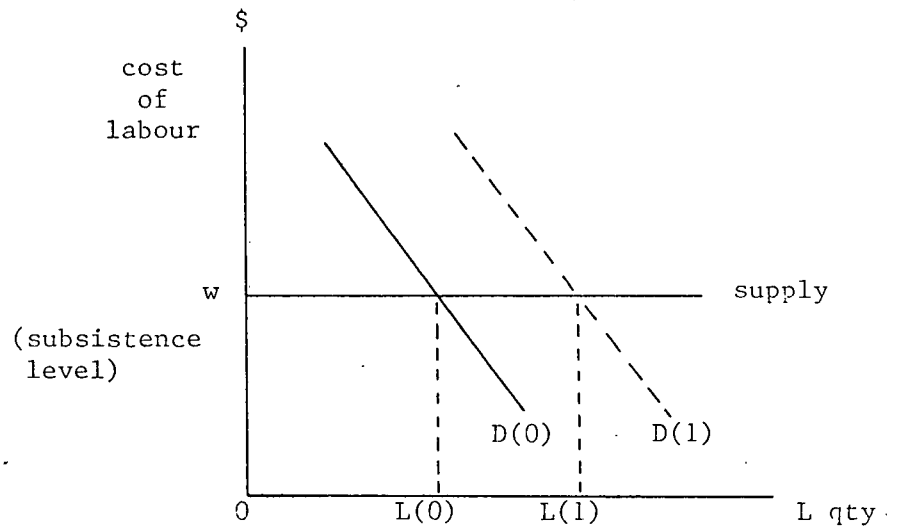
Data sources utilized are primarily secondary in nature with a heavy reliance on existing Statistics Canada data. The most detailed data available is for the census years, particularly 1981, which is not an ideal year for the study of unemployment in the CMA due to the low unemployment levels experienced in this year. Manpower U.I. data has been used for a supplementary analysis of unemployment in 1980 and 1984 and has enabled the examination and comparison of the 1981 situation with the nature of unemployment in the CMA in more recent itmes. Statistics Canada's manufacturing production statistics at the sub-provincial level (in document 31-209), which unfortunately is only available up until 1981, has been the major information source for the regional level analysis.

Chapter II

## THE NEOCLASSICAL CONCEPTION OF THE LABOUR MARKET

The nineteenth century historical and sociological context of the industrial revolution heavily influenced the classical economic conception of the market for labour. Under this perspective, the labour input to the production process was implicitly considered in terms of a horizontzal, perfectly-elastic long-run supply curve - supply being equal to the size of the lower-class population (see FIGURE 2.1) (Tait Montague, J. (1970) p. 36).

Figure 2.1 The Labour Market in the Classical Economic Model




Source: Adapted from Tait Montague, J.(1970,p.22)

Unlike more localized and scarce resources, labour was assumed to be at hand in the quantity and quality (homogeneous and unskilled) required to man the capital equipment at whatever location was chosen for industrial development. Consequently, spatial considerations were completely irrevelevant and demand for labour was perceived as being met by an automatic response from the unlimited population of workers. Excess labour supply above demand requirements would not occur as the "natural" wage rate (subsistence level) ensured on equilibrium matching of supply to demand as

mediated by Malthusian limits to the reproductive behaviour of workers.

This view of the labour input was consistent with:

1. The social relations of that European historical period in which the subistence wage was perceived as a logical extension of the traditional feudal relationships from which the capitalist mode of production emerged and,
2. The massive rural-urban migration of labour to burgeoning industrial towns which ensured an unlimited supply of labour at the basic cost required for the physical sustenance of the worker (and family).

In early neoclassical economic theory of the late nineteenth century, the concept of the labour "market" was developed to incorporate the analysis of labour within a market like that for any other commodity for sale. The introduction of the notion of possible scarcity in labour inputs inspired the adoption of a positively-sloped supply curve in subsequent labour market theory. The early neoclassical appproach (up to approximately the mid-twentieth century) was primarily concerned with the nature of the demand curve and the use of marginal analysis to judge the returns made possible by labour inputs (Tait Montague, J. (1970) p. 90). The market for labour was subsumed under the neoclassical rubric of marginal utility theory (proposed by Walrus and others) showing how prices at which commodities or factors of production exchanged are determined by the relative marginal utilities of people taking part in the transactions.

Such fundamental neoclassical perspectives provided the foundation for the sub-discipline of labour economics which has evolved as perhaps **the** major Western contemporary field of study encompassing a systematic, theoretical treatment of labour in the (capitalist) economic system. Although based on the neoclassical economic paradigm, the simple modelling of early proponents has been subsequently modified in

an attempt to account for observed imperfections in the ideal operation of labour market.

## A. THE DEMAND AND SUPPLY FOR LABOUR IN COMPETITIVE MARKETS

In its simplest form, the single, spatially-abstract labour market is conceived as a bourse or mechanism for matching job-seekers to job-providers (Dicken, P. and Lloyd, P. (1981) p.128) or simply as a convenient abstraction for the purpose of rationally organizing ideas about the job-matching process (Fleisher, B. and Kneisner, T. (1984) p.172). Labour, as an impersonal factor of production, is assumed to be discretely exchanged in a market like any other commodity market with no interdependence, transaction cost or planning. The wage is portrayed as merely the price paid to the seller of labour by the buyer.

In common with all neoclassical theory, the operation of the labour market is assumed as being governed by a number of axioms:

1. A perfectly competitive economic environment within which rational, profit-maximizing economic "men" make decisions with perfect knowledge.
2. Exchange is the central social and economic process.
3. Price is the key signal and short-run clearing mechanism.
4. The model is perfectly equilibriating and symmetrical.
5. Disequilibrium will be met by susbstitution as the main adjustment process.
6. The outcome is optimal and perfectly fair - the market is perceived as the meritocratic allocator of rewards to individual persons.
7. Individuals exercise free choice and outcomes align with preferecnes and fulfil utiliy-maximization criteria.

(Clark, G. (1983b) p. 166; Storper, M. and

Walker, M. (1983) p. 8-9)

Under this scenario, labour and its characteristics are listed in a central market place, bidding ensues, and the price is determined by the interaction of supply and demand and substitution options. Space, if recognized at all, is simply a passive stage on which labour exchange is freely facilitated (Clark, G. (1983) p.2). However, the friction of space on the labour market operation is an essential aspect of the first part of the intended research aim and spatial (and other) constraints are introduced after a brief overview of the ideal operation of labour markets in neoclassical economic theory.

## 1. THE DEMAND FOR LABOUR

The marginal productivity principle is the primary means of assessing the demand for labour at the level of the firm and provides the essential link, in labour economic theory, between the product and labour markets. Labour is envisaged as a divisible commodity arranged according to the most efficient mode of production.

Labour demand is usually referred to as a **derived demand** stemming from a 1) market relationship (the demand for goods and services to be produced and the marginal returns to the enterprise from a small variation in sales) and 2) a technological relationship (the marginal physical productivity of labour or the output that results from a small increase in labour services with capital fixed) (King, J. (1972) p.19).

The product of the marginal revenue (MR) (derived from the product market) and the marginal physical product of labour (MPPL) gives the **marginal revenue productivity of labour** (MPPL) or the addition to total revenue produced by the employment of one extra unit of labour. Having determined the returns to the enterprise from the addition of units of labour, comparison with the cost to the employer in adding labour services, supposedly reveals the amount of labour required

for profit to be maximized - that is, where the MRP equals the marginal cost (MC) of labour (a function of the going wage rate). Under the equilibrium assumptions firms will hire labour as the only variable factor of production, until the MC of labour is equal to the wage that it creates. Therefore, the firm's labour demand curve is defined by:

$$W = VMPL = P.MPPL$$

where

W = wage

P = market price

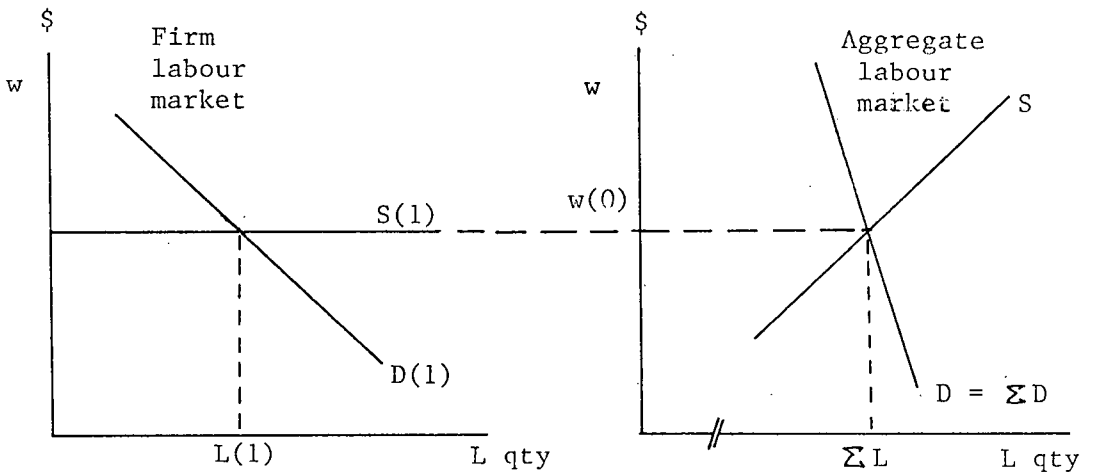
VMPL = value of the marginal productivity of labour (MPPL.P)

The key concept of marginal productivity implies a negative relationship between the wage rate and the level of employment offered by the firm - ceterus paribus, increased wage rates will mean a decrease in the firm demand for labour. The negative slope of demand curve (see FIGURE 2.2) reflects this inverse relationship and the demand schedule itself shows the amount of labour firms would be willing to hire at various wage rates.

In this microeconomic view, marginal productivity is used to derive the firm's level of employment and not its wage (which is perceived as being determined exogeneously at the aggregate or industry labour market level) (Addison, J. and Siebert, W. (1979) p.35). As such, it does not constitute a theory of wages but is simply posited as the "rational" process for establishing derived demand for any factor of production.

The derivation of the demand for labour when the firm adjusts capital inputs requires a slightly more complicated analysis by incorporating the concept of an expansion path of points of tangency between isocost and isoquant lines for labour and capital (Fleisher, B. and Kneisner, T. (1984) p. 60). Isocost (or isoexpenditure) lines

Figure 2.2 The Firm and Industry Level Labour Demand Curves Under Perfect Competition




Source: Adapted from M. Gunderson (1980,p.148)

show how the firm can implicitly trade-off labour and capital for a given budgetary constraint and isoquants are the locus of input combinations capable of producing a given level of output. By allowing, for example, the wage rate (w) to vary, substitution (input mix) and scale (output quantity) effects (operating on the expansion path defining the way a firm adjusts its inputs as output grows or contracts) are considered to be the determinants of the form of the labour demand schedule. The absolute quantity of capital demanded from wage change is more unpredictable under these conditions and the elasticity of demand for labour is greater than when capital levels are fixed. Most analyses assume the technical relationship between production inputs and outputs (the production function) as fixed.

At industry levels, changes in labour demand are evaluated from changes such as movements in the price of output. Decline in product price is seen to affect firm's demand curve for labour because the value of the marginal product of labour will drift downwards making labour demand schedules steeper than for those at the firm level (see FIGURE 2.2) (Fleisher, B. and Kneisner, T. (1984) p. 75).

In summary, the study of labour demand in labour economics is pivoted around how changes in product demand and labour and capital prices affect the firm's demand for labour (Ehrenberg, R. and Smith, R. (1982) p. 21).

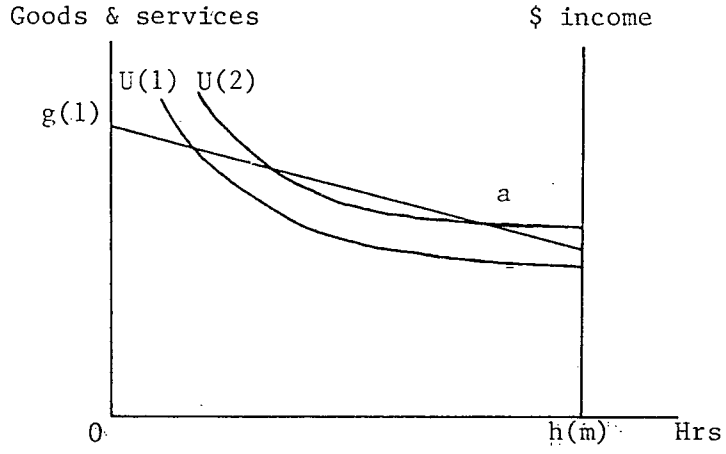
## 2. THE SUPPLY OF LABOUR

Since about World War II, there has been a considerable research emphasis shift from demand manipulation to the intrinsic nature of supply in the short and long term (Tait Montague, J. (1970) p. 35).

Analysis of individual labour supply in the shortrun is primarily focused on the supply response to changes in the wage rate and in non-labour income. The neoclassical model of the supply of time (labour hours) to the marketplace is basically a theory of consumer behaviour in which individuals freely choose to sell their labour to acquire income in the light of their utility functions (containing some trade-off between consumption of goods and services and leisure (non-market) time). Individuals are prevented from consuming unlimited quantities of goods and hours due to the finite nature of scheduled time and the assumed limited income available to them (Fleisher, B. and Kneisner, T. (1984) p. 117). These limitations are summarized in the budget constraint line (see the line connecting g(1) and v(1) in FIGURE 2.3) defining the individual's consumption opportunities - consumption measured along the vertical axis and hours of (non-market) leisure time along the horizontal axis.

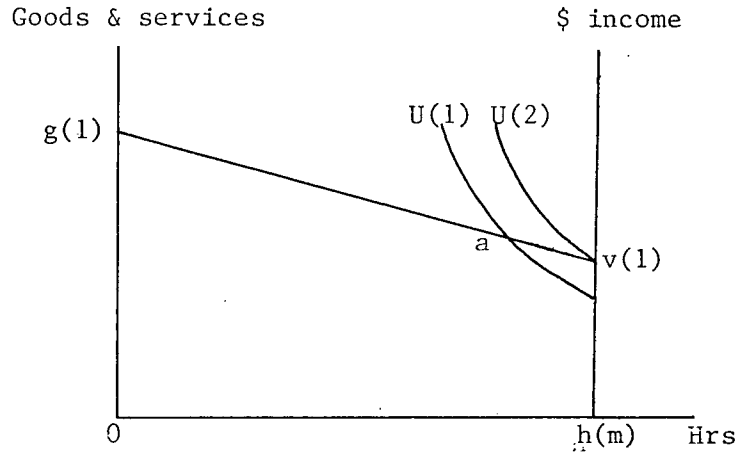
When the marginal rate of substitution ((MRS) the negative slope of the indifference curve between "bundles" of goods and leisure at a given utility level) is less than the market wage, the decisionmaker chooses to sell some labour time to the labour market (see point "a" in FIGURE 2.3). If the indifference curve intersecting the budget constraint at the point indicating zero hours of market work (h(m)) is steeper than the budget constraint at that point, then utility is maximized (given U(2) is a high level of utility than U(1)) by not participating in market work at all. (see

Figure 2.3 Utility Maximization: Work




Source: After Fleisher,B. and Kneisner,T. (1984, p.120)

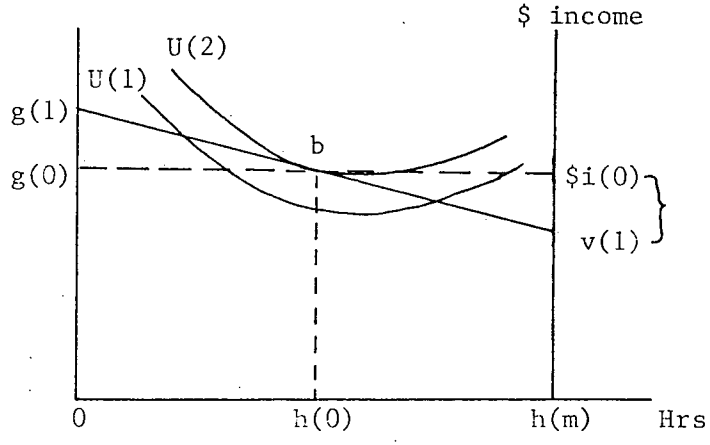
Figure 2.4 Utility Maximization: No Work




Source: After Fleisher,B. and Kneisner,T. (1984, p.119)

Figure 2.5

Utility maximization and Hours of Work




i(0) = total income

y(0) = earnings from market work

Source: After Fleisher,B. and Kneisner,T. (1984, p.124)

FIGURE 2.4) That is, for an individual not to participate in the labour force, the MRS between market goods and time must exceed the market wage rate at the point where no work is performed (h(m)).

As the market wage increases (shifting the budget constraint), it will eventually reach a value where non-participants in the labour force become indifferent between working and not working - a value called the reservation wage rate where the budget constraint is tangent to the indifference curve at h(m) hours. Further increases in the market wage will lure the individual into labour force participation. The decision-maker would be seen to maximize utility where the slope of the budget constraint (market wage rate) equals the slope of the highest indifference curve for that individual. Utility is therefore maximized (see FIGURE 2.5) at point "b" by consuming h(o) hours and g(0) goods.

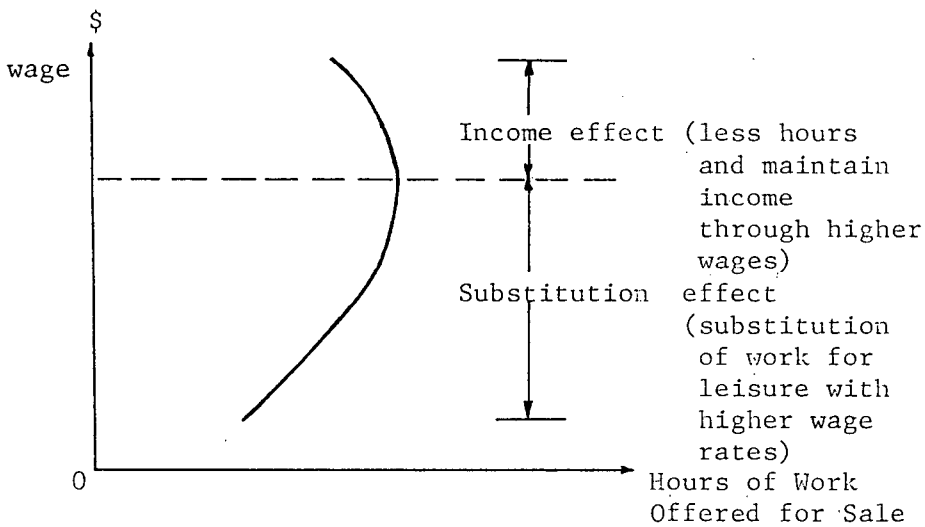
Clark (1983b, p. 167) has paraphrased this process description as the offering of labour for sale by individuals at a minimum bid price (reservation wage) based on the calculus of utility. Individuals are valued in terms of their individual contributing value to production and supply and demand set the market price (wage). If there are no "bids" greater than the reservation wage, labour is withdrawn from the market.

Invariant participation rates were the prevailing view by economists until well into the twentieth century (Tait Montague, J. (1970) p.43). Previously, labour supply variations were primarily attributed to demographic changes.

In more modern neoclassical treatments of labour supply in the short-run, the focus is upon the "supply of labour" as the product of the number of workers by the number of hours offered for sale and the response of this total supply of labour hours to wage rate changes. The supply schedule is ascertained by the "calculation" of utility maximization points at various wage rates thus revealing how the optimal number of hours is affected by changes in the wage rate and nonemployment income.

The slope of the market supply schedule is generally perceived as being positive on the assumption that higher market wages raise the price of leisure relative to the price of consumer goods and hence encourage a substitution of work for leisure and increases hours supplied (the substitution effect). At some point, the supply curve is believed to bend backwards (see FIGURE 2.6) as a result of the "income effect". With increasing wages, the individual becomes "richer" and eventually prefers to trade-off consumption for greater leisure time (Addison,J. and Siebert, W. (1979) p.73).

Figure 2.6 The Income and Substitution Effects on the Supply Curve for Labour




Source: After Tait Montague (1970, p.44)

The role of cultural factors and macroeconomic change (such as increased cyclical unemployment), on the participation decision, and analytic treatments of the individual's supply decision in the light of their relevant household context, are other major aspects of the labour economic study of labour supply in the short-run (Hewings, G. (1977) p.86).

Long-run supply changes are examined within labour economics under the guise of theories of the investment in human capital by the household and the firm. Human capital has been broadly defined by Myers (1975) as that:

> ...national stock of wealth inhering in human beings, representing the capitalized value of income streams resulting from expenditures, public and private, or education, health, training, migration and the like...
> (1975, p.94)

Under this theoretical framework, individual wage variations are perceived as reflecting differences in labour quality and hence the VMP of labour units resulting from variable embodied human capital investment. If the worker wishes to increase his or her wage rate in the long-run, they will choose to add to their skills through the expenditure of time and money on schooling and training. (Storper, M. and Walker, R. (1983) p. 8). However, this decision is also framed within utility maximization criteria, with the occupation alternative chosen being that one yielding the greatest present value and hence maximizing the individual's wealth. Individuals must choose whether or not to incur direct costs such as tuition and foregone (lower) earnings in order to reap future benefits.

The decision to undertake an increment to the individual's stock of human capital is considered optimal whenever the rate of return on that investment is greater than the applicable rate of interest. Hence, the present value of the investment must exceed its cost (Fleisher, B. and Kneisner, T. (1984) p.296). Individuals are seen to rationally adjust their levels of education (embodied human capital) with respect to their immediate consumption and future expected earnings, thus fulfilling wealth maximization imperatives and their respective preferences. Therefore, observed differences in income among individuals is a result of differences in human capital which are individually derived (Clark, G. (1977) p.14).

## 3. THE INTERACTION OF SUPPLY AND DEMAND FOR LABOUR

Prevailing wage rates utilized in deriving the equilibrium level of labour demand at the firm level, are generally seen to be an outcome of the interaction of labour supply and demand schedules at the aggregate market level (which many be

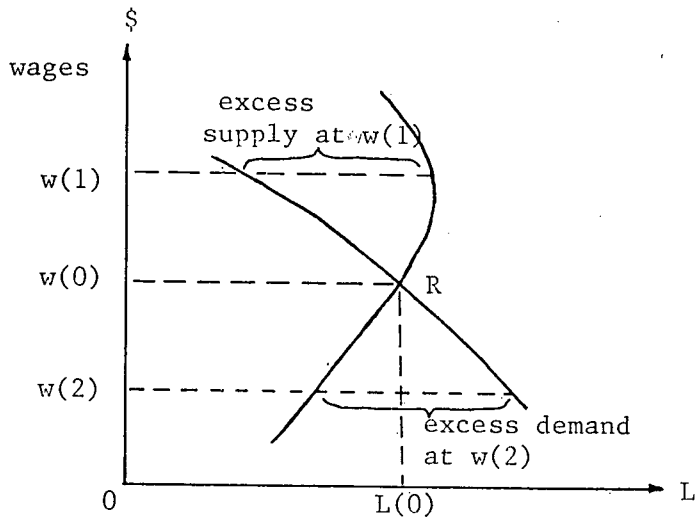
delineated on industry, occupation or geographic criteria). The firm supply of labour is usually assumed as homogeneous and perfectly elastic (horizontal) at the market wage rate. Competitive firms are wagetakers, and are therefore held to be able to employ all of the labour they want at the resulting market wage rate (see FIGURE 2.2) (Gunderson, M. (1980) p. 147).

However the aggegate supply curve is, as shown in FIGURE 2.7, the total number of hours workers will wish to sell at each wage rate (with the backward bend from greater income levels being accompanied by an increased desire to spend more time in leisure activities). The market labour demand schedule represents the summation of the labour demanded by all firms in a particular labour market at each level of the real wage (allowing for feedback effects from the markets for final output) (Ehrenberg, R. and Smith, R. (1982) p.28)

Where supply and demand intersect, the market-clearing or equilibrium combination of wages and quantity of labour demanded (w(o) and L(o) respectively in FIGURE 2.7) is found and labour is assumed to be efficiently allocated and all parties completely satisfied. The market for labour is cleared at w(o) because the quantity of labour workers desire to sell matches the amount employers desire to purchase. At w(1) there is an excess of labour up for sale and, at w(2), insufficient labour will be attracted to meet demand requirements (Fleisher, B. and Kneisner, T. (1984) p.173) The equilibrium wage rate, w(o), becomes the going wage rate for firmspecific marginal productivity assessment and consequent levels of labour demand required.

As such, marginal productivity theory does not really provide a basic rationale for wage determination and has been criticized on these grounds (Smith, D. (1977) p.69). Unlike the classical economists who perceived production labour as the sole source of value, the neoclassical paradigm uses a relative measure of value - that of scarcity (supply and demand) as measured by market prices - to define the worth of

Figure 2.7 Labour Market Equilibrium




Source: After Fleisher, B. and Kneisner, T. (1984, p.161)

workers (Clark, G.L. (1984) p.178). The market wage is basically a phenomenon resulting from the supply-demand interaction (obviously within an effective labour market) and marginal productivity, as the "value" labour contributes to the enterprise sales revenue, is only indirectly responsible for the determination of wage levels.

Market labour demand is the summation of all firms' demand for labour hours at various wage levels and is directly appropriate in assessing the nature of the labour-demand / labour contribution (to output) relationship. However, the wage paid to labour, even within the neoclassical conception, is still fundamentally a result of the interaction of the market demand curve with the supply curve. As a consequence, the marginal productivity of labour (though an influence on demand) could well be conceived as independent of the supply situation (which is supposedly originally determined by market wage levels) and, if so, is only an ancillary aspect in the setting of the equilibrium wage. Interdependencies and contingency, rather than unidirectional causality, characterize the neoclassical models. The somewhat tautological neoclassical explanation of wage determination is discussed further in Chapter 10.

Implicitly assuming away the more fundamental aspects of the creation and distribution of value (as natural and fair in market economies), supply and demand models are primarily used for predicting how "exogeneous events", such as labour supply and productivity changes influence wages and employment (Fleisher, B. and Kneisner, T. (1984) p.173).

## B. CONSTRAINTS ON THE PERFECT OPERATION OF THE LABOUR MARKET RECOGNIZED BY NEOCLASSICAL THEORISTS

A number of real world phenomena are incorporated within neoclassical labour market theory to account for the inevitable deviations which impinge upon and prevent the ideal operation of the market for labour described in the previous section. These appended analyses are usually centred upon modifying or relaxing some of the tenets of the simple neoclassical market conception - the assumed perfectly competitive environment (for buyers and sellers of labour), perfect knowledge by all actors, homogeneity of the "commodity" for sale, perfect mobility (from the aspatial assumptions), and the lack of institutional constraints on wage movements and the adjustment process in general. When the ideal conditions are not fulfilled, the "exogeneous" distortions of markets are entered into labour economic analyses as malfunctions in the natural, equilibrium process.

### 1. NONCOMPETITIVE BUYERS OF LABOUR

Imperfections in the product market can prevent the ideal labour market outcome from occurring. In the case of the firm being a monopolist in the product market, that firm will also be the industry (for the product considered) and will influence its price in the determination of output levels. Because the monopoly firm is the industry, its output demand curve is the downward-sloping market demand schedule and as additional units of output are offered for sale, the price the monopolist can

charge must decline (Fleisher, B. and Kneisner, T. (1984) p.196).

The basic disparity between adjustment in the competitive model, and the supply-demand interaction underlying the monopoly product market outcome, stems from the determination of a monopolistic labour demand curve which lies below the competitive labour demand schedule (see FIGURE 2.8). This divergence results from the different nature of the profit-maximizing output decision which has direct implications for derived labour demand.

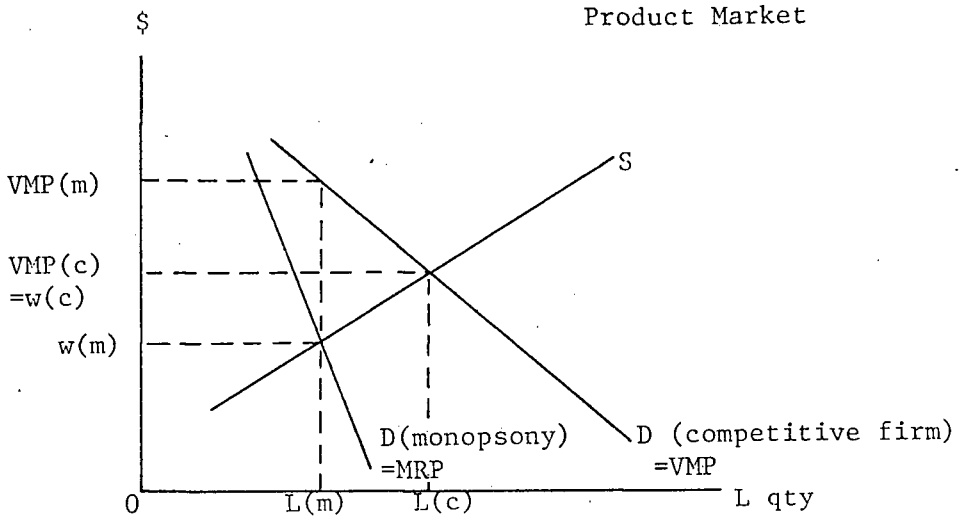
Unlike the competitive decision-maker, the monopolist bases the profit-maximization decision on the product marginal revenue (MR) schedule rather than the demand schedule (Gunderson, M. (1980) p.152). Marginal revenue is the additional revenue generated by selling an additional unit of output and, because the monopolist has to lower the price on all units of output (and not just additional units) to sell more output, the MR will fall faster than the price. Hence, the MR schedule will lie below and to the left of the demand schedule (Fleisher, B. (1970) p.161). Profit is maximized where MC equals MR and the equilibrium outcome will be one of less output and a higher price than if it were a competitive firm on the product market.

This situation has direct ramifications for the derived demand by the monopolist. The competitive labour demand schedule is given by the product of the MPPL by the market price of output (P) (resulting in the value of the marginal product of labour (VMPL)), that is:

$$W = VMPL = P.MPPL$$

However, the monopolist labour demand curve is derived from the MR schedule:

Figure 2.8 The Competitive and Monopolistic Labour Demand Schedules - Imperfections in the Product Market




Source: Based on Fleisher, B. (1970, p.161)

$$W = MPPL.MR = MRP$$

where MRP = marginal revenue product

Since the monopolist MR schedule lies below the demand schedule, the monopolist's labour demand schedule also lies below the competitive firm's demand schedule (see FIGURE 2.3). The monopolist's demand for labour falls faster than it would for a competitive firm because both MPPL and MR fall (because output price must be lowered) when the monopolist hires more labour (thus creating more output).

Consequently, if the firm has monopoly power, it will use less labour L(m) and pay a lower wage w(m) than if competition prevailed (L(c) and w(C)). In the competitive situation, labour is hired up to the point where the wage rate equals the value of the marginal productivity of labour (w(c)). Under monopoly, the difference between the wage (w(m)) paid and the VMP under monopoly (VMP(m)) has been termed as a measure of the Pigouvian exploitation of labour (per worker) (Gunderson,

M. 1980) p.153).

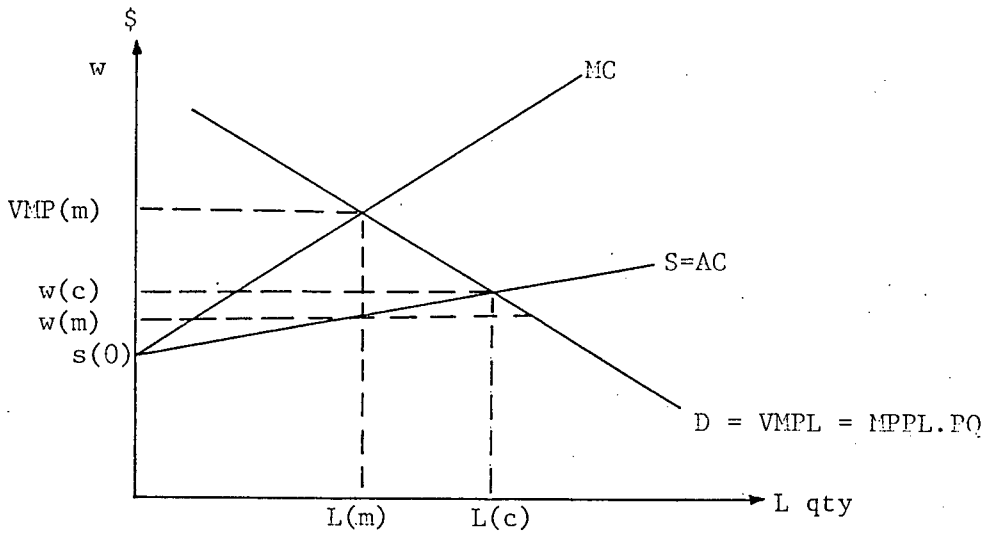
The second major type of noncompetitive market imperfection is the case of the monopsonist where there is only one buyer of labour in the market. Oligopsony (with only a few firms buying labour) is usually a more realistic scenario and only requires slight theoretical modification of the monopsony model.

Because the monopsonist is the only buyer of labour, its labour supply curve is the labour market supply curve and it is therefore a wagesetter having to increase wages to get additional units of labour. Thus, the monopsonist faces an upwardly-sloping labour supply curve (at the going wage rate) rather than a perfectly elastic schedule faced by the competitive firm (Gunderson, M. (1980) p.165). As at the competitive industry level, this labour supply curve shows the average cost of labour or the wage that must be paid for each different size of the firm's workforce.

The major departure from the competitive model lies in the derivation of a MC of labour curve, lying above the average cost (AC) or supply curve, as the relevant decision-making schedule (see FIGURE 2.9). This difference stems from the assumption that the firm cannot increase units of labour without increasing the wage rate to <u>all</u> employees (existing and intended additions). As a result, the larger the monopsonist's workforce, the larger the difference between its current wage (AC) and its cost of adding a worker (MC) (Fleisher, B. and Kneisner, T. (1984) p. 205).

The MC of adding another worker equals the new wage to additional employees and the addition to wage costs of existing workers (to maintain parity).

Figure 2.9 Comparison of Competitive and Monopsonistic Labour Markets




Source: After M. Gunderson (1980, p.166)

Therefore, the MC of adding an additional worker is greater than the average cost and the appropriate MC schedule is thought to lie above the supply (AC) schedule. This equilibrium orientation totally ignores the possible wage effect of a potential balance of bargaining power favouring the firm as the only purchaser of labour in a particular labour market.

Profit maximization is obtained by hiring labour until the MC of labour equals the MR generated by that unit. MR is given by the VMP schedule in the competitive product market situation. The monopsonist restricts the quantity of employment demanded, in relation to the competitive scenario, because hiring additional labour becomes relatively more expensive (required demand shifts from L(c) to L(m) in FIGURE 2.9). The actual wage paid in the monopsonist firm is read off the supply curve at that level of employment demand resulting from the interaction of the MC

and VMPL (demand) curves. The supply curve is the indicator of the amount of labour which will be forthcoming at each wage (that is L(m) units at w(m)). The wage paid (w(m)) is less than the wage that would need to be paid to employ the competitive labour demand outcome (L(c)) and is also less than the VMP of L(m) units of labour used in the monopsonist outcome.

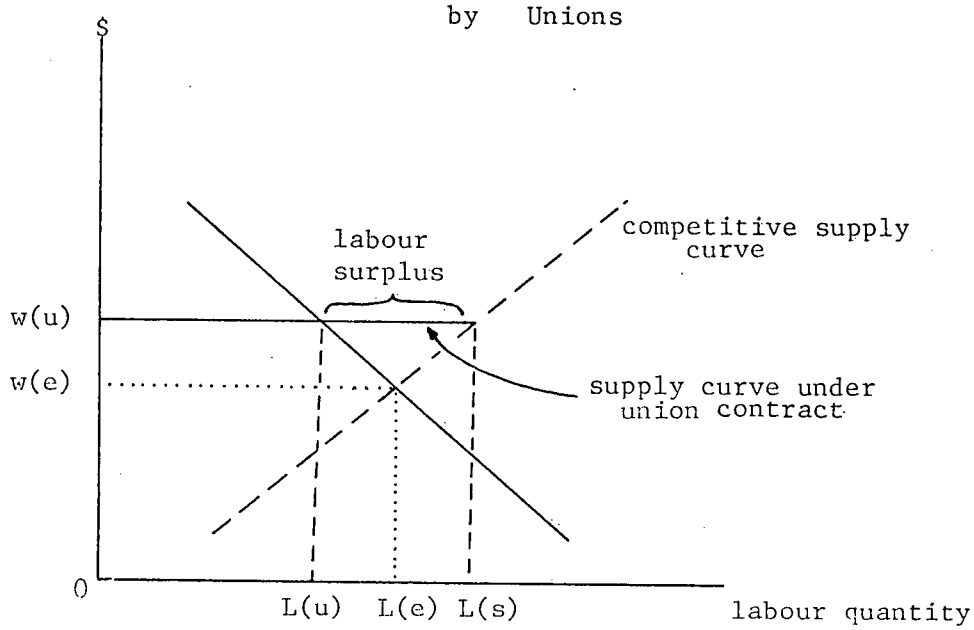
That is, the monopsonist pays a wage rate to the worker less than their marginal value to the firm (though the value of output does equal the MC of producing it). This difference is termed the monopsonistic exploitation of labour - equal to VMP(m) - w(m) per worker. A further outcome of the inequality between the VMPL and wage rate paid is that an increase in wages may not necessarily lead to a decrease in the employment level in the presence of exploitation (Addison, J. and Siebert, W. (1978) p.52).

2. NONCOMPETITIVE SELLERS OF LABOUR

Another distortion on the perfect operation of the labour market, considered in the labour economics discipline, is the effect of unionization as a situation where the sellers of labour are noncompetitive. The impact of unions, through contracts and collective bargaining agreements (often at an industry-wide level), are primarily focused on the nature of the supply curve.

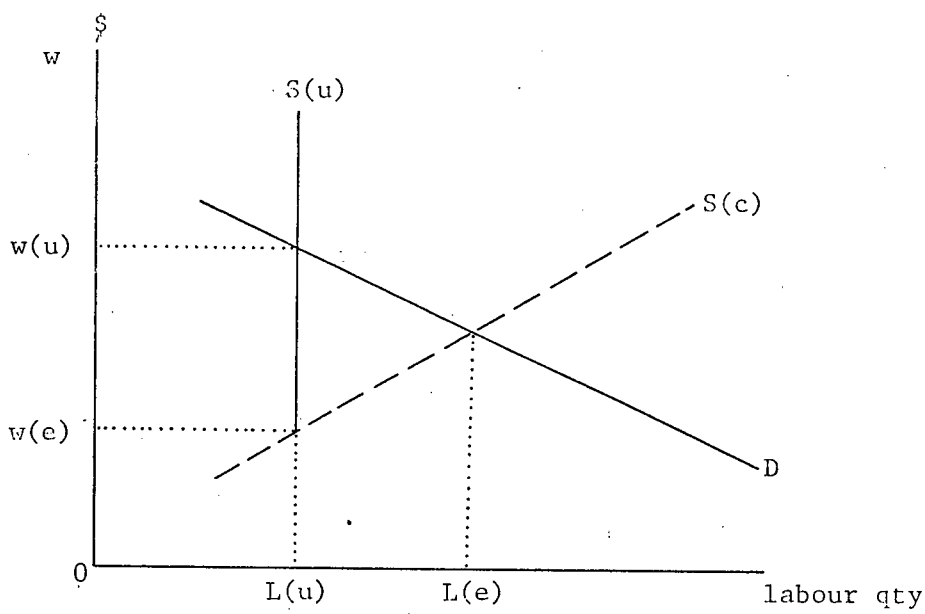
Wage setting in contracts is perceived as making the industry supply curve horizontal so that no employee can get paid more or less than the contract wage (Ehrenberg, R. and Smith, R. (1972) p.38). The modified supply-demand interaction outcome results in a wage above the competitive equilibrium with employment levels below those resulting from the lower competitive wage result (see FIGURE 2.10) A "surplus" of labour remains (L(s)-L(u)) as, at wage W(u), L(s) workers want jobs but only L(u) can find work.

Figure 2.10 The Effect of Wage-Setting Contracts by Unions




Source: After Ehrenberg, R. and Smith, R. (1982,p.38)

Figure 2.11 Effect of Supply Limitations by Unions




Source: After Ehrenberg, R. and Smith,R. (1982, p. 40)

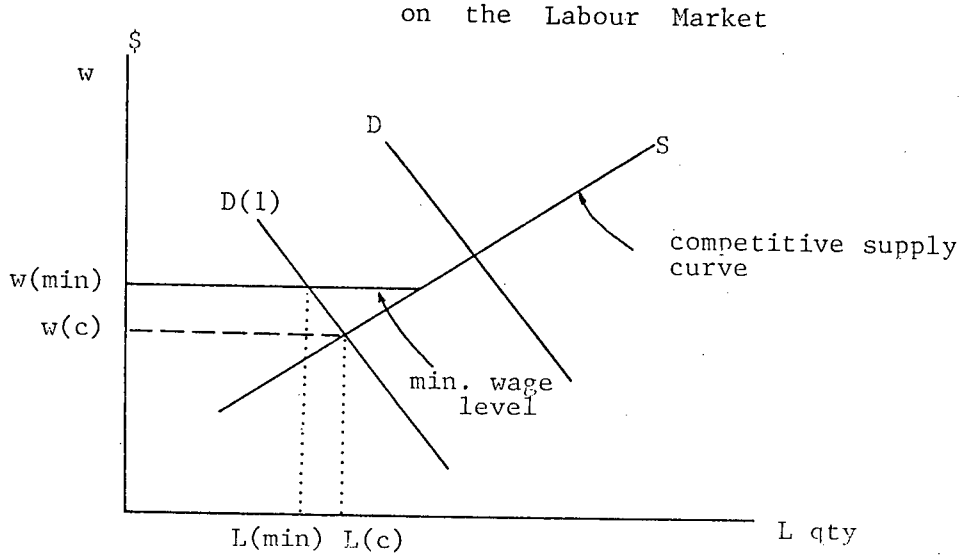
Another important aspect of unionization considered is restrictive entry policies which can also hamper the idealized response of labour supply to labour demand by directly limiting supply (effectivcely making the supply curve vertical). Employers hire all labour from the union and the union controls who, and how many members, it lets in. The noncompetitive outcome of restricted supply is also an artificially inflated wage (w(u)) and a reduction in labour demanded (see FIGURE 2.11) (Gunderson, M. (1980) p.308).

Reductions in the total labour demand from higher wage levels (and restricted supply to some extent) is often attributed as a major cause of unemployment via " the determination of monopolistic trade unions to insist on levels of pay that price men out of work altogether " (The Economist 1984 ).

The impact of unions on non-union wages and demands and indirect effects on protective trade, automation, and work-related legislation constitute other aspects of labour economic theory and research (which unfortunately cannot be discussed due to the limited nature of this analysis).

Minimum wage legislation, often at least partly instigated from collective labour groups, can have a similar effect to the wage contracts of unions but are generally more broad in their occupational and geographic spheres of relevance. This institutional barrier would flatten out the supply curve at the set minimum wage level ($3.50 per hour in Canada and $3.65 in British Columbia in 1984 (Statistics Canada 1984)). In FIGURE 2.12, a reduction in demand from D to D(1) would not result in a decrease in wage below w(min) - thus decreasing labour demand even further (to L(min)). Wages under competitive conditions should drop to w(c). The negative ramifications of minimum wage legislation on efficiency aspirations and particularly on the employment opportunities of those low-skilled whose VMPL is considered below the minimum wage, is commonly emphasized within the labour economic literature (Fleisher, B. and Kneisner, T. (1984) p. 185, P.469).

Figure 2.12 Minimum Wage Legislation Effect on the Labour Market




3. OCCUPATIONAL CONSTRAINTS

Although some labour economic theory relaxes the usual assumptions of homogeneous labour and admits the existence of an occupationally differentiated workforce, there is minimal explicit analysis of occupational bottlenecks to labour market adjustment. Beyond aggregate conceptions of the working-age population as the potential appropriate labour supply, the ability of a worker to fill vacant employment demand is perceived to be severely reduced by the skill and qualification levels which act as entry prerequisites for the heterogeneous demand for labour.

In labour economic theory, occupational mobility is usually considered as being relatively unconstrained except for the possible effect of a number of institutional constraints beyond the scope of the discipline (Addison, J. and Siebert, W. (1979) p.184). Where there has been some recognition of people as occupationally immobile, at least in the short-run, the result is seen as a series of "non-competing" groups in the labour market (Samuelson, P. (1967) p.552). This socially (or "biologically" as Samuelson contends) derived restraint on the individual's choice of labour demand

opportunities, delimits a set of sub-markets with corresponding unique supply, demand and wage conditions. In some more enlightened labour economic theoretical treatises, the conception of the aggregate labour market is acknowledged as being confined to certain occupational or industry (and geographic) contexts (Gunderson, M. (1980) p.148).

The existence of occupational heterogeneity in the labour supply is also used to explain the nature of individual-based wage differentials, and imbalances in the supply-demand sub-markets are assumed as being temporary in view of the longterm equilibriating adjustments by individuals choosing to upgrade their skills as prescribed by human capital theory. The possibility of labour market segmentation is often discussed but generally given little theoretical treatment (see Chapter 3).

## 4. INFORMATIONAL BARRIERS

Perfect information is assumed in the conception of the ideal labour adjustment model in all of the aspects relating to workers' and employers' utility - maximizing decisions. From the marginal productivity evaluation of labour inputs, to the optimal choices made in human capital investment theory, to the awareness of any regional wage differentials, complete knowledge is an important condition for the achievement of the efficient, equilibrium outcome.

However, labour economic theory does explicitly recognize the fallibility of this assumption and imperfect information is posited as a central factor underlying observed wage differentials (within given occupations) and the seemingly paradoxical coexistence of excess supply and excess demand in the labour market. The job search process is inevitably restricted by incomplete information and the resultant outcome is far "inferior" to the competitive model predictions in which workers will allocate themselves to create an equilibrium situation throughout the geography of the economic system (Addison, J. and Siebert, W. (1974) p.171). The potential employee, rather than the employer, is the focus of labour market theory on the job search process.

Facilitating the adjustment of the labour market perceived to be substantially constrained by the less than perfect awareness of the relevant actors, is a principal rationale for the establishment of Canada Manpower Centres (Employment and Immigration Canada (1981)).

## 5. GEOGRAPHIC SEPARATION OF SUPPLY AND DEMAND OPPORTUNITIES

In the aspatial setting of the ideal, single labour market, imperfect geographic mobility, in the matching of supply and demand, is obviously assumed away. However, the physical separation of labour supply and demand locations is one of the most apparent constraints in the provision of the quantity of labour required at a potential or actual work site.

More elaborate labour economic approaches continue to adopt the stance that labour is mobile in the longer term and evidence of regional and international migration is presented in support of this doctrine (Rees, A. and Schultz, G. (1970) p.2). Whether the locational adjustment of supply to demand (for the most efficient allocation of labour) can or should be made in the long-term is a highly contentious issue in current times. In the historical period appropriate to classical economic theory, it was assumed labour would naturally migrate in response to wage and employment opportunity and this perspective has been perpetuated in the neoclassical paradigm.

However, like all factors of production in neoclassical theory, the response of labour is not instantaneous and it is recognized as being relatively immobile in the short-run. There are also limits on the spatial range of potential employment from the given residence of a worker which is defined by the daily commuting trip and the means available for this journey-to-work (more on this in Chapter 3).

To the extent that distance can be perceived in a positive relationship with costs which discourage interaction, spatial separation can be considered as having a frictional effect on labour market adjustment (Dicken, P. and Lloyd, P. (1981) p. 131).

Consequently, short-run adjustments are constrained by the distance variable and longer-term residential relocation would be subject to a degree of inertia from community and familiarity ties, invested capital in the original location, aversion to uncertain environments, welfare policies which reduce costs of not moving, and monetary costs of relocation to accessible employment (de Souza, A. and Foust, J. (1979) p.324).

Despite the recognition of short-run constraints and possible barriers to residential relocation impeding optimal labour market adjustment, labour economics has minimal analytic incorporation of geographic factors and their influence on the jobmatching process. Space is briefly acknowledged as a variable showing the instantaneous and perfect matching of supply and demand but there is certainly no coherent treatment of geographic labour makets - particularly at the local level. In many ways, this abstract theoretical inclination is a reflection of the discipline's assumptions rooted in an underlying classical economic philosophy labelling labour as a commodity - and a willing, mobile and readily available one.

## C. UNEMPLOYMENT

According to the classical analysis and the unconstrained labour market operation conceived in neoclassical theory, there should be no such thing as involuntary unemployment (Addison, J. and Siebert, W. (1979) p.384). "Involuntary unemployment" is roughly equivalent to the most widely accepted definitions of unemployment (as an economic indicator) which require that a person be available for work, actively seeking work, and unavailable to find work even for a real wage rate below the previously attained level (Fleisher, B. and Kneisner, T. (1984) p.24).

The underutilization of any resource (including labour) will not occur, in neoclassical models, according to Say's law of markets in which "supply creates its own demand". If a worker is made redundant, he or she will be reabsorbed by bidding

down wages so that a greater quantity of labour can be utilized by the firm.

However, this naive conception of unemployment is criticized in labour economic theory which recognizes the constraints on the perfect labour market adjustment process (as outlined in Sections 2.A and 2.B) which will result in at least some level of unemployment at any given point in time. Nevertheless, unemployment is still perceived as a consequence of the dysfunctioning of natural equilibriating tendencies in the interaction of supply and demand.

A succinct statement of the major labour economic explanations of unemployment is difficult to produce but there does appear to be a research and theoretical emphasis within the discipline on those aspects of classical theory which explain away all unemployment as either "frictional" (short-term changes in the type of demand for labour), "voluntary" (in the sense of an unwillingness of workers to accept jobs at the wage level offered), or from institutional wage rigidities. Fleisher, B. and Kneisner, T. (1984, p.464-5) believe that unemployment has been overstressed in its interpretation as a simple form of excess supply and that, in fact, the major consideration is the role played by the individual in determining job opportunities.

Few labour economic treatments of unemployment progress beyond the microeconomic examination of the labour supply curve and the effect of "exogeneous variables" (particularly minimum wage legislation, union, and unemployment insurance (U.I.) impacts) on the job search process and tend to focus heavily on how individuals determine their optimal job search strategies. The lack of information about a) job opportunities, b) appropriate human capital investment adjustments, and c) about the future in cyclically-sensitive industries, is posited as the major source of unemployment (Fleisher, B. and Kneisner, T. (1984) p.521).

The other major attributed cause of unemployment relates to wage rigidities and increased reservation wages from artificially high minimum or contract wage levels (which require wages above the VMPL of, in particular, low-skilled workers - hence

making them "unemployable"). UI effects are thought to raise the reservation wage leading to longer durations of search, higher wage expectations and decreased incentive for firms to smooth out employment demand fluctuations as an alternative to layoffs.

Labour economic literature also covers (albeit in brief) the macroeconomic policy impacts on overall employment levels and texts usually provide outlines of the various categories of unemployment based on the original Keynesian (1942) schema dividing unemployment types into those due to:

1. Unemployability
2. Seasonal factors
3. Men moving between jobs
4. Misfits of trade or locality due to lack of mobility
5. A deficiency in aggregate effective demand for labour

(Kahn, R. (1976) p. 29)

It is beneficial at this point of the paper to briefly describe the breakdown of unemployment used in most salient analyses. Although there is little general consensus on the definition and utility of the scheme, the disaggregation (by cause) is probaly the only broadly acknowledged classification and will be used repeatedly in the following analysis and discussion. The classes are by no means perfectly mutually exclusive.

## 1. THE UNEMPLOYABLES

This type of unemployment is seen to be the result of an extreme form of skill mismatch whereby some people of working age have no attributes making them suitable for employment. The low-skilled, whose VMPL for firms' activities is below minimum wage rates, could be grouped into this class of unemployment. Part of this class would still be included in the unemployed labour force.

Reasons for unemployability can include a) age, b) lack of skill, c) ill health, d) physical disability, and e) simply "unwillingness to work" (Standing, G. (1983) p.148). The long-term unemployed may well develop traits inimical to productive employment (such as loss of skills and dexterity, alcohol and drug use, and other forms of anomie) and end up under this categorization.

The concept is debatable on the basis of its subjective nature and "unemployables" are often classified as part of structural unemployment (see 2.C.4).

2. SEASONAL UNEMPLOYMENT

Seasonal unemployment is simply unemployment attributed to the seasonal labour demand requirements of some forms of economic acitivity on which portions of the labour force depend.

3. FRICTIONAL UNEMPLOYMENT

Frictional unemployment is thought to occur when unemployment and vacancies (in the same occupation) occur simultaneously in a given location (Chiplin, B. (1982) p.289). It consists of all those unemployed persons for whom there appears to be vacancies in the categories for which they are registered but have not yet been brought together by job search activity (Gunderson, M. (1982) p.288).

Even when supply equals demand for a given job type, there are perceived to be inevitable lags or delays in workers finding jobs which stem, at least in part, from inadequate information flows within the labour market. Thus, informational barriers on the labour market operation are an important aspect of frictional unemployment.

4. STRUCTURAL UNEMPLOYMENT

Although the idea of "mismatch" is probably the key concept of structural unemployment, its definition is subject to a great degree of variation and contention

within and between respective labour-related disciplines.

Paul Cheshire (1981, p. 228) describes structural unemployment as that resulting from the coexistence of vacant jobs and unemployed persons within the same labour market where the unemployed are, in some way, unqualified for the vacancies.

The underlying causes of structural unemployment are usually attributed to long-run changes in the economic base of a region or economy and changes in demand for labour in particular occupations, industries and regions (Chiplin, B. (1982) p.287). However, the labour supply side has also been emphasized. This aspect relates to the inability or failure of labour to adopt to changes in technology or changing demand so that unemployment becomes concentrated, for long periods of time, among specific occupational groups in particular areas (Thirlwall, A. (1969) p.23). This perspective lays the blame on the unemployed.

Standing (1983) describes seven major contributing causes of structural unemployment:

1. Changes in industrial structure
2. Mismatch of skills
3. Geographical mismatch
4. Demographic shifts
5. Institutional rigidities (including growth of non-wage labour costs, U.I. effects, unionization, the "poverty trap", wage rigidities, minimum wage legislation, income policies and labour market segmentation)
6. Unemployability
7. Capital-restructuring unemployment

He also attempts (rather unconvincingly) to conceptually separate technological unemployment, as the labour displacement associated with mechanization and automation linked to cyclical factors, from structural unemployment as the qualitative mismatch of

the demand for labour and the supply of workers (which could exist at any level of aggregate demand) (1983, p. 138). Barriers in hiring practices and procedures (including discrimination) have also been included in this category.

A selective comparison and amalgamation of alternative definitions has been undertaken for the purposes of this research. Structural unemployment will primarily refer to the situation where workers and vacancies are considered to be in different labour markets, either by virtue of geography or because of a mismatch in regard to qualifications and characteristics (Gunderson, M. (1980) p.289). Thus, the two major synthesized dimensions of structural unemployment relevant for this study are a) occupation-structural unemployment, and b) geographic-structural unemployment - though institutional and discriminatory aspects must be regarded as important. As a consequence, the spatial and occupational (and institutional) constraints on the ideal labour market are perceived to fall primarily under the aegis of structural unemployment.

## 5. DEMAND-DEFICIENT (CYCLICAL) UNEMPLOYMENT

Whereas structural and frictional unemployment are generally conceived as components of non-cyclical unemployment, demand-deficient (or cyclical) unemployment is defined as that caused by fluctuations in the national level of economic activity (usually equated to the "business cycle") (Taylor, J. and Bradley, S. (1983) p.114).

It is that component of unemployment which is the excess of total unemployment over total vacancies once frictional, structural and seasonal elements have been accounted for. Demand-deficient unemployment has little to do with direct spatial or skill mismatches and is the prime target of Keynesian macroeconomic full employment policy approaches.

## D. MACROECONOMICS, LABOUR ECONOMICS AND UNEMPLOYMENT

There is a mass of literature on the appropriate macroeconomic responses for dealing with unemployment and it is impossible to cover the substantive theory, at any level of detail, in this review.

Macroeconomic policy oriented towards the amelioration of cyclical (demand-deficient) unemployment has its roots in Keynes' (1936) "General Theory" and its explanation of mass unemployment in the industrialized world (in the 1930's) which was largely a rebuttal of some of the tenets of classical theory (Jordan, B. (1982) p.14). The Keynesian approach contended that the national economy might reach an equilibrium below the level of full employment because of an insufficiency of aggregate demand. This possibility was conceived as a result of the constant danger that the total sum of consumption and investment would fall short of the levels required to provide jobs for all. His economic theory, insisting that the state accept responsibility for ensuring sufficient aggregate demand, achieved rapid and widespread political acceptance in the post-1945 period. Government spending (via deficit-spending and money supply expansion), tax reductions and low interest rates would act to remove involuntary unemployment by stimulating growth in aggregate demand (and hence labour demand) (Addison, J. and Siebert, W. (1979) p.389).

The relationship between wage inflation and unemployment is a popular area of theory and research in labour economic study particularly in regard to the microeconomic foundations. The so-called "Phillip's curve" (after Phillips (1958)), based on United Kingdom data for the period 1861 - 1957, estimated a negative relationship between money wage changes and unemployment levels in the economy as a whole. The simple Phillip's curve wage-employment trade-off suggests that one determinant of change in the level of aggregate money wages is the "tightness" of the labour market (Gunderson, M. (1980) p.261). Conversely, controls on wage increments and price controls could be seen to help keep unemployment at "acceptable" levels. However, the

negative relationship between wages and unemployment, as embodied in the Phillip's curve, was not upheld in the 1970's when stagflation challenged the postulated trade-off relationship.

Friedman (1968) and Phelps (1968), as spokespersons of the monetarist approach (emerging out of the late 1960's) have questioned both the nature of the Phillip's curve and the efficacy of Keynesian demand manipulation to reduce unemployment in the long-term. By introducing a central role for expectations in regard to inflation and money wages, the monetarists proposed that any trade-off in the Phillip's curve must only be short-term.

The central issue revolves around the "natural rate of unemployment", that is, the level of unemployment at which there is no tendency for inflation to either accelerate or decelerate (requiring the expected inflation rate to equal zero) (Chiplin, B. (1982) p.297). Unemployment is perceived to be held below the "natural rate" (a product of structural and frictional forces) only by allowing the inflation rate to increase. Therefore, any decrease in unemployment by Keynesian aggregate demand macroeconomic policy, which forced unemployment below the natural rate, was necessarily temporary and would be based on faulty expectations. The end result would be that real wage and unemployment levels would remain unchanged.

According to the monetarists, their modified, expectations-augmented Phillip's curve would have to be based on the natural unemployment rate which has increased over time and is used to explain the stagflation phenomenon of the 1970's. Monetary expansion by the government, and subsequent inflation, is perceived as the major culprit and both inflation and unemployment are seen as consequences of monetary policy rather than as causes (Jordan, B. (1982) p.40). Deflationary policies are pursued directly on the assumption that inflation and expectations are responsible for high unemployment levels.

However, there is also an emphasis, in monetarist economic theory, that increased unemployment is largely a product of the growth of the natural rate of unemployment (the frictional and structural components) which could be changed by policies that directly affected conditions in the labour market (such as skills and mobility levels). This emphasis is contraposed to the Keynesian approaches of manipulation of aggregate demand to decrease unemployment.

The microeconomic persuasion of the labour economic discipline appears to align well with the monetarist philosophy (which currently has a strong influence in Canadian, United States and British politico-economic contexts). The overall operation of the economy (the aggregate labour market) is seen as best left to the benevolence of the "invisible hand" of market forces, free from fumbling government demand manipulation, while the frictional and structural problems of the natural unemployment rate are attacked by facilitating the micro-level operation of the labour market - via informational improvements and the easing up of supply-side impediments (such as geographic immobility, redundancy in skill levels, and institutional rigidities on wages).

Chapter III

# THE SOCIAL AND SPATIAL STRUCTURES AS BARRIERS TO THE PERFECT OPERATION OF THE LABOUR MARKET

Those constraints on labour market adjustment which are recognized by neoclassical economic theory have been broadly outlined in the previous section. However, this chapter will extend upon the discussion of barriers to the idealized labour market by introducing the institutional, segmented labour market perspectives, focused on socio-structural constraints which are largely outside the realm of neoclassical models, and by elaborating upon the role of space in demarcating the matching process between labour supply and demand.

## A. HETEROGENEITY IN THE SUPPLY OF, AND DEMAND FOR, LABOUR

Although neoclassical-based labour economic theory admits the existence of differentiated occupational supply and demand which defines distinct sub-markets for labour in the short-term, occupational mobility is assumed as being no impediment to equilibrium conditions in the long-run as individuals sapiently and autonomously choose to invest in human capital. Structural unemployment from lags in the occupational adjustment process would only be temporary. Rigidities in the social structure would not exist and all people would be treated equally by society's institutions.

Neoclassical economic theory essentially embraces a labour "queue theory" perspective in which employees are ranked along a single ordinal scale according to their respective marginal productivities (Montagna, P. (1977) p.66). Occupational and wage differentials are therefore just marginal productivity differences which are amenable to changes in human capital (though admittedly limited by inherent ability). The labour market is perceived to be shaped by economic motivation only and discrimination should not occur under competition as firms, which do no allocate labour on purely economic criteria, will not survive.

There is a brief mention of the institutional and dual labour market structures in neoclassical economic theory, but the notion of an institutionally determined heterogeneous labour force is by no means fully accepted (Clark, G.L. (1984) p.179).

## 1. INTERNAL AND EXTERNAL LABOUR MARKETS

The possibility of unemployment resulting from social institutions and patterns was originally outlined by C. Kerr (1954) in his treatise on the "balkanisation" of the workforce. Institutions were proposed as the main determinant of the framework of labour market operation and were seen to present formal barriers which workers would face in a highly structured labour market (Montagna, P. (1977) p.67).

The original work of Kerr (1954) was expanded upon by Doeringer and Piore (1971) in their attack on the neoclassical theorists' conception of the labour market. The "institutionalists" argue that the labour market could actually be separated into internal and external segments.

Structured, "internal" labour markets would be characterized by the preferential treatment of workers inside the firm for jobs at higher skill levels or supervisory positions (over competing applicants from the open market) (Cooke, P. (1980) p.545). Demand for vacant employment positions would be met largely within the context of a single organization (Addison, J. and Siebert, W. (1979) p.186). In labour economics, this internal bias in promotion from within the firm is explained in terms of the worker reaping the returns from their on-the-job training investments (Fleisher, B. and Kneisner, T. (1984) p.360).

"External" labour markets are conceived as structureless, open labour markets comprising of everyone else outside the firm and are seen as the relevant field of choice for filling entry-level jobs. Whereas external labour markets would be more compatible with the neoclassical conception of the labour market (where pricing and allocation decisions are controlled directly by economic variables), the widespread

existence of large internal labour markets within the modern form of (predominantly corporate) economic organization would be considered to place further restraints on the supply-demand matching process even within given occupations. Workers would compete in the open market only for initial entry at certain job classifications (usually at the bottom rungs of the employment ladder) and other jobs would be filled by promotion of those workers who had already gained access to the organization.

Selection in the internal labour market would be related to the conduct and performance of the individual in terms of the administrative institutional rules of the firm (derived from joint negotiation, unilateral imposition, custom and tradition) which define the pricing and allocation of labour (Dicken, P. and Lloyd. P. (1981) p.200). The tendency toward internal promotion and job availability would restrict the overall inter-firm mobility assumed by aggregate, competitive models.

## 2. THE DUAL LABOUR MARKET

Piore (1975) and his associates have elaborated upon the internal-external labour market dichotomy by tying them together dualistically as "primary" and "secondary" in nature (Cooke, P. (1980) p.545). This perspective emerged in the late 1960's to explain the phenomena of urban poverty and unemployment.

The basic premise of dual labour market theory is the existence of a bipartite (or tripartite) labour market fragmented on the basis of the different nature of behavioural rules between workers and employers. Within the labour market, two broad sectors could be identified:

1. A "primary" labour market composed of "good" jobs (usually in large firms) with higher relative wages, good working conditions, employment stability and security, higher levels of unionization, and prospects of upward mobility and,
2. A "secondary" labour market consisting of the "bad" jobs with lower

wages, poor working conditions, little upward mobility, high labour turnover and minimal on-the-job skill acquisition.

(Clark, G. and Gertler, M. (1983b) p.277 ; Danson, M. (1982) p.258))

Doeringe and Piore (1971) suggest that entry and promotion in the primary labour market is assessed on the basis of the ranking of workers (on their potential productivity) who are advanced by a queuing process (Addison, J. and Siebert, W. (1979) p.189). The primary labour market has been subdivided into 1) an upper tier characterized by white collar, professional occupations with power, wealth and prestige, considerable autonomy, good working conditions and prospects and a command of theoretical knowledge, protected by an internal labour market setting, and, 2) a lower stratum containing salespersons, clerical, and skilled manual labour whose work is highly supervised (they "respond the demands of capital") and involves training which is primarily on-the-job (Danson, M. (1982) p.259). In the primary sector, wages are not determined by individual productivity (as with promotion) but are thought to be related to long-term contracts and union power.

Employment is drawn from the secondary labour market as if it were an undifferentiated labour pool (with homogeneous skills, education and motivations) with wages determined simply according to the quantity requirements of employers (Clark, G. and Gertler, M. (1983b) p.277). There is some disagreement over the nature of the relationship between employer and employee in the secondary labour market (for example, see P. Montagna (1977, p.68) and M. Danson (1982, p.258). The employment relation between labour and management has been seen as highly personalized - thus encouraging favouritism and discrimination. However, other perspectives (such as those of A. Alexander (1974)) argue that "the only nexus is cash". Overall, the views are probably compatible in regard to job security aspects and the nature of the relationship would depend on the level of management considered. The disorganized,

semi-skilled and unskilled production and service occupations of the hypothetical secondary labour market are not included in the firm's internal labour market.

A central argument in dualist theory is that entry into and confinement of disadvantaged workers in the secondary sector is not attributed to differences in skill, motivations, or demands for labour but to the power of institutional forces like discrimination from employers and unions. Hence, there would be severely limited mobility from the primary sector into the secondary sector even in the situation of increased aggregate demand for labour.

The existence of the dual labour market (which is yet to be universally accepted on the basis of sketchy empirical evidence) would split the labour market into at least two discontinuous, if not entirely separate, systems and would alter the depicted nature of the supply curve and the adjustment process initiated from movements in demand and wage levels.

Thus, the segmented labour market theorists, with their emphasis on real, formidable barriers in the institutional framework of the labour market and from the existing social structure, suggest that there are, in fact, a set or series of discontinuous labour markets (which have approximate parallels in "occupational" strata).

The dual labour market perspective, in particular, was born of the same intellectual tradition as current radical theory - Marxism. However, the more conservative Marxist conceptions of the labour market incorporate poverty and inequality in the social system as necessary functional aspects of capitalism and a central emphasis is placed on the role of a reserve army of unemployed in a purposeful organized stratification of the labour market by the capitalist class (Montagna, P. (1973) p.72).

Although some parallels could be drawn between a reserve army of the unemployed and the secondary labour market, dual labour market theory does not

attribute the same teleological status to capital but identifies the causes of unemployment in 1) the social institutions which realize the theoretical operations of the labour market, 2) from active discrimination, and 3) from rigid labour market stratification - which can only be interpreted as the outcome of the dynamic nature of capital rather than as a functional requirement of the process of capital accumulation.

If labour market segmentation can be structured along class, racial, ethnic (or other group attribute) lines, the mapping of residential social area patterns has been suggested as enabling an identification of the "building" of dual labour markets in space (Scott, A. (1981); Clark, G.L. (1983) p.277). This possibility is seen to be enhanced given that labour market segmentation creates distinctive income distributions which could be located in space (within the differentiated urban housing market). However, the contentious existence of duality and fragmentation in the nature of employment demand, and the problems of internal heterogeneity in neighbourhood spatial units, remain as impediments to further development in geographic interpretations of labour market segmentation theory.[1]

## B. SPACE AS AN INTERVENING VARIABLE BETWEEN THE EQUILIBRIUM MATCHING OF LABOUR SUPPLY AND DEMAND

Probably the first major consideration of the relationship between the spatial structure of economic activity and its required labour supply (hence implicitly involving the role of space in the labour market operation), emerged with Weberian industrial location theory. In earlier neoclassical economic theory, locational aspects of labour supply were disregarded. This neglect is easily understood in the relevant historical context of undifferentiated, low-skill labour demand requirement, the relative abundance of labour in the new industrial towns, and the overall aspatial orientation of economic theory.

---

[1]For an attempt at linking dual labour market theory and geographical consideration, see M. Danson (1982)

The agglomeration economies of the rapidly growing industrial areas included a large urban labour pool able to more than satisfy the production activities of firms.

Primarily as an adjunct to theory on transport cost derived optimal locations for industry, the bulk of traditional, labour-related location theory market has revolved around how industry takes into account given, fixed wage differentials (or other supply characteristics likely to affect labour productivity) (Addison, J. and Siebert, W. (1979) p.170-190 ; Dicken, P. and Lloyd, P. (1981) p.212 ; Lloyd, P. and Dicken, P. (1977) p.214)

## 1. WEBERIAN INDUSTRIAL LOCATION THEORY

Weber's theory of industrial location is essentially rooted in the neoclassical economic paradigm where partial equilibrium and cost-minimization set the framework for "economic man" capitalists deciding where to optimally locate their industries. However, in Weberian models there is a marked divergence from early neoclassical theory. Labour becomes an immobile, spatially heterogeneous factor of production instead of the perfectly mobile, equally productive supply factor of the idealized, aspatial labour market model. The firm is seen to "move to labour" (or at least consider its spatially-fixed properties in its optimal location decision) rather than perceiving labour as moving to the firm. A daily commuting field is implicitly assumed as the uniform accessibility area for capturing a local labour supply.

In the simplest, "pure", Weberian industrial location model (1909), which adopts a partial equilibrium approach, the labour input was assumed to have a negligible impact on locational choice consistent with the primacy attributed to transport costs for raw materials and finished products. This emphasis on linkage analysis as the major stock in trade of Weberian location theory involved the central idea of profit-maximizing firms being attracted to locations that minimized aggregate transport costs on all input (and output) flows (Scott, A.J. (1981) p.113). Firms would therefore

locate either at resource sites, break-of-bulk points, markets or where other firms already existed.

However, in subsequent modifications Weber included a theoretical analysis of how industry would incorporate a consideration of the given distribution of labour (with fixed differential wage rates across the geographic surface) in its location decision, by introducing his concept of the "critical isodapane". As an extension of his orignal model, Weber proposed that the **optimal** location of the industry (determined solely on the basis of total transport cost isodapanes) could alter if possible wage savings were considered. If location at point "L" (see FIGURE 3.1) entailed a wage saving of five dollars per unit of output and lies within the total transport cost isodapane which has the same value as the saving in labour costs (the five dollar critical isodapane), the firm will reduce total costs by locating at "L" rather that the original optimal location "O" (Smith D. (1981) p.72).

This analysis presupposes that wage differentials exist at different points in space due to unspecified unique supply-demand interaction characteristics (see FIGURE 3.2), and that supply is perfectly elastic at any given point (note the horizontal supply curve) and immobile beyond that point. Consequently, Weber considered the cost of labour as a "regional" factor influencing the resultant geography of production, with the initial locational pattern set by transport costs, and subsequently distorted by spatial variation in the cost of labour (de Souza, A. and Foust, J. (1979) p.323). Although this rather simplistic approach ignores both the possible effects on wages and the relevance of other characteristics of the labour supply, Weber did realize that labour costs were not equally important to all industries in his concepts of a "labour index" (the average cost of labour needed to produce one unit by weight of output) and a "labour coefficient" (the ratio of the labour cost divided by the unit product weight to the total weight of material and product to be moved) (Lloyd, P. and Dicken, P. (1977) p.211). The characteristics of the firm would influence the relative importance of

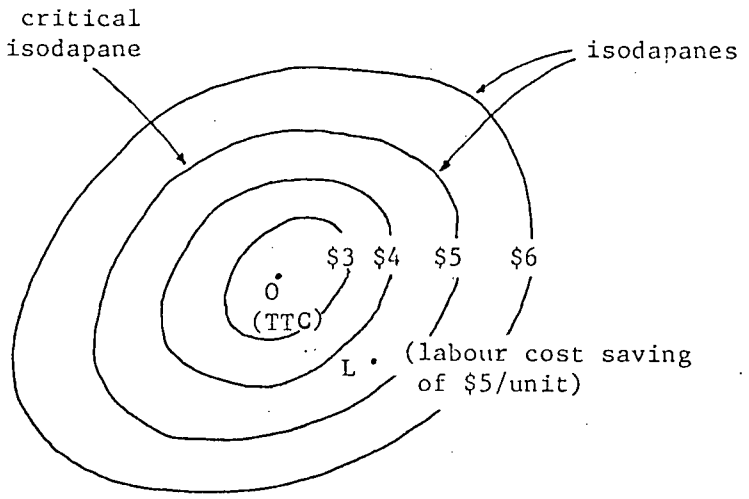



Figure 3.1 The Effect of a Cheap-Labour Location on the Transport Cost Optimum Location in the Weberian Model

Source: Based on D. Smith (1981, p.72)

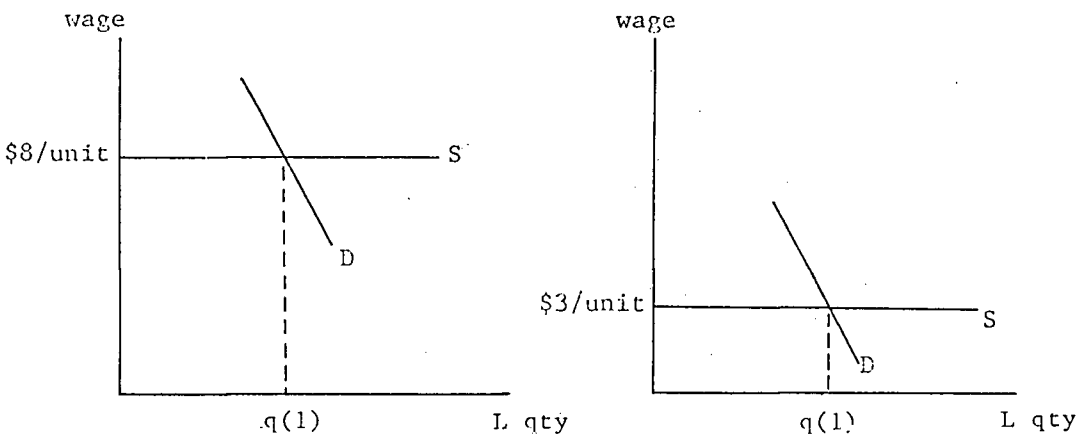



Figure 3.2 The Assumed Labour Market Conditions at Location 'O' and Location 'L' in Weber's Model

labour as a locational factor.

Weber also noted that industries strongly attracted to low labour-cost locations tend to become concentrated in few locations. The long-term trend in decreasing transport cost would tend to increase the relative attraction of labour cost savings locations by accentuating the general predilection of manufacturing activity to agglomerate (Conkling, E. and Yeates, M. (1976) p.94).

The model must be considered rather tenuous in the light of limiting assumptions of uniform cultural, economic and political characteristics across the landscape, disregard for institutional barriers, and from the usual weaknesses encountered by partial equilibrium, least-cost approaches which intrinsically divorce themselves from a consideration of the spatial nature of demand and possible ramifications of "explained" change.

In summary, the treatment of labour in Weberian industrial location theory is similar to that of any other localized factor of production or input except that labour (and its geographic pattern of productivity) is assumed as spatially-fixed - mobile only within a daily commuting field. Unlike the prescriptives of neoclassical labour theory, residential relocation and movement of labour to the firm for varying wage and employment opportunities is virtually ignored. The two approaches may be reconciled if the Weberian partial equilibrium analysis is viewed as only applicable in the immediate short-term. The firm is perceived as the dominant actor perusing the landscape of possibilities for labour and trading-off the various costs of required factors of production to choose the optimal site.

## 2. CRITIQUES OF WEBERIAN LOCATION THEORY ON LABOUR

Although most recent location theory acknowledges the limitations of simplistic Weberian models (particularly in regard to labour), the most concerted critique would stem from the radical labour market theorists.

Given the centrality attributed to the conflict between labour and capital in structuring spatial outcomes in radical theory, this school heavily criticizes the Weberian emphasis on linkage analysis rather than the role of labour in the process of capital accumulation. The geography of industry is perceived as a prime consequence of the dynamics of accumulation rather than as a result of the static allocation of activities to their best location *vis-a-vis* markets, labour and materials (Walker, R. and Storper, M. (1981) p.481).

The dependence of labour, on the activities of the production system for the sale of its labour power, is stressed in opposition to the simple view of the firm choosing from a number of labour-cost alternative sites. This difference probably stems from the moral rejection of the fundamental perspectives of neoclassical location theory oriented towards maximization of firm profit levels. A situation of mutual interdependence between labour and capital (though the balance of power is seen as favouring the capitalist) is posited as a far more realistic scenario, for explaining observed spatial outcomes, than the unidirectional determinancy assumed in Weberian theory.

A. Scott (1983, p.234) rejects the focus on the structure of transport costs and the single-minded rationality of individual spatial behaviour and decision-making as a theoretical formalism which has lost the sense of spatial relationships as structured outcomes of the social logic of production systems (that is, capitalism in the Weberian era of relevance). Rather than assuming the "siting" decision or the location problem as the starting point of theory, Scott (1982a, p. 134) believes any legitimate explanation must be ground in its historical context. Traditional industrial location theory is criticized for assuming the economic system as given (and fixed) therefore ignoring the unique historical setting and the associated dynamic of the "form of organization" (Massey, D. (1973) p. 183). Space is framed in terms of political and institutional space rather than just "abstract" space.

Processes operating in space (such as decentralization) would thus need to be examined with reference to the ongoing process of accumulation and technological change. The production system itself would have to be related to a conception of capitalism as a set of human relationships built around the central mechanisms of 1) the labour process, 2) the distribution of economic surplus and 3) accumulation (Scott, A. (1983) p.234).

The basis of neoclassical locational explanation rests on the existence of factor supply differentials (in quantity, quality, or real or expected price) resulting from the fact that the equilibrium has never been reached or has been upset by exogeneous forces. The static, limited perspective of neoclassical location theory has been criticized on the grounds that an analysis dealing only with factor supply aspects (and differences in these aspects, which are never properly explained) is bound to be inadequate (Walker, R. and Storper, M. (1981) p.486; Massey, D. (1973) p.186). The actions of individual firms are thought to require interpretation at the level of the total economy where the forces which shape the space economy can be identified.

The Marxian models of capitalist reproduction contend that capitalism is forever altering the basis for the industrial space–economy, under the imperatives of capital accumulation, regardless of the initial distribution of factor supplies - by technological, organizational and spatial changes. Both the location and conditions of factor supplies and markets could therefore be altered by the actions of capitalists and the effects of capital in general (Walker, R. and Storper, M. (1983) p.494). Spatial outcomes would be subject to the structural requirements of capitalist society to expand the reproduction of capital and maintain capitalist social relations. These requirements are seen to be ideologically embedded in the nature of neoclassical industrial location analysis (Massey, D. (1973) p.185).

Although there is substantial criticism of Weberian location theory from radical theorists, it is notable that many of his basic perspectives are still frequently utilized

in radical literature. For example, explanations of the restructuring and consequent movement of capital to lesser developed and newly industrializing nations are rationalized in terms of Weber's least-cost criteria. In addition, Scott's (1981) intra-urban plant location theory is pivoted upon firm locational decisions with an explicit consideration of intra-urban spatial variation in wages (though his variations are primarily based on commuting cost differences and he does extend discussion to include the effects of location on wages within the urban area).

The principal radical objections to neoclassical location theory are probably predicated upon the delimited scope of explanation (ignoring the overall "logic" of social and economic systems) and their intrinsically ahistorical and ideological nature. The radical "school" also rejects the neoclassical conception of the labour market (necessarily implicated in traditional location theory) as discussed in Chapter 6.

3. DO "JOBS FOLLOW PEOPLE" ?

Whether jobs follow people in search of suitable, high-productivity, or low-cost labour or whether people move to the location of existing demand, has been a significant area of debate since the late 1960's and well into the 1970's. For evidence of Weber's treatment of labour, we would expect mobile firms to evaluate the relevant cost surface, and establish themselves in relation to the original factor supply spatial pattern. Thus (labour-dependent) firms would be expected to "follow" people.

Alternatively, orthodox neoclassical theory predicts that people will respond to spatial wage differentials (as a function of employment opportunities) and long-term equilibrium will eventually occur through people moving to jobs.

Marxian theory appears to be confused or at least flexible in predicting which actor actually leads the changes in spatial structure. The upper hand in resultant spatial relationships between labour and capital is clearly attributed to capital but one specific school of thought, the "capital-logic" school, contends that capital (being more mobile

thant labour) initiates and tends to lead labour migration (Clark, G. and Gertler, M. (1983b)). Other Marxian theorists would point to the movement of capital (at urban, regional and international scales) to utilize existing cheap or disorganized labour and would be aligned, in part, with Weber's conception of labour in the firm's locational decision.

The empirical evidence on the direction of causality, at all geographic scales is unclear and probably reflects the fallibility of attempts to generalize across industries, time and socioeconomic contexts. In North America, Steinnes (1977; 1982) found evidence, contradicting that of Kain (1968) and Hoover and Vernon (1959), that manufacturing jobs decentralized before people at the intra-urban level. Hall (1984, p. 24) concludes that most evidence supports the contention that the suburbanization of people has occurred before that of manufacturing jobs. However, the causality link inferred by Steinnes (1982) is extremely difficult to prove particularly in recognition of the expanding spatial range of the journey-to-work trip from technological improvements. Suburbanization of both employment and residence cannot even be assumed to guarantee accessibility levels higher, or equal to those in previous conditions. Accessibility considerations are probably a cost for both employers and employees in the matching of supply and demand, but the influence of this factor, in relation to a host of other possible reasons for changes in relative spatial structure of the workforce and production activities, is very difficult to assess.

Although the balance of evidence suggests that residential suburbanization preceded (manufacturing) employment suburbanization (Kennett, S. (1980) p.97), the causal link cannot be established. Results obtained tell nothing about the effect on specific groups within the city, which may not have (or not be able to) suburbanize, and for which the journey-to-work to changing employment locations may be an important factor on the ability to find employment. A more acceptable link between the suburbanization of supply and demand would probably be that of technological

change. Decreased transport costs may also be accompanied by a reduced dependence of firms on labour supply inputs thus eroding the need for a consideration of accessiblity to large labour markets. For example, persistent excess levels of appropriate labour supply or greater capital-intensification could reduce the firm's necessity for high levels of labour market accessibility.

In addition, the movement of people to the suburbs before manufacturing jobs does not indicate which actor is dominant in the labour-firm relationship. "Following" the other actor may give some advantage on past conditions or may simply be a necessity. At regional levels (where migration could be separated from those effects which have simply expanded the daily commuting field) evidence on the temporal ordering and spatial structure of growth and decline in labour supply and demand, would probably be more meaningful. However, what research has been done at this level is equally inconclusive and the lines of causality between capital growth and labour migration are similarly plagued by the inevitable chicken-or-egg problem (Clark, G. and Gertler, M. (1983b)). Referring to aggregated employment demand, Long and DeArc (1983, p.41) contend that, for the 1970's, population has tended to follow jobs from urban to rural settings.

Even at international levels, migration has undoubtedly occurred in response to the growth of employment demand opportunity (for example, to British Columbia in the 1970's) together with the movement of capital in response to (and as a cause of) national and regional variation in labour supply characteristics.

The only general conclusion that can be drawn from the "people follow jobs" or "jobs follow people" debate is that the distribution of the labour supply and its characteristics is important to the firm's locational decision subject to the particular requirements for employment demand. The firm may, or may not, make its locational decision on the basis of geographical variation in labour properties depending on the sectoral, intra-industry, and technologically-derived demand for this "raw material". The

particular historical context, state of the organization and form of the production process, and the existing overall, and area- and occupation-specific labour market considerations (such as excess supply or demand), would influence whether the required labour input was treated as effectively "localized" or "ubiquitous" in the firm's locational decision.

The frictional impact of space on the supply-demand matching process and the resulting relative location of employment demand and supply must be considered at a micro-level. Understanding and interpreting the processes which change the spatial structure would, however, require explicit consideration of the dynamic total economic system and the "forces" of change.

## C. THE CONCEPT OF A "LOCAL" LABOUR MARKET - VANCOUVER CMA AS THE STUDY AREA

The work of Weber, which includes an identification of spatial variations in labour characteristics and the recognition of geographical constraints on the matching of supply and demand in labour economics, exemplifies the importance ascribed to an integration of the spatial dimension into a realistic conception of the labour market - particularly in the short-term. Some sort of limit on daily commuting fields will prevent the acceptance of available jobs without residential relocation. Residential relocation itself may be constrained by a number of factors and increasing distance to available potential job destinations may well be related to information, certainty, cost, and hence the probability of moving residence.

As a consequence, space is likely to impede the job search process of the worker and hence influence the length of duration of unemployment. Spatial separation, as a direct cost and as an added barrier for effective information dissemination, could be hypothesized as a contributing cause to unemployment. Even if residential mobility is possible (as is explicitly assumed in neoclassical economic labour market theory)

spatial boundaries need to be drawn around the exchange process in the short-run. Geography will therefore play some role in the understanding of the operation of the labour market and in explaining the existence of unemployment.

The appropriate scale at which spatial separation will result in job dislocation is a complex issue and remains a moot point between many labour theorists. The use of regional perspectives has been common in applying regional policy (for example, in the United Kingdom and Canada) as the framework for linking *ad hoc* policies aimed at tackling disparities in economic welfare levels between regions (Armstrong, H. and Taylor, J. (1983) p.311). This level of resolution reflects prevailing attitudes that conceive of economic development problems as basically regional in nature (as in regional economic theory since the 1950's) and accept medium-distance worker migration as both possible and appropriate.

However, without migration the Census Metropolitan Area (CMA) (or equivalent travel-to-work geostatistical areas in the United States and United Kingdom) is usually assumed as the functional unit within which space does not impinge upon the perfect operation of the labour market (that is, the CMA is assumed as the local labour market). Functionality is usually defined on a journey-to-work basis.

Geostatistical units to represent local labour markets are usually determined on the basis of two concepts: the extent to which the area is self-contained (measured by the proportion of the resident employed population working locally and the day employed population living locally) and the strength of a given area's commuting links with other contiguous areas (usually a gravity-type equation) (Carmichael, C. (1978) p.130).

The Vancouver CMA comprises the focal study area for the following research undertakings. In the Canadian context, a Census Metropolitan Area:

> Refers to the main labour market area of an urbanized core (or continuously built up area) having 100,000 or more population... They contain whole municipalities (or census subdivisions). CMAs are comprised of (1) municipalities completely or partly inside the urbanized core; (2)

> other municipalities if (a) at least 40% of the employed labour force living in the municipality works in the urbanized core, or (b) at least 25% of the employed labour force working in the municipality lives in the urbanized core.
>
> (Statistics Canada (1981) 95-978)

Thus the CMA is assumed as being the relevant local labour market area (LLM) within which any two points are an "acceptable" daily commuting trip length apart. The underlying belief for this definitional basis of the local labour market is that the collective daily journey-to-work interaction patterns of a metropolitan population represent the spatial exchange relationship for all particpants in the urban labour market (Clark, G. and Gertler, M. (1983b) p.275). The local labour market which realistically defines the commuting capabilities of all, or a designated portion, of the labour force has been proposed as the ideal areal structure of exchange for effective targeting of intervention and monitoring of public policy (Clark, G. (1978a) p.2).

The assumption and use of such travel-to-work areas (like the CMA), as the real local labour market or catchment area, has been criticized on a number of grounds.

An inherent weakness in the use of a local labour market concept is that it implies a static, equilibrium context for the exchange process. Boundaries are identified as if they were contours of equal commuting in either direction (Cheshire, P. (1979) p.33). Cheshire (1979) argues that such lines are impossible to distinguish, except as "snapshots", given the dynamic nature of the labour exchange process under study.

In addition, the local labour market (defined on journey-to-work functionality criteria) is incorrectly assumed as being a closed system - reflected in the elimination of existing interaction with contiguous areas. The rather arbitrary selection of levels, for defining when the area is self-contained, is a recognized limitation of the implementation of the LLM concept (Gordon, I. and Lamont, D. (1982) p.239).

However, the arbitrary nature of definitions of the spatial extent of LLMs, would apply to attempts to demarcate the exchange process at any level of resolution. The pattern of journey-to-work movements (if assumed as the true representation of employment spatial range possibilities) is a highly complex and dynamic system of interaction which may show identifiable concentrations of interaction density at any given point in time but certainly has no distinct, objective and immutable boundaries. Destinations and origins are not sharply defined but are scattered, if unevenly, across the landscape.

A major criticism of the use of travel-to-work areas, as LLMs, revolves around the acceptance of behavioural outcomes (that is, the observed journey-to-work dimensions of the employed) as the sufficient condition for delineating areas of perfect (or at least unconstrained) daily mobility. Not only does this imply the existing commuting pattern is optimal, but it fails to take into account the commuting range capabilities of those people who do not have a journey-to-work trip as a result of accessibility or mobility constraints.

The final but probably most poignant attack on the journey-to-work, self-containment models of LLMs, is levelled at the implicit assumption of homogeneity in the levels of mobility of individuals within the demarcated area. Instead of passively accepting that every "unit" has uniform mobility (and unconstrained accessibility), this criticism is based on the contention that the spatial range of employment opportunities varies amongst particular social and economic groups (Dicken, P. and Lloyd, P. (1981) p.198). The travel-to-work based CMA is believed to reflect the commuting pattern of upper income, higher-educated and skilled suburban residents (with greater levels of mobility and capacity to travel long distances) (Clark, G. and Gertler, M. (1983b) p.275). Variations in mobility levels between socioeconomic groups are seen to be a result of different group-specific capability constraints (based on the resources available to individuals such as actual or expected income levels and car ownership) and

coupling constraints (which define where, when and for how long the individual has to join with other individuals to produce, transact, consume or fulfil family roles) (Miller, R. (1981) p.4). Hence, some groups (those with more severe mobility constraints, would be unable to undertake daily commuting trips to every and any place in the CMA. For example, it is a well-established phenomenon that (in the United Kingdom) higher education level occupations and males tend to be more mobile than manual or female workers. (Carmichael, C. (1972) p. 130)

If labour supply within the CMA boundary is heterogeneous in terms of the capacity for movement and is, in part, sometimes less mobile than the maximum extent of commuting observed would indicate, the generalized definition of the LLM must be a compromise on reality. Ball (1980) has suggested that metropolitan travel-to-work areas in the United Kingdom are too broad and should be replaced by local authority districts as more meaningful areas of ease of access.

The possibility of heterogeneity in the spatial ranges of groups within the labour supply has led some theorists to perceive the CMA as a set of discontinuous labour markets, dynamic in nature, and each with their own supply and demand schedules which could be circumscribed in space according to the appropriate nature of space-time constraints (resulting in very complex but transitory patterns) (Bederman, S. and Adams, J. (1974); Clark, G. and Gertler, M. (1983); Vipond, J. (1980) p.132). Under this condition, the CMA would really be a superset of overlapping labour markets divided along the lines of gender, age, occupational, income and other related social and economic characteristics.

One of the principal aims of this study is to evaluate the efficacy of the Vancouver CMA as a local labour market by examining possible geographic barriers to the daily commuter, and residential relocation, matching of supply and demand locations

– at least for certain occupational groups (in particular, the manufacturing production labour force). The existence of geographic constraints within the CMA would have important ramifications for the implementation of effective policy aimed at facilitating or manipulating the adjustment of supply and demand.

Of course, broad national (and even international) economic and social structural change would also be a vital consideration in assessing how unemployment arises as a malfunction of the equilibrium conception of the labour market and some discussion of the nature of these trends will be included in subsequent sections.

Chapter IV

## ANALYSES OF INTRA-URBAN SPATIAL VARIATIONS IN UNEMPLOYMENT

Theoretical and empirical geographic studies of unemployment characteristics at the intra-urban level appear to be of fairly recent origin. Throughout the 1950's and 1960's, most labour market analyses incorporating the spatial dimension were applied at the regional level and attempts at explaining unemployment patterns were usually hinged upon the role of the regional industrial structure.

Even among the ecological and social area analysis studies stemming from the Chicago school of sociology, unemployment characteristics received little explicit attention. The emphasis, in this work, was placed upon segregation of urban areas by more "stable" social and economic characteristics such as ethnicity, occupation, race and life-cycle stage (Ley, D. (1983) p.58-72). Although some more "secondary" aspects, such as juvenile delinquency, were considered in particular case studies, unemployment experiences were probably conceived more as epiphenomena of the more essential socioeconomic traits. Spatial variations in unemployment levels would therefore be little more than a byproduct of those processes (variously described by human ecologists and land economists) which acted upon the "major" social and economic characteristics enabling distinctive socio-spatial patterns to be identified within the metropolis.

Among the earliest detailed, well-known, urban studies utilizing spatial unemployment differentials were those examining the effects of major redundancies in industrial employment in the United Kingdom accompanying its gradual decline in world economic standing which started as early as 1900 in some sectors. The persistent high unemployment rates since the 1970's have instigated substantial research on urban unemployment. The unequal negative impact of restructuring by industry on the inner city areas was the underlying theme of the Inner Area Studies (1977) in the United Kingdom and in associated works such as those of Metcalf and Richardson (1976), Evans (1976), and Cheshire (1977;1979) which examine and discuss intra-urban

variations in unemployment levels.

One of the major concerns in the studies of geographic variations in unemployment (usually at either a census tract or local authority level) is the origin of the distinctive mosaic of unevenness. During the 1970's, there emerged two major schools of thought on the predominant causes of observed intra-urban employment differentials.

On the assumption that a major portion of the unemployment pool is comprised of displaced industrial workers, the "demand-side" explanations argue that there are direct spatial causes of observed unemployment variations by area of residence. With the decline and decentralization of industrial activity from particular urban areas (usually the inner city core areas), the appropriate labour force, which remains residentially "trapped" in these areas, is believed to be locationally disadvantaged in terms of access to the new distribution of industrial activity.[1] Longer and less efficent job search and the greater costs of commuting to remote opportunities are posited as determinants of higher unemployment in the deserted areas.

However, the opposing school's explanation of concentrations in unemployment is based on the housing supply characteristics of the urban area and broad economic changes beyond the isolated urban milieu. The cause of unemployment differentials is rooted in the "supply" characteristics of particular socioeconomic groups who are systematically allocated to the housing submarkets of the urban spatial structure.

To some extent, an evaluation of the relative efficacy of the two major schools, in explaining observed census tract variations in unemployment in the Vancouver CMA, shall constitute a major research objective of this thesis. However, given that Vancouver CMA does not match the size, age, or industry-intensity of the

---

[1]Decentralization is assumed here to refer to the process of spatial change generated by "centrifugal" forces, which result in a relative shift of population and/or employment away from the major urban cores (Kennett, S. (1980); Johnston, R.J. (1981)). The process is examined for industry in the Vancouver CMA context in Chapter 5 to establish if the necessary condition for demand-side explanations is present in the study area.

large traditional industrial areas where the explanatory power of the two schools may be more balanced, the research is undertaken on the accompanying rationale that a detailed examination of unemployment in the CMA, within a spatial perspective, will contribute to an understanding of the nature of this foremost problem in the study area context. This chapter will provide a brief synopsis of the existing literature relevant to the "decentralization of demand" / "characteristics of labour supply" debate.

## A. THE CHANGING SPATIAL STRUCTURE OF INDUSTRY AS A CAUSE OF UNEMPLOYMENT

Concern for job dislocation resulting from geographic separation of the home and workplace arose as a consequence of the well-documented phenomenon of the relative decentralization of economic activity - particularly manufacturing activity from the inner city area. As proposed, the geographic explanations presuppose that industrial activity is a major source of employment for a significant portion of those unemployed. If this is not the case, possible geographical barriers to the job-matching process for manufacturing activities, which may influence spatial unemployment variations in manufacturing and associated occupations, would be unlikely to be a significant factor in explaining total unemployment rate variations. However, the manufacturing production occupations do appear to constitute a major component of the total unemployed pool in the Vancouver CMA (see discussion of FIGURE 8.1) and the possibility of the substantive existence of such geographic-structural unemployment is entertained. The decentralization of manufacturing activity in the CMA is examined in Chapter 5.

The "demand-side" school centres its argument on the flight of industry from the inner city to suburban areas, and beyond, leaving behind an abandoned inner city pool of unemployed. Spatial restructuring is seen to detrimentally affect certain residence-based sectors of society (Gillespie, A. (1983) p.180). Observed inner city

concentrations of the unemployed are therefore perceived as a result of 1) inaccessibility (because commuting costs are too high for the daily commuting trip to new job locations) and, 2) a "housing trap" restricting the ability of this socioeconomic group (or groups) to residentially relocate to within an acceptable daily commuting range of the suburban peripheral industrial destination areas. The "trapped" hypothesis purports that the decline in inner city jobs has created a residue of low-skilled unemployed who are unable to relocate because of either the costs involved (pecuniary and other) or the nature of their tenancy in the housing market (Elias, P. and Keogh, G. (1982) p.26).

In many respects, this argument aligns with the criticisms of the conception of travel-to-work areas supposedly defining large metropolitan areas as effective local labour markets (LLMs). If suburbanization of industry locationally disadvantages residents of the inner city, the "ease of access" assumption of the CMA would be violated. The existence of geographic-structural unemployment (for certain occupations anyhow), within the CMA, would suggest that labour markets were, in fact, localized and that employment decline has led to deficient demand within the actual spatial extent of the labour supply-demand exchange process (Bramley, G. (1980) p.273; Vipond, J. (1980) p.132).

The increased separation of homes and jobs for inner city manufacturing workers, as a constraint on job-matching, would be exacerbated by lower levels of car ownership for lower occupation-skill groups (assumed as being disproportionately represented in manufacturing production activity) and by the requirement for reverse, non-radial commuting to suburban locations (Gillespie, A. (1983) p.183). It is important to note that, if the trapped hypothesis is to be regarded as a possible major direct cause of observed unemployment differentials, there has to be an underlying assumption that total labour supply and demand requirements are approximately equal for the CMA as a whole. There is little evidence of this necessary condition in the British

context (Gillespie, (1983) p.182).

Inaccessibility and housing entrapment tend to be more widely accepted as determinants of inner city unemployment concentration in the United States than in British urban areas (Gordon, D. (1972); Metcalf, D. and Richardson, R. (1976) p.202). The racial dimension of the United States appears to play a significant role in explaining this disparity (Gillespie, A. (1983) p.181; Kain, J. (1968)). The McCome Commission report declared that high levels of unemployment, from the inadequacy of public transit services in overcoming home-work separation, was a significant factor in provoking the 1965 race riots in Los Angeles. De Vise's (1976) study of Chicago found that the rate of job decentralization from inner to outer city areas was more than twice the employed resident decentralization rate (over the period 1960-1970) thus reducing the accessibility of inner-city blue-collar workers.

His results also indicated a net commuting outflow of blue-collar workers from the inner city illustrating that reverse commuting had become a major feature of Chicago's travel patterns. The exclusion of inner-city blacks from new suburban housing, coupled with lower mobility in reverse commuting to decentralized factory jobs, was proposed as conferring a major employment disadvantage on this group.

In their exploratory study in Los Angeles, Wachs and Kumagai (1973, p.450) identified lower accessibility for low-skill primary, machine trades, and bench work occupations to their appropriate employment destinations than for professional, technical, clerical, sales and service workers. This initial accessibility disadvantage was also suggested as being accentuated by car ownership patterns. In addition, Wachs and Kumagai found that low income workers were less accessible to jobs (for that income category) than for the highest income group to their opportunities. However, workers in the low income range were more accessible to their work than the middle income groups to their employment.

Bederman and Adams (1974) examined the relationship between job location and employment in Atlanta to assess whether areas of underemployment and poverty matched those of low job accessibility. Unlike the other studies supporting accessibility limitations on inner city residents, the areas of highest accessibility to (aggregated-occupation) employment were found to be those with the highest rates of underemployment. Although the five employment centres used covered only 32% of jobs and destinations were not analyzed in terms of the appropriateness of jobs available, Bederman and Adams conclude that the variation in underemployment is not explained by the accessibility of residential tracts to job centres and that reasons for underemployment and poverty in the inner city would have to be sought elsewhere.

Although, in the U.K., there is some evidence of housing mobility constraints operating disproportionately on the bottom-end of the occupational-skill spectrum, the "demand-side" (inaccessibility and decentralization) thesis is not well supported overall. Gillespie (1982, p.182) notes that, while the number of manual jobs in the U.K. city cores declined substantially over the period 1966-71, the number of resident manual workers declined by a larger amount and at a faster rate. In fact, core job surpluses actually increased slightly over the period. Thus the necessary condition for accessibility impediments to job matching is not fulfilled at this generalized level in the U.K.

Hall (1981, p.2) proposes that the deprivation of many inner city areas is sustained and reinforced by a vicious circle of poor jobs and poor housing via the joint operation of a technological-employment trap (technology removing existing potential jobs) and a housing trap (from people being afraid to move to new job sites, having inadequate information, and being restricted to rent-controlled housing). According to Cheshire (1979, p. 36), the renowned Inner Area Studies (1977) of Liverpool, Birmingham and Lambeth, all espouse variants of the "trapped" hypothesis claiming the large numbers of unskilled workers have, as a result of inferior mobility, become incarcerated in the job-deficient inner city as industry has decentralized, and

have thus become ensnared in a vicious circle of unemployment and immobility (similar to Halls' "vicious circle"). He provides an example from the Liverpool study which claims that the 100,000 new manufacturing jobs (from regional policy) have been predominantly located on the periphery of the Merseyside conurbation out of daily commuting range of the inner city unskilled. However, N. Thrift (1979, p.178) highlights different conclusions from the Inner Area Studies reports, quoting paragraphs that do tend to indicate an acceptance of geographical variations in intra-urban unemployment rates as directly attributable to non-geographical factors such as the occupational structure of the residential labour force.

Bramley's (1980) contribution to the Lambert studies discusses the existence of real barriers to emigration for the less-skilled and lower-paid due to uncertainty coupled with relatively higher rents and housing payments at residential areas near employment growth destinations. The necessity for the use of cars for access to suburban job locations was also considered as a constraint on the low-income inner city residents. One-quarter to one-third of inner city residents expressed a desire to move out for various housing and environmental reasons but were prevented by housing cost considerations.

Studies in London by Berthoud (1980, p.240) also provide some evidence on the limited nature of housing mobility. While two percent of managerial and professional households were found to move for job reasons in a year, a scant 0.4% of semi- and unskilled manual workers did the same. Less than one in five manual workers would ever move for job reasons in their working lifetime. However, in his analysis of travel time to work-areas (for occupational groups), the three manual groups were found to have slightly lower journey times than either of the non-manual groups. Although this outcome suggests greater accessibility for the manual worker, Berthoud discusses how the positive association social class and car ownership, and the necessary dependence of manual workers on public transport or foot, would mean a

relatively smaller geographic range for the manual worker in his or her daily commuting trip for a given length of time. The radial focus of the transport network was also considered as placing further constraints on the job choices (many being located in suburban areas) of the manual worker. Berthoud refers to Daniel (1972) who found that, when male manual workers were made redundant in south-east London, their new jobs involved an increase of 23% in journey-to-work times together with a 15% decrease in real earnings.

Gillespie's (1983, p.182) findings at the U.K. national aggregate level contradict Bethoud's journey-to-work disadvantage for the manual worker. His calculations indicate that "core" to "ring" journeys for semi- and unskilled manual workers have remained a constant proportion of total work trips for that group (for the period 1966-71) whereas, for skilled manual workers, reverse flows were shown to increase slightly in importance. Although this phenomenon could reflect greater capability constraints on the less skilled, Gillespie concludes that the various studies do not lend much support fo the "accessibility crisis" hypothesis (admittedly only for his relevant study period) and subsequently renounces the possible efficacy of isolated transport improvement solutions.

Several other studies in the U.K. stand directly opposed to the "trapped hypothesis" as an explanation of intra-urban variation in unemployment rates. The majority of these studies favour the supply-side explanations as adequate alternatives. Cheshire (1979, p.36) criticizes the Inner Area Studies for failing to present any evidence to support their assertion that the unskilled had become trapped by the changing pattern of industrial employment.

Metcalf (1975) and Metcalf and Richardson (1976) reject the importance of area characteristics in explaining unemployment on the grounds that no association could be found betwen London boroughs' employment in manufacturing in 1966 and the unemployment rate in 1971. In addition, greater variation in unemployment rates (for inner versus outer metropolitan areas) would be expected for unskilled, than other

groups, if differential locational advantages were operating. However, Metcalf and Richardson (1976) found no more variation in unemployment rates of the unskilled than for the other groups. Evans (1976) obtained similar results indicating systematic differences in observed unemployment rates. Some areas of London (for example, outer Inner London) were found to have higher than national unemployment rates at all skill levels.

Joan Vipond (1984) ran a multiple regression analysis on census tract data (for Sydney, Australia in 1981) to reveal a positive unemployment gradient, with distance from the CBD, after the influences of spatial variations in characteristics of workers had been removed. This result supported her hypothesis that increased spatial frictions, from decreased accessibility and greater resistance on information flows with increasing distance from the CBD, would increase the length of the job search process. To Vipond, the positive unemployment gradient is evidence contradicting those U.K. and U.S. studies emphasising spatial causes of inner-city unemployment. Although her regression results reaffirm the traditional importance of workers' personal characteristics in explaining unemployment differences, the overall results are supportive of the significance of geographic-structural (and frictional) unemployment in explaining intra-urban unemployment variation patterns - only the observed pattern is different in the Australian context.

In Canada, the problems of job dislocation from the relocation of industrial plants from the City of Toronto to outlying municipalities beyond community range of displaced workers, have been addressed to some extent (see City of Toronto Planning Board (1975)). However, this study focuses on the effect of relocation beyond the Metro Toronto boundary and could not be conceived as a test of the local labour market effectiveness of the Metro Toronto area (though geographic mismatch at broader scales is stressed as the problem for specific groups). The research did reveal that older workers and low-wage employees experienced the most difficulty in finding new

work but the results do not help to isolate the relative explanatory power of accessibility constraints versus housing and personal characteristics in regard to spatial variations in unemployment within the urbanized area.

## B. INTRA-URBAN UNEMPLOYMENT DIFFERENTIALS FROM PERSONAL CHARACTERISTICS OF THE RESIDENTIAL LABOUR SUPPLY

The other major school of thought on the fundamental causes of observed variations in intra-urban unemployment levels upholds the role of personal characteristics of the residential labour supply as the key set of factors behind this mosaic of unevenness. Stated simply, unemployment is perceived to be high in certain areas of the city (such as the inner city) because low-skilled workers, who are prone to high unemployment, live in the cheap (low-income) housing of those areas (Vipond, J. (1980) p.131). The observed pattern would then be just a consequence of the low-income housing preferences of "unemployables" and those that recurrently suffer unemployment spells. Inner city areas, in particular, are often held to be areas with a high percentage of residents vulnerable to unemployment[2] (Corkindale, C. (1980) p.181).

Spatial concentrations of unemployment are thought to reflect concentrations of people with certain characteristics (such as age, skill level, race and family situation) which, in turn, reflect the impact of the housing system on residential location patterns (Bramley, G. (1980) p.273). People would be allocated to the differentiated landscape of the housing market on the basis of their socioeconomic and cultural characteristics and related needs and constraints. The form of the housing market itself would be the result of complex historical processes and an underlying "rationale" by participant decision-makers. This approach implies that the relevant urban area is a single spatial labour market which may, however, be linked to non-spatial aspects of segmentation -

---

[2]There is a considerable body of evidence intimating the propensity for low-skill occupations to suffer longer durations, and more frequent spells, of unemployment. This evidence will be examined, in part, in Chapters 7 and 8.

particularly the dual labour market thesis (Bramley, G. (1980) p.273). The spatial structure and its influence on the labour supply-demand adjustment process is ignored.

To some extent, the conclusions of the Lambeth Inner Area Study (1975) do facilitate the supply-side explanations. Although they propose that people are possibly trapped in the inner city because they cannot afford to move out or commute, the alternative explanation is considered when people are also seen to, perhaps, choose to live in this area because housing is cheap or available (for renting) (Corkindale, J. (1980) p.169). However, the fundamental contention of the personal characteristics explanation is that, if people are trapped, they are trapped in low-income housing, but the location of this housing does not impinge upon the job search process and access to available jobs.

This school is, therefore, passing on the actual explanation of the observed variation in unemployment rates by residence to those theories and models which attempt to explain the urban housing structure. Unemployment traits would just be ancillary aspects of those more fundamental socioeconomic and cultural characteristics which are seen to guide households to particular areas of the housing market (though there is an obvious direct and confounding association between unemployment and income levels).

The original attempts at accounting for intra-urban spatial variations in land use (and values and intensity) stem from the work of Von Thunen (1826) and were further developed throughout the twentieth century by Hurd (1903) and the land economists (such as Haig (1926)) and the Chicagoan human ecologists Park and Burgess (1925) and then Hawley (1950) and Firey (1947). In the 1960's, Alonso (1960), Wingo (1961), Mills (1967; 1969) and Muth (1969) developed the models widely accepted (and criticized) in the contemporary analysis of intra-urban land use.

The key concepts in Alonso's model are accessibility (to a city centre assumed as being the only source of employment) and the income available to households.

Increased distance from this centre would imply reduced accessibility and greater commuting costs which, in turn, would reduce the amount remaining for a household to spend on property. This setting:

> ...produces a bid-rent curve, portraying the amount of money which people are able to afford for land with increasing distance from the city centre. Individual housholds can choose where to live on this curve: each has an indifference curve indicating its relative preferences for the two elements of the equation. Alonso assumes that all households want as much land (space) as possible; land is more plentiful on th edge of the city, as well as being cheaper, so it is the rich who choose to live in the lower-density outer, wheras the poor are **confined** [*emphasis added*] to inner-city districts (where relative increases in commuting costs have less impact).
>
> (Johnston, R.J. (1981) p.9)

Therefore, the poor (who are more vulnerable to unemployment) would end up living at high densities on expensive land near the city centre as a result of the income-derived trade-off betwen space and accessibility to work. The concentration of unemployment in the inner city areas would then exist even in the face of high accessibility levels to the assumed central focus of job opportunities.

The supply side explanations of intra-urban unemployment variations have been supported by many British theorists in the wake of the early Inner Area Studies (1975) - mainly in response to evidence against the demand-side approaches.

As described, Evans (1976) rejected the "trapped" hypothesis on the grounds that unemployment rates were exceptionally high for both unskilled and other occupational groups in the outer Inner London area. Corkindale (1980, p. 184) attributed a major part of the differences in residential unemployment rates to variations in the structure of the labour force between boroughs (the inner boroughs having a higher percentage of unskilled, manual workers). In support of Evans' work, he found that, in general, there was <u>no</u> obvious tendency for unemployment rate differentials (within socioeconomic groupings) to be higher in inner versus outer boroughs thus concluding that the concentration of the unskilled and out-of-work in inner areas was probably derived from the operation of the housing market.

After dismissing the potential spatial causes of unemployment variation because of the absence of a relationship between the percentage in manufacturing in London boroughs in 1966, and the unemployment rate in 1971, Metcalf and Richardson (1976) applied a multiple regression analysis of the (selected) personal characteristics' make-up of the boroughs on the 1971 male unemployment rate. They found that variations in the male residential unemployment rate, between boroughs, could be well explained by individual characteristics - especially marital status (married men being less likely to be unemployed), number of dependents (in a positive relationship with unemployment rate), and the the proportion of unskilled workers (positive relationship). Once these variables were controlled for, age, ethnicity, and area characteristics (proportion of labour force in manufacturing in 1966 and number of redundancies before 1971) were apparently unrelated to 1971 unemployment levels.

By extending the model to include some "wealth" variables, Metcalf and Richardson found that boroughs with a high percentage of owner-occupied dwellings tended to have low unemployment rates and that the unskilled tend to live in low-rent housing. Because direct accessibility variables were not incoporated, the outright rejection of a relationship between accessibility and the probability of unemployment is questionable.

A study by the Northern Region Strategy Team (1975) also indicated that skill, and age, were the most important factors making an individual vulnerable to unemployment.

Overall, the housing effect explanation has probably gained the most favour in the British urban context. Inner city problems are seen as occurring because individuals who suffer labour market disadvantage live disproportionately in the inner city because therein lies the largest stock of cheap housing (Metcalf, D. and Richardson, R. (1976) p.202). On the other hand, inner city unemployment in the U.S. is commonly attributed to employment suburbanization, housing segregation, inadequate public transport

systems, poor labour market information and discrimination.

Cheshire (1973; 1979) also acknowledges that supply-side characteristics, the "logic" of the urban structure, and patterns of residential location are very important for explaining intra-urban unemployment disparities. However, he questions the utility of studies focused solely on the supply aspects on the contention that implications of differences in the observed personal characteristics of the unemployed are impossible to identify and that personal characteristics of the unemployed, in one spatial labour market, actually tell nothing about the causes of unemployment. The characteristics of the entire labour force are seen as being more persuasive for an understanding of unemployment rate variations.

Although demand differences are admitted to play only a minor role in explaining high relative inner city unemployment, Cheshire (1979, p.32) stresses that demand characteristics of a particular town or region are crucial in explaining unemployment variation over time and hence the high absolute level of inner area unemployment in the 1970's. To Cheshire, supply factors (that is, factors determining the quality of an area's labour supply) which are important in explaining intra-urban unemployment differences, should be far less influential in determining inter-urban differences. He perceives long-term unemployment differences between regions and towns as the outcome of long-term differences in the spatial pattern of excess demand for labour (or regional demand deficiency) (Chesire, P. (1979) p.36).

At this level of "determinancy", crises of the inner city areas (particularly in the U.K.) can be seen as crises of the manufacturing (or other low-skilled employment demand) sectors (Thrift, N. (1979) p.175). The inner city, with its traditional dependence on low-skill production or service jobs to match its typically high proportion of low-skill workers has been described as an "open economy" highly senstitive to the rapid transmission of economic fluctuations from other regions or countries. The strucural transformation of the economic base of Britain (mirrored in

varying degrees throughout the capitalist world economy) would lie at the heart of worsening inner city unemployment problems. Hall (1981) describes the inner cities of Britain as extreme versions of the economic woes of the country. Hence, although it is likely that persistent long-term supply characteristics (of socioeconomic groups and the housing system) are responsbile for relative inner city concentrations of unemployed, the absolute magnitude of variations in unemployment rates would be a result of profound changes in the nature of prevailing economic systems.

A recognition of the profound influence of "exogeneous" effects at national and international levels, where broad structural changes have a differential impact on the regional levels of demand for labour, implies a shift in emphasis to macroeconomic perspectives in order to understand urban labour market phenomena. The futility of isolated, local, piecemeal policy to reduce urban labour demand and supply "mismatch" problems (as in the inner city), without an explicit consideration of the changing nature of the Western economic system and the "processes of social equality", appears to be gaining considerable acceptance (Thrift, N. (1979); Cheshire, P. (1981); Elias, P. and Keogh, G. (1982) p.30).

One of the principal aims of the thesis will be to examine which of the aforementioned explanations of intra-urban unemployment variations is most appropriate to the Vancouver CMA. The research results obtained should enable a comparison of this Canadian city with the urban environments examined in Britain and the U.S.

If the supply-side explanation is supported, the original causes of unemployment would have to be located somewhere in the far broader macroeconomic interpretations.

However, the suburbanization of industrial activity is a necessary condition for the demand-side explanations (and a significant aspect of broad economic explanations) and evidence on the existence and nature of this process is examined in the Vancouver CMA study area in the following chapter.

Chapter V

# THE DECENTRALIZATION OF INDUSTRY IN THE VANCOUVER CMA

## A. THE PROCESS OF DECENTRALIZATION

### 1. GENERAL TRENDS

The rapid centralization of population and economic activity experienced with the onset of the industrial revolution continued to be the major spatial trend until well into the twentieth century. The radical technological changes which powered the urbanization process favoured the strategic concentration of the burgeoning goods-production sector and its required labour force. These areas of spatially-clustered economic activity and population acted as self-reinforcing magnets of growth by offering a range of agglomeration economies to firms within small, centralized core areas whose boundaries were rather narrowly defined by the relatively expensive transport and communication costs of the relevant time period[1] (Myrdal, G. (1957)).

However, during the twentieth century (particularly in the latter half), a number of countervailing forces have emerged to stimulate a reversal in the dominant process. The decentralization of population, and many forms of economic activity, at the intra-urban, urban to rural, metropolitan to nonmetropolitan, regional, national and even international scales has been well documented as a pervasive phenonemon in Western mixed economies (see Dicken, P. and Lloyd, P. (1981) p.155-168). Although there has been some evidence of an incipient decentralization of certain manufacturing activity sectors since early in the twentieth century (de Souza, A. and Foust, J. (1979) p.234), it was not until the 1950's that the suburbanization of the residential population and certain forms of economic activity was recognized as a distinct and entrenched process.

---

[1]This process of concentration stimulated by agglomeration economies would only apply to those firms for which the benefit of an existing urban core location more than offset cost advantages of a non-urbanized, raw material site.

The massive suburbanization of the residential population after the Second World War, in many nations, is linked to a range of motivations and causes which vary according to the perspective adopted. Undeniably, government housing policy targeted at home-ownership (and inspired by Keynesian macroeconomic theory) and the technologically-invoked improvements in transportation, communication, productivity and related increases in community wealth, played prominent roles in the formation of the low-density urban residential sprawls which characterized the post-war period (see Chapter 6 for some of the radical perspectives on residential suburbanization.)

The other major element of the urban system undergoing substantial decentralization (and the most relevant aspect for this paper) has been that of industrial activity. There has been a very pronounced redistribution or relocation of secondary activity away from its traditional location in the inner cities of large industrial metropolitan areas to a variety of more peripheral settlement areas. This phenomenon is of major importance to the research objectives of the thesis, both as 1) the underlying factor in the proposed spatial causes of unemployment in the "trapped hypothesis" and 2) as a notable aspect of the production process changes at macroeconomic levels which have indirect, but critical, implications for the nature of the outcome of regional and local labour market operation (and hence for the supply-side theories of unemployment rate variation).

The "Frostbelt-Sunbelt" regional shift of productive capacity (and people) in the U.S., is frequently monitored, analyzed and discussed as the prototypical illustration of the decentralization process (Cohen, Y. and Berry, B. (1975); Gertler, M. (1984) p.155; Norton, R. and Rees, J. (1979); Phillips, R. and Vidal, A. (1983) p.297). The onset of nonmetropolitan industrialization (the relative decentralization of industry from major metropolitan areas to rural and smaller urban areas),in the U.S., has also been identified by many researchers. For example, between 1962 and 1978, 56% of the increase in U.S. manufacturing employment took place in rural and other

nonmetropolitan areas (Norcliffe, G. (1984) p.27).

In Britain, similar changes in the geography of industrial activity have been identified. Keeble (1976) concluded that there was a core to periphery movement of manufacturing at the regional scale because the growth in manufacturing employment between 1966 and 1971 was inversely related to city size and positively related to 1) the perceived desirability of cities and 2) whether or not the region had "assisted area" status. In their regional shift-share analysis for the period 1959-1971, Fothergill and Gudgin (1971) observed that the Southern and Midland regions of the U.K. showed the fastest growth (though less marked for manufacturing alone) while London suffered a decline in total and manufacturing employment growth.

Monitoring decentralization processes at the international level is a far more difficult problem - particularly in terms of evaluating the extent of actual relocation of productive capacity from the traditional core industrial nations to the "developing" nations of Latin America, Asia, Oceania, and Africa. The shifting of investment capital through the international capital markets and the operation of multinational corporations (both mechanisms are primarily post World War II phenomena) is often conceived as the major impetus behind the relative decline of the First World nations as producers - especially in the older "smokestack" industries (Multinational Monitor (1984)). The output of manufacturing industry grew far more quickly in the "developing" nations than it did in most "advanced" nations (Jordan, B. (1982)). In fact, from 1970 onwards, there was a relative stagnation in manufacturing output in many "developed" nations. The redistribution in the geography of manufacturing output towards the industrializing Third World (particularly for low-skilled manufacturing "branch plant" functions) could be framed within the context of a relative decentralization of industry at the international level.

## 2. THE CENTRIFUGAL FORCES UNDERLYING DECENTRALIZATION

The underlying causes of the dispersal of industry from its central area location have received considerable emphasis in research and theory over the past twenty years. In order to avoid undue repetition of some impressive existing accounts and summaries of the major factors proposed as the forces behind this pervasive process, a review of the alternative explanations shall only be included in Appendix A. This list has been compiled on the basis of Scott's (1982a, p. 123) replete description which has only been modified in part to account for several other possible determinants of the decentralization phenomenon. The factors are not necessarily mutually exclusive or compatible but represent an *ad hoc* listing of propositions from a variety of theoretical and methodological perspectives. In addition, as Scott (1982a, p. 121) has stressed, most of the postulated explanations do not stand alone as final causes and do not fit within comprehensive, integrated broader theoretical contexts (that is, they are essentially a-theoretical) and tend to form a piecemeal listing of changes which would favour non-central locations.

However, perhaps the most powerful common determinant of the listed factors would be the effect of technological and organizational innovation on both the specific nature of the production process and the relative costs of factors of production including the costs associated with linkage requirements. Technological change could be perceived as directly initiating increased land requirements, the reduction in transport and communication costs (which previously tied the firm to clustered core locations), and shifts to transport modes (such as trucking) - outcomes which enable and encourage peripheral locations. It could also be linked to the economic concentration, and functional specialization, and possibilities for separation, which have resulted in function-specific locational requirements which are often no longer optimally fulfilled in the core area. The changes in the production process (and associated employment demand) and the evolving geographic pattern of required labour supply (which has

been strongly affected by technological change) have also been proposed as providing a dynamic set of locational considerations often reversing the centripetal tendencies of earlier times.

Obsolescence of central plant and equipment is an obvious product of innovation. Even changes in the land price gradient could be at least partly attributed to the technologically-invoked transformation of the economic base and "highest and best use" possibilities for inner city versus suburban sites. The impact of technology appears to seep through to almost every aspect considered as "pushing" industry from the core and "pulling" it to the peripheral areas.

Only a simplistic conception of physical constraints on expanding inner city firms, the exacerbation of negative externalities with city growth, variation in municipality policy and taxes relating to housing and industry, interest group lobbying, and changes in the collective bargaining power, or militancy of labour would escape direct association with the changing nature of technology.[2]

Probably the most elaborate, integrated treatment of decentralization in the traditional models of industrial location lie within incubation, product cycle, and hierarchical filtering theory (Hoover, E. and Vernon, R. (1962); Norton, R. and Rees, J. (1979); Struyk, R. and James, F. (1975)). The theory (actually an amalgamation of three related theories) places prime emphasis on explaining the differing locational requirements of firms, and in particular, product lines, as they evolve in response to demand requirements. The inner city is conceived as the safest place for the nurturing of new and innovative firms dependent on the agglomeration economy benefits of this area. As they become self-sufficient and stable (if they survive), or as the market increases for the product and standardization becomes viable, the firm becomes increasingly independent of the central city and is likely to be "spun off" from the

---

[2]Changes in the nature of the labour process, and labour relation, from technological and organizational innovation, and the effect of increased auto use and transport improvements factilitating suburbanization, and the expansion of firms initiated by technology-based changes, would have to be discarded.

incubating central area to the suburbs or down through the urban hierarchy. The theories have been criticized for their intrinsically static nature, underemphasis on labour aspects, and failure to go much beyond the investigation of formal spatial relationships (Scott, A.J. (1982) ;Webber, M. (1982)).

The relevance of some of the appended list of decentralization factors will be assessed in the following description of the changing geography of industry within the Vancouver CMA.

## B. INTRA-METROPOLITAN DECENTRALIZATION - THE CHANGING GEOGRAPHY OF INDUSTRY IN THE VANCOUVER CMA

The intra-metropolitan decentralization of manufacturing industries (and tertiary and quaternary activities to some extent) has paralleled, if not preceded, the similar trends found at larger geographic scales (Dicken P. and Lloyd, P. (1981) p.155-158). Movement from the inner city area to suburban peripheral areas, beginning since the early 1900's, but accelerating in recent years, has been instantiated in many geographic studies.

In the U.S.A., numerous case studies and U.S. Bureau of Census Data analyses have revealed the pronounced tendency for manufacturing (and associated blue-collar) employment to shift from the inner city to the suburbs (Struyk, R. and James, F. (1975); Berry, B. and Kasarda, J. (1977); Kain, J.(1968)). Although at a lesser scale than manufacturing, office and service suburbanization has proceeded at an increasing rate since World War II (de Souza, A. and Foust, J. (1979) p.234). A plethora of studies in the U.K. have also monitored the decentralization of manufacturing activity output and jobs from inner city regions (particularly in London) (Drewett, R., Goddard, J., and Spence, N. (1976); Dennis, R. (1978)).

The process of decentralization (along with outright "deaths" of industrial firms) has been attributed as major causes of "deindustrialization" of traditional manufacturing

core areas (Phillips, R. and Vidal, A. (1983) p. 291). The loss of industry from these core areas can result in the creation and exacerbation of social and fiscal problems (such as unemployment, job dislocation, and reduced municipal tax revenues without similar declines in needed expenditures) in traditional manufacturing core cities. The urban industrial decline phenomenon has had profound negative repercussions in many of the older industrial cities and constitutes a key problem addressed in urban, regional, and national economic development policy (particularly in the U.K.).

Manufacturing value-added and employment statistics for individual municipalities (when available) were extracted from the Statistics Canada, "Manufacturing Industries of Canada" data, at the sub-provincial level, calculated as a percentage of the total for the CMA, and plotted on the maps shown in MAPS 5.1 and 5.2. [3]

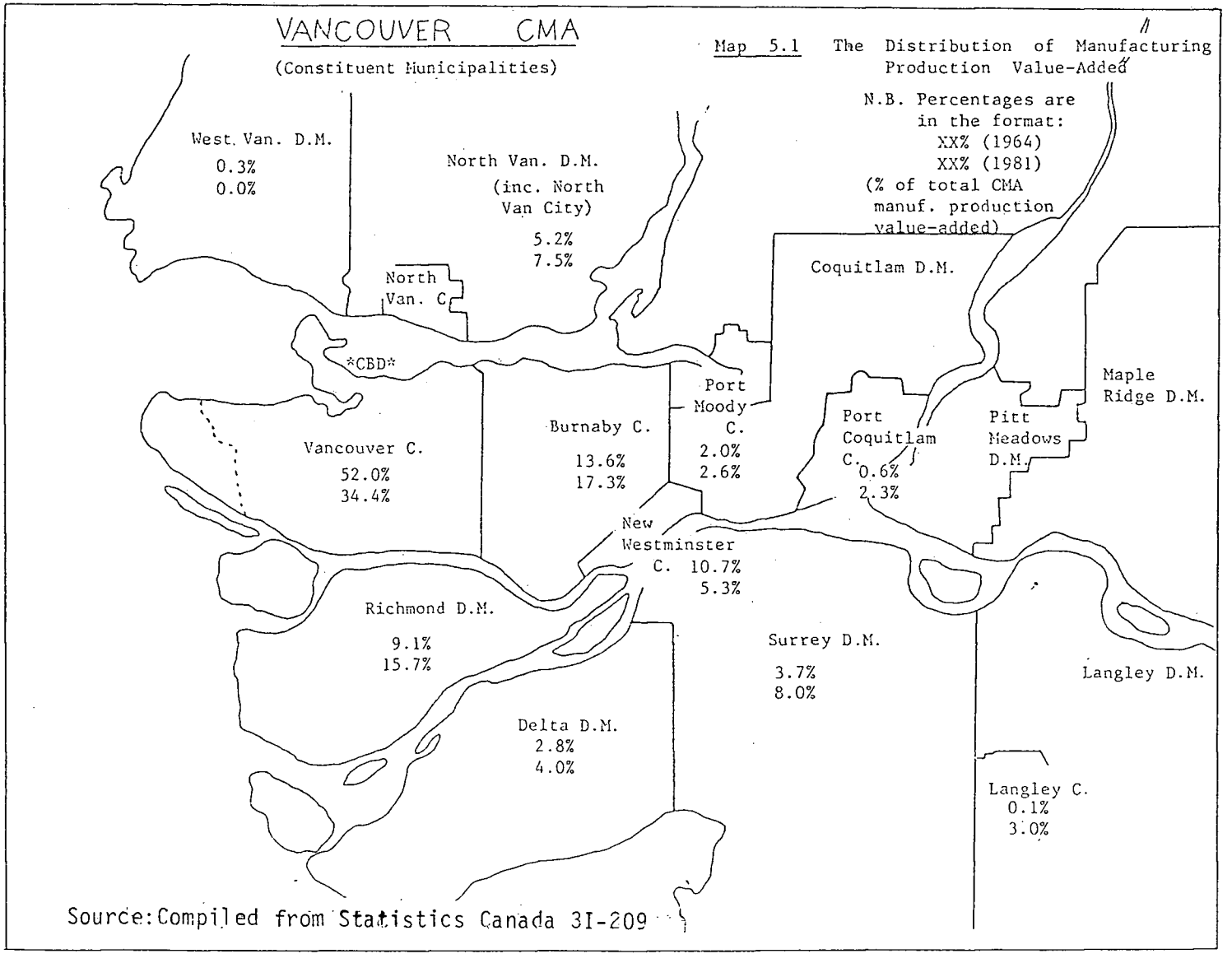
Vancouver City has lost about 18% of both the total CMA manufacturing employment and manufacturing production value-added over the period 1964 to 1981. Although it still has the largest share of both these variables, it has lost its relative share of manufacturing employment and value-added primarily to the suburban municipalities of Richmond, Delta and Surrey and to Port Coquitlam around the eastern arm of the Fraser River. Burnaby has encountered slight increases in its portion over this period while New Westminster has lost approximately 4.5% of the total share of the CMA's manufacturing employment and value-added. While North Vancouver has experienced slight increases in its share of manufacturing activity, West Vancouver's tiny proportion in 1964 was virtually reduced to zero by 1981.

The pattern of manufacturing production employment change for the component municipalities is shown in MAP 5.2.[4]

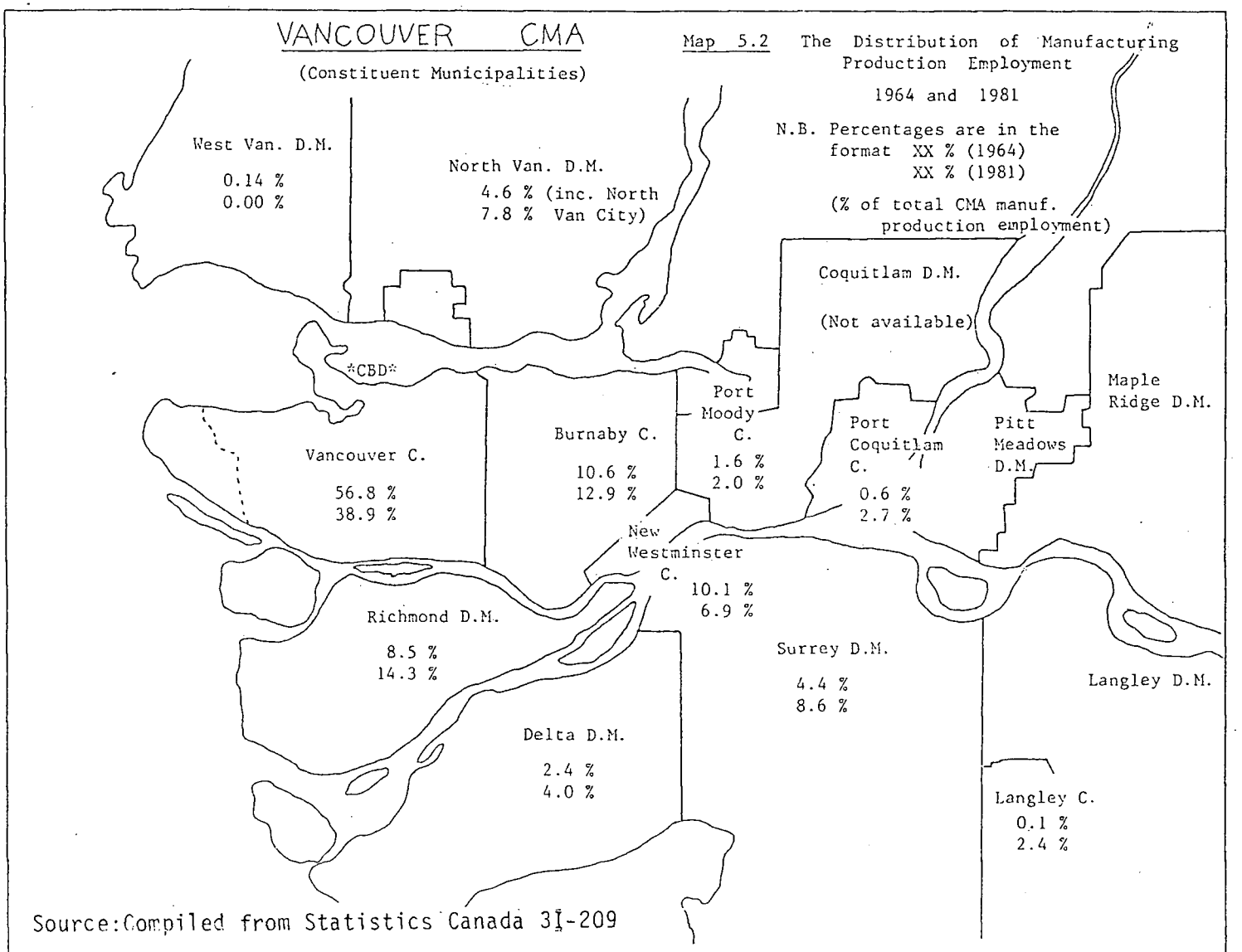
---

[3]There are some inconsistencies between the percentages calculated for the two years as some of the statistics were not available for all municipalities. However, figures have been adjusted to take account of missing data where possible and the major trends should still be fairly accurate.

[4]Statistics for Coquitlam, Maple Ridge and Pitt Meadows, were not available for both years, due to confidentiality criteria and were hence omitted from the calculation.




Source: Compiled from Statistics Canada 3I-209

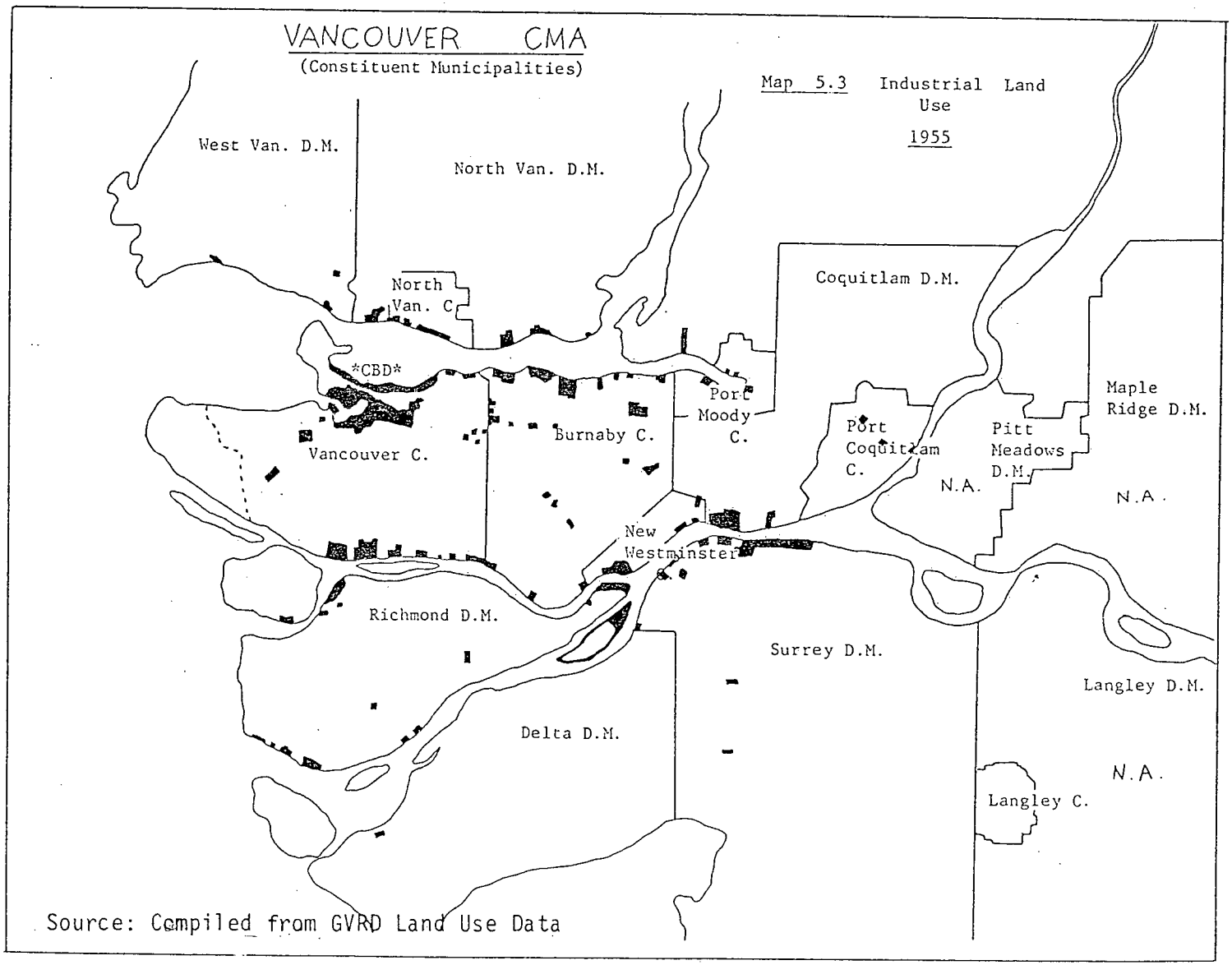



Source: Compiled from Statistics Canada 3I-209

Absolute changes in the number of jobs for manufacturing production workers are fairly consistent with the relative distributional changes. Both Vancouver and New Westminster suffered absolute losses over the 1971-81 period. Vancouver City lost 7.6% of its manufacturing production workforce (1724 jobs) and New Westminster lost 7.1% of its manufacturing production employment (265 jobs). The municipalities which gained the bulk of new jobs in industry were Richmond and Surrey which together accounted for almost 50% of the increase. Other suburban municipalities each captured between 2% and 10% of the net gain in employment. The rate of growth was quite spectacular in Langley C. (297% increase), Langley D.M. (132% increase) and Port Coquitlam (203%).

Vancouver City and New Westminster were the original areas of settlement and the hub of early industrial activity coalescing around the railway lines and along the waterfront (MacDonald, N. (1973) p.142-151). False Creek and the area along the harbour to the east and New Wesminster (with its sawmills, and fish cannery) were the dominant industrial areas of the region until the 1960's (Hardwick, W. (1972) p.126). Although these areas could only be seen as traditional core manufacturing areas at a far lesser scale than the older core areas of cities of the "manufacturing belt", decentralization, from Vancouver City in particular, has occurred in terms of a decrease in their combined relative share of manufacturing employment and value-added - from over 65% in 1964 to only about 45% in 1981.

The concentration of industrial land use in Vancouver City in 1955 is illustrated by the plot of industrial land use activity, at that time, in MAP 5.3. The absolute growth rate of the industrial sector in Vancouver City has been very slow over the last two decades. Between 1968 and 1976, the City actually lost 123 acres of industrial land use (an average of 1.1% per year) and manufacturing employment fell by 2,500 jobs in the period 1966 to 1972 (City of Vancouver Planning Department (1977) p.7-9).



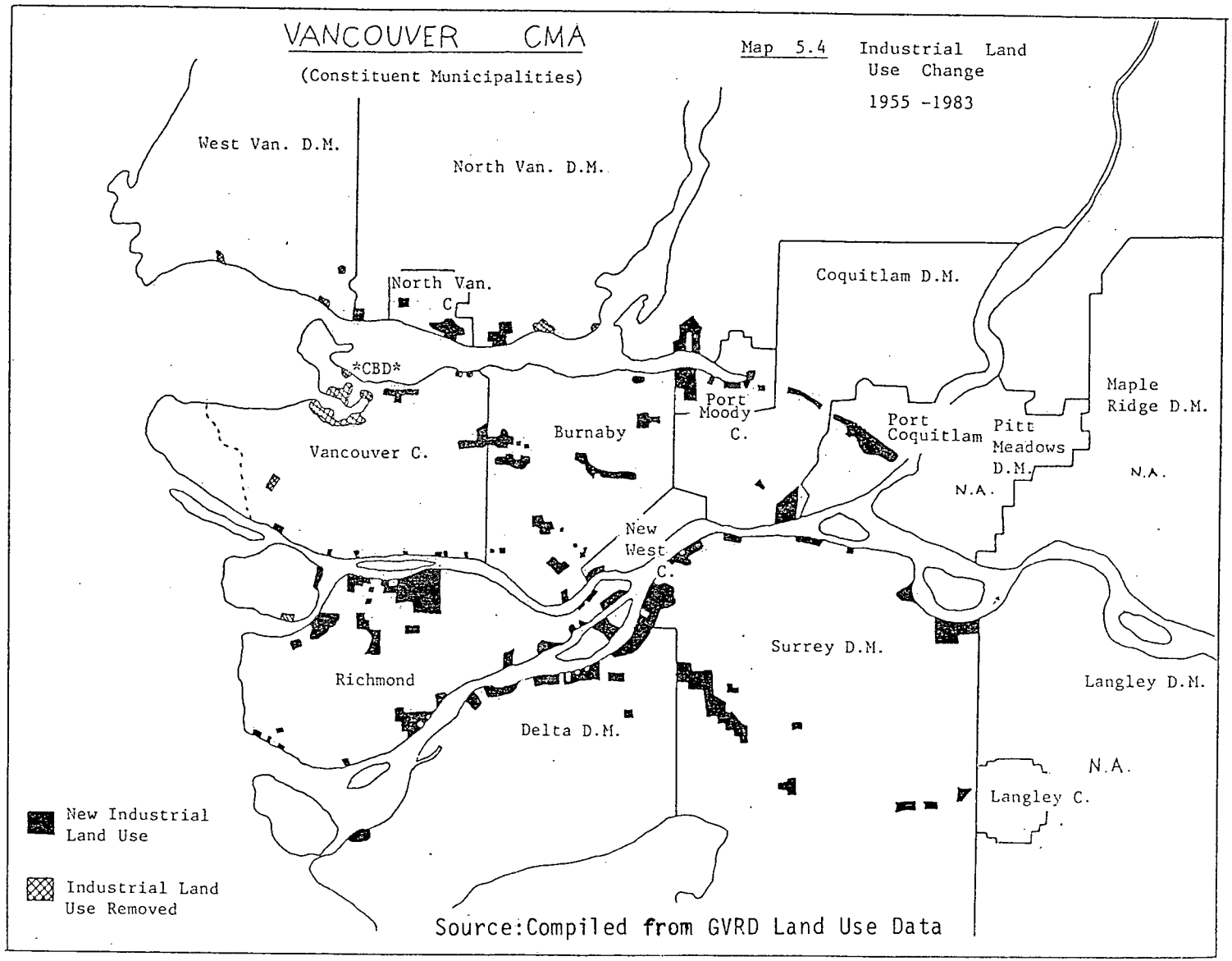

Source: Compiled from GVRD Land Use Data

After World War II, the population sprawled in the Lower Mainland area and new manufacturing plants, especially the larger ones spread eastwards along the Fraser River and into the suburban areas (Walker, D. (1980) p.219). MAP 5.4 shows those areas of the CMA which either gained or lost industrial land use over the period 1955–1983.[5] Apart from the loss of some scattered areas in West Vancouver and Richmond (some of which could be a result of inaccuracy in the original land use maps used), False Creek has been the most significant area of industrial land use to be displaced in the Vancouver CMA. The loss of industrial land use and manufacturing employment (which declined by 6,000 jobs from 1966 to 1978) in both absolute quantity, and relative proportion of the CMA total, supports the notion that Vancouver City has been undergoing a sustained reduction in its importance as an industrial centre since the late 1960's (DPA Consulting Ltd. (1981) Table D–1). However, manufacturing shipments (adjusted in line with the Canadian C.P.I.) did increase slightly (by 20%) over the period 1966to 1981.

By the early 1970's, Steed (1973, p.239–40) described the geography of industry in the Vancouver CMA area as having a high proportion of suburban manufacturing associated with the rather specialized locational requirements of a few large plants. The wood processing and paper mills were located along the waterfront areas where their input and water needs could be easily provided and the export nature of their output could be satisfied by the capability for port facilities. Fish processing plants could be found in Richmond, shipyards in North Vancouver and chemical plants and petroleum refineries at the eastern end of Burrard Inlet. Steed described the suburbanized pattern as heavily influenced by firms which, for the most part, required large tracts of land,

---

[5]Although "industrial" land use covers wholesaling, warehousing, distribution and construction activities in addition to manufacturing, processing and fabrication in the previous discussion of manufacturing, this measure is the only sutiable indicator of land use available. It is important to note the limitations of an analysis of industrial activity changes by illustrating the simply aggregate areal changes shown in MAPS 5.3 and 5.4. These areas mask variation and changes in use intensity (of output and employment) and variation in specific industry types within their homogeneous spatial expression.


VANCOUVER CMA
(Constituent Municipalities)
Map 5.4 Industrial Land Use Change
1955 -1983
West Van. D.M.
North Van. D.M.
North Van. C
*CBD*
Vancouver C.
Burnaby
Port Moody C.
Coquitlam D.M.
Port Coquitlam
Pitt Meadows D.M.
Maple Ridge D.M.
N.A.
N.A.
New West C.
Richmond
Delta D.M.
Surrey D.M.
Langley D.M.
N.A.
Langley C.
New Industrial Land Use
Industrial Land Use Removed
Source:Compiled from GVRD Land Use Data

waterfront and some isolation due to pollution problems.

The decentralization of industrial land use in the CMA, since 1955, is clearly ilustrated in MAP 5.4. The map showing the spatial distribution of industrial land use in 1955 (MAP 5.3) highlights the role of Vancouver City as the industrial centre of the CMA prior to the 1960's.

The period from 1955 to the early 1970's, was a time of drastic physical change and land use instability in the region with considerable demolition of inner city neighbourhoods (Ley, D. (1980) p.254). The outflow of industry from False Creek (around 1963 to 1972) was accompanied by the growth of Port Moody, New Westminster and North Vancouver and the prolific suburbanization of industrial land use in Richmond, Delta, Surrey and to some extent, Burnaby.

These changes (up to the early 1970's) are consistent with Guy Steed's (1973, p.255-257) study findings on industrial land use activity in the Greater Vancouver Regional District (GVRD) from 1954 to 1967 - the eastward shift from the core, the decline of the False Creek area, the rapid growth in North Vancouver, and a considerable expansion in suburban industry areas. However, after the early 1970's, the decentralization of industry to outlying suburban municipalities was by far the most pronounced aspect of industrial land use change and this trend suggests that industry has tended to locate (or relocate) at even greater distances than those involved in the more modest extensions of the earlier period.

In the high economic growth context of the 1970's, physical constraints on land availability and high land values in Vancouver City reduced the appeal of the central area for potential or expanding industry. The environmental awareness preferences dominant in the late 1960's and the early 1970's also contributed to the "pushing" of industry from its traditional stronghold (City of Vancouver Planning Department (1977), p.7.9 ; Roy, P. (1981) p.146). The increased demand for land by industry, from horizontal plant layout requirements of modern production techniques and increased

employee auto use and parking needs, meant that land constituted a greater cost component in the firm's investment hence exacerbating this negative aspect of the city area. Increased demand by commercial uses (which can generally outbid industry for available land) has also raised land prices and added pressure for rezoning away from industrial uses (Tennant, L. (1977) p.56).

The rezoning of 400 acres of industrially-zoned land in Vancouver (from 1968 to 1976), civic efforts to convert False Creek from an industrial area to mixed residential, commercial, and recreational uses, suburban municipal industrial park provisions and tax incentives, and the "balanced growth" strategies of the GVRD "Livable Region Plan" have all played a vital role in the decline of core industrial areas and the growth of suburban industry. P. Roy (1980, p. 134) saw the False Creek transition as "symbolizing Vancouver's emergence as a post-industrial city". The decisive influence of social groups and institutions in directing the nature of industrial development in the city illustrates the potential for social perceptions and "meanings of place" to act back upon the spatial structure and spatial distribution of the economic base.

In more recent times, the City of Vancouver Planning Department has been adopting strategies to preserve and maintain a strong industrial sector. The guidelines of the "Economic Strategy for Vancouver in the 1980's" and the creation and possible implementation of two new (light) industry zoning schedules ("I-1" and "I-2") are oriented toward the achievement of a more stable environment within which industries can operate and develop (City of Vancouver Planning Department (1983) p.18). Fears of negative economic repercussions from continued industry loss (particularly in times of economic recession) may well be currently outweighting the environmental concerns of the past.

The construction of additional bridges across the Fraser River, and reduced linkage costs acting to reduce the accessibility disadvantages of the periphery, have

allowed a number of "pull" factors to draw new and relocating industries to the suburban areas (as shown in MAP 5.4).

Industrial land values in the suburban municipalities have been far cheaper than those in the city - ranging from less than $1 per square foot in Delta and Surrey, to $18 per square foot in Vancouver City (in 1976) (City of Vancouver Planning Department (1977) p.7.10). The existence of cheap large parcels of land, available in the suburban areas, and the shift of the "market centre" towards the south-east (to near Port Mann Bridge) away from Vancouver CBD (due to strong residential suburbanization in the 1960's and 70's), have stimulated the industrial decentralization process.

In summary, there appears to be considerable evidence that the decentralization of industrial land use, manufacturing employment, and manufacturing value-added, is occurring away from the traditional core area of Vancouver City and New Westminster to the suburban municipalities (particularly since 1970). The process is probably not as pronounced as in the large older metropolitan industrial core areas of the U.S. and Europe. Vancouver has never been a heavily industrialized urban area over its relatively short history of settlement and the original industrial sectors were not focused exclusively on an identifiable large, dominant "inner city" area. The export-orientation and "upstream" nature of resource exploitation and production activities have always relied heavily on transport locations (such as those along the many waterfront sites of Burrard Inlet, False Creek and Fraser River) rather than on the agglomeration economies and high central market access features of a concentrated industrial core area.

Chapter VI

# RADICAL INTERPRETATIONS: THE RESTRUCTURING OF CAPITAL AND THE LABOUR MARKET

The purpose of this chapter is to provide a brief synopsis of the significant field of radical theory on the labour market (and hence, on unemployment) in order to acknowledge the Marxian-based explanations of unemployment. Selected aspects of these radical interpretations will be examined to gauge their relevance or applicability in the British Columbian setting (in Chapter 9) with specific reference to the manufacturing production employment sector.

The existence of institutional and spatial constraints on the ideal neoclassical models of the labour market have already been discussed in Chapter 3. However, since about the mid 1970's, there has emerged a vigorous growth in the use of Marxian-inspired theoretical (and to some extent empirical) analyses in geographical literature. One of the central concerns of such radical theory in geography has focused upon the role of labour in capitalist economies. The rapid increase (throughout the 1980's) in the volume of radical works salient to the labour market makes it appropriate to address this (rather loosely) unified view which probably constitutes the major, singular school diametrically opposed to the fundamental assumptions and perspectives of neoclassical interpretations of the labour market.[6]

The selection of the neoclassical and radical labour market models for review is not meant to imply that these two perspectives encompass the appropriate theoretical literature in its entirety. Existing models of the labour market and the labour process include a number of other conceptions (such as labour queue theory, labour exchange models and those framed within industrial sociology studies) but many of these draw heavily on, and involve only minor modifications to, the quintessential views of the neoclassical or radical schools. To some extent, it is also true that the radical and

---

[6]The Marxian-based criticisms of Weberian location theory were briefly outlined in Chapter 3.B.2.

neoclassical conceptions do agree on some basic theoretical relationships, motivations of actors and treatment of the labour "problem" and one has to move to "higher" epistemological, ethical and aetiological levels before major disparities become obvious.

The variety of perspectives within the Marxian-based interpretations also complicates the execution of a concise review of radical labour market models (Kirwan, R. (1981) p.79). Within geography, the influence of Marxian thought ranges from the more rigid, holistic, structuralist interpretations inspired by Althusser (1969; 1976), Castells (1977) and the French School of structural marxism to the somewhat more flexible interpretations of theorists such as Massey and Meegan (1978; 1979), Clark (1977; 1978a; 1978b; 1978c; 1979a; 1979b; 1981a; 1981b; 1983a), Gertler (1984), Scott (1980; 1981a; 1981b; 1982a; 1982b; 1983a; 1983b; 1984) and Walker and Storper (1981; 1983) who use many of Marx's philosophical orientations and concepts in their analyses of aspects related to the labour market and the effect of restructuring and locational strategies of capital. However, the differentiation is largely a matter of degree. The organismic orientations which portray capitalism as having an "inner logic" (inner laws of transformation), with each part functioning to preserve the existence and general structure of the whole, abound in the works of Castells (1977), Peet (1979) and Harvey (1978) and appear sporadically throughout the less orthodox radical theory.[7]

However, outside the formalist theoretical structuralist readings of the political economy, structuralism has been deployed much less restrictively (and rigorously) to connote a concern with the historically-specific and deep-seated constraints which set the limits to human action (Johnston, R.J. (1980)). Although primacy is attributed to "capital" and the operation of a capitalist economic system perpetuated by a socially-reproduced set of social relations, and the effect of "capital" on the economic base or structure, many of the current Marxian geographical works could be more

---

[7]See Duncan and Ley (1982) for a comprehensive critique of structural marxism in human geography.

accurately cast in structuralist-realist terms.

This general theme would be purported in the explanation of the phenomena of human geography as lying in hidden mechanisms rather than in the phenomena themselves and would involve both the underlying "structural" relations and their inner logic (of which human actors are largely unaware) and human agency and contingent circumstances which generate the actual events of everyday life (Storper, M. and Walker, R. (1983) p.27). The prescriptive tendencies of capitalism are adopted without the inviolable determinacy of the economic structure of Marxist dogma (Badcock, B. (1984) p.53). In addition, the renunciation of empiricism by Castells (1977) appears to be implicitly rejected in the considerable body of research, undertaken throughout the 1980's, in an attempt to assess the evidence for and against radical theory constructs versus other models (for example, see Clark (1981b; 1983b; 1984) and Scott (1983a; 1983b; 1984)).

In some respects, the adoption of more appropriate modern conceptual schema and the heavy revision of original Marxist theory could be conceived as iconoclastic. However, despite these modifications, the lack of consensual theoretical formulations, and a surprising lack of internal recognition, the "radical" school could probably be collectivized on the basis of a number of common axioms concerning the structural relation between social institutions and groups within capitalist society and in relation to the way they "read" the dynamic form of the social and spatial structure of economic organization.

This chapter will outline the common themes of the "neo-Marxian" perspectives, specifically in regard to the operation of the labour market, and is aimed at illustrating how the radical geography orientation fits the overall Marxian mode of social theory. It is not meant to be a summary of the diverse and voluminous encompass of Marxian theory in general. A brief review of the major radical critiques of the neoclassical model will be followed by a limited summary of the school's

conception of the socio-spatial relationship. Finally, but most importantly, a synthesis of the contemporary Marxian-based theory on the restructuring of capital and the spatial structure of industrial activity is presented as an example of the radical explanation of the true dynamic form of the labour market in capitalist societies.

## A. THE RADICAL CRITIQUE OF THE NEOCLASSICAL LABOUR MARKET

The attacks on the neoclassical labour market from the radical school cut across many disciplines and would require a review of massive proportions to provide a truly representative account. However, given the weaknesses of arbitrarily attempting to isolate and synthesize a few key subject areas, the following list should outline some of the major points of contention.

### 1. THE MECHANISTIC, ANTI-HUMANIST NATURE OF NEOCLASSICAL APPROACHES

There are at least two major sets of objections to the neoclassical conception of people as decision-makers and participants in the labour marker, espoused by radical theorists.

Firstly, there appears to be some consensus on an implicit underemphasis in the role attributed to labour aspects in neoclassical economic theory. The importance of labour in the processes of change stimulated by class conflict, and as the sole source of surplus value, elevate the worker to a central status in Marxian economic theory designed to analyze and understand the operation of the capitalist economic system. Walker and Storper (1981) argue for the primacy of labour considerations in the decision-making process of firms (assumed as being structurally-dominant over labour) in industrial location theory, on the basis of an assumed priority of cost, control and reproduction characteristics of the labour force.

The treatment of labour (in geography and economics) in a market like that for any other commodity, and as simply one of a variety of supply factors of production, is rejected on the basis of both moral grounds and as a gross simplification of labour devoid of its crucial role in exchange and consumption (Cooke, P. (1980) p.544). The abstraction of labour as a commodity, rather than as people's existence, and in aggregate, society itself, could thus be seen as caricaturizing society as a supply factor for the utilization of the firm rather than giving society its deserving key role.

Criticisms of the minor role attributed to labour as an element in the production system are also accompanied by a related, second set of objections opposing the dehumanization of labour as a passive factor of production to be manipulated and exploited by the firm. Under the radical conception, labour is a unique factor of production which is, by nature, embodied in human beings, and is consequently alive, conscious and antagonistic to domination by capital (Walker, R. and Storper, M. (1981) p.498). The nature of labour market structuring and outcomes at a given time and place are seen to be ultimately the result of power relations rather than the product of neutral principles of supply and demand or other mechanistic economic principles (Clark, G.L. (1983a) p.2). A consideration of the historically-specific mode of production and social relations defining worker behaviour is perceived as paramount to a proper understanding of the labour market operation.

Although some radical interpretations adopt the stance of the complete subordination of labour to the structurally-dominant whims of capital (a perspective which aligns with classical economic theorizing), the "bilateral relations" school within radical theory conceives of workers as entering explicit and implicit contractual agreements with employers (Clark, G.L. (1983a) p.2 ; (1983b) p.166). The existing social relations of production would define the collective power of labour and determine the nature of wage and employment outcomes.

Hence the labour market would be a far more restrained market than that for any other productive factor given the emotional, physiological and routinized capability and capacity constraints of the "commodity" in question (Cooke, P. (1980) p.544). As an antagonistic, inconsistent input, human labour would not fit the fixed laws and parameters of mathematical modelling applied in marginal utility and other deterministic aspects of neoclassical economic theorizing. This criticism is akin to those from behavioual and humanistic geographical perspectives on the inadequacy of the "economic man" concept used to establish the rules for human behaviour in normative neoclassical model assumptions.[8]

If radical theory drawing on Marx's works is to be perceived as more humanistic in orientation than neoclassical economic theory, it would probably have to be related to Marx's approach in earlier publications such as the "Economic and Philosophic Manuscripts" (1844) concerned with the nature of capitalist society creating alienation (Johnston, R.J. (1983) p.92 ; Lavine, T. (1981) p.274). This early Marxist work clearly expresses a moral or humanistic viewpoint which has, as its fundamental theme, the moral regeneration of humanity through world revolution. The more scientific socialist or economic theory of history Marxist approaches to some extent eclipse this theme and have been criticized as anti-humanist for neglecting the social and psychological aspects of lived experience (phenomenological dimensions) in accounting for human action and, therefore, change in the larger system at hand (Duncan J. and Ley, D. (1982) p.45).

However, if a humanistic orientation can be considered in terms of the concern for human welfare and dignity, the radical approach does inculcate such a perspective in 1) attributing priority to the welfare of labour (as society) over the maximization of returns to the unevenly distributed ownership of capital, 2) in the more realistic

---

[8]The critique of the robotic creature of "economic man" conceptions, and his or her idealized behaviour, by no means stems exclusively from radical theory and will not be attempted in the discussion.

treatment of labour as an animate, intelligent contributor to the production process, and, 3) in expressing the improvement of the condition of human society as a direct, fundamental goal (rather than implicitly, as a byproduct of facilitating the production process controlled by the firm).

## 2. THE IDEOLOGICAL NATURE OF NEOCLASSICAL ECONOMICS

Within its positivist mode typical of most conventional economic analysis, neoclassical economic treatments of labour are thought to be undertaken on a value-free basis like that of the mimicked natural sciences. The approach generally involves the determination of the mathematical, economically-efficient optimal condition or the natural equilibrium outcome to be derived given the prevailing economic system (usually idealized and abstracted considerably from reality). The application of mathematical physics to human economic behaviour (inaugurated by Francis Edgeworth in the 1880's) has been recognized by non-Marxist and Marxist scholars alike, as rationalizing the tenets of conservatism and as operating as a calculus of human mathematics in order to justify divisions of sex and status (Heilbroner, R. (1972) p.169). With people as its subject matter (though in dehumanized form) and, in dealing with matters that will inevitably have social ramifications, the possibility of a value-free economic approach is highly questionable. Any economic study would necessarily be a study in political economy.

To much of radical theory, neoclassical economics, and its labour-related spin-off disciplines, fulfill an ideological role by nurturing and legitimizing market capitalism (Badcock, B. (1984) p.26). The bulk of theory is seen as being oriented toward the formulation of strategies that firms should, or actually do, use in maximizing their profits, and, for the orthodox Marxist theories, the only way to do so is to increase the rate of exploitation (or surplus-value) derived from labour. Its natural inclination is, therefore, conceived as being anti-labour.

There is evidence of a pro-capital bias to be found in neoclassical-based disciplines such as labour economics. Distributional and normative issues are conveniently disregarded as beyond the scientific approach implemented (Fleisher, B. and Kneisner, T. (1984) p.13). The evils of wage rigidities and union actions are frequently claimed as the major cause of unemployment (Addison, J. and Siebert, W. (1979); Fleisher, B. and Kneisner, T. (1984) p.469; Marsden, D. (1982) p.240). Minimum wage levels and inflated reservation wages from unemployment welfare and insurance are considered to either raise wage levels above the value of the marginal productivity that the worker can offer the firm or prevent the worker from accepting a low-paying job in line with his or her marginal productivity.

There is also an emphasis on the expected mobility of labour in response to the economic efficiency locational choices of firms in labour economic literature and conventional labour market studies.[9] For example, Employment and Immigration Canada's (1981, p.46) publication on labour market economic policy states:

> A primary purpose of labour market policies is to facilitate more smoothly functioning labour markets by increasing mobility from regions and industry where demand and productivity are low to expanding sectors with a minimum of wage pressure... to ensure that avilability of labour will not impede realization of our economic potential.

The underlying assumption is that people should move to jobs.

Most of the solutions resulting from neoclassical economic reasoning are pivoted around the removal of wage rigidities and the facilitation of the "invisible" hand of the labour market operation by increasing labour mobility and encouraging human capital investment to increase worker marginal productivity as the only true method of increasing real wages (Addison, J. and Siebert, W. (1979) p.387 and p.391). According to Marsden (1982, p.240), such free market policies act as an ideology to reduce worker power to oppose the operation of dominant financial interests.

---

[9]However, this perspective diverges with the treatment of labour in Weberian industrial location theory and the assumed movement of firms to exploit cheap labour supply sources.

The superstructure of capitalism is seen as being underpinned intellectually (often unwittingly) in economic textbooks, thus ensuring its perpetuation, preserving the *status quo*, and masking the deeper processes of class exploitation (Badcock, B. (1984) p.26).

3. STATIC AND NARROW CONCEPTIONS OF THE ECONOMIC SYSTEM

Another major facet of the radical critique of the neoclassical models is focused on their essentially ahistorical nature.

The neoclassical economic world is basically devoid of long-term change in the conditions and forces that govern the labour supply-demand matching process. Cultural factors and historically-specific social conditions are assumed not to alter the nature of the immutable forces tending towards equilibrium and any dysfunction would be the result of institutional blocks primarily bestowed by the actions of government and unions.

Technological innovation can proceed to increase productivity but, within the short-term focus, the production function defines the possibilities and the painless substitution between labour and capital inputs will occur consensually on the basis of factor price and marginal productivity differentials.

However, radical theory usually rests on the essential Marxian social theory of historical materialism which would emphasize the dynamic nature of conditions that influence the labour market. For example, relations which determine the wage level are seen as social relations which change over time (see section 6.A.5). The profound importance of the historical context in the Marxian analysis would stand directly contraposed to the static conception of neoclassical models and has been recognized (amongst radical theorists) as probably the most valuable offering of Marxian analysis (Badcock, B. (1984) p.175). The historicism interpreted in many Marxist works has been criticized by, among others, Popper (1957) in his rejection of large-scale laws of

historical development. However, the importance of the historical approach has been embraced in much of the radical literature (for example, see D. Gordon, (1973), A.J. Scott, (1982a) and M. Webber, (1982)) without the underlying historicism described by Popper.

Whereas long-term equilibrium and consensus are the basic axioms of the timeless, neoclassical models, the Marxian-based interpretations contend that the labour market cannot be isolated from its unique social and historical context - an integrated setting that is believed to be "evolving" over time as the result of conflict between social groups. In Marx's time, the conflict ensued primarily between the working class labourers and capitalist owners of industry. However, in more modern radical treatments of the capitalist system, the argument has been adapted as the struggle between labour and management, or, between those primarily dependent on selling their labour power for economic survival (labour), and those responsible, or directly dependent upon, maintaining the institutionalized system (capitalism) and whose function is to maximize the return to investment capital (that is, the owners and managers of capital).

Thus the entire economic system and social relations of production are seen to evolve over time as a result of the drive to accumulate and class conflict, but Marxism asserts the priority of capital in these social dynamics.[10] (Walker, R. and Storper, M. (1981) p.475).

Technology is imputed a critical role in Marxian analysis for two major reasons. Firstly, technology can be conceived as a significant component of the definition of the labour process at any particular point in time. Its fundamental link to the level of individual and social wealth (and therefore financial support alternatives and levels), the nature and quantity of employment demands, and the spatial, organizational and scale characteristics of the work process, is seen to provide the very

---

[10]Neoclassical theory implicitly accepts the primacy of capital in its analytical orientation. This is reflected in the stance adopted - from the perspective of the firm in its profit-maximizing decision-making context.

fabric for the labour relation and the bilateral power outcome. The workplace or production process at a given moment, is seen to be a society in miniature shaped by the relevant technology (as the way nature is transformed by human action) and the class character of capitalist production (Storper, M. and Walker, R. (1983) p.29).

However, technology is seen as both the outcome and the basis of class struggle and workplace relations. Motivated by competition and the imperatives for capital accumulation, technological change (for example, capital intensification) is often held to be a weapon utilized by capitalists to reduce worker power and reward (Storper, M. and Walker, M. (1983) p.29). In radical "labour process" studies control-induced innovation (rather than the priced-induced technical change of neoclassical economics) is given a central role. Non-technical and technical aspects of work organization are conceived as managerial tools for breaking worker militancy and, in turn, the strength of worker bargaining is considered as affecting the course of technological development. This perspective aligns with Marx's original belief in technological innovation and the deliberate creation of mass unemployment (a "reserve army of the unemployed") in order to undermine bargaining power and keep wages down (Marsden, D. (1982) p.240).

However, technology has also been attributed as the most important factor in the resilience of capitalism - by allowing standard of living improvements over society as a whole through increased productivity (Malecki, E. (1983) p.90).

The key role attached to technology in radical theory is a far cry from the models of neoclassical economics where technology is simply appended to the equilibrium outcome descriptions. Under its short-run perspective, technology is assumed fixed and technical substitution between labour and capital is thought to occur in appropriate response to changes in the relative costs of these production factors. Treatment of technology in the longer-term is quite limited and neoclassical theory tends to bypass issues such as the relationship between technological change and

unemployment. Through the price mechanism and the presumed ease of factor sustitution, technological change is considered to cause only temporary departures from equilibrium (Standing, G. (1984) p.131).

The orthodox Marxian theory predicts a long-run trend towards a rising organic composition of capital, through technical innovation, associated with a decline in the average profit rate. Although this prophecy would not be wholeheartedly supported by all radical theorists, the general tenor of radical theory favours the acceptance of each technologically-based historical period, and the related relationship between labour and capitalism, as unique. The capitalist economic system is seen to be in constant flux and particularly noticeable periods of marked economic base or organizational change are denoted as involving "restructuring" or more euphemistically the "rationalization" of the economic system. This is thought to occur at the firm or sectoral level but, in the aggregate, entails a discernible, unidirectional change in the very nature of the capitalist production system.

Within standard neoclassical theory, however, there is no account of structural change and aberrations from equilibrium conditions are described in terms of cyclical phenomena (the "business cycle" being the most popular conception). The explanations of cyclical movements in the amount of business activity ("business cycles" and "Kondratieff long-waves") are usually defined in reference to degree of utilization of productive resources and were basically derived from extended Marxian theory on accumulation as passing through cycles of productive expansion and contraction (Standing, G. (1984) p.131).

Cyclical (or demand-deficient) unemployment was named on the basis of faith in the cyclical nature of business acitivity with an expected return to equilibrium conditions in the long-term. But to the radical theorists, there is a basic restructuring or evolution of the capitalist system over time which involves transformation to a new stage of development (Walker, R. and Storper, M. (1981) p.489). The dynamic in this

model is seen as a product of the struggle between labour and management. The struggle is pictured as occurring in a structured employment relation played out on a dynamic "chessboard" with a varying pattern, rules and powers for the actors involved - ascribed by the evolving state of technology and related social relations of production.

Another related aspect of the radical attack on the ahistorical neoclassical paradigm concerns the narrow scope of factors used for explanation and assumed as influencing the original models - even at a given point in time. The stripping away of reality to the hypothesizeed major variables assumed to operate under strict behavioural axioms within a perfect environment is pursued in order to apply rigorous mathematical modelling (under partial or general equilibrium perspectives) or at least to attempt the "rational" prediction of changes in endogeneous, or from exogeneous, variables. The problem with the idealized, simplistic models is though to lie in the arbitrary selection of factors directly incorporated in the models and the sacrifice of an understanding of the real and changing causes of phenomena observed for mathematical, "scientific" rigour in explanation and prediction.

The tendency for neoclassical economic fields (such as labour economics) to remain fearfully within their allocated discipline ignores the complexity of the real world. Often only a very narrow part of the social and economic context is considered in the neoclassical search for causality. For example, the role of the labour supply as the consumer of the output of goods and services, as well as a factor of production, receives very little attention in neoclassical economic theory. Consumption is usually reduced to an aggregated lump as an independent variable in national income equations or as a function of real disposable income (for aggregated, homogeneous households) in macroeconomic theory. In microeconomic labour theory, labour is simple treated as a supply factor.

Factors which have not been included in the operational universe of hypothesized models are labelled as "exogeneous" and existing models usually account for these factors only in regard to how the included variables will respond to their influence. Frequently, exogeneous events involve aspects that the economist can't count or measure and, therefore, by definition, don't fit within mathematical models of the globe (Cohen, D. and Shannon, K. (1984) p.43). In labour economics, the principal study area of labour in neoclassical economic theory (particularly for microeconomic theory), the models used for other commodity markets are applied to labour and any factors which disturb or distort its operation (for example, technological change) are proclaimed as belonging to a mixed bundle of "exogeneous" influences and hence outside the field of direct relevance and are dismissed from further explanation.

Many aspects of neoclassical economic model building have been criticized for their failure to examine the full context of influential variables. Bergman and Goldstein (1983, p.264) argue that modern neoclassical regional economic development theory ignores the influence of the ownership and control of industry and the changing nature of the international division of labour.

Clark (1981a, p.566) challenges the utility of the "Phillip's Curve" 1) on its implicit assumptions of the homogeneity of the labour force in which workers are hired and fired on the basis of their contribution to total output, and, 2) in assuming away the complexity of production requirements and the interdependence of labour and capital in the wage and employment contract.

However, radical conceptions of labour are held to be superior to the constrained, static realm of the neoclassical world because they recognize the importance of historically unique frameworks on the dynamic labour relation. An eclectic perspective, involving sociological, philosophical, economic, human geographic, and historical spheres of study, is adopted. The trade-off between complexity and mathematical rigor is considered worthwhile.

## 4. EQUAL AND FREE CHOICE IN LABOUR MARKET SUPPLY DECISIONS

An assumption of the relative, and equal, autonomy of all individuals and households in their labour supply decisions pervades most of the labour economic literature. This perspective is reflected in the theoretical and research emphasis involving the job search process, the ease of worker mobility, and the role of the individual in deciding on his or her occupational level (and hence future wages).

Although there is some recognition of differential constraints acting on certain individuals and groups on the basis of their existing wealth, labour market knowledge, number of children and other related factors, such aspects are given very little explicit theoretical treatment in labour economic theory (Fleisher, B. and Kneisner, T. (1984) p.465).

One immediately apparent weakness of the choice assumption in microeconomic labour theory is the conception of labour supply (or the number of hours supplied) as being determined by the wage rate (and non-employment income) rather than by the basic need to obtain employment for economic survival and maintenance of living standards. The generally positive relationship theorized between wages and hours supplied ignores the likelihood that a reduction in the relative real wage is accompanied by an increase in the labour hours supplied to the market to support the worker and his or her family.

As previously discussed in Chapters 2 and 3, the major longer-term labour market barriers envisaged in neoclassical economic labour treatments relate to the lack of information and the existence of institutional barriers (from unions and minimum wage legislation rather than the social structure). Accordingly, the unemployment problem is perceived as primarily of frictional and structural (wage rigidity) origins and recommended solutions are formulated on this basis (Fleisher, B. and Kneisner, T. (1984) p. 478).

Nevertheless, perfect information does remain as a fundamental tenet of much of the neoclassical economic theory on labour. This dependence is evidenced in the key role attributed to perfect information in 1) the individual's "setting" of the reservation wage for job search process decisions and 2) in human capital investment decisions which assume knowledge of the rate of return from further investment in human capital.

Over and above perfect information limitations, a major source of criticism by radical theorists is focused upon equal and unconstrained choice assumed in human capital theory. Identifying fundamental inequalities resulting from the social structure and the processes that form and maintain that structure, the radical theories on labour market segmentation are related to the dual and institutional labour market perspectives described in Chapter 3. Thus, there is perceived to be an oligopoly, or at least markedly different constraints, on who can acquire skills within the social structure of the labour force.

To the mainstream neoclassical proponents, the poor and "disadvantaged" workers have only their low-productivity (from insufficient human capital investment and possibly inherent low ability) to blame for low wages (Clark, G. and Gertler, M. (1983b) p.276). These people have simply failed to make the appropriate response to poverty and underemployment - increase their individual productivity by investing in human capital (skills, education and training).

The freedom of choice implied in human capital theory has been severely criticized in radical literature as grossly overestimating the power of individuals to change their employment skills or occupation when not in demand (or move residence to employment opportunities) (Clark, G. and Gertler, M. (1983) p.277). Implicit assumptions of equal oportunity are rejected on the grounds that opportunity for advancement and occupational mobility outcomes are structured by broader social phenomena such as racism, sexism or socioeconomic background. Skills are considered

as not being freely accessible to all workers (Storper, M. and Walker, R. (1983) p.10).

Hence, there are perceived to be inequalities built into the labour market mechanism which determines the value of labour power (Cooke, P. (1980) p.544). Human capital investment decisions and histories (and therefore, the distribution of income) would be a function of the existing order of social inequality and unequal power distribution reinforced by the nature of social and political institutions (Clark, G. (1977) p.15). The societal structure is posited as the overarching determinant of individuals' decision possibilities and as the means for the "reproduction" of existing wealth distribution.[11]

Although education, in itself, is believed not to guarantee occupational entry and mobility, it is attributed as having a significant role in the perpetuation of the social order (Clark, G.L. (1977) p.15). The extra wages of the skilled are argued not to be a measure only of the cost of training but also as a scarcity value artifically created by the structure of society (Robinson, J. (1966) p.12).

Neoclassical labour theory does acknowledge the existence of unequal constraints on different individuals from the existing structure of society. However, in general, these aspects are deemed as "institutional" and exogeneous factors beyond the designated realm of the discipline. Consistent with the proposed scientific, non-ethical basis of the neoclassical economic paradigm, no judgement is offered on exogeneous factors which may favour certain individual and group actors in the models devised.

## 5. THE VALUE OF LABOUR

There is little doubt that both neoclassical and radical models of the labour market share their roots in the classical economic tradition of the late eighteenth and early nineteenth century. For example, the underlying assumption of profit maximization

---

[11]In many ways, the argument over autonomy in the labour market, between neoclassical and radical schools, is akin to the basic structuralist versus agency debate rooted in the philosophical foundations of these perspectives.

as the objective function of capitalist enterprises is explicitly adopted in neoclassical models and accepted in radical models. However, a major division between radical and neoclassical models, as theoretical descriptions of the functioning of the capitalist (or any) economic system, develops around their conception of the determinants of the true "value" of the objects and services exchanged.

The labour theory of value, associated originally with the classical economist David Ricardo, is assigned a central place in Marxist theory. The classical labour theory of value asserts that the prices (exchange-value) of all goods must be seen as derived from the current labour input and from the labour input embodied in the materials of production (Johnston, R.J. (1981) p.203). Therefore, human labour, (together with nature in some interpretations), is conceived as the sole source of surplus value (the return to the capitalist and the source of profit) and is proposed as the prime object for exploitation under the capitalist's imperious desire to maximize the returns to capital (profit).[12]

The major alternative view is, of course, neoclassical theory which accepts that the productive factors of capital, land and entrepeneurship, as well as labour, contribute to the creation of value and hence their owners deserve some return from the total revenue to the firm - depending on their marginal productivities (see Chapter 2). As described, marginal productivity theory assumes that each production factor should earn the equivalent of the value-added by the last (marginal) unit employed. The neglect of scarcity considerations is posited as probably the major criticism of the labour theory of value (Smith, D. (1977) p.67).

In the Marxian analysis, value is considered as socially and historically contingent whereas neoclassical theory sees value arising from some almost mechanical process of market determination. Smith (1977, p.97) describes the principal objection to

---

[12]Detailed accounts of Marx's basic economic anaylsis and concepts have not been attempted due to resource constraints, and on the assumption of familiarity by the reader.

the distribution of rewards to land and capital:

> Ownership of land and capital require particular institutional arrangements, whether proprietorship is to be vested in private individuals or some public collective. On these arrangements will depend who gets any return attributed to non-human factors employed in production. The size of the return is itself an institutional outcome ... Distribution of society's product thus depends on how society is organized.

To the neoclassical school, the value of the labour factor of production (its price or wage) is appropriately determined by its contributing share to the total value-added while the rest of the returns to the firm are distributed, on the same basis to (the owners of) land and capital and the entrepeneurs who devised the lucrative scheme. To Marx (1967, p.315) all value-added had its original source in the actions of labour.

The "transformation problem" - that is, translating value to prices - remains a central point of theoretical debate within Marxist literature and some resolution is required to extend the labour theory of value to actual events and their interpretation (Clark, G.L. (1984) p.182). However, there are a number of Marxian-based criticisms of the neoclassical conception of wage determination, which provide equivalent difficulties in that school's justification of any "true" notion of the appropriate reward and return to labour as a factor of production.

The marginal productivity theory of wages is presented as the neoclassical economic explanation of the approriate price of labour. The theory states that the rate of pay for any group of workers tends to equal the change in the value of output associated with a variation of one unit in the size of that group (Bullock, A. and Stallybrass, O. (1981) p.369). However, the theory can be criticized as tautological in nature and as providing no real foundation for the derivation of wage rates. Even under its own paradigmatic reasoning, scarcity is the actual basis of evaluation of the price paid to labour rather than marginal productivity theory.

The cyclical nature of the logic behind marginal productivity can be illustrated in the attempt to link the microeconomic labour theory with macroeconomic conceptions of the labour market. At the firm level, marginal productivity analysis is used to derive the demand for labour. The quantity of labour used is calculated as depending on the value it contributes to total revenue which, in turn, is a function of the price and output demand in the product market.[13]

The market demand schedule, used to derive the industry wage, is seen to be simply the summation of all relevant firm's labour demand. The interaction of the market supply of labour with the market demand schedule is considered to give the going market wage. However, the underlying cyclical nature of this reasoning becomes apparent in the marginal productivity theory of wages because the market interaction (and resulting wage), in also thought to determine the marginal cost of labour and hence play a key role in the choice of labour demand at the firm level.

Not only is this paradox to be found within the derivation of the labour demand schedule, but the neoclassical conception of the labour supply curve suffers from similar problems. The going wage level is proposed as determining the number of hours of labour supplied but the aggregate market supply schedule is, in its interaction with the market demand curve, held to determine the going market wage rate (Ehrenberg, R. and Smith, R. (1982) p.58; Fleisher, B and Kneisner, T. (1984) p.195; Gunderson, M. (1980)).

Clark (1984, p.178) contends that the neoclassical paradigm involves the use of a relative measure of value, that of scarcity, as measured by market prices, to define the worth of workers. Marginal productivity theory would be useful in determining the quantity of labour required at the firm and aggregate levels but the wage level paid, as the actual measure of its contribution to output value is rejected by most radical theorists. Even given the operation of a free market in the determination of the price

---

[13]Clark (1983b) found that the price of labour (wages) was not the most important determinant of short-run labour demand in the U.S.

of labour as with any other commodity, neoclassical theory attributes a rather trivial and secondary role to the supply curve.

The supply curve would, in fact, be characterized by a certain amount of rigidity reflecting the necessity for labour to participate in the capitalist economic system simply in order to sustain comforable living standards, or, at worst worker health and life. Although actual participation rates and total hours supplied may be influenced by wage levels, cultural attitudes, and technological factors, the population (and hence labour force) level would provide some basic level of supply that has to be offered in the labour market.

The relationship of this conception of the labour supply curve (in which simple demography provides the base, and, the key role of wage levels is rejected) with the amount of labour required in the economic system would be the source of the wage paid in the "free market" world. The rigidities of the supply curve, from the necessity of labour to sell its time to survive, are largely hidden within the neoclassical marginal productivity analysis. The dependence of labour on capital for the sale of its labour power and economic survival is the foundation of the radical labour process studies and bilateral power relations theorists' view of the structural-dominance of capital over labour (Storper, M. and Walker, R. (1983) p.29).

If these criticisms hold, the neoclassical model of the labour market does not serve as a convincing explanation of the value of labour and the process of wage determination but is relegated to the status of a simplistic device for attempting to predict and explain the effect on 1) wages and employment from changes in the supply and demand curve (and their interaction), 2) "exogeneous" influences, and 3) constraints on the ideal conception of the labour market adjustment.

Critiques of marginal productivity theory can be found in labour economic texts (for instance, see Addison, J. and Siebert, W. (1979) p.53-60). However, this discussion refers primarily to operational difficulties in applying the theory to the real world

rather than comprising a fundamental critique as in the radical mode.

To David Smith (1977, p.100) the explanation of "who gets what" should be couched in terms of "relative bargaining power" or class struggle rather than marginal productivity. This profound shift in perspective from the neoclassical economic approaches to the theoretical treatment of political economy (as in Marxian theory) is succinctly expressed by Nell (1972, p. 95):

> Orthodox economics tries to show that markets allocate scarce resources according to relative efficiency; political economics tries to show that markets distribute income according to relative power.

Wages are seen to be determined primarily in a political context akin to class conflict (Hicks, J. (1974)).

G. Clark (1983b, p.165) sums up the "bilateral power relations" sentiment on wage determination (and consequent income distribution) by rejecting the notion of just supply and demand interaction as setting wages, and instead, proposing that union and collective wage bargaining are the key institutional aspects of the labour market. Wages are then seen as a result of a power play-off between labour and capital.

The radical school does not accept that the return to the firm, from the sale of output, is divided according to the marginal productivity of each of the components of production (such as land, labour, capital and entrepeneurship). The profit to the firm, after detracting basic non-labour factor costs, can be cut into by wage increases without closing down the firm's operation. Profits would then depend on the wages firms <u>have</u> to pay (Heilbroner, R. (1972) p.43). The "slice" of the firm's revenue going to the workers would reflect the relative power of capital and labour in the labour market.[14] (Smith, D. (1977) p. 108). In radical theory, the power of labour would depend on aspects such as the size of the unemployment pool,prevailing values and attitudes,political sentiments, overall wealth, social security assistance levels,and the organizational capacity of labour.

---

[14]Smith acknowledges that conflict over "value surplus" would involve various interest groups within the overarching capital-labour struggle.

Therefore, the difference between the wage, and the Marxian perspective of the true value of the marginal product of labour, would be contingent on the particular historical and cultural context or form of the capitalist mode of production. When the supply of labour is considerably greater than the demand required (and government regulation and labour contracts do not exist), a minimal wage could be paid to labour because the working-class is conceived as having little option but to sell its labour to capitalists (Badcock, B. (1984) p.63). The basic subsistence wage paid to the worker in the times of the industrial revolution (in a situation of abundant labour) would be presented as a case in point.

The basic contention of the radical and (related) institutional labour theorists is that the determination of wages and employment is largely an institutional matter, based on social convention, rather than the result of a free market for labour (Clark, G.L. (1978) p. 26). Some Marxists embrace this principle over a far wider theoretical domain and insist that the creation of value is a function of the whole ensemble of social relations of production (Bluestone, B. and Harrison, B. (1982)).

In summary, the radical theorists perceive the price paid to labour (wages) as the result not only of the relationship between supply and demand, but as contingent upon productivity levels and the overall surplus generated by the economic system, the state of technology, and the power of labour relative to capital. The power of labour is, in turn, dependent on the technical relations of production, the organization and structure of firms and other social and political aspects of the particular historical context (such as prevailing attitudes and government policy).

## B. THE RELATIONSHIP BETWEEN SOCIAL PROCESSES AND THE ORGANIZATION OF SPACE

Before attempting to summarize the radical perspectives on the "evolution" of the capitalist mode of production and its relationship to the spatial structure of industrial

activity (in the following section), it is necessary to provide a brief outline of the radical geographers' conceptions of the nature of the relationship between social processes (and structure) and the spatial structure of the humanized environment. Once again, this is a difficult task in the light of the internal conflict and variety of viewpoints which tend to undergo modification over time.

However, Marxian analyses, involving the spatial dimension, all show a clear divergence from positivist spatial science where the organization of space is seen to have a separate structure formed by intrinsically spatial processes. Instead, space is portrayed as inextricably linked to, and a product of, societal processes (Badcock, B. (1984) p.4 ; Castells, M. (1977) p.8). This view also stands opposed to aspects of the urban managerial thesis of Pahl (1975) who identifies certain independent spatially-determined urban problems thus suggesting local solutions and policy changes. Harloe (1977, p.5) argues that spatial relations and forms can only be socially determined.

Over the broad encompass of Marxian thought, the major viewpoints on the relationship between social relations and the spatial structure range along a continuum depending on the degree of primacy attached to (non-spatial) social determinants and vary in accordance with their fundamental conceptualization of space.

At one extreme of the spectrum, space is seen as simply the material "debris" formed by social processes (basically capital accumulation) thus condemning spatial theory to vacuity (Slater, D. (1975)). In many respects, this view is consistent with the bulk of Marxist political economic theory which is characterized by a deep tradition of anti-spatialism (Johnston, R.J. (1983) p.112). This could be interpreted as meaning geography would have little to offer to add to the insights yielded by dialectical materialism (Badcock, B. (1984) p.52).

However, Marxist geography, by definition requires some justification of its spatial theme and even the more structuralist and deterministic perspectives do accept

that the observed organization of space can reveal something about the social structure and processes of the economic system. These more rigid structuralist works attribute a major role to capital in determining the spatial structure (Hayter, R. (1983) p.160). Consistent with Marxist urban theory, the city is seen as first and foremost a product of the capitalist mode of production which requires a spatial organization which facilitates the circulation of capital, commodities and information - hence reducing the indirect costs of circulation and consumption to speed up the rate of circulation of capital (Cojkine, J. (1976) p.127).

Scott (1984, p.24) calls for a return to the concept of the city as a structured outgrowth of stubborn social and property relations of capitalist society. His trilogy of journal articles on industrial organization and the logic of intra-metropolitan location examines the nature of organization and labour demand, together with locational aspects of two case studies, to attempt to provide some understanding and support for the determinacy he attributes to production system dynamics in capitalism.

Radical geographers would probably accept the tenet that social processes are registered or "etched" in space and that the city can be considered as a projection of society on space (Castells, M. (1977) p.115). The emphasis on the study of "causal" social processes or in reading the built landscape to understand the nature of these causal processes would hence follow logically. However, in terms of causality, the reflexive nature of space is widely accepted in radical geography literature.

The adoption of the concept of space as recursive upon the social structure has been suggested as hinting at a realist approach to explanation (Badcock, B. (1984) p. 53 ; Johnston, R.J. (1983) p.113). Capital is still usually considered as the principal "architect" of spatial structure under capitalism.

Although Harvey accepts the idea of the city as primarily a medium for the circulation of capital in "The Limits to Capital" (1978), he also espouses a recursive view of space:

> The distinctive role which space plays in both the organization of production and patterning social relationships is ... expressed in [the] urban structure ... And [the] urban structure, once created, affects the future development of social relationships and the organization of production.
>
> (Harvey, D. (1973) p.307)

Both Peet (1979 ; 1980) and Soja (1980) perceive there to be a necessary reciprocal and dialectical relationship between space and economic, political and ideological forces which shape the organization of space. To Soja (1980), the spatial structure is explained by the "socio-spatial dialectic" in which the social relations of production are both space-forming and space-contingent The socio-spatial dialectic is defined:

> The structure of space is ... a dialectically defined component of the general relations of production, relations which are simultaneously social and spacial.
>
> (Soja, E. (1980) p.208)

Peet sees spatial relations as essentially manifestations in geographic space of social (class) relations but proposes:

> ... neither environment nor space is passive as social relations pass over and through them. Both inject their own ingredients, their own qualities and limitations, into ongoing and overgoing processes ... Class relations become infused with the direct and indirect effects of the contents of regions and environments, previous and "future" movements in the history of a mode of production...
>
> (Peet, R. (1979) p.167)

The vague and overly-metaphorical verbage of Peet and Soja has been criticized as "irresponsible" and as "mystifying" process (Ley, D. (1982) p.37) and as consisting of a confusing "melange of words" (Smith, N. (1981) p.111). Browett (1984, p.163) also attacks the spatial and socio-spatial dialectic concepts of Peet and Soja as being ahistorical and riddled with spatial fetishism, recurrent instances of the personification of space, and attributing autonomy to space as an entity. He argues for a re-emphasis in the consideration of people as not merely passive agents of "the

structure" and its reproduction requirements but as active classes which, within certain constraints, are able to act back upon and help shape and transform their social world. Hence, in an era of capital restructuring and "crisis", the "crisis" would be seen not as one for "space", for "the region", or "the structure", or for capital, but as a crisis for labour in particular, and people, in general.

The literary esoteric of socio-spatial and related conceptions probably masks the more accepted radical geography belief (also accepted by many non-Marxist theorists) that, at any given moment in time, the spatial structure is mainly a product of historical social processes but may also, in the future, affect those social processes (influencing the nature of social formations). For example, the accessiblity to community services of varying quality (such as education) may affect the future development of the form of the class structure.

Walker and Storper (1981, p.480) claim that capitalism creates a social landscape or "geography of accumulation" broadly consistent with the social structure of accumulation but never strictly determined by it.

The process of partial constitution of class relations in the domain of the spatial structure (Gregory, D. (1978)) is, in many respects, akin to the theory of structuration which represents spatial structure as both a condition and consequence of human action and reaffirms the structuralist-realist orientation of much contemporary radical theory.

## C. THE RESTRUCTURING OF CAPITAL AND THE SPATIAL STRUCTURE OF INDUSTRIAL ACTIVITY

The purpose of this section is to outline and synthesize the contemporary radical perspectives on the restructuring of capital and the resultant dynamic form of the spatial structure of industrial activity. This task is undertaken in order to acknowledge this growing field of literature pertinent to geography and the observed

changes in the labour market and to present the salient bakground for an exploratory examination of the relevance of some of the radical proposals in the context of British Columbia's manufacturing production activity changes in the period 1971 - 1981 (in Chapter 9).

It is important to note, at this stage, that the bulk of radical material on the restructuring of capital tends to appease the supposed adoption of a "recursive" view of space by attributing almost complete primacy to capital as the dominant actor in the capital-labour conflict-based relation. This approach represents the implicit approbation of the "jobs follow people" perspective (Steinnes, D. 1977 ; 1982). The focus of the radical analyses centre upon the deliberate change in the production process and the socio-spatial structure in order to increase the rate of exploitation of labour (thereby sustaining profit levels and ultimately capital accumulation).

As discussed, the drive to accumulate and the struggle between labour and capital are held as the central determinants of restructuring and consequent changes in the spatial structure of industry and the labour force (Webber, M. (1982) p.212). Labour is placed above the traditional emphasis on linkage costs (due to a fundamental shift in the "logic" of industrial location) as the major factor of production to be considered in technical, organizational and locational decisions by the firm[15] (Scott, A.J. (1983a) p.235).

A review of a substantial portion of the recent radical geography literature on the role of labour in the changing form of the production system has led to the choice of two broad types of strategies which will have a significant impact on the labour market and the relationship between labour and capital. These categories form the basis of the attempt at synthesizing the major arguments of the relevant literature. Stemming from a radical geography perspective, the Marxian-based discussion has emphasized the spatial consequences (direct and indirect) of these strategies. Much of

---

[15]There is considerable evidence that labour is still the largest single factor affecting production costs (on the average) for all industries (Luger, M. (1980)).

this literature is comprised of attempts at understanding the changing pattern of industrial location by examining the historical causes of changing investment patterns and the evolution of industry.

The first type of strategy involves those actions which are not directly spatial in character but indirectly affect the area-based productivity, quantity, quality,real cost or bargaining power of labour as a factor of production. This is believed to occur through the rationalization and restructuring of the labour and/or production process in order to increase overall cost efficiency. Changes in the structure of capital are assumed to influence the employment situation and characteristics of the labour force residing in particular areas (such as wage levels and unemployment rates). Hence, the strategy would involve an in-situ transformation which can be observed spatially and can be seen as involving unique, long-run, structural changes in the nature of the economic base.

The second set of strategies are defined on the basis of their direct spatial character (such as the decentralization process). Although actual restructuring would often involve both types of strategies, the analytical separation is useful. These "spatial" strategies would include those due to shifts in factor supply cost and requirements but are analyzed here as those strategies which enhance or allow continued capital accumulation by decreasing the real cost or bargaining power of labour. This class could be further subdivided into:

1) The direct movement of productive capacity (or redistribution of new investment) towards cheap (or more "productive") labour areas - at intra-urban to international scales. This process would assume that the spatial configuration of labour costs will structure capital mobility (Clark, G.L. and Gertler, M. (1983)).

2) Movement to areas to externalize or geographically fragment required labour demand. Secondary labour market characteristics of labour supply

in the desination locations are thought to benefit the firm by reducing the propensity to organize and oppose exploitation by capital.

1. STRATEGIES WHICH ARE NOT DIRECTLY SPATIAL IN CHARACTER

The onus for these changes in the investment process would stem from the national and international competitive environment of the capitalist economy guided by the "imperative" of capital accumulation and driven by the struggle between labour and capital. Such coping strategies are usually performed as the organizational rationalization or restructuring of the technical aspects of production in order to retain or increase profitability particularly in times of uncertain or stagnating demand.

The existence of evidence of restructuring outcomes as proposed by radical theorists would not necessarily provide proof of their entire theoretical perspective as similar trends and outcomes are contained within perspectives by researchers and theorists in many other fields. However, radical analysis emphasizes the benefits to capital from production process change - particularly those changes wrought from a decreased dependence on labour and an associated increase in the availability of labour as a factor of production. These strategies generally involve the adoption of new technologies which increase productivity and/or competitiveness but have added benefits of 1) a relative weakening of the bargaining power of labour by increasing the pool of unemployed labour, 2) helping to reduce the "problems" of the labour component of production by reducing labour demand required (and hence allow utilization of cheaper forms and locations of other production factors) or, 3) can allow the exploitation of cheaper, less organized and less militant (more "productive") labour supplies through production process changes (such as standardization and deskilling).

In "radical labour process" studies, technology is seen as the tool for gaining advantage or control over labour to reduce production factor costs - a necessary goal in the face of competitive pressures (Storper, M. and Walker, R. (1983) p.17).

However, "aspatial" investment decision strategies, as a response to changing demand conditions may also take the form of cuts in capacity and changes in the organizational setting[16] (Thrift, N. (1979) p.158).

Two aspects of "in-situ" production investment changes are examined in this section. Firstly, the labour-related motivations and effects of capital-intensification and the standardization of production is considered. Secondly, the consequences of change in the nature of labour demand are reviewed.

The related processes of capital-intensification and the standardization of production have been facilitated by economic concentration and centralization, the growth in market size, and by technological innovations in production techniques and in transport and communication fields (Heilbroner, H. (1972) p.295 ; Walker, R. and Storper, M. (1981) p.478). The most obvious goal of capital-intensification is to increase the competitiveness of productive units by substituting cheaper non-labour factors of production for "expensive" labour inputs. Standardization and accompanied increases in plant size, from the greater scale of production, allow the reaping of economies of scale and the standardization of inputs, outputs and linkages and facilitate the more effective implementation of automation. These explanations are the prominent motivations acknowledged within neoclassical economic theory.

However, there are a number of indirect effects of capital-deepening and standardization which are elaborated upon by radical (and some other) theorists.

For firms which can initiate the necessary technical innovation, capital-intensification can mean a decreased dependence on the labour factor. Although the net result may depend on the size of the operation involved, an increase in the capital-labour ratio will probably decrease overall labour requirements without a substantial increase in product demand. Hence, the decentralization of some production functions may be facilitated by reducing the need for access to residential areas of

---

[16]Such in-situ contractions and closures are seen as a major cause of inner city decline in the U.K.

appropriate labour supply. The optimal access area for labour has historically been the urban core area with its proximity to working-class households and as the focus of radically-oriented transport systems. However, the suburbanization of the workforce and improvements in personal mobility from increased auto use may well make the significance of locational changes, on access to labour, a moot point.

Scott (1983a, p.247) proposes that capital seeks to free itself from the dependence on labour it has created and attempts to undercut the constraints that tie it to a particular set of geographical conditions. In his "narration" of the reproduction of socio-geographical formations, he conceives the firm as breaking this dependence by the means of organizational and technological transformations of the production processes which would include (amongst restructuring, resynthesis of work tasks and job deskilling) capital-deepening.

Not only does capital intensification (and to some extent, standardization) usually mean the firm is not as tied to the core area labour market concentrations, but the newfound locational flexibility can be utilized advantageously to accommodate increased space requirements which often accompany capital intensifying production process change. The larger scale of operation, and implementation of horizontal plant layout with capital intensification and standardization, generally involve more extensive site requirements. (Webber, M. (1982) p. 218)

The reduced dependence on high levels of access to large urban labour pools and the greater demand for labour would encourage the decentralization of functions, undergoing the capital-deepening process, to areas in which other supply factors (such as land) can be obtained more cheaply - peripheral areas often being the new optimal location particularly in terms of land costs. Of course, this argument is by no means the only explanation of the relative decentralization process (see Appendix A).

To Scott (1981, p.26; 1982, p.125; 1983a, p.248), the result of the production process changes leading to decreased dependence on labour and a greater demand for

land would be a sorting process in which capital intensive, vertically-integrated, standardized product plants seek peripheral locations. More labour-intensive, vertically-disintegrated plants (of smaller size, with variable output in terms of quantity and quality) remain clustered at the core to exploit offered agglomeration economies (such as access to labour pools) and to reduce uncertainty. Hence, with this ongoing process, a distinct and growing dichotomy in the nature of production processes could be found in space.

As a corollary of this propostion, one would expect: 1) a fairly steady increase in average plant size moving outward from the centre of any core area[17],2)a positive association between the degree of change in the capital-labour ratio in an industry and the reduction in the proportion of that industry's output that is produced in the central city, and, 3) (related to 2) a greater increase (or perhaps existing) capital intensity in peripheral areas (Scott, A.J. (1983a) p.248 ; Webber, M. (1982) p.219).

The Marxian-based analyses stress the strategic intent to break the dependence on the labour factor by capital-intensification (rather than as an indirect outcome of competition or change in product demand). To this school, decentralization, in this sense, would be a by-product process facilitated by deliberate changes in the nature of investment which are not explicitly spatial in character.

Another indirect result of production process changes which decrease the demand for labour is to increase the size of the pool of unemployed labour available for those occupations affected.[18] In radical theory, interpretations of the creation of an unemployed labour pool range from a rigid functionalist view (derived directly from the classic Marxist treatise) to the perception of increased unemployment as an

---

[17]Plant size is never explicitly defined by Scott. Either employment or output value-added could be the relevant measures. Output would be the more logical choice for this hypothesis

[18]The increase in the pool of labour available for the particular sector undergoing automation would require an assumption of restrained occupational mobility for displaced workers and constant employment conditions in other sectors. The rapid expansion of the service sector in the 1960's and 70's is an example of the fallibility of this assumption.

incidental, but beneficial outcome (to capital) of the contradictions within capitalism.

In the classical line of reasoning of orthodox Marxist theorists, capital-intensification, and concomitant increases in the pool of unemployed, is considered part of the functional necessity and deliberate creation of a "reserve army" of unemployed to undermine bargaining power and keep wages down (Marsden, D. (1982) p.240). Drawing on classical economic theory, Marx asserted that:

> ...the general movements of wages are exclusively regulated by the expansion and contraction of the industrial reserve army ... They are ... not determined by the variations of the absolute number of working population, but by the varying proportions in which the working-class is divided into active and reserve army, by the increase or diminution in the relative amount of the surplus-population, by the extent to which it is now absorbed, now set free.
>
> (1967, p. 637)

Resulting cuts (or at least a levelling off) in real wages would, therefore, increase the surplus transformed into profits, allow the speeding-up and reorganization of work processes, help to maintain stable wage rates in subsequent periods of expansion and provide reserve labour for new sectors of production without impairing the supply of labour to others (Montagna, P. (1977) p.72 ; Standing, G. (1983) p.148).

The functionalist view conceives of an "industrial reserve army" (IRA) deliberately created to act as a reserve for the spatio-economic centre of the economy providing added labour-power in boom times and helping to stabilize in periods of accumulation crisis (Bruno, S. (1979) ; Mandel, E. (1969)). Hence, high unemployment is seen to facilitate the restructuring of capital. The quantity of labour in relation to the needs of capital would be crucial - the larger the labour surplus (IRA) and the more rapid its expansion rate, the easier to control the struggle with labour in the workplace (Harvey, D. (1978) p.40).

It is possible to conceive of the vast proportion of this "relative surplus population" as living in the inner city area if immigrants, unskilled labour and the like are considered as having the highest probability of being in the unemployment

pool. The inner city in this perspective is considered as a spatial manifestation of a labour imperative of state capitalism (Thrift, N. (1979) p.195). The geographic concentration of unemployment would be a result of historical housing processes and the "requirement" of an IRA for the reproduction of capital.

By accepting the labour theory of value, rising wages are seen as the major threat to the expropriation of surplus value as the target of the drive to accumulate. The expansion in output, motivated by profit-maximization and competitive pressures (the "expanded reproduction of capital") can cause an increase in wages as capitalists bid off for additional labour required (Heilbroner, R. (1972) p.153).

The reduction in surplus value from increased wage (in Marxist theory) or the increase in the cost of labour relative to capital costs (as in the laws of technical substitution in neoclassical theory) result in the capitalists substituting labour-saving saving machinery to reduce variable labour costs.[19] However, according to Marx, this is a fundamental mistake by capitalists because decreasing the labour input reduces the sole source of surplus value and profits (Badcock, B. (1984) p.65).

Thus a long-run trend is predicted in which there is a rising organic composition of capital (technical change causing the substitution of constant for variable capital) associated with a decline in the average profit rate (Standing, G. (1984) p. 131). Increased productivity and the continued need for maximization of investment returns means technological change continues in the same direction, but the reduced total wage of the working-class (from higher unemployment) exacerbates the dilemma faced by the capitalist as consumption, and hence demand for products, falls, profit shrinks further, and more labour is released.

Productivity gains and decreased consumption are seen as indicating that the capitalist system has developed the ability to produce commodities far in excess of its

---

[19]Capital-intensification and labour replacement can also occur in response to dwindling demand and the need for capacity cuts and improved cost effectiveness by the introduction of technology (that is, declining profit and aggregate demand) (Standing, G. (1983) p.149).

ability to consume them. At this point of the crisis, the general problem of "overproduction" or "absolute overaccumulation of capital", first surmised by Malthus and later re-introduced by A. Mummery and J. Hobson in the late nineteenth century, is reached. Depressions are seen as caused by excessive saving and the chronic inability of the business system to distribute enough purchasing power to buy its own products back (Heilbroner, R. (1972) p.187).

In such periods of "crisis" (falling profits and inadequate demand), a fundamental dilemma is encountered. To restore profitability, the capitalist system has to restructure itself and a number of possibilities have been suggested.

Firstly, as production demand drops, the smaller firms may drop out and some devaluation of constant capital must occur as the stronger capitalists can acquire machines for less than their true value. Secondly, the large number of unemployed created by the crisis are willing to undersell themselves in the labour market to regain employment (Thrift, N. (1979) p.140). Thirdly, the expansion of product markets and the deliberate stimulation of aggregate demand (from outside the domestic firm control) may all increase consumption and reduce unemployment hence increasing demand further and allowing profit rates to be restored. In addition, new sources of surplus value from cheaper labour may be found in geographically expanded labour markets. Finally, the centralization and restructuring of capital, allowing increased economies of scale and the abandonment of less profitable capital.

These factors are thought to allow the whole process of accumulation to begin again, but at a higher level. However, Marx predicts that the process leads to the same catastrophic conclusion with each crisis successively getting worse leading to eventual collapse.

Therefore, in the orthodox Marxist fashion, capital-intensification is held to be both a product of the unrelenting drive to accumulate and as the process for ensuring an IRA exists to stabilize the periods of accumulation crises and to exert downward

pressure on wages.

Within radical labour process studies, control-induced innovation is given a central role. A prime function of automation is considered to be the reduction or elimination of the labour problem by enhancing managerial control or reducing the workforce (Multinational Monitor (1984) p.17). Gertler (1984, p.158) suggests that rapid capital-intensification, observed in core areas of the north-east U.S., could be from entrepeneurs attempts at disenfranchising a chronically troublesome or militant workforce.

However, even within the broad encompass of radical theory, functionalist interpretations of the Marxian model have been criticized. Clark, G.L. ( 1979b, p. 27-28) argues that the concepts of the "IRA" and "reproduction" are not separate and independent modes of determination created by the actions of capital in a functionalist sense. Rather, they are perceived as derivative of the logic of the capitalist mode of production or as the outcome of the process of capital accumulation as a response by capital to the periodic crises of capitalism (from its internal contradictions):

> Causality is vested in the actions and decisions of individual capitalist entrepeneurs, rather than in aggregate "agents" who exogeneously and continuously create the conditions for capitalism.
>
> (Clark, G.L. (1979b) p. 28)

Under this perspective, the IRA is a consequence of structural change in the capitalist system initiated by the drive to accumulate and the competition between firms to reduce costs. Its existence would, however, be beneficial to capital by suppressing upward wage pressures but it is conceived as more a by-product than a deliberate creation of the capitalist system.

The spatial dimension would be implicated in the production process changes because capital-intensification would have area-specific ramifications on local wages and employment (assuming limited wage rigidities and relative labour immobility). The spatially-variable characteristics of labour would also have considerable influence on the firm's decisions with respect to in-situ investment changes. Changes in the nature of

the production process in local labour markets would alter the quantity and quality of labour requirements and hence, modify the labour market situation for the existing labour force (such as unemployment levels within certain occupations and the relative bargaining power of labour in that area). In turn, these changes may well influence future investment process decisions.

Similarly, the movement of productive capacity - facilitated by technical innovation - from existing sites to new optimal, cost-minimization non-core locations, could increase unemployment and decrease wage pressures in the traditional urban core locations containing large pools of labour.

In addition to the effects of capital-intensification and standarization directly on the quantity of labour required and the locational decision of the firm, radical theorists discuss another type of strategy of capital (which is not directly spatial in nature) to increase the rate of exploitation of labour. These strategies relate to changes in the production process or the adoption of new production or organizational technology, involving a resynthesis of work tasks to control labour or decrease the real cost of required inputs.

A main thrust of this argument revolves around the deskilling of the required labour force which has been observed, at least in some studies as accompanying the restructuring of industry. Massey and Meegan (1979, p.283) found that deskilling (a proportionate increase in use of low-skill labour in the labour process) was a major result of the rationalization and reorganization of the electrical and electronics industry sector in the U.K. over the period 1966-71.

The deskilling of jobs could be seen as simply part of the ongoing division and specialization of labour which has constituted an important part of the economies of scale derived from increasing the scale of production and implementation of standardization in the production process. However, to many radical theorists, changes in

the production process which lead to a downgrading in the skills required is an intentional process to shift dependence on labour to the easily replaceable and readily available low-skill variety.

Automation and labour displacement which often accompany such production system changes would provide an added benefit by swelling the pool of labour available for its operations by effectively reducing demand for the now-redundant semi-skilled labour relegated to the low-skilled unemployment pool (Multinational Monitor (1984) p.4). Competition amongst more workers for fewer job opportunities would keep wages low.

The qualitative shift in labour demand to low-skill, low-wage workers who are easy to hire and fire is akin to increasing the portion of the workforce in the secondary labour market (see Chapter 3). This argument is consistent with the Marxist perspective that labour market segmentation is required by capitalism to enable the reproduction of capital and the relations of the mode of production (Reich, M., Gordon, D., and Edwards, R. (1973)).

Although the low-skill workforce required could be found in large pools in the inner city, labour in these locations is often perceived to be too militant or expensive. With standardization and decreased dependence on labour, deskilling is sometimes seen as best accompanied by decentralization or new investment to exploit female, part-time and disorganized low wage labour in more peripheral suburban, rural and nonmetropolitan locations (Massey, D. and Meegan, R. (1978) p.287 ; Dicken, P. and Lloyd, P. (1981) p.181).

The strategy could also be seen as an attempt by individual firms to "balkanize" long-term requirements and to deliberately underemploy peripheral workers who may only be required for relatively short periods of time (Clark, G.L. (1979a) p.12).

The increased subcontracting of production work could be considered as a part of this strategy by enabling the firm to externalize what would otherwise be an internal labour market. Employment demand required is divided into many competing units thus putting strong market discipline on wages that can be paid and inhibiting effective labour organization. This possibility would be enhanced by using low-wage female and unorganized ethnic workers (Scott, A.J. (1983a) p.244). The undercutting of security of tenure for workers in subcontracting firms would be advantageous for rapid rotation in labour-intensive industries (such as textiles) characterized by uncertain, volatile and competitive product markets.

Scott (1983b, p.360) proposes that subcontracting is used by small, vertically-disintegrated, unstandardized producers as a method for transferring labour demands from high-wage, organized segments of the labour market to low-wage, disorganized segments. The shift to employment demand of a secondary labour market type would hence inhibit the organizational capacity of labour and decrease labour costs in urban core areas but the core location would continue to provide maximum access to the pools of labour required for these industries (which tend to be labour-intensive).

Danson (1982, p.261) found in Clydeside, Scotland, that there was a breakdown in the old strong internal labour markets and a replacement with new weaker versions comprised of female and part-time service worker employment. The jobs typically involved lower unionization levels, little on-the-job training, and low skill requirements.

There has also been considerable concern expressed over the increase in part-time job tenure (accross the entire employment spectrum) or the "marginalization" of the labour force which acts 1) to decrease real labour costs (particularly by removing fringe benefits), 2) allows ease of turnover, and 3) inhibits unionization (Canadian Conference of Catholic Bishops (1983)).

## 2. STRATEGIES WHICH ARE DIRECTLY SPATIAL IN CHARACTER

A second type of strategy by capital initiated in order to influence the power relationship between labour and capital can be identified in the radical labour market theory - those which are directly **spatial** in nature. These developments lie more exclusively within the domain of radical geography and often form the basis of theory or research on the role of labour in the industrial investment and location decision-making process.

In organizing the spatial structure of their activities, firms are faced with a spatial surface of costs and benefits due to the existing spatial variation in resources and materials, supplies and customers and in the availability of labour and capital (Dicken, P. and Lloyd, P. (1981)). In turn, many aspects of this cost surface will be affected by the locational choices of firms.

Radical geographers tend to place primary emphasis or spatial variations in the quantitative and qualitative features of labour as a factor of production (Walker, R. and Storper, M. (1981) p.300 ; Webber, M. (1983) p.213). In some ways, this treatment of labour is similar to A. Weber's treatment in the firm's locational decision in that firms are seen to "follow" the existing distribution of labour characteristics.[20] However, radical theorists portray labour as a key locational factor (and determinant of all forms of technical and organizational change) rather than just an afterthought to transport cost considerations. In addition, the focus on wage levels in Weberian theory is augmented by the inclusion of a far more diverse range of characteristics such as unionization levels, organizational capacity and propensity and skill and productivity levels which are seen to vary across space.

Location is entered, in radical analysis, as a strategic variable and an intimate part of the structural relationship between labour and capital (Clark, G.L. (1983a) p.12). Storper and Walker (1983, p.34) consider location as an essential means of shaping and

---

[20]See Chapter 3 for the major radical criticisms of Weberian industrial location theory.

reshaping the employment relation. Cooke (1980, p.556) believes that the spatial dimension is clearly becoming a factor of increasing importance in the labour market and in industrial restructuring.

The major spatial trend examined in radical geography literature would probably be that of the relative decentralization of industy from old traditional core areas. Webber (1982, p.213) proposes that an understanding of the dispersal of industry can only be understood in relation to the central processes of capitalist development - the drive to accumulate and the struggle between labour and capital.

Although they are not clearly distinguishable, the spatial strategies of capital (related to the stratification, segmentation and variability of other labour market aspects), can be divided into two broad categories - those that involve the direct movement or investment of capital to cheap labour areas and strategies that attempt to directly alter the bilateral relations between labour and capital by spatial changes in investment patterns.

There is nothing uniquely Marxian about theories of the relative decentralization of productive capacity to cheap labour areas. The proposition is in perfect accord with all the tenets of neoclassical and, in particular, Weberian locational theory. However, the trend has received considerable attention in the radical literature and is seen as part of the requirement for captalist commodity production in the advanced economies to enhance competitiveness *vis-a-vis* producers in countries or regions with a substantial labour cost advantage (Cooke, P. (1980) p.556).

Economic concentration and functional specialization are often seen to facilitate the decentralization strategies of firms to decrease production costs[21] (Scott, A.J. (1982b) p.192). Together with the potential for the separation of control and production functions (made possible by adequate technology and the growth in size of firms), the

---

[21]In 1980, 70% of all private economic acitivity in the U.S. was in the hands of 800 conglomerate firms (Bergman, E. and Goldstein, H. (1983) p.265).

greater locational freedom of the firm (facilitated by technologically-derived reductions in linkage costs) has allowed the improvement in the firm's labour position (Bergman, E. and Goldstein, H. (1983) p.270 ; Dicken, P. and Lloyd, P. (1981) p.181 ; Standing, G. (1984) p.138). The redistribution of industrial activity to the low-wage, low-unionization areas of the U.S. "Sunbelt" area is the classic illustration of this process at the regional scale.

Storper and Walker (1983, p.3) claim that greater locational flexibility has meant the spatial variations in labour characteristics have become more important. The specialization and separation of functions and locational freedom is perceived as allowing a superior exploitation of the existing spatial division of labour at urban to global scales (Malecki, E. (1983) p.101 ; Multinational Monitor (1984) p.4 ; Walker, R. and Storper, M. (1981) p.500). The primary motivation of decentralization to peripheral areas would then be the firm's wish to secure its main labour requirements at lower wages per occupational category than those that prevail at the industrialized core (Scott, A.J. (1982b) p.192).

Economic concentration, technological improvements in transport and communication and the development of international capital markets have been major reasons behind the spectacular growth of multinational corporations (MNC) since the Second World War. The development of a system of international financial markets (such as the Eurodollar market), less subject to regulation by national-based central banks, has represented the evolution of banking into a phase in which it has become, in a literal sense, supranational (Tarshis, L. (1984) p.104). The near perfect spatial mobility of capital is seen as largely responsible for the international spread of manufacturing with trade occurring more frequently between subsidiaries or joint ventures of global corporations producing goods in different parts of the world (Cohen, R. (1981) p.288).

Although lower wages are only one reason for the international location or relocation of production plants away from the core regions, it is a particularly appropriate reason for "developing" nation destinations (Carmichael, C. (1978) p.145). Large multi-plant, multi-national firms can maximize their returns by moving standardized production plants (with considerable labour requirements) to these low-wage labour market areas. This feature is especially common amongst enterprises experiencing structural change due to developments in international trade. Declining profit and aggregate demand in industrialized countries has stimulated labour-intensive investment in low-income countries as well as labour-saving innovations in the "developed" nations, and the net result has been an accelerated redistribution of unemployment, an increase in unemployment relative to output, and changes in the "pattern" of unemployment in the "advanced" economies (Standing, G. (1983) p.149).

In Marxist-based perspectives, labour cost-reducing moves to developing nations have been described as fulfilling two roles beneficial to capital accumulation by: 1) reducing the hourly labour input cost (Webber, M. (1982) p.212), and, 2) by the suppression of wage pressures at existing domestic plants by capacity cuts and increased redundance (Multinational Monitor (1984) p.18) The developing nations are seen as being "reserves" of labour power and the relative redistribution of productive capacity in their favour is regarded as involving an international redivision of labour (Browett, J. (1984) p.158 ; Standing, G. (1984) p.140).

The movement of industry from urban core industrial areas to low-wage peripheral locations within national boundaries is explained on similar criteria - minus the role of international capital markets. Structuralist analyses emphasize the real costs of labour (including all qualitative characteristics of labour) in the investment decision (Norcliffe, G. (1984) p.33). The existence of low-wage areas whould, therefore, play a part in the locational decisions of footloose firms attempting to reduce real labour costs. In the more functionalist interpretations of the necessity and inevitability of

uneven spatial development, it is argued that the raising of the rate of exploitation through the "superexploitation" of relatively low-cost labour (that is, reducing the value of labour power) is made possible by the presence of reserves of labour in non-core areas. These reserves of labour power are considered to be created by the capitalist mode of production itself to ensure expanded reproduction (Mandel, E. (1968)).

Scott (1981 ; 1982b) undertakes an elaborate analysis of the intra-urban variation in wage rates and their effect on plant location and concludes that the analysis of intra-urban locational patterns must be rooted in the theory of production and the related question of pricing of production factors in the urban environment (that is, a theory of wages). With selective suburban decentralization of capital-intensive industry, wage rates are seen to increase in the periphery. This outcome is posed as accentuating the tendency for the core and periphery to become locationally specialized foci of labour-intensive and capital-intensive industrial activity (respectively).

As stated, the attraction of low-cost wage areas is accepted by both radical and neoclassical labour theorists and it is difficult to isolate uniquely Marxian perspectives on this spatial trend. In radical analyses, wage costs are just one part of attributes of the spatial division of labour which is incorporated into a broader theory of the historical transformation of the labour process involving the deepening and restructuring of capital under the drive to accumulate. The ongoing power struggle between labour and capital is probably more important.

Neoclassical theory treats labour cost variation as simply another spatially-differentiated supply factor. A tendency towards the greater growth of industry (particularly for labour-intensive activities) in low-wage areas would be an expected outcome of both perspectives.

A recognition of the inadequacy of the conception of a spatial cost surface (wage surface) for labour as a passive supply factor is reflected in recent

Marxian-based geographic literature on spatial strategies of capital motivated by attempts to gain the upper hand in the continuous struggle with its most troublesome (and to the Marxist, the only) source of value. Emphasis is placed on the labour factor as the major stimulus of the restructuring, and in the long-term, the evolution of capitalism. However, rather than simply adopting a static conception of localized differentials in labour costs (wages), existing wages are considered to only be a part of the real cost or total productivity of labour in particular areas. Over time, other characteristics of labour, and the relationship between local labour market supply and demand conditions for various types of labour (such as the unemployment levels for particular occupations) are seen to directly influence the future stream of payments to labour and the total real cost of labour and returns to the firm.[22]

Hence, strategies involving a reorganization of the firm's activities across space would be pursued in order to break the "bilateral relations" between capital (management) and labour thus increasing or maintaining the rate of exploitation and resulting surplus value appropriated to the capitalist as profit.[23] The expanded reproduction of capital acts as the ultimate motive and capital mobility across space is utilized to overcome profit losses from the formation and growth of cohesive and solidaristic primary labour markets (Cooke, P. (1980) p.560). The movement from militant labour core areas to labour power "reserves" willingly yielding the desired secondary labour market workforce would decrease existing and future streams of real labour costs for the firm's operations in the new location. The redistribution may also help to reduce solidarity in the old core areas by disinvestment and capacity cuts

---

[22]Once again, the relatively slow response of labour supply (locational and performance), is assumed in contrast to the greater speed of transformation of the form, purpose and location of capital.

[23]Although most radical theory attributes the ultimate upper hand to capital in the struggle with labour, a two-way interdependence in the relationship is generally acknowledged. The term "bilateral relations" is borrowed from G. Clark (1983a). Neoclassical theory assumes away any interdependence - labour is simply a commodity freely offered on the labour market and allocated on the basis of price outcomes of supply and demand which, in turn, reflect its contribution to the output price.

adding to unemployment "pools" in these areas.

Location is portrayed as the means of transforming the nature of the employment relation (Storper, M. and Walker, R. (1983) p.34). Driven by the "imperatives" of capital accumulation, mobility would not be a luxury for capital but a necessity. The struggle and interdependence between labour and capital and the continuous modification of the conditions and balance of power of the (at least two) actors has motivated some radical-oriented theorists to describe this relentless change as the "structuration" of the labour market (Cooke, P. (1980) p.558). As power relations change, the "local" character of the labour market changes and geographic dimensions are seen to be inherently related to the structure of contractual relationships (Clark, G. (1983a) p.5).

The technological and organizational developments of the twentieth century (responsible for the capacity for functional specialization and geographic separation and the locational mobility of firm's activities) outlined in previous discussion also apply as the enabling conditions for relocation to decrease the real costs of labour (Kirwan, R. (1981) p.79).

The structuralist view emphasizes the utilization by capital of the totality of existing geographically-based social, political and economic environments in its quest to control labour. There is a great deal of radical literature on the spatial strategies of capital to affect the nature of the capital-labour relation. A few of the major dimensions of this perspective have been reviewed in the following discussion.

The decentralization of industry from urban core areas to pockets of docile and politically-passive labour supply found in small towns, semi-rural (and also suburban) areas is discussed as one important aspect of the use of location as a strategic variable to ameliorate the endemic conflict between labour and capital (Gertler, M. (1984) p.152 ; Scott, A.J. (1982b) p.194). An anti-union legislative environment would often be found in these settings and would provide further incentive for location.

The complementary aspect of this argument is the perception of the flight of capital from urban core areas as a reaction against the complexity of contractual negotiations and the power of labour in large older areas (Clark, G.L. (1981b) p.420). The movement to more favourable labour climates (with "tractable labour") would escape the upward pressure on wages and the rigidities on wages, employment and hours worked resulting from union activities (Gertler, M. (1984) p.168). The militancy of workers (exhibited in the urban core areas) is considered to stem from community socialization, work experience, unionization and especially cultural values about what sort of work intensity and standard of living are acceptable (Walker, R. and Storper, M. (1981) p.498). Hence, the geographic dimension is upheld as playing a key role in the differentiation of community-based labour "climates".

In addition, Gordon (1978, p.49) views decentralization as a result of labour conflict in traditional core areas and as a corporate strategy to reduce the "contagion" or local "demonstration" effects which encourage unionization and add pressures for wage increases in geographically concentrated settings. The spatial and functional separation of facilities would act to segment different labour groups (and the scope of applicability of contractual relations) geographically and would subsequently impose informational and perceptual barriers on organizational activity by the groups concerned (Clark, G.L. (1981b) p.415). Old community ties would be severed and the loss of employment demand would help to fragment labour markets in the older, industrial areas (Storper, M. and Walker, R. (1983) p.33 ; Cooke, P. (1980) p.559).

The principal goal of these strategies (particularly if deskilling is involved) is conceived to be the externalization of the labour force and the increased use of labour supply with secondary market characteristics (or at least the positive aspects of secondary workers). This would help dispel long-term contracts or promotion or skill upgradings, tenure and benefits and would help keep wages low.

The notion of the deliberate fragmentation of the workforce by spatial strategies of capital has also been hypothesized at the intra-urban scale. Danson (1982, p.261) describes how outer city locations for capital-intensive producers have assisted in the replacement of strong ILMs (used when in core locations) with weaker versions comprising of female, part-time and service workers. A similar perspective is held by Massey and Meegan (1978) on the use of cheap and unorganized female labour by suburban industry.

A parallel can also be found in radical theory on the suburbanization of housing which has blossomed since the Second World War. Once, again, there is an anti-labour intent expressed (in the actions of the state on behalf of capital). The residential fragmentation into dispersed communities is attributed as an attempt to divide the life activity patterns of the working class, diluting their collective class consciousness and reducing the stimulus and ability for organization and political action. In addition to the mainstream interpretations of stimulating overall economic growth by consumption (by credit), the neo-Marxists contend that suburbanization is also a plot to subdue the working-class, and middle-class to some extent, rendering them reluctant to "rock the boat" due to their new debt-encumbered, partly-propertied status. Political stability and the status quo is thus assured (Edel (1982); Gordon (1978) p.52; Thorns (1982) p.761; Walker, R. (1981); Webber, M. (1982) p.218). These are strong assertions open to criticism which will be reviewed in Section D below. Evidence of the growing relevance of "labour climate" criteria and the employment relation between labour and capital in explaining decentralization would need to show, as a necessary condition, that industry tended to undergo a redistribution from unionized areas with full-time employment and other strong primary labour market characteristics to areas with low unionization - with the subsequent use of a labour force that is more secondary in nature.

## D. LIMITATIONS OF RADICAL THEORIES ON THE RESTRUCTURING OF CAPITAL AND THE LABOUR MARKET

Throughout the review of the radical perspective on the relationship of the restructuring of capital and the labour market, several inherent weaknesses can be discerned. These problems should be acknowledged at this point of the analysis in order to provide the setting for the empirical tests of Chapter 9 and to counterbalance the critical review of the neoclassical models.

One major limitation of the radical literature is the paucity of empirical research to substantiate the broad theoretical claims of this school. Although there is some evidence that Marxian-inspired theory is being subject to empirical enquiry in more recent times (for example see Clark (1981a; 1981b; 1983a) and Scott (1983a; 1983b; 1984)), a preoccupation with unsubstantiated theoretical pursuits has been severely criticized (see Duncan, J. and Ley, D. (1978)). The analysis in Chapter 9 comprises an attempt (though modest) to relate some of the relevant radical theory, described in previous sections, to the situation in British Columbia.

In addition to the empirical shortcomings, radical theory is also subject to many of the criticisms levelled against the neoclassical school. For example, the radical viewpoint could also be perceived as encompassing a rather limited scope in its posited factors for the theoretical "explanation" of the spatial and technical organization of capital.

Firstly, labour is assumed as the prime determinant of the form of productive activity thus unjustifiably underemphasing or disregarding a whole range of potentially influential variables which may well play a key role in the locational and other investment decisions of capital - particularly in view of claims for capital-intensification and its proposed effect to decrease the firm's dependence upon labour. Parallels could be drawn to Weberian location theory which attempts to attribute determination to a very limited range of factors in the partial equilibrium analysis. A more balanced

consideration of possible factors would probably entail a more realistic approach. The need for this broader outlook is likely to be quite apparent in the B.C. context where the location of raw materials will undoubtedly have a major influence on the form and location of many types of production activity.

Secondly, and akin to much of the neoclassical theory and research, the radical theories on the changing structure of economic activity tend to be overly concerned with the production sector while almost completely disregarding the strong and growing importance of the service sector as a provider of employment in "advanced" Western nations over the past 25 years. Related to this aspect, the role of consumption receives minimal treatment in much of the radical literature reviewed.

In addition to these aspects which entail an obvious simplification of reality, the radical approach is by no means immune to the probable weaknesses resulting from broad generalizations about human behaviour and the explanation of the historical development of the form and nature of society. The roles attributed to the two major actors conceived in most Marxist work (labour and capital) are highly abstracted from reality (at least in the contemporary context) and could also be interpreted as reflecting a rather mechanisitic, deterministic, and possibly anti-humanist orientation. Both labour and capital are treated as aggregate agents with a single-minded, inflexible, and homogeneous rationality.

Although "labour" is considered to consist of non-passive creatures, human behaviour is reduced (as in the neoclassical school) to a stereotypical, consistent, and predictive form thus countering the broader claims for dynamism and historical flexibility. The invariable hostility and relentless profit-maximizing pursuit attributed to capital also reflects this reductionist proclivity. "Capital" is assumed as a non-human entity with no intimate attachment to the social environment (an unrealistic depiction) and is attributed the power of perfect information so often criticized as a major fault of neoclassical theory.

In fact, the radical arguments are often consistent with equilibrium theory (for example, the proposed relationship between the "industrial reserve army" (excess supply of labour) and wage rates) and the basic rationale behind many of the predicted relationships requires the acceptance of many of the heavily criticized axioms of neoclassical economic theory. The influence of values, emotions, and existential aspects of life experience, on human behaviour, and the inconsistencies indubitably attached to humans as complex, animate beings is also, as in neoclassical theory, largely ignored.

In much of the radical theory, labour is still implicitly treated as if it were a simple (though antagonistic) product exchanged in a market.[24] The heterogeneity of labour (and often capital) is seldom incorporated convincingly within radical labour market theory and suffers from a lack of empirical support. The existence of a state which does represent labour's interest in some degree provides a perplexing phenomenon to orthodox Marxist theory. The power of labour is usually confined to unionization in radical theory. However, there are many institutional strongholds of labour to be found in the modern mixed economy (including the state) which detract from the rather simple dichotomisation of society into either "capital" or "labour".

In addition, whereas the neoclassical school assumes outright that the relationship between capital and labour is completely based on consensus, the orthodox radical school proclaims the purely conflict-based nature of this relationship. A more realistic depiction would probably be founded on a compromise between these diametrically opposed perspectives.

The tendency for generalization which highly simplifies the radical conception of the assumed behaviour of the dominant actors in society also pervades the Marxist-based theories of historical development. Similar developmental outcomes predicted for societies which have quite disparate characteristics suggests a dynamic perspective adopted in radical theory in relation to the temporal dimension but a

---

[24]This similarity is probably a result of the common economic roots of the radical and neoclassical schools of thought.

rather myopic viewpoint across different social contexts. This predilection for assuming a grand homogeneity of social contexts across space (thus disregarding cultural differences) is related to the commonly applied "core-periphery" classification schemes, which are a cornerstone for many radical works, which are often rather ambiguously applied and implicitly assumed as relevant and comparable in any regional context.

There are many other areas of radical theory, such as the basic conceptual terminology, which have been subject to severe and often almost devasting criticism.[25] A complete critical review would involve a lengthy account of the major arguments against structural Marxism which is beyond the purposes of this paper. However, there are a few remaining factors directly pertinent to the analysis.

Radical theory is often preoccupied with capital mobility with very little explicit regard for the significant effect of the mobility (and probably the increasing mobility) of labour. This tendency reflects the primacy attributed to capital in the labour market power playoff (particularly in the radical "labour process" theories) which would underestimate the potential strength of labour and its institutional "weapons". The competitive, "free market" bias of firms in neoclassical reasoning is directly contraposed by the monopolistic version of capital in radical theory. Neither scenario would be an accurate description of the nature of employment demand in modern Western society.

A final illustration of the ambiguity and inconsistency to be found within radical theory is the assumption that the capital-intensification process will lead to a "sorting process" in which the "core" areas would become increasingly labour-intensive with increasing capital-intensity in the peripheral areas (see Scott (1981, p.26; 1982, p.125)) which directly contradicts predictions of other radical labour theorists that labour-intensive industry would seek to disperse itself geographically to fragment worker collectivization potential which is enhanced in the concentrated core areas.

---

[25]For example, see Duncan, J. and Ley, D. (1978) for a comprehensive attack on the literalism inherent in Marxist theory.

Other limitations of the radical perspective will be addressed throughout the result discussion and concluding sections.

## E. THE RESTRUCTURING OF CAPITAL AND THE GEOGRAPHY OF UNEMPLOYMENT

In the outline of the two major "types" of strategies of capital espoused by the neo-Marxian theorists (see section 6.C), some of the direct and indirect effects of restructuring on the character of geographically-based labour markets have been presented. The influence of the character of the existing and potential labour force on the restructuring process have also been included in the discussion. The primacy of capital in the interdependent relationship with labour, and, the decentralization process (at urban, regional, and international scales) as an integral part of the present form of restructuring, are pervasive themes throughout the radical literature.

The overarching framework of radical perspectives on the "evolution" of the capitalist mode of production can be applied to the analysis of unemployment at the urban level.[26] The changing quantitative and qualitative local labour requirements of capital will have profound repercussions on the absolute growth of unemployment, the concentration of unemployment in certain occupational-skill categories (usually the lower-skilled), and the geography or distribution of unemployment characteristics within the urban area. Even if the intra-urban geography of unemployment can be identified as a mosaic which is primarily the result of spatial frictions and job dislocation, the unique structural changes in the historical transformation of the production system (continuously responding to, and affecting the employment relation) would be considered as the deep, underlying causes of decentralization - rather than decentralization being

---

[26]Approaches which impute a central role, in the analsis of labour market changes, to unique structural changes in the economic base, over time, are not necessarily Marxian in perspective (for example, see Thrift, N. (1979)). However, the conception of increasing unemployment as a result of increases in the "natural rate of unemployment", in monetarist neoclassical approaches, almost completely ignores economic structural change and shifts the source of blame to labour supply frictions.

the original cause itself.

The phenomenon of concentrated unemployment in residential areas in the urban context (commonly the inner city in the U.S. and the U.K.) is then explained, in radical theory, as a product of the restructuring of capital. The "flight of capital" from its foundational inner city core areas would be seen to either leave some inner area-based appropriate labour supply disadvantaged in terms of commuting to suburban locations or the decline in productive investment and capital substitution in the urban area, as a whole, is seen to have diminished potential job opportunities anywhere in the urban area. Whereas suburban industry may be considered to be more remote for inner-city residents, the concentration of unemployment would be perceived as primarily stemming from the change in the "logic" of location and the nature of the production process which have resulted in the demise of optimal production employment locations in the core.

In the face of competitive pressure from regional and international sources and declining aggregate demand for (some) industrialized nation's manufactures, decentralization would just be one of the responses of capital, amongst its production process changes, to maintain cost-competitiveness or to maximize returns to investment capital. The rate of return, with labour as a key factor, is a function of geographic location. The managers of the production system would be forever revising the nature of products and resource mix (such as labour use) - and hence, location of investment - in response to an economic system in constant flux. The changing nature of technology would be one of the main stimulants of ongoing change in the production process. The employment demand required from urban areas in the "developed" world would change and the residential structure of the housing system would reflect the dynamic state of the capitalist economy.

The relative decentralization of production employment may just be a result of the closure of inner city plants or the capital-intensification of existing operations.

However, changes which proffer a decreased dependence on labour (for a given level of output), together with technologically-induced locational flexibility, exacerbate the "flight" of capital by removing the need for proximate large pools of inner city labour. Capital-deepening cannot only decrease the overall production costs at an existing location but can allow the exploitation of cheaper forms of other non-labour production factors thus enhancing the price-competitiveness of the firm product.

In neoclassical theory, this is perfectly rational behaviour as the firm alters its product output, input demands, and associated location in response to changing production and consumption market. The comparative advantage of an area (and the use of its "resources" such as labour) will change. Apart from the differences described in Section 6.A, this is also how the radical theorists portray the process - without the moral acceptance of the consideration of labour as the same as any other factor of production.

As described, radical interpretations contend that capital really sees labour as the biggest threat, and yet the main source of, surplus value. Hence, strategies of capital to effect the employment relation are attached far more importance than in the equilibrium least-cost models and their passive "economic men". A deliberate intent to subdue labour is seen to pervade the restructuring process.

Decentralization from inner core areas is then considered as one part of the struggle between labour and capital enabling capital to utilize a labour force which is more secondary in nature by:

1. Stifling upward wage pressures by decreasing employment demand in the core.
2. Combined with standardization, by reducing and deskilling the required employment demand thus suppressing overall wage pressures and the power of labour in higher-skill occupations.
3. Providing an opportunity for replacing militant labour with a

docile labour force without negative employment relation ramifications.

4. With capital-intensification, simply removing or decreasing the troublesome factor of labour from the production process.

Technological and structural change in the production system would, therefore, facilitate the casting off of the core areas and their militant labour supplies as output levels can be met in other locations with preferable factor supply characteristics.

Structuralist-inspired analyses have argued that inner cities are merely the latest areas to be deserted by capital as the transformation of the mode of production continues (Thrift, N. (1979)). Inner city problems are portrayed as manifestations of the inherent contradictions of capitalism and the inner city area is often conceived as containing the bulk of the "industrial reserve army" (Braverman, H. (1974)). Particularly in the U.K., with its industrial demise during the twentieth century, the inner cities are seen as victims of the radical restructuring of manufacturing industry stirred by international competition (Kirwan, R. (1981) p. 84).

Under Marxian economic analysis, the local manifestation of uneven development, such as declining inner city areas, are thought to only be explainable in relation to broader structural features of the national and international economy. To Scott (1982a, p.124) understanding the decentralization process (and hence, the removal of employment demand from core areas) needs a coherent problematic that roots the phenomenon in the internal dynamics of the firm as a structured relation within capitalism. Hence, a radical-based interpretation of the intra-urban variations in unemployment would reject an isolated spatially deterministic conception of the "accessibility crisis" on "trapped hypothesis" as an adequate explanation. Societal processes would be seen to lie at the heart of problems in the urban spatial structure - though the structure would, in turn, influence the form of the processes.

Over the past five years, British Columbia has undergone strong pressure for the restructuring of its industrial sector in the face of declining demand and world prices for its principal products and competition resulting from the changing nature of international capitalism. TABLE 6.1 illustrates the relatively low levels in corporate profits (before taxes) from operations in the province since 1979. Although British Columbia has never had the distinct inner city concentration of industry and a heavy reliance on "downstream" industrial activity in a traditional old metropolitan core area, if broad structural changes have significant spatial ramifications, the pressures for restructuring may be "etched" upon the spatial structure of the urban area. The analysis of the geography of unemployment (as part of the nexus of space and the labour market) in the Vancouver metropolitan area may help reveal something about the nature of hypothesized structural trends operating in the B.C. context where there has been a marked alteration in the return on investment capital in recent times. The labour market should be an excellent instrument for monitoring the affects of these changes.

Table 6.1 British Columbia Corporate Profits and Investment Income 1968 - 1983

| Year | Corporate Profits before Taxes ($1971 millions) | Interest and Miscellaneous Investment Income ($1971 millions) |
|---|---|---|
| 1968 | 799 | 473 |
| 1969 | 847 | 553 |
| 1970 | 570 | 529 |
| 1971 | 705 | 607 |
| 1972 | 949 | 710 |
| 1973 | 1 641 | 867 |
| 1974 | 1 554 | 996 |
| 1975 | 1 269 | 806 |
| 1976 | 1 435 | 1 075 |
| 1977 | 1 371 | 1 224 |
| 1978 | 1 589 | 1 456 |
| 1979 | 2 048 | 1 762 |
| 1980 | 1 757 | 1 763 |
| 1981 | 1 213 | 2 051 |
| 1982 | 558 | 1 892 |
| 1983 | 855 | 1 901 |

Source: Statistics Canada 13-213 "Provincial Economic Accounts"

## Chapter VII

## METHODOLOGY

The research undertaken can be divided into two distinct, but related, aspects. The first task involved a series of investigations of the spatial distribution and socioeconomic characteristics of total and manufacturing production unemployment to ascertain the relative explanatory power of the two alternative hypotheses described in Chapter 4. The major objectives of research executed at the urban level include both 1) the exposition of the dominant process in the formation of observed unemployment differentials, and 2) the evaluation of the general nature of unemployment in the CMA to suggest some potential contributing causes to this major social and economic problem which can be analyzed on a spatial basis. The results of this analysis are presented in the following chapter.

A wider geographical perspective is adopted in the second section of the research (with findings discussed in Chapter 9). This supplementary empirical aspect of the thesis comprises an exploratory study of the spatial and structural changes in manufacturing production employment demand in British Columbia (B.C.), as the region surrounding and including the Vancouver CMA study area, in order to assess the influence of regional, structural-economic change on the metropolitan labour market. Admittedly, manufacturing production activity is only one branch of the region's economic system supplying employment demand for the labour force and the accuracy and representativeness of generalizations to economy-wide sectoral changes and impacts is necessarily limited by this myopic perspective. However, a consideration of production activities and the broadening of the salient study area can be justified on a number of grounds.

One major reason for the examination of manufacturing production activity is that a significant proportion of growth and existing unemployment in the Vancouver

CMA stems from displaced manufacturing production workers.[1] The changing nature of demand in this sector, at a regional scale, would have definite ramifications on the nature of unemployment in the major metropolitan area. Hence, the monitoring of structural changes which transcend the urban boundaries is assumed to offer some insight into the causes of urban labour market mismatch and to perhaps suggest the direction of future trends in this sector and their associated impact on urban unemployment. Informational and other resource constraints have also confined the scope of the examination of the changing nature of provincial employment demand to the industrial sector.

In addition, a major purpose of the province wide study is to evaluate the relevance of some broad structural trends, proposed as underlying the recent changes in the labour market resulting in widespread and growing unemployment, for the B.C. context.[2] The regional focus is maintained on the assumption that an understanding of such changes would require higher levels of geographic resolution than the urban setting. However, a greater emphasis on national and international trends would probably be necessary for including the actual sphere of influences affecting the nature of urban unemployment.

In particular, some of the hypotheses that follow from the radical literature on the role of labour in the production process and locational changes of industry (summarized in Chapter 6) are tested for their applicability in the B.C. economy. The radical theories of the labour–capital relation in the production system have strong implications for the characteristics of the local labour market such as unemployment levels and composition and the relative bargaining power and returns to labour. This study may help throw some light on the integrity of the structuralist interpretations of

---

[1]The manufacturing production occupations collectively comprise approximately 25% of the total unemployment insurance recipient "pool" in both 1980 and 1984 (Employment and Immigration Canada (1980; 1984).

[2]For example, the process of "deindustrialization" is commonly contributed as a major contributing factor to the endemic high unemployment rates in the U.K. (see Rose, D. *et al.* (1984)).

unemployment in the Vancouver CMA case study area within its regional (and to some extent, international) context.

## A. THE URBAN ANALYSIS OF UNEMPLOYMENT IN THE VANCOUVER CMA

The attempt at identifying the major sources of unemployment in the Vancouver CMA begins with a series of tests aimed at evaluating the direct influence of the decentralization of industry and the spatial separation of home and workplace. Analysis of the variations in the levels of unemployment within the CMA are assumed to provide some possible insight into the processes resulting in unemployment in the study area.

Characteristics of labour supply and demand at the total CMA level are also examined to describe the nature of the mismatch manifest as unemployment, and the personal and housing characteristics of those in the CMA's unemployment "pool" are analyzed and correlated by statistical procedures and by means of maps. These studies at the aggregated urban level provide further evidence on the major process behind the observed variations in unemployment rates and may also help to suggest the source of dysfunctioning in the urban labour market and the processes causing unemployment *per se*.

A comparison of occupational unemployment characteristics at the B.C. level is made to present a brief synopsis of the unemployment problem at the provincial level and to assess if geographic redistribution, or occupational or skill upgrading of the workforce would assist in alleviating metropolitan unemployment.

### 1. DESCRIPTION OF UNEMPLOYMENT DISTRIBUTION IN 1981

The first section of the urban analysis is a description of the distribution of total unemployment by residence in the CMA for the census year 1981. Concentrated areas of high unemployment numbers or rates are defined primarily with reference to

the CBD or core area of the Vancouver metropolitan area. Utilizing the census tract as the principal analytic data unit, the spatial pattern of unemployment is depicted by means of maps (for the absolute unemployment numbers and for unemployment rates) and by correlating unemployment rates with (auto) travel time distance from the CBD.

The absolute numbers and relative rates of unemployment only reveal the "stock" of unemployment as a static "snapshot" picture of the distribution of unemployment. Unemployment is actually a stock and flow concept - differences in the stock of unemployed (identified in census and Employment and Immigration Canada data) may be the result of differences in the flows on and off the unemployment register. The unemployment stock in time *t* is a product of the net inflow of persons into the stock at time *t* and the expected or mean duration of unemployment (Armstrong, H. and Taylor, J. (1983) p.313). Hence, a high unemployment rate in a particular area may simply be the result of higher flows on and off the register and this situation may not entail a relatively more serious problem in terms of mean unemployment duration.

A test of average duration for Unemployment Insurance (U.I.) beneficiaries is applied at data unit levels (Canadian Employment Centre (CEC) areas) to see if the observed 1981 census distribution of unemployment can be related to different average durations. The duration measure obtained from Employment and Immigration Canada is the average time spent (up to the time of the survey) in unemployment for claimants currently on register. The average time for an individual client to have been continuously eligible for U.I. benefits (for 1980) was calculated for selected CEC areas containing the highest and lowest unemployment rates, derived from the 1981 census tract data, to ascertain whether significant differences exist in the duration of unemployment experienced (by occupational groups) in these areas. Due to the dependence on U.I. data for this research it is likely that the long-term unemployed (who become ineligible for unemployment insurance) will be underrepresented.

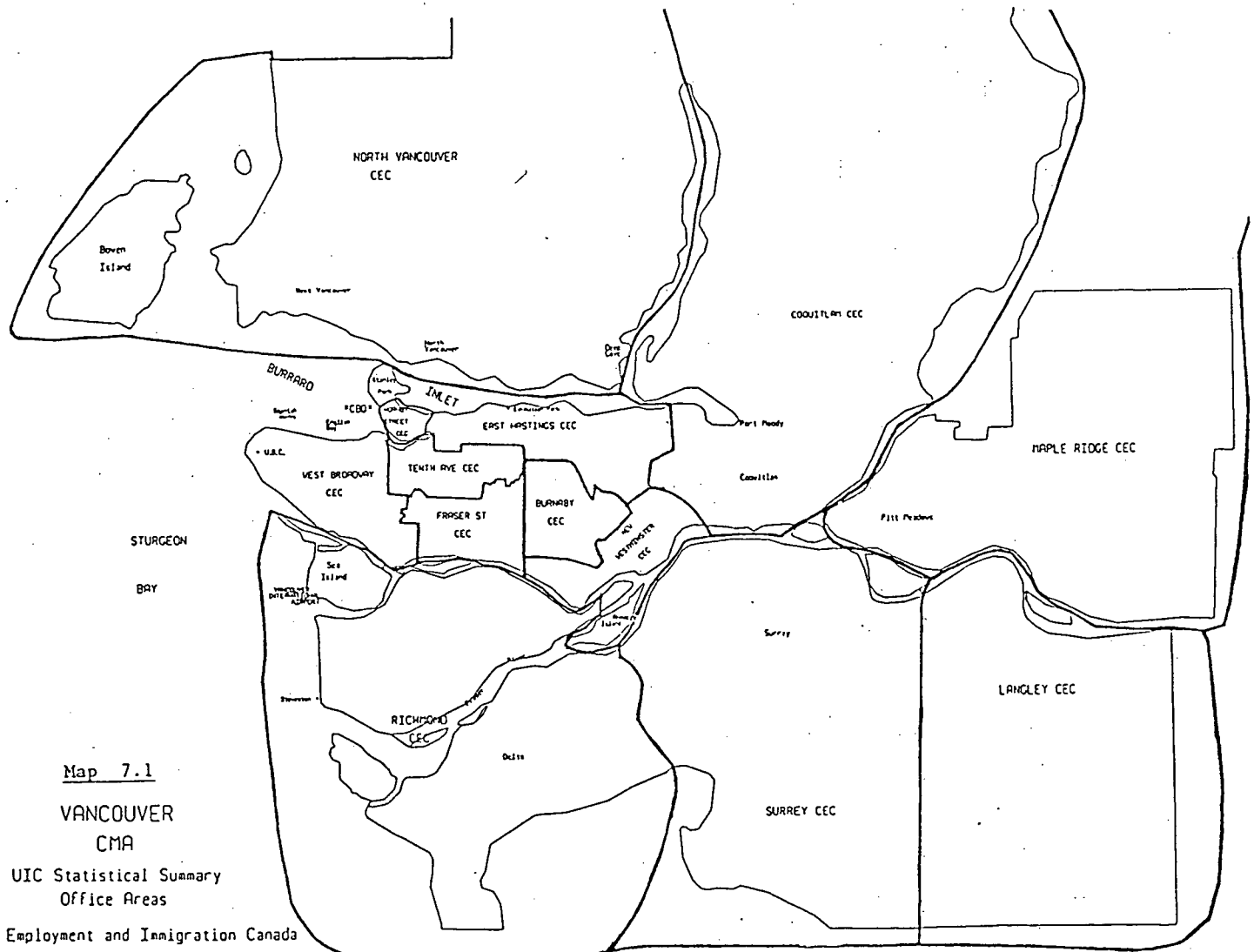
Unfortunately, the Employment and Immigration Canada (E.I.C.) intra-urban geostatistical units (see MAP 7.1) are considerably larger, and are only roughly contiguous with, the Statistics Canada census tracts but some comparison between the two data sets is still possible. However, the stock measure of unemployment is used almost exclusively throughout the research and remains as a fundamental methodological problem.

The dependence on 1981 census data for the analysis of unemployment in the CMA presents several other problems which detract from the reliability of the results obtained. The aggregation of individual labour force characteristics at the census tract level involves the loss of the individual for the comparison of different social and economic traits and the usual problems of the "ecological fallacy" are faced in drawing conclusions from this data. In addition, the detailed social and economic breakdown of the census tract (CT) population is collected on the basis of a 20% sample which is weighted up to compensate for sampling thus restricting the accuracy of CT data. Thirdly, unemployment figures exist only as totals for all socioeconomic group categories and the only possible breakdown of unemployment by personal characteristics is a "recently-unemployed" figure for occupations obtained by subtracting the persons employed by place-of-residence for each occupation from the occupational experienced labour force totals.[3] This figure is used as the only indication of census tract differences in manufacturing production unemployment rates in the regression analysis of 1) unemployment, 2) accessibility to potential employment and 3) selected sociodemographic characteristics described in 7.B.6.

Probably the foremost caveat of the census data basis utilized for the purposes of this research is the low unemployment rate for the CMA in 1981 (see FIGURE 1.2). Immediately after this census year, unemployment rates rose rapidly through to

---

[3]The experienced labour force figures were derived by deleting from the total labour force unemployed persons 15 years of age and over who had never worked or who had only worked prior to Jan. 1, 1980.




Map 7.1

VANCOUVER
CMA

UIC Statistical Summary
Office Areas

Employment and Immigration Canada

1984

Source:Compiled from Emp. and Immigration Canada data

1985. However, this earlier data year could be seen as suited to the investigation of the "longer-term" processes causing intra-urban variations in unemployment because the post-1981 statistics could also be conceived as being primarily "cyclical" in nature rather than a result of structural and frictional factors operating in the more favourable growth period. Nevertheless, the unemployment experienced after 1981 has been of "crisis" proportions for the CMA and province and is undoubtedly the optimal target of investigation for attempting to explain and help propose the nature of solutions required.

The only available source of more recent unemployment trends and characteristics is Employment and Immigration Canada's U.I. claimant statistical summaries issued monthly. Two-digit occupation, age, and duration breakdowns are tallied for each of the administrative areas of CECs (shown previously in MAP 7.1). The Vancouver CMA contains thirteen of these regions constituted from the aggregation of enumeration area (EA) census geostatistical units.[4] U.I. claimant total figures and occupational breakdown (by CEC region) have been extracted from monthly statistical summaries for 1980, 1982 and 1984 for use throughout the anlaysis. By integrating the occupational breakdown of U.I. claimants for each CEC area, with extrapolated 1981 labour force census data, (compiled in runs completed by E & I Canada), unemployment rates for each occupation (by area and month) have been calculated. Although the CEC areas are seldom contiguous with municipal or census tract boundaries. This reliable and accurate data source has proved extremely useful in the following analysis.

The only major obvious associated drawback of this approach is the exclusion of the unemployed who do not qualify, or have exhausted, their U.I. eligibility and those who are not in receipt of any form of unemployment assistance but are actually

---

[4]North Vancouver, Coquitlam and Maple Ridge CECs do, in fact, cover areas outside the CMA but the low population of external areas has allowed their effective incorporation within the Metropolitan Area definition. The CEC map was compiled and digitized from EA descriptions supplied by Employment and Immigration Canada.

seeking work. With a worsening unemployment situation in the CMA, over the past few years, the expiration of U.I. coverage for many individuals has contributed to the substantial growth in welfare (Guaranteed Available Income for Need (GAIN)) recipients (see FIGURE 1.3). However, there are severe data limitations, particularly for recent statistical measures, operating to prevent the inclusion of welfare receipients in the study. The geostatistical units that provide the basis for welfare monthly summaries are even larger than the CEC areas and not contiguous with either CT or CEC units. In addition, only aggregated figures are released for each month - there are no tabulations of occupational or other personal characteristic attributes of the client population. Due to reasons of "confidentiality" and resource constraints by the provincial "Ministry of Human Resources" responsible for welfare provision, recent and detailed data is very difficult to obtain.

The final part of the general description of the unemployment distribution in the CMA contains a breakdown of the unemployed (in 1980 and 1984) into the major two-digit standard occupational classification categories. This data was obtained from the U.I. claimant statistics and hence excludes welfare recipients and the unemployed not in receipt of any form of benefits. A comparison of the occupational composition of the unemployment pool and the unemployment rate for the labour force classified into each occupational group (for the two data years) aids in the identification of the changing nature of unemployment in the CMA and illustrates the occupational "problem area" amongst the general unemployment crisis. This analysis is also used in a variety of contexts in the balance of the research completed.

## 2. CHANGE IN THE GEOGRAPHIC DISTRIBUTION OF CMA UNEMPLOYMENT OVER TIME

The main purpose of examining the change in the unemployment rate distribution over time is to provide a historical depiction of the pattern which may

reveal something about the changing nature of operative processes. For example, if an inner city concentration of unemployment is found for all three dates (1961, 1971 and 1981) and there is no disproportionate rate increase in this area versus the outer area, it is unlikely that the process of decentralization of economic activity (which has been most pronounced since 1961), and accompanying access problems, have exacerbated inner city unemployment.

Thus the first two tests in the evaluation of changes in the distribution of unemployment over the CMA are designed to compare the 1981 distribution of unemployment rates (described in the previous section) with the distribution found in the 1961 and 1971 census years. The patterns of unemployment have been compared on the basis of the relative ranking of each CT's unemployment rate amongst the rates of other CT's and in doing so, this part of the test only really provides an indication of changes in the relative distribution of unemployment - absolute movements are lost. These "relative" comparisons include 1) a qualitative description of the dynamic pattern by means of CT maps showing the unemployment rates for 1961, 1971 and 1981 and 2) a quantitative comparison of the change in the rank ordering of the unemployment rates for CT's using the Spearman's rank correlation test. The unemployment rates for CT's have been compared over the 20 year period by ranking the CT's according to their unemployment rate, assigning approximately equal percentages of total CTs into nine classes for each of the census data years and by plotting the distribution for each year onto a CT map by a computer-assisted shading program (UBC GRP). Because there was considerable variation between unemployment rates over the three census data years, the class intervals are different for each map and overall changes, apart from the distribution of, for example, the highest or lowest five percent of CT unemployment rate areas, are difficult to infer. However, the unemployment rate maps do present an effective means of visually representing the major geographic changes in relative unemployment rate levels and for comparing

changes in the pattern over time.

The Spearman's rank test is a simple statistical nonparametric test to correlate sets of ranked ordinal data. The ranked unemployment rate values for each CT were correlated for the 1961 to 1971, 1971 to 1981 and 1961 to 1981 periods to determine to what extent the structure of unemployment differentials had altered over time.

A second pair of tests are applied to estimate differences in the growth of unemployment in selected areas of the CMA. The design of this analysis is based on the assumption that evidence of substantial job dislocation from industry suburbanization would require, as a necessary condition, a greater increase (or smaller decrease) since 1961, in unemployment rates in the inner core areas than in the outer suburban areas.

Arbitrarily defining the "inner city" of the CMA as encompassing those CTs within twelve minutes auto travel time of the CBD (assumed as being centred upon the centroid of CT 59.01), the 1961-1981 change in unemployment rates is compared to change in the balance of the CMA over the same period.[5]

This research is augmented with a similar comparison of "inner" versus "outer" city unemployment rate changes for total unemployment and manufacturing production unemployment between 1980 and 1984. This data was extracted from U.I. claimant summary statistics but, unfortunately, information for earlier periods was not available and a different (and slightly less "accurate") definition of the inner city - comprised of Hornby St., East Hastings and Tenth Avenue CECs - had to be used for the necessary calculations.

## 3. THE RESIDENTIAL RELOCATION OF MANUFACTURING PRODUCTION EMPLOYEES

---

[5]Due to data limitations, the balance of the CMA is based on the 1961 definition of the Vancouver metropolitan area which is considerably smaller thant the 1981 area. The derivation of travel time figures for inter-CT movement is explained in Section 7.A.6

This part of the research was completed to directly test the extent to which manufacturing production workers were "trapped" in inner city areas. That is, if there are more severe constraints acting on the manufacturing production workers ability to take up suburban residential locations (as in the "trapped hypothesis") one would expect a disproportionate residential growth favouring other occupations (particularly higher-skilled and by inference high-income occupations) in the suburban areas. The problem of variation over time in the shares of the total occupational labour force apportioned to each occupational strata has been overcome by implementing the initial procedures of a crude shift-share analysis.

The 1971-81 changes in the percentage of each selected occupational strata found in the core municipality of Vancouver City are compared with the percentage changes for the suburban municipalities of Richmond, Surrey, Delta, and Langley (City and D.M.) The three categories of occupations included in the analysis are 1) managerial, professional, administrative, technical and related occupations, 2) manufacturing production occupations and 3) a "total occupation" category. Census data on occupations can be compared with reasonable accuracy for 1971 and 1981 but 1961 data is coded under a different schema.

If the residential growth of manufacturing production workers in the suburban municipalities is on par with the "total occupation" results or those of the professional occupation, there would be no evidence of more severe constraints on the residential suburbanization ability of this group. Hence, manufacturing production workers should be able to relocate from abandoned inner city locations at a rate similar to that of other occupational groups who, in turn, may be becoming less accessible to their core employment locations from suburban locations. This situation would suggest the limited relevance of the housing "trapped hypothesis" resulting in access problems to work, in the Vancouver CMA setting.

Changes in the residential concentration and distribution of the manufacturing production labour force over the 1971-81 period are also examined by the use of CT maps plotted to show the location of CTs containing predefined percentages of the total manufacturing production labour force. Identical class intervals for the percentage of total manufacturing production employment held in each CT, are applied for both years and a computer-assisted shading program has enabled a visual comparison of the changes in manufacturing production labour force distribution.

However, there is a number of caveats to any conclusions drawn from this analysis in addition to the problems confronted in the use of the 1981 data base (as described in section 7.A.1).

One problem relates to the definition of that part of the labour force attributed as the relevant workers for manufacturing production activity in the CMA. The selection of occupational groups as "belonging" to manufacturing production activities was based on crosstabulated data of individuals' industry and occupational characteristics, at both the B.C. and Vancouver CMA levels. The occupational composition of manufacturing activity was anlayzed at the B.C. level from a crosstabulation undertaken by Employment and Immigration Canada on 1981 census data and, at the CMA level, by the author crosstabulating occupation and industry characteristics of the 1 in 50 sample used in the "Personal User Summary Tapes". This latter source contains detailed social and economic characteristics on an individual by individual basis from the 1981 census survey, enabling crosstabulation of any included variables.

The results of the B.C. analysis are shown in TABLE 7.1.

Both "processing" and "machining" occupation groups were included in the "manufacturing production" group due to the very high percentage of workers within the activities of manufacturing industry (84.0% and 64.8% respectively). Although the inclusion of "materials handling" and "product fabrication" groups is somewhat more

contentious, the reasonably high percentage in manufacturing (far higher than in other industry categories) and the strong contribution to the total "blue-collar" manufacturing labour force (particularly for product fabrication occupations with about one-quarter of the blue-collar manufacturing workforce) has warranted their inclusion in the manufacturing production group.

However, their arbitrary selection introduces a considerable source of potential error in the analysis - a factor which should be considered throughout as the assumed correspondence between these four occupations and the production activities of industrial activity is a recurrent basis for much of the subsequent research.

There are at least three other problems detracting from the attempt at identifying variations in occupational residential suburbanization.

Firstly, it is quite likely that the "manufacturing production" worker portion of the labour force contains a wide variety of people with different skill levels, incomes and constraints on both housing mobility and commuting ability. To treat this class as internally homogeneous may well mask differences within the class in terms of residential location patterns.

Secondly, it is difficult to ascertain to what extent possible high levels of housing "mobility" of manufacturing production workers may, in fact, be an incorrect interpretation of displacement from lower-income housing from (inner city) areas by gentrification, higher-density residential revitalization and the associated in-movement of white-collar workers.

Thirdly, a somewhat unrealistic scenario of fixed occupational mobility is implied by assuming 1) the manufacturing production labour force are the only possible group to fill manufacturing production employment demand and 2) manufacturing production employment demand is the only source of employment for these workers.

## 4. GEOGRAPHIC VARIATION IN UMEMPLOYMENT RATES FOR MANUFACTURING PRODUCTION VERSUS OTHER OCCUPATIONS

Another method of evaluating the two alternative hypotheses concerning intra-urban variations in unemployment rates is borrowed from Corkindale (1980) and Evans (1980) in their studies of unemployment in London boroughs.

If the decentralization of industry from inner city locations is leaving manufacturing production workers trapped in the core area and has acted to decrease their chance or ability to find work in suburbanized industry, one would expect the unemployment rates of manufacturing production workers to vary more widely in certain areas (probably the inner city) than for other occupations whose employment demand has not decentralized to the same extent. Manufacturing production workers who live in, or who have been able to relocate to, those suburban areas receiving substantial proportions of the new industrial employment demand would have a higher probability of obtaining employment in the accessible suburban industry.

Conversely, the non-manufacturing production workers living in core areas should not be disadvantaged in terms of access to employment (assumed to remain predominantly within the core) and their unemployment rates should not differ significantly from their suburban counterparts. The overall result would be that unemployment rates for the industrial and non-industrial occupations should be approximately equal in some areas (probably the outer areas) whilst they should be quite disparate in inner locations. The difference between expected high manufacturing production unemployment and lower non-manufacturing production unemployment rates in the inner area should be considerably greater than in the suburban areas.

Using Employment and Immigration Canada U.I. data, the unemployment rates for the two occupational groups (1) manufacturing production occupations and (2) non-manufacturing production occupations have been compared for the three CECs assumed as comprising the "inner area" of the CMA and for two suburban CECs

(Richmond and Surrey) which have collectively received 54% of the manufacturing production employment demand increase over the period 1971-81 and, in 1981, held 25% of the total employment demand for "blue-collar" manufacturing.

The municipal employment statistics were compiled from the Statistics Canada's annual catalogues of the manufacturing statistics of Canadian industry for subprovincial levels (31-209).

If the unemployment rates, and differences between these unemployment rates, for the two occupational categories are similar in inner and outer areas, there would be little evidence for the hypothesis stressing the role of spatial factors as determinants of intra-urban variations in unemployment.

Unemployment statistics are compared for the inner area and the two suburban CECs for both 1980 and 1984 to investigate how this situation may have altered in the rapid unemployment growth of the post-1981 period and to examine if the overall distribution of manufacturing production unemployment underwent substantial change. Although the CEC geostatistical units are considerably larger than CT units utilized for the census data analyses, an indication of the redistribution of unemployment across the CMA over the 1980-84 period may suggest possible sources of, or at least help illuminate the nature of, the burgeoning unemployment growth of this recent period.

## 5. THE RELATIONSHIP BETWEEN CENSUS TRACT CAR OWNERSHIP LEVELS AND UNEMPLOYMENT RATES

As an adjunct to many of the other investigations of the relative explanatory power of the two alternative hypotheses, the association between CT unemployment levels, travel-time distance from the CBD, and car ownership levels is explored in the Vancouver CMA context. Census data on car ownership levels, at the level of the census tract, is only available for 1971.

The level of car ownership (CAROWN) has been defined as the number of cars per 100 members of the labour force. This index is assumed to provide an indication of the travel "mobility" of the labour force in the CT (admittedly only by depicting the CT as an individual) and has been correlated with 1981 CT unemployment levels, travel-time distance from the CBD, and the proportion of the labour force in manufacturing production versus other occupations in an attempt to ascertain the possible effect of car ownership on the probability of being unemployed. Lower levels of carownership in CTs with high levels of unemployment or higher proportions of manufacturing production labour force members could indicate 1) a narrower spatial range of potential daily commuting journeys for manufacturing production workers, or, 2) an association between limited daily mobility and high unemployment.

This situation could be interpreted as presenting some link between mobility and the percentage of the labour force in manufacturing production, differences in unemployment rates and hence, the accessibility thesis in general. Although there are likely to be considerable interdependency problems between the variables correlated, associations between relevant indices would be an important aspect to consider throughout the overall assessment of the two hypotheses.

## 6. THE RELATIONSHIP BETWEEN CENSUS TRACT UNEMPLOYMENT RATES, TRAVEL TIME TO THE CBD, AND SOCIOECONOMIC CHARACTERISTICS OF THE CENSUS TRACT POPULATION

The primary purpose of this aspect of the research is to assess the influence of accessibility to employment demand locations and selected socioeconomic characteristics on the 1981 unemployment rates for Vancouver CMA census tracts. By the use of multiple regression analysis, the separation of the effects of spatial factors and labour force heterogeneity, in terms of social and economic characteristics, is

attempted.

There are two main elements of the regression analyses incorporating accessibility factors.

The first regression is performed on total unemployment rates from 1981 census tract data. The relevant accessibility index in this context is a travel time measure of access to employment demand which is assumed to be located predominantly within the core. The second section of the analysis is similar to the first regression but manufacturing production unemployment rates comprise the dependent variable and the appropriate accessibility index is split into two measures based on the travel time to manufacturing production employment demand locations dispersed throughout the urban area.

Hence, the second part of the urban research is a more direct test of the effect of job access on manufacturing production unemployment rates. A positive association would tend to support the contention that spatial factors (namely, the redistribution in the pattern of industrial employment demand) may be playing an important role in the unemployment probability of these workers. The multiple regression analysis of total unemployment rates constitutes a more general approach by investigating the overall effect of spatial factors (distance from the core) on total unemployment and by giving an indication of the influence of selected socioeconomic variables on the unemployment rate while controlling for potential spatial determinants (and vice versa).

The methodology for this analysis is similar to, but derived independently from that utilized by Joan Vipond (1984) in her multiple regression analysis on total unemployment differentials in Sydney, Australia. Both analyses have proceeded in the face of opposition by Holterman (1978) who has cautioned that correlation and regression analysis on percentage variables can provide little understanding of the processes that generate observed spatial patterns – particularly in view of the problems

of the "ecological fallacy".

The accessibility indices are based on a matrix of the shortest path auto travel times between all CMA census tracts. The inter-CT travel time matrix was derived by applying a shortest path algorithm to an available matrix of travel times between traffic nodes.[6] This network of nodal points, prepared by the Greater Vancouver Regional District Planning Department for use in transportation planning, was reduced to appropriate census tract centroids and the shortest path between representative nodes was determined to generate a reasonably accurate, 246 by 246 matrix of average, minimum-distance, auto travel-times between CTs.

If spatial variables (represented in the travel-time based accessibility indices) are important in determining the observed unemployment rates for CTs, a positive and significant relationship between the level of access and the unemployment rate (after controlling for socioeconomic heterogeneity) would be expected.

For the multiple regression analysis on total unemployment rates, all non-spatial variable measures are derived from the 1981 census social and economic characteristics data. The actual socioeconomic characteristics that were included in the analysis were selected (and transformed) from a fairly comprehensive range of all social and economic data available on the basis of estimated "logical" relevance (see the description of the original 18 variables correlated with total unemployment rates in TABLE 7.2) and from the resulting coefficients from applying Pearson's correlation test. The actual fifteen variables that were made eligible for introduction into the stepwise regression procedure were selected on the basis of either their strong correlation with the total unemployment rate dependent variable or their significance in previous research.[7] Although some of these variables did appear to be moderately inter-correlated, most did not present any logical grounds for combination with

---

[6]The shortest path algorithm was written and applied by Dr. K. Denike (UBC Geography) while the derivation of the form of the raw CT travel-time matrix is the principal work of Raymon Torchinsky (UBC Geography).
[7]For example, see Metcalf and Richardson (1976).

Table 7.2 Description of Major Personal Characteristic Variables and Coefficients from Correlation with the 1981 Total Unemployment Rate for each Census Tract (TOTUNRAT)

| Variable Name | Variable Description | Correlation Coefficient (with TOTUNRAT) | Included in Regression with TOTUNRAT |
|---|---|---|---|
| YUNG | % of labour force (L.F.) under 24 years of age | -.2101 ** | X |
| OLD | % of L.F. 45-65 years old | -.0426 | |
| LOWSCH | % of L.F. with less Gr.12 & no other qualifications | .5214 ** | X |
| PERSKILL | % of L.F. in prof.,tech., manag.,admin.,&rel. occup. | -.4090 ** | X |
| MARRIED | % of L.F. married | -.4791 ** | X |
| DEPEND | number of children/100 L.F. | -.2089 ** | X |
| PNCUSEUK | % not born in Canada,U.S., Europe or U.K. | .3031 ** | X |
| PASIABOR | % born in Asia | .3386 ** | |
| PMANPROD | % of total L.F. in manuf. production occupations | .3166 ** | X |
| PERSERV | % of total L.F. in service occupations | .5831 ** | X |
| CAROWN | number of cars/100 L.F. | -.5647 ** | X |
| POPINC | % population increase 1971 to 1981 | -.2251 ** | X |
| PEOLREP | % total dwellings "old and in need of repair" | .2122 ** | X |
| PEROOM | average number people per room | .3259 ** | X |
| PERDET | % of dwellings detached (non-apartment) | .2889 ** | |
| PERENT | % of dwellings rented | .4059 ** | X |
| AVALDW | average value of dwelling | -.2483 ** | X |
| PSINHO | % non-family one-person households | .4025 ** | X |

** = significant at less than .001
* = significant at less than .01

correlated variables and asssociations were generally insufficiently strong for the discarding of any variables. Variables with possible tautological relations with unemployment (for example, income) or those essentially identical in interpretation, were omitted.

The accessibility index used in the total unemployment rate multiple regression was simply the travel-time from each census tract to the centroid of the census tract in the heart of the CBD area of Vancouver (CT 59.01). Assuming the CBD is the sole source of employment is an obvious weakness of this analysis. The "core" CT, 59.01, contains only 11.8% of the CMA employment demand and even the total Burrard Peninsula and False Creek downtown area only accommodates a little over 34% of the total employment by place-of-work. [8]

The dependent variable is the total unemployment rate for each CT at the time of the census in 1981.

The second section of the multiple regression analysis is focused only on the unemployment rates of the manufacturing production labour force. As described, this rate was calculated by determining the difference between the experienced labour force and those actually employed in manufacturing production occupations and expressing the result as a percentage of the manufacturing production experienced labour force. The exclusion of "inexperienced" and longer-term unemployed and the small numbers of unemployed obtained for some census tracts connotes that this measure is far from an ideal estimation of the displaced manufacturing production workers. These problems are exacerbated by the sampling procedures (used in the construction of CT data) which would have a significant effect on the relatively small numbers involved. Nonetheless, this is the only measure of occupational unemployment available at the CT level. The

---

[8]This percentage of total CMA employment is still 2 percentage points higher than the job destination area, used by Bederman and Adams (1974) in the simple correlation study of access and underemployment in Atlanta, U.S.A.

data from Employment and Immigration Canada is at too great a scale to apply regression analysis - only thirteen areas are contained in the CMA.[9]

The socioeconomic variables incorporated were chosen in the same manner as for those in total unemployment analysis though some variables were obviously logically incompatible (for example, PMANPROD) and hence meaningless for interpretation via regression analysis.

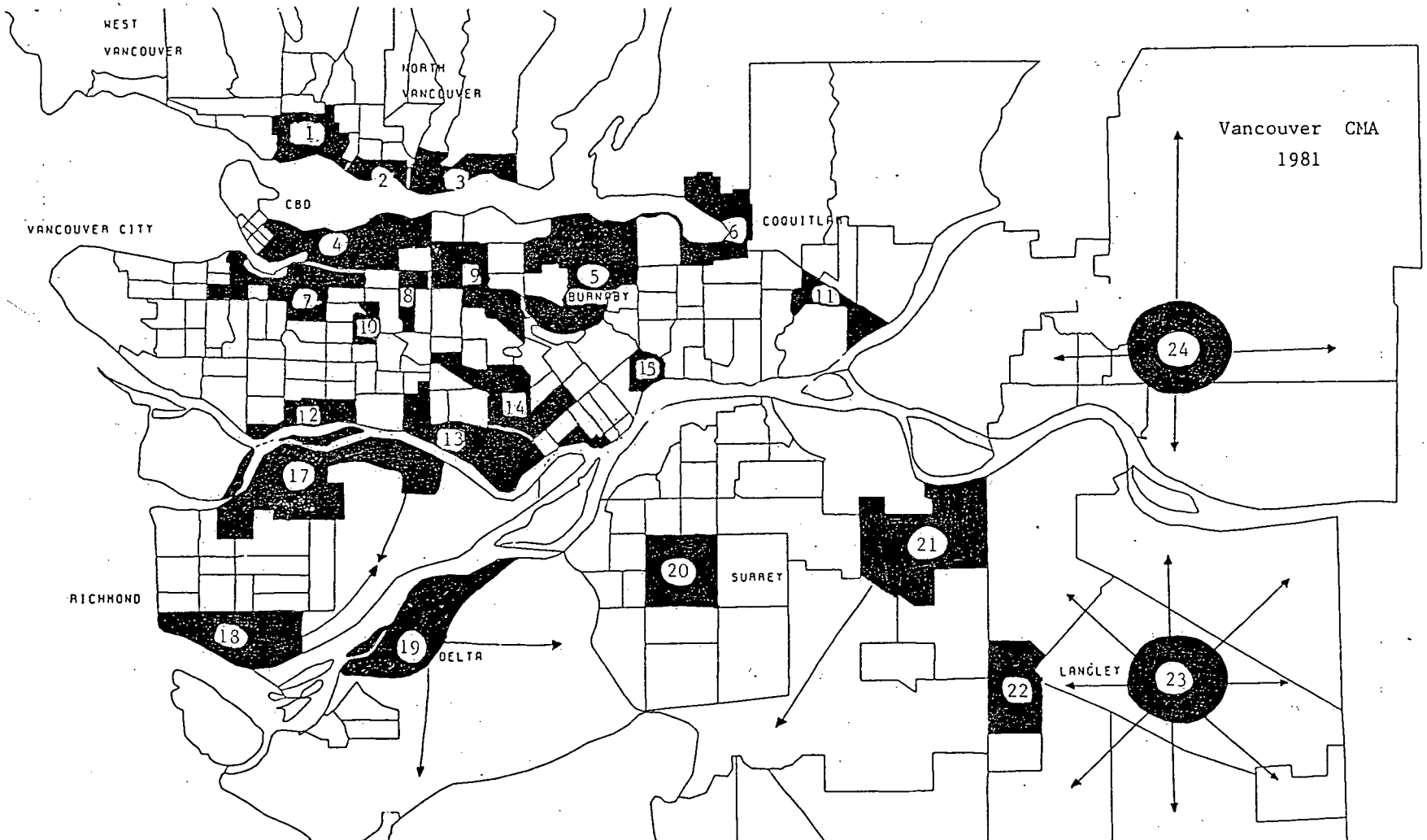
The derivation of accessibility indices for representing the spatial dislocation of CTs from manufacturing production employment is more sophisticated than that for the travel-time to core measures used in the total unemployment rate analysis.

The first step of the procedure was to compose a number of manufacturing production employment destination zones to contain the bulk of jobs available for production workers. The 24 resulting zones were determined by aggregating census tracts which collectively hold more than 80% of the CMA's manufacturing production jobs (see MAP 7.2)[10] The destination modes used to represent the centroid of each zone is shown (in MAP 7.2) with the approximate extent of constituent CT's shaded around this central point. Where census tracts are exceptionally large (notably in outer suburban areas), they have sometimes been split between two manufacturing production employment zones or, for purposes of visual clarity, the shading may not cover the entire area of their CT definitions.

A "central" CT was selected for each employment demand zone and the auto travel times from each CT to each of the 24 central CTs comprise the basis of the calculation of the two types of accessibility index. The two accessibility indices are intended to represent access to <u>new</u>, as well as existing, manufacturing employment demand by applying different weighting procedures to the raw travel-time matrix.

---

[9]U.I. statistics are available at postal code level but require special computer runs for compilation - an expensive procedure beyond departmental budgetary constraints.
[10]Manufacturing production employment data was obtained from place-of-work occupational statistics from the 1981 census.




Map 7.2 Major Manufacturing Production Employment Zones

(Contain 80 % of total CMA manufacturing prodn employment)

The first index is proposed as a measure of the average travel time to a manufacturing production (in all areas of the CMA). This proxy for accessibility to existing manufacturing jobs was calculated for each CT by summing the travel time to each demand destination zone weighted by the percentage of the total employment demand contained in that zone (see TABLE 7.3). Therefore, the form of the first accessibility index is:

$$A_{ij} = \sum \frac{TT_{ij} \cdot E_i}{57366}$$

where

$A_{1i}$ = accessibility to existing manufacturing employment demand for CT $i$

$TT_{ij}$ = auto travel time from CT $i$ to demand destination zone $j$

$E_j$ = manufacturing employment demand in CT $i$

57366 = total CMA manufacturing employment demand (in the selected zones) in 1981

The second accessibility index is constructed to measure the average travel time to new additions to the stock of employment demand over the 1971-81 period.[11] The index for each CT is determined by the summation of travel times to each zone,

---

[11]Manufacturing production employment changes at the municipality level were obtained from Statistics Canada's "Manufacturing Industries of Canada: Sub-Provicinal Areas" (31-209). The most recent summary available is for the year 1981.

Table 7.3 Employment Demand Zone CT Description and Weightings used for Accessibility Indice Calculation

| Employment Demand Zone Number | CT Composition | Weighting for Manuf. Production Employment Acess Index One (based on % of total CMA employ.) | Weighting for Manuf. Production Employment Acces Index Two (based on % of new CMA man. prod. employment) |
|---|---|---|---|
| 1 | 101.02, 102, 118 | 0.042 | 0.032 |
| 2 | 100.02 | 0.010 | 0.07 |
| 3 | 111.03, 111.01 | 0.023 | 0.018 |
| 4 | 53,55-58,59.01,59.02,66 | 0.210 | --- |
| 5 | 236, 243 | 0.038 | 0.005 |
| 6 | 260.02 | 0.013 | 0.03 |
| 7 | 31,38,39,41,48,49.01,50.01 | 0.106 | --- |
| 8 | 36.01, 52.01 | 0.016 | --- |
| 9 | 230.02, 239, 240 | 0.039 | 0.005 |
| 10 | 34 | 0.006 | --- |
| 11 | 290.02 | 0.014 | 0.09 |
| 12 | 3, 4, 5 | 0.058 | --- |
| 13 | 1, 220 | 0.026 | 0.003 |
| 14 | 222, 223, 225, 226.01 | 0.041 | 0.005 |
| 15 | 210 | 0.019 | --- |
| 16 | 192, 200, 202 | 0.045 | 0.11 |
| 17 | 148,150,151 (&one-half 140) | 0.123 | 0.20 |
| 18 | 141 (&one-half 140) | 0.037 | 0.06 |
| 19 | 161.01 | 0.036 | 0.073 |
| 20 | 185.02 | 0.021 | 0.05 |
| 21 | 182 | 0.015 | 0.04 |
| 22 | 503.01, 503.02 | 0.022 | 0.092 |
| 23 | 500-502, 504-506 | 0.014 | 0.046 |
| 24 | 401 - 404 | 0.026 | 0.06 |

weighted by the percentage of the total increase in employment demand accruing to the municipality containing each zone (see TABLE 7.3). Unfortunately, the municipality level is the only scale at which this data is available. Zones in municipalities which did not experience any manufacturing production employment growth over this period were deleted from the analysis (zones 4, 7, 8, 10, 12 and 15 in Vancouver City and New Westminster).

Thus, the accessibility index to newly created manufacturing production employment takes the form:

$$A_{2i} = \sum \frac{TT_{ij} \cdot E_m}{10\ 464}$$

where

$A_{2i}$ = accessibility to new manufacturing production demand 1971-81

$TT_{ij}$ = auto travel time from CT $i$ to demand destination zone $j$

$E_m$ = absolute growth in employment demand for the relevant municipality for CT $i$

10464 = increase in manufacturing production employment demand 1971-81.

The higher the value of the derived accessibility indices, the higher the average travel time to existing or new manufacturing production employment. In this sense, the indices are really inaccessibility measures and a positive relationship with unemployment

rates, after accounting for personal characteristic heterogeneity, could provide evidence of a link between the observed manufacturing unemployment rate and access to existing, or growth in, relevant employment demand. This would also apply for the accessibility index used in the multiple regressions with total, male and female unemployment rates.

Unless a positive and significant association exists between manufacturing employment demand access and unemployment rates for the CMA CTs (in particular, for manufacturing production occupations) there would be little support for the contention that decentralization may have disadvantaged manufacturing production workers in certain residential locations resulting in a spatially-derived pattern of unemployment differentials.

Because the manufacturing production unemployment figures derived from census data are rather dubious, the weighted travel-time indices are also regressed on the total unemployment rates to see if access to manufacturing demand can be linked to overall unemployment rates. The total unemployment rates are far more accurate than the occupation unemployment statistics and manufacturing production unemployment does constitute a significant part of the total. Hence, it is possible that access to manufacturing production employment may be contributing significantly to observed CT unemployment differentials.

## 7. CHARACTERISTICS OF THE UNEMPLOYED IN VANCOUVER CMA AND THE RELATIONSHIP BETWEEN SOCIOECONOMIC AND HOUSING CHARACTERISTICS OF THE LABOUR FORCE

Following the more direct tests of the two alternative hypotheses on the spatial variations in unemployment, the personal characteristics of the unemployed in the CMA as a whole are examined. This task is pursued on the assumption that knowledge of the nature of the mismatch between labour supply and demand may help in identifying the causes of spatial variations in unemployment rates and in ascertaining

the causes of unemployment in general in the study area.[12]

For the "supply-side" hypotheses, the personal characteristics of the unemployed are considered to present different unemployment probability levels for individuals and the residential concentration of those "more" likely to be unemployed is thought to result in the intra-urban pattern of unemployment rates. Strong correlation between personal characteristics and observed unemployment rates, with no evidence of a link between accessibility factors and unemployment rates, may indicate support for this hypothesis. However, there is a great deal of interdependence between the social and economic characteristics (for example, between income levels, occupational structure, skill and car ownership levels) and any inferences will be speculative. An investigation of possible links between personal and housing supply characteristics may also help provide at least tentative evidence for or against the supply-side thesis.

The analysis of personal characteristics of the unemployed in the CMA is focused primarily on occupational and skill aspects. As the occupational composition of unemployment is covered in earlier sections, this section shall emphasize the link between skill levels and the probability of unemployment. However, a range of other socioeconomic characteristics (all those used in the multiple regression analysis previously outlined) are examined briefly and related to Metcalf and Richardson's (1976) findings reviewed briefly in Chapter 4.

A relationship between low skill levels and high unemployment probability has been found in many other studies in different regions throughout the Western world and is a well-accepted tenet of neoclassical labour economic theory.[13]

The sources of data and methods used to investigate the personal characteristics of the unemployed and the associations between personal characteristics and the housing supply in Vancouver CMA context include:

---

[12]This assumption is rejected by Cheshire (1979)

[13]For example, see Addison J. and Siebert W. (1979, p.401); Deaton, R. (1983, p.16); Elias P., & Keogh G. (1982, p.29); Fleisher B. & Kneisner, T. (1984, p.466); Sinfield, A. (1976, p.222); Thrift, N. (1979, p.127); Wolfbein, S. (1976, p.83)

1. "Personal User Summary Tapes" of 1981 census data for the Vancouver CMA. This part of the research involves the crosstabulation of labour force activity, personal and housing characteristics of one in fifty of all individuals surveyed in the 1981 census.
2. A correlation of aggregated individual characteristics to compare the unemployment and housing characteristics of each CT with skill and other socioeconomic factor composition of these census tracts. This data is also based on the 1981 census.
3. A multiple regression similar to the one described in 7.A.6 but without the spatial variables. Personal and housing characteristics of CTs are regressed on total, female and male unemployment rates.
4. A comparison of maps of the 1981 CT distribution of skill levels and housing characteristics.

These analyses should help to indicate the major characteristics of the unemployed in the CMA, the relationship between housing, unemployment and personal characteristics, and hence provide supplementary data for evaluating the two alternative hypotheses. Unfortunately, an analysis of unemployment after 1981 is restricted to the occupational data offered in the U.I. claimant statistics. However, evidence of links between skill and occupation levels of the labour force, from the 1981-based analysis, may help identify the nature of unemployment changes in the CMA in the more recent post-1981 period.

## 8. COMPARISON OF CMA AND BRITISH COLUMBIAN UNEMPLOYMENT LEVELS FOR OCCUPATIONS

The final section of the urban analysis actually extends beyond the CMA to the B.C. regional level where the absolute occupational unemployment trends are examined over the period 1975 to 1984. The labour force and employed labour force figures for each occupation are drawn from Statistics Canada's "Labour Force Survey: Annual Averages" (71-529).

A regional perspective on the trends in the absolute level of unemployment, defined by the gap between labour supply and labour demand, is adopted for two reasons.[14]

Firstly, the nature of the mismatch between supply and demand, for the region surrounding and including the CMA, will illustrate to what extent intra-regional geographic mobility of the metropolitan labour force would aid in alleviating unemployment problems. The identification of excess demand for labour in all or some occupations in the CMA's regional hinterland would enable relocation policies and incentives to relieve the central area problems.

Secondly, this geographic level is the only scale for which reasonably accurate measures of employment demand (or at least employed labour force) and available labour supply (total labour force) can be obtained for the standard two-digit occupational classification. Therefore, a comparison of the relationship between absolute levels of supply and demand will help to give some idea of the existence of occupational-structural unemployment in the province and hence the potential for changes in occupational status to reduce overall unemployment levels. Considerable variation in the "gaps" between supply and demand, with little difference in some

---

[14]The "employment demand" figures are assumed as equivalent to the number of people employed (and hence exclude existing vacancies). The difference between labour supply and demand would be composed of all types of unemployment. The level of employment demand actually required would be higher than depicted due to unfilled vacancies from frictional and structural barriers. However, for the purposes of this discussion, the level of frictional and structural components of unemployment (as in the "natural rate of unemployment") is assumed to have remained fairly constant since 1975. Therefore, the increasing gap between supply and demand is primarily attributed to other sources.

occupations and wider disparities in others, could indicate that enhanced occupational mobility (probably combined with geographic mobility improvements) may play a significant role in ameliorating unemployment.

Although CMA level data would be required to complete a more accurate assessment of the separate influence of geographic and occupational mismatch and constraints impeding an "equilibrium" labour market outcome for the metropolitan area, the data analysis undertaken at the regional level does provide some evidence on the possible effectiveness of facilitating both geographic and occupational mobility in reducing unemployment in the CMA and province. Migration and job-training are often proposed as the appropriate means for dealing with the unemployment problem and this analysis may help explore their potential efficacy in the B.C. context. Filtering out the effects of occupational and geographic structural unemployment in the province may give some indication of the influence of other sources of unemployment. Trends in the relationship between supply and demand observed for each occupational group, and data obtained on the association between occupation and other personal characteristics (such as skill levels), will provide further substantive material for discussion of the changing nature of unemployment in the CMA study area and the region in general.

## B. THE REGIONAL ANALYSIS OF SPATIAL AND STRUCTURAL CHANGES IN MANUFACTURING PRODUCTION ACTIVITY EMPLOYMENT DEMAND

The second major aspect of the empirical portion of the analysis is an exploratory investigation of the predominant trends in manufacturing production employment in B.C. As described previously, a focus on the manufacturing production sector is considered worthwhile because:

1. Those in manufacturing production occupations comprise a significant portion of the total unemployed labour force (approximately 25% at the

CMA level)(see Chapter 8).

2. Formidable data availability constraints exist for other economic sectors and there is a considerable body of previous research and theory pertaining to the industrial sector.

3. The importance of this sector (though contentious) as a basic economic activity for the economic "health" of the region.

4. To test the relevance of some of the radical theory propositions on the restructuring of the capitalist production system in the B.C. context. The synthesis of recent theory and research in this field provides the basis for the structure of research undertaken. To avoid undue repetition, the link between the tests completed and the relevant Marxian-based literature will not be reiterated in this section.

5. To aid discussion on the likely future form of the market for manufacturing production labour in B.C. and the Vancouver CMA, and hence the developments possible in the quantitative and qualitative characteristics of the study area's unemployed labour force.

At this stage of the analysis, consideration of changing labour supply characteristics is severely delimited due to resource constraints and, as a result, any conclusions remain highly tentative. In addition, the source of data for manufacturing production employment demand statistics (Statistics Canada's "Manufacturing Industries of Canada: Sub-Provincial Areas" 31-209) is only available up to 1981, a year which brought to a close a period of considerable and sustained growth in manufacturing production output since at least the mid-1960's. Faltering output and employment demand has only really occurred since the 1980's and, given the data availability limitations, it is not possible to identify and measure the more recent consequences of pressures for restructuring on the B.C. industrial sector.

This regional case study is broken into a general overview of aggregate changes and a more disaggregated review of the structural changes occurring in B.C. manufacturing production activity over the 1970's.

## 1. GENERAL TRENDS IN THE SPATIAL AND ORGANIZATIONAL STRUCTURE OF INDUSTRY IN B.C.

The initial part of this section of the research is a description of the aggregate characteristics and trends in industrial activity in the province over the period 1965–81 to trace changes in employment, output (assumed as a proxy for aggregate demand), productivity and capital–intensification patterns in B.C.. The changing importance of the industrial sector in the B.C. economy shall also be monitored to assess to what extent B.C. may be considered as undergoing a process of deindustrialization (in its many contextual meanings) throughout this sixteen year period. These changes are assumed to be relevant to the labour market opportunities of a substantial part of the unemployed labour force in the province.

The trends in manufacturing production activities in the province are monitored at three spatial scales (the "core", metropolitan and overall provincial areas) in order to assess the spatial ramifications and differential effects of the dominant processes at work and to help identify the nature of these processes. The "core" area is arbitrarily defined as the aggregation of Vancouver City, Burnaby, New Westminster, and North Vancouver City and D.M. on the basis of the concentration of the bulk of manufacturing production employment and output in these municipalities during the 1950's (see Chapter 5) and their proximate location *vis-a-vis* the CBD of the Vancouver CMA. The "metropolitan" area is equivalent to the entire CMA (core area and outer suburban municipalities) while the regional area is simply the total B.C. setting (including the CMA).[15] It should be noted that this classification is quite

---

[15]Victoria CMA is not included in the "metropolitan" definition for analytic simplicity – particularly in view of undercapacity distortions on value–added figures for 1981.

different from the three separate areas used for the basis of discussion in the disaggregated analysis.

There are a number of weaknesses to be recognized in the approach taken for this specific section of the research.

Firstly, because of the inclusion of the smaller areas as the spatial scale is increased, the outer suburban area alone cannot be compared to the nonmetropolitan area. Secondly, comparisons based on the aggregation of industry figures can be misleading and make interpretation extremely difficult in the light of widely disparate industry mixes at the three spatial scales. The second section of the regional study focuses specifically on two-digit industry classes for enhanced comparability. A third problem stems from the relatively short length of the study period which prevents a clear identification of long-term structural changes as opposed to "temporary" cyclical fluctuations in the industrial sector - such as short-term movements in output and employment. A final related problem is the pervasive use of the "value-added" concept as an aggregate demand measure, and in the calculation of other indices such as capital-intensity and productivity levels. Value-added in production is not an ideal representation of utilized and fixed capital. Undercapacity, in particular periods and areas (for example, in the Vancouver Island Economic Region in 1981), can give very distorted results to measures based on the value-added statistics.

Aggregate demand (value-added), employment growth (in person-hours and number of production workers), derived productivity and capital-intensity levels, and hourly wage level trends are described and compared for the three spatial scales.[16]

---

[15](cont'd) This CMA has less than 10% of the employment and output activity of the mainland CMA.

[16]The productivity measure utilized is simply the commonly accepted measure derived from dividing value-added by the number of man hours. However, the value-added measure includes wages and, to derive the capital-intensity index, "wages paid" have to be subtracted from value-added statistics before division by the number of man hours. This is the best measure possible with available data and has been elicited from Aberg,Y.(1973).

## 2. A MORE DETAILED LOOK AT STRUCTURAL CHANGES AND TESTING THE RELEVANCE OF RADICAL THEORY IN THE B.C. CONTEXT

The second part of the review of some major aspects of the structural and organizational characteristics of B.C. manufacturing activity (examined spatially) serves a dual purpose. Firstly, more detailed examination of the changing attributes of industry, often disaggregated to the two-digit standard industrial classification, augments the earlier description of broad output and employment changes at the three areal levels. The spatial perspective adopted throughout also involves a revised definition of the three major comparative geostatistical units (described in more detail in subsequent discussion). The principal objective of the direct description of trends is to help evaluate the possible ramifications of such changes in the nature and location of employment demand on geographically-based labour markets - particularly over the next decade or two in B.C.[17]

The other principal goal of this synopsis is to attempt to relate the description of spatial and structural change in the province to the explanations posited by neoclassical, and primarily, the radical theorists. The loosely-unified "radical" school (reviewed in Chapter 6) has probably constituted the most prolific source of recently published geographical literature on the theoretical, and to a lesser extent empirical, issues involving the role of labour in the restructuring of industry.

Thus, B.C. manufacturing statistical data is utilized as evidence for assessing the applicability of processes postulated as influential in the restructuring of industry. Ideally, identification of such processes could help to suggest at least the "demand" side causes of unemployment among relevant occupational strata and possible scenarios faced by the manufacturing production and low-skilled worker in B.C. Unfortunately, comparative unemployment characteristics, in the three area types, have <u>not</u> been

---

[17]Unfortunately, there is an inherent weakness in this part of the research because study area units do not actually represent local labour markets (an extremely difficult concept to operationalize as described in Chapter 3).

examined, so the present and anticipated effect of spatial and structural change in industry upon unemployment cannot be inferred with any certainty. A more reliable analysis, with a necessary resolution on local labour markets and corresponding fine detail on contiguous area labour supply and demand characteristics and changes (together with an ominiscient and presageful sense of the world economy) could not even be considered due to obvious data, time and resource constraints.

The overriding objective - to identify industry spatial, and organizational, structural outcomes and patterns as evidence of predominant processes - is only intended as exploratory in nature. However, this is considered preferable to unconstrained abstraction and theorizing.

a. Methodological problems

There are a few major limitations of the simple time-series approach adopted that will unavoidably detract from the interpretation of empirical findings. The study period 1971-81, the only years for which all data dimensions of the analysis are available, presents some formidable drawbacks.[18]

Firstly, 1971 is a very late base year from which to examine trends and changes to help understand underlying processes (for example, decentralization of industry has been occurring since well before 1971). In addition, an analysis focused on such a short time period makes it extremely difficult to establish, generalize, or predict longer-term trends. Cyclical effects may well be indiscernible over such a short interval. This problem is exacerbated by the comparison of only two points in time to identify trends. Assumed consistency in the interim period between the two sample years could well mask cyclical aberrations and grossly distort trends or changes described simply by interpolating between the data years.

---

[18]Note that his period is shorter than the 1965-81 interval used in the general description of trends in manufacturing production activity.

Related to this problem, the 1970's were, for the most part, a "boom" period for the province bringing near full capacity utilization and sustained growth in most industrial sectors. The absence of data beyond 1981 forecloses any assessment of the effect of the recession years of the 1980's on the restructuring of industry (probably quite a different response from the boom period of high rates of return to capital and demand for provincial product).

The aggregated nature of the data presents the usual difficulties of incomparability resulting from finer variations in industry mix and invites unsubstantiated generalization in the place of explanations and trends which can only really be understood at micro-levels (such as the individual firm or very fine industry classification levels).

In addition, many important measures are simply not available and inferential statistical techniques have not been used to assist in specifying the "certainty" of postulated associations. This is primarily a result of the limited number of years and cases examined.

One final caveat, that pervades the entire analysis, is that many of the processes proposed by theorists (even within similar schools of thought) are off-setting in terms of the outcome or predicted trend. For example, attempts at establishing whether or not relative decentralization is occurring in low wage areas becomes extremely problematic when the possible recursive effect of increased demand for labour, on wages, is considered.

b. Choice of comparative spatial areas in B.C.

Selection of workable spatial units, for comparison and identification of differential characteristics and trends in industrial spatial structure and organization, has resulted from a compromise between resource and data availability and the amalgamation of previous theoretical and empirical work in the field. The concept of a spatial core-periphery classification (perhaps

overstressed and attributed deterministic power by the more dogmatic, functionalist Marxist geographers guilty of "reifying" space (Browett, J. (1984) p.168)) has roughly equivalent translations in most schools of geographic thought.[19] The basic dichotomy can be applied at many spatial scales, from the intra-urban to the international and suitability is usually dependent upon the delineated study area. For instance, the "periphery" can refer to either metropolitan suburbs, nonmetropolitan urban areas, rural areas of the developed world or "developing" or Third World nations.

Given the regional focus of this analysis (which may in fact delimit the extent of the appropriate context for tracing predominant processes acting on the study area), the province has been split into core and periphery areas on the basis of a reconciliation of existing definitions of this division at the sub-national scale. The metropolitan Vancouver area has been divided into its own core and periphery areas (inner versus outer suburbs) in line with most existing urban geographical theory.

G. Norcliffe (1984, p.26) proposes four geographic levels as being appropriate for studying regional change in the spatial structure of industry - 1) the inner city, 2) the suburbs, 3) nonmetropolitan areas (NMAs) which are highly accessible to metropolitan areas and, beyond the NMAs, 4) the peripheral areas. However, it is difficult to extract any consensus from existing literature on the optimal spatial categories for use at geographic scales larger than the urban area. For the purposes of simplicity and in the light of data and conceptual problems in splitting "nonmetropolitan" from more "peripheral" areas, the non-CMA portion of the province has been bundled together under the "nonmetropolitan" classification.

---

[19]However, with widely disparate attributed roles to core versus peripheral areas.

This aggregation is not meant to imply the inconsequence of the classification method used to divide the study area into three regions. Although necessarily somewhat generalized and arbitrary, the *a priori* assumption underlying the construction of the area categories is one of considerable internal homogeneity of those characteristics ("factors of production") which are important for decisions on locational, organizational and technical changes in industry.

In addition, a comparison of results with other regional or urban studies would require at least an implicit acceptance of the comparability and generalizability of the defined spatial units which provide the basis of this part of the research. Unfortunately, the choice of areas has had to be delimited by research and data resource constraints and is somewhat intuitive in nature being based on preconceptions, experience, and previous research concerning the internal homogeneity of relevant characteristics.

The "core" area, defined as the aggregation of the municipalities of Vancouver City, Burnaby, New Westminster, and North Vancouver (City and D.M.) is equivalent to the core area for the more general discussion and has been selected for similar reasons. Burnaby and North Vancouver (D.M.) are probably the most contentious members for inclusion but have been incorporated on accessibility criteria (mainly to the CBD) and as a result of data constraints.

The "suburban" area is comprised of the outer suburban metropolitan municipalities of Richmond, Surrey, Delta, Langley City and D.M., Port Coquitlam, Coquitlam, Port Moody and Maple Ridge. Due to confidentiality restrictions manufacturing data from Coquitlam, Pitt Meadows and West Vancouver is not published and these municipalities have necessarily been excluded from the calculation of "suburban" area statistics. The principal common characteristic of these areas is their relatively accessible location to the

core market distribution centres (but further removed than the "core" areas) and the cheaper land costs at these locations. They comprise the balance of the Vancouver CMA. As stated, the division is arbitrary and other factors, such as differential municipal taxes and industrial park policy have been ignored for the sake of simplicity.

The "nonmetropolitan" B.C. area covers the balance of the province with the major exception of Economic Region Six ("Vancouver Island - Coast"). The presence of a large metropolitan area, undercapacity problems in industry over the study time period, and the relative geographic separation of Vancouver Island have been considered as constituting sufficient criteria for its deletion from the nonmetropolitan category.

The aggregation of urban and rural nonmetropolitan areas will reduce the validity of any internal homogeneity assumptions due to different wage and labour availability characteristics likely to be found in the two area types. However, due to data and resource constraints, and in view of the probability that most of the B.C. nonmetropolitan industry is associated with urban areas or municipalities, the category has been accepted as useful for the purposes at hand.

In examining the changing characteristics of industrial activity in each spatial unit, the "migration problem" continues to plague any meaningful interpretation of two "snapshot" sets of aggregated data. Changes in labour force or industry characteristics from *in-situ* transformations cannot be isolated from the in- or out-migration of labour or productive capacity.

The research findings have been presented in a similar structure to the review of the radical theories (in Chapter 6) for the sake of logical consistency.

c. The format of the disaggregated analysis

Changes in capital-intensity levels over the 1971 to 1981 period are examined and compared for all industries and for specific two-digit manufacturing classifications in each of the three study areas. Relative increases in the capital-labour ratio are related to the level of unionization (in 1971 and 1981) in both the manufacturing production and total occupation labour force to test the possible influence of the organizational power of labour on the rate of the process of capital substitution and, in turn, the possible influence of capital-intensification on unionization levels. Of course, the general nature of the analysis would only reveal associations at best and causal links could only be suggested.

The only data readily available on geographic variations in unionization levels within the province is the annual report of basic statistics compiled by Statistics Canada from information provided by unions according to the "Corporations and Labour Unions Act"(71-202S). As membership data is presented at metropolitan and provincial levels, total workforce unionization at the CMA and (approximate) nonmetropolitan levels can be calculated with relative accuracy. However, there are considerable problems faced in attempting to isolate manufacturing production unionization ratios from statistics on unions which are not necessarily occupation-specific. In order to obtain a reasonable level of reliability in representation figures, a "blue-collar" unionization index was estimated - selecting all unions with a strong majority membership of primary, manufacturing production, transport or construction occupation workers. The total and "blue-collar" membership figures are compared as a percentage of the appropriate occupational labour force totals derived from the 1971 and 1981 censuses. Actual employed labour force figures would probably have been superior to the total labour force numbers (employed and unemployed) but

these statistics were not readily available for the CMA in 1971. 1970 was used as the unionization level data base for the earlier year because 1971 data was not available.

Economic Region Six ("Vancouver Island - Coast"), excluded in the nonmetropolitan area manufacturing production statistics used throughout this section, is necessarily included in the nonmetropolitan definition for the unionization research.

The relationship between wage rates and capital-intensity changes is also briefly examined to attempt to identify any systematic pattern or association between the cost of labour and the rate of increase the capital-labour ratio. Although high costs of labour may be perceived as encouraging greater levels of capital-intensification, capital-intensification in turn may suppress wage increases by decreasing the relative demand for labour (assuming output increases are insufficent to offset displaced labour).

An expected positive association between unionization levels and wage rates, and changes in wage rates (both absolute and relative), are evaluated and some attempt is made to ascertain whether deskilling has accompanied capital-intensification. However, as there is no real labour supply analysis incorporated in the research, any conclusions with regard to deskilling are highly tenuous.

Other associations investigated to determine the nature of structural change and to provide some evidence of the radical theorists hypotheses in the three arbitrarily-selected regions of the province include:

1. The relationship between capital-intensification within an industry and the rate of decentralization from the core area. A positive association is

expected as growth in peripheral (non-core) areas has been proposed as more capital-intensive in nature. The suburban and nonmetropolitan levels are compared to the core.

2. The tendency for growth in output and employment in manufacturing production activity to be greater in cheap labour (wage) areas. Labour-intensive industries, in particular, are considered to be attracted to cheap labour locations.

3. The relationship between the size of aggregated industry manufacturing production plants (assumed as increasing with capital intensity) and distance from the core area. Once again, this is primarily an attempt at isolating different trends in the capital-intensification process in each area. The relationship examined involves a comparison of plant size (employment and output) in the three areas and does not actually include a direct distance measure.

Finally, the link between employment growth and the level of unionization in each of the three areas is explored to provide a preliminary test of the "bilateral relations" explanations of the decentralization of industry as it applies in the B.C. context.

The precursory review of the nature and direction of structural changes and possible associations with the cost and organizational level of labour may help to suggest the underlying contributing causes of manufacturing production unemployment in the province and the nature of future changes and outcomes in the market for this type of labour.

Chapter VIII

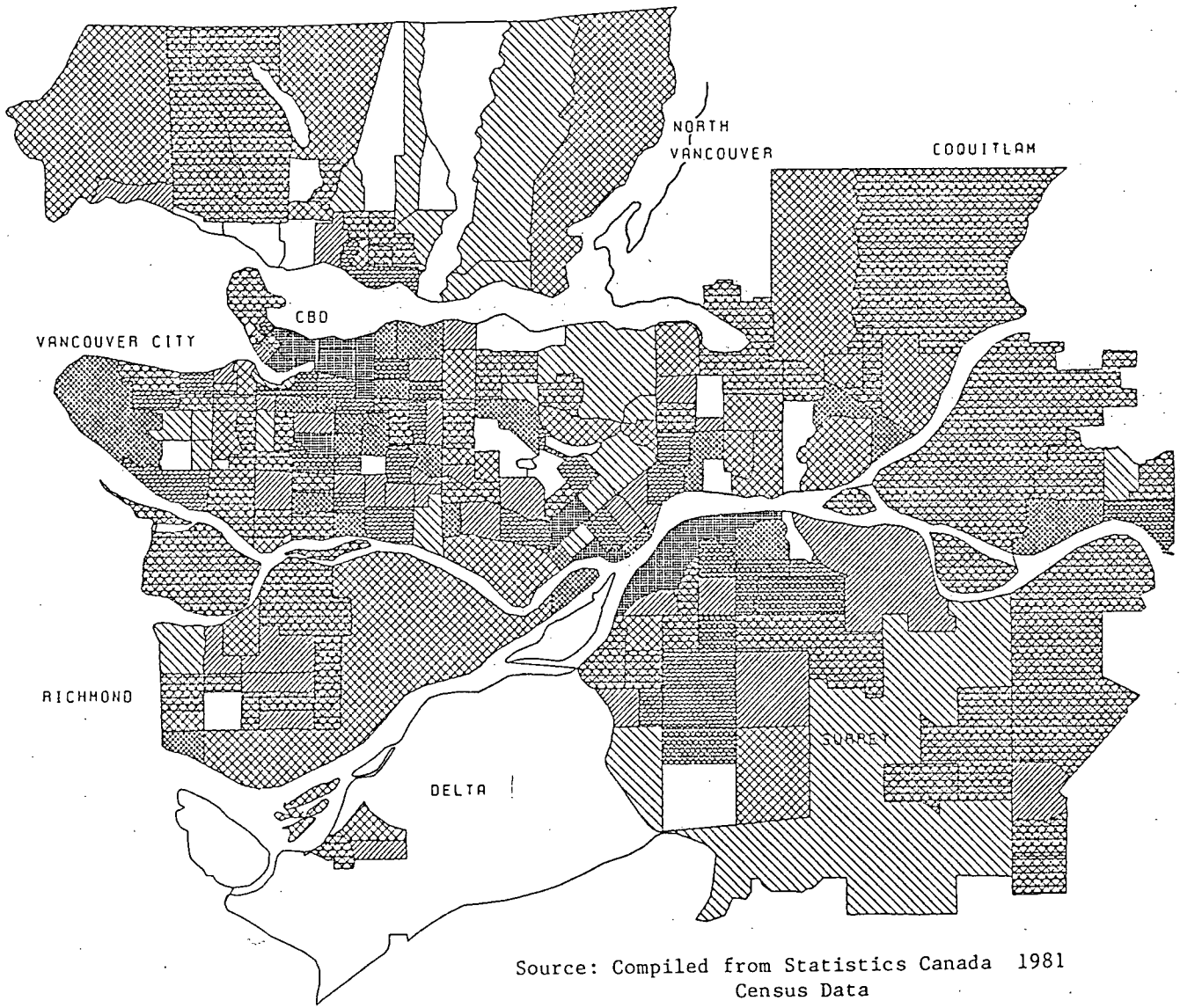
# RESULTS OF THE URBAN ANALYSIS OF UNEMPLOYMENT

## A. UNEMPLOYMENT IN VANCOUVER CMA 1981

The relatively low CT unemployment rates of 1981 have been plotted on a Vancouver CMA base map to illustrate the geographic distribution of total unemployment rate levels by place of residence (see MAP 8.1). Although there are CTs with high unemployment rates dispersed throughout the outer suburban areas, there does appear to be a discernable concentration of high 1981 unemployment rates in and around the "inner city" area (close to the CBD), the east side of the core municipality of Vancouver City, and in the older commercial and industrial city of New Westminster. The only non-central area with significant portions of areas of high unemployment is the municipality of Surrey - particularly in those areas near the waterfront industrial areas. West Vancouver, North Vancouver City and D.M., Burnaby, and Coquitlam are clearly areas of low unemployment.

Although the dependence on CT data units (which vary in area) detracts from the direct comparability of actual unemployment rates in all parts of the CMA, the inner areas do appear to have far higher unemployment rates than the average rate for the CMA in 1981 (5.1% of the labour force). Higher inner city unemployment is a fairly common phenomenon in the U.K. and U.S. and has been an integral part of the theory, research, and policy on inner city problems (Thrift, N. (1979) p.166-167). Male unemployment levels have also been found to decline with distance from the CBD in the Australian setting (Vipond, J. (1980) p.136) and in the Canadian context, a concentration of high unemployment areas in the inner city areas of Montreal and Toronto can be discerned in 1981 (Statistics Canada (1981b)).

A simple Pearson's correlation between the total unemployment rate of each CT and its travel time from the CBD does yield a significant and negative coefficient




Source: Compiled from Statistics Canada 1981
Census Data

Map 8.1

VANCOUVER CMA

1981 UNEMPLOYMENT RATE

| | | | |
|---|---|---|---|
| 9.0 | TO | 21.7 | % |
| 7.4 | TO | 8.9 | % |
| 6.4 | TO | 7.3 | % |
| 5.8 | TO | 6.3 | % |
| 5.1 | TO | 5.7 | % |
| 4.1 | TO | 5.0 | % |
| 3.6 | TO | 4.0 | % |
| 3.0 | TO | 3.5 | % |
| LESS THAN | | 3.0 | % |

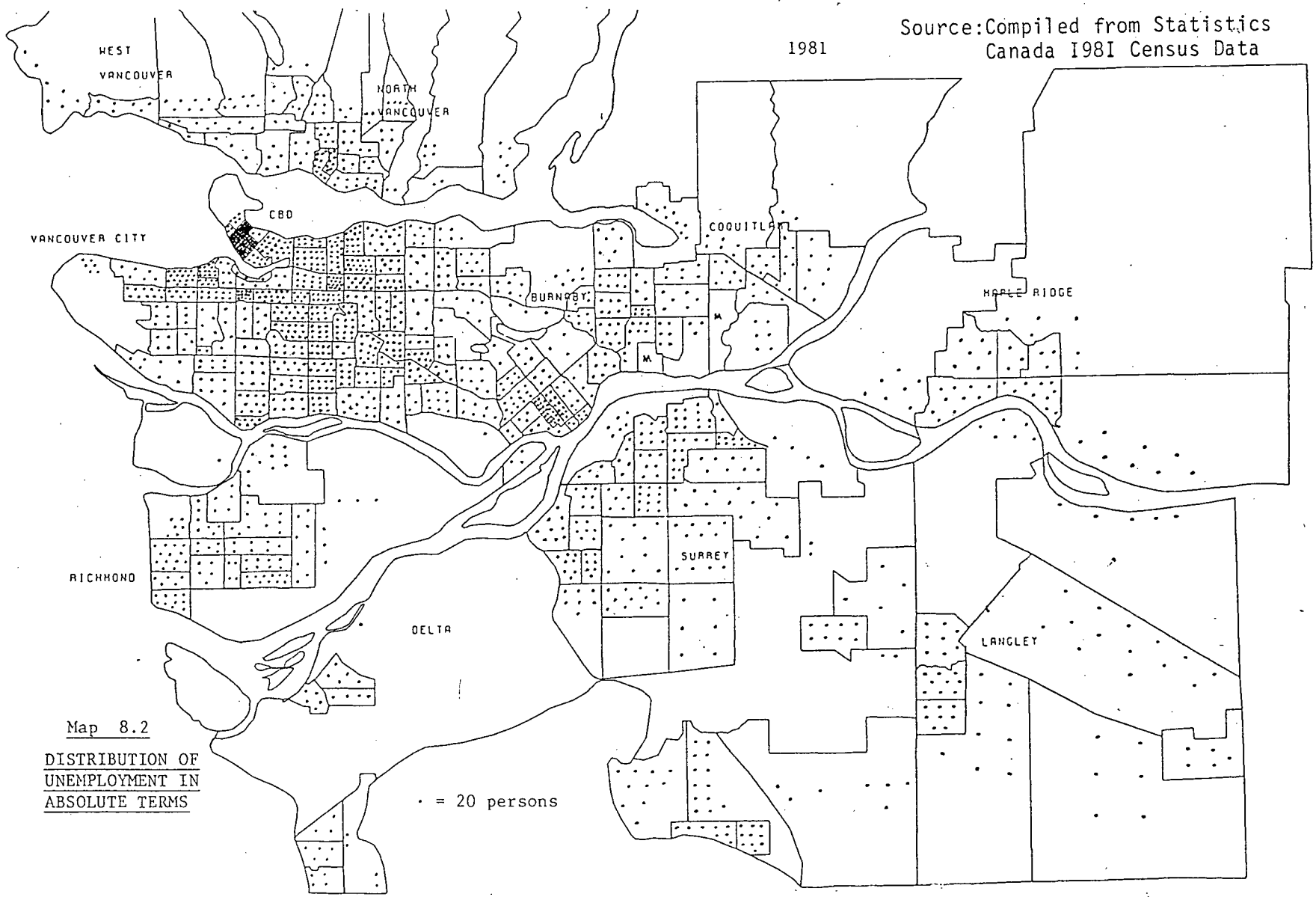
(-0.1973) indicating an overall inverse relationship between the two variables. However, the absolute value of the coefficient is very low and this statistic does not irrevocably verify the existence of a distinct negative unemployment gradient from the core area. There are many exceptions to a direct inverse relationship, particularly when high unemployment concentrations in the New Westminster (which could be considered as a core area in many respects) and Surrey areas are noted. However, the "inner area", east of and south of the CBD, is obviously a region of exceptionally high unemployment levels according to the 1981 census stock data.

In order to check that the observed higher unemployment rates are not simply the consequence of high turnover levels, the average duration of unemployment for U.I. claimants (of those currently on claim at the date of the survey) was compared in inner and outer areas.[1] For 1980, the average number of weeks on U.I. in the inner CECs of Tenth Avenue, East Hastings and Hastings Street was 11.4 weeks while the "outer" Richmond CEC (containing both Richmond and Delta municipalities) had an average U.I. duration of 12.4 weeks. By 1984, the average durations for these two representative areas was almost identical (at 16 weeks). Hence, there is little evidence, at this fairly general geographic scale of analysis, of significant differences in the duration of unemployment which could act to distort the observed pattern of unemployment rate differentials based on stock figures. The high unemployment rates of the inner area would reflect a higher propensity for sustained unemployment amongst labour force members in this area.

The distribution of absolute unemployment (also by residence) corroborates the pattern found for the unemployment rates of CTs (see MAP 8.2). Obviously, population density will heavily influence the number of unemployed in any particular CT. However, the location of absolute unemployment levels indicates the residential location of the quantitative pool of the unemployed. This aspect is important for identifying

---

[1]A more detailed explanation of the duration comparison is provided in Chapter 7.




Map 8.2

DISTRIBUTION OF UNEMPLOYMENT IN ABSOLUTE TERMS

the "size" of the problem in each area and helps offset the inadequacies of a sole focus on relative rates of unemployment. A tendency for higher population density in the inner areas and old core areas (New Westminster) has resulted in the apparent concomitance of high absolute levels of unemployment in CTs with high unemployment rates.

The occupational breakdown of U.I. recipients in September of 1980 illustrates the relative importance of each occupational type as a portion of the total unemployment pool and the various probabilities of unemployment at the time roughly equivalent to the 1981 census year (see FIGURE 8.1). An identical breakdown for 1984 is useful for a comparison and monitoring of the effects of the recessionary years on the size and composition of the unemployment pool.

The highest rate of unemployment is to be found amongst the occupations (in the favourable economic growth year of 1981) is that for the primary occupations (7.0%).[2] Manufacturing production and service occupations had rates between 6.0% and 7.0%, service occupations 5.5%, and all others had below 4% of their relevant labour force unemployed. Of the "pool" of unemployed, the largest portion consists of manufacturing production workers (25%) followed by clerical (21.8%), service (13.9%), technical, administrative, professional and related (13.7%) and construction workers (10.9%). Hence, even in the relatively low unemployment conditions of 1980, manufacturing production occupations constitute a significant proportion of the total unemployed labour force and have the second highest unemployment rate and a specific focus on this group, in Chapter 9, is at least partly justified on these grounds.

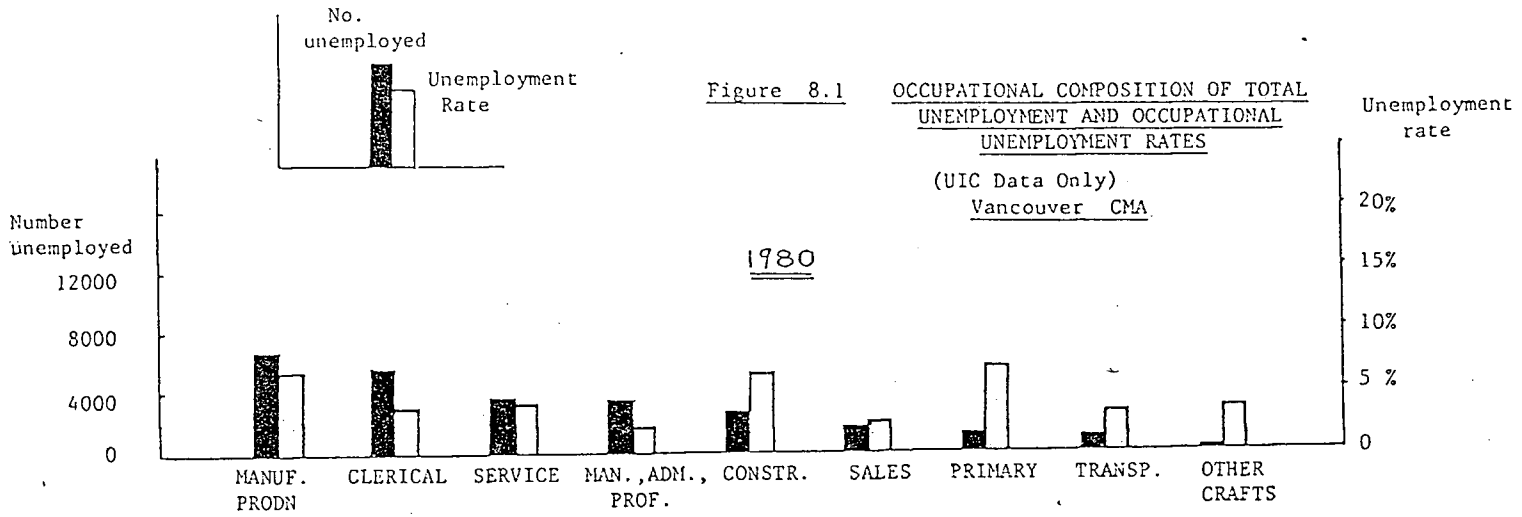
Absolute levels of unemployment grew by a staggering 230% in Vancouver CMA over the 1980–84 period. The occupational sectors suffering the most adverse effects of B.C.'s economic 'crisis' of the 1980's have been the construction and

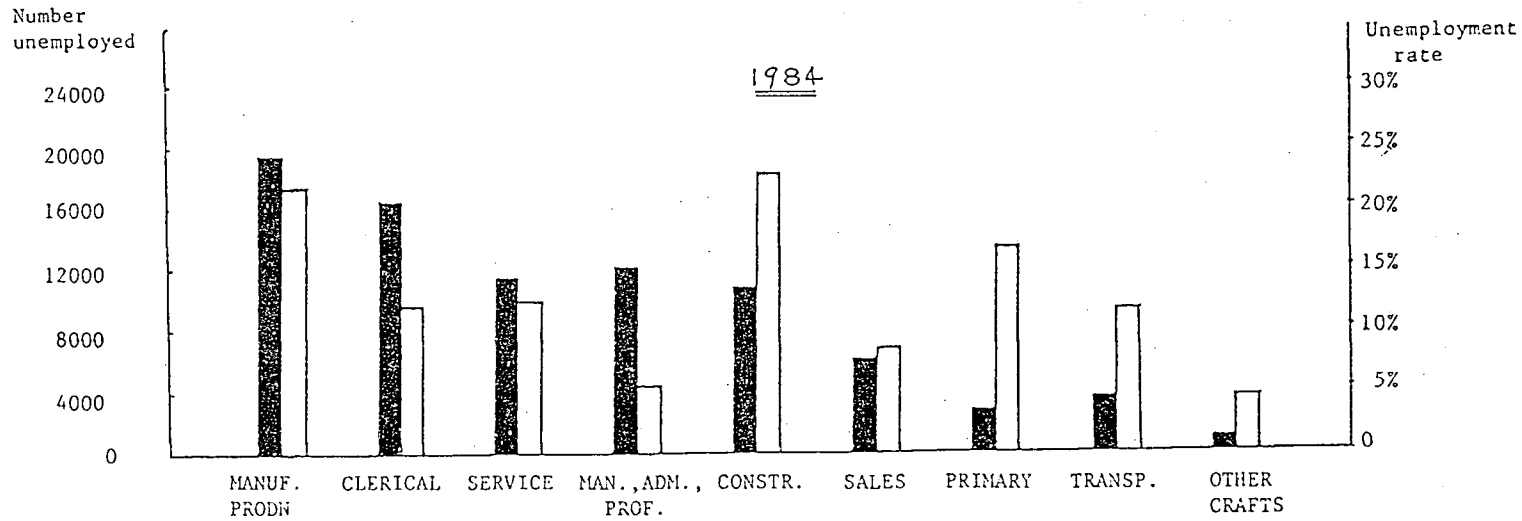
---

[2]Note that this index is derived by dividing the number of U.I. claimants by the estimated relevant labour force figures. Hence, the unemployed who do not receive U.I. are excluded.

Figure 8.1 OCCUPATIONAL COMPOSITION OF TOTAL UNEMPLOYMENT AND OCCUPATIONAL UNEMPLOYMENT RATES

(UIC Data Only)
Vancouver CMA




Source: Compiled from Claimant Statistics VP8040 Employment and Immigration Canada

manufacturing production occupations and, to a lesser extent, the service, clerical and sales occupations. The construction industry plummeted over this period and the (U.I.-based) unemployment rate rose by 16.1 percentage points (from 6.7% to 22.3%). This was the highest unemployment rate in any of the occupations for September 1984 and the absolute quantity of unemployed construction workers increased from under 11% of the total unemployed labour force (729) to 13% (10,643).

Manufacturing prodution occupations continued to account for approximately one-quarter of the total unemployment pool during this period and suffered a marked increase in the unemployment rate - up 14.7 percentage points to 21.9%. These two occupational groups (manufacturing production and construction) had by far the largest rate increases. Clerical, sales, service, primary and transport occupational unemployment rates all increased by somewhere between 5.5 and 8.5 percentage points while the professional occupations unemployment rate increased by only 3.1 percentage points. Although the professional occupational categories have retained a relatively low rate of unemployment (5.2%) amidst the massive redundancies in other occupational groups in 1984, the sum total of its unemployed labour force did comprise over 14% of the CMA unemployment total. 8337 "professional" workers (an increase of 230% - the CMA average) were added to the unemployment pool between September 1980 and September 1984.

Two other categories deserve special mention. The clerical occupations' unemployment rate increased only by 6.4 percentage points but gained an extra 2 percentage points of the total unemployed labour force adding 10,408 workers (an 181% increase) to the unemployed of the CMA. As with the professional occupations, this apparent anomaly is the result of large increases in the total and employed labour force for these categories. The service occupations retained approximately one-eighth of the total unemployed labour force. However, their unemployment rate increased by over seven percentage points.

In summary, if the primary occupations are temporarily disregarded due to the relatively low absolute quantity of unemployed primary workers, the manufacturing production and construction occupations had the most severe unemployment problems in 1980 and have continued to accumulate the bulk of the negative employment impact of the 1980–84 slump. However, the relatively low unemployment rate of professional occupations mask the significant portion of the total unemployed labour force (14.6%) consisting of these workers in 1984, and clerical and service occupations (with 19.8% and 13.5% of the unemployed labour force respectively, and unemployment rate increases of over 6 percentage points) would have to be recognized as major areas of concern.

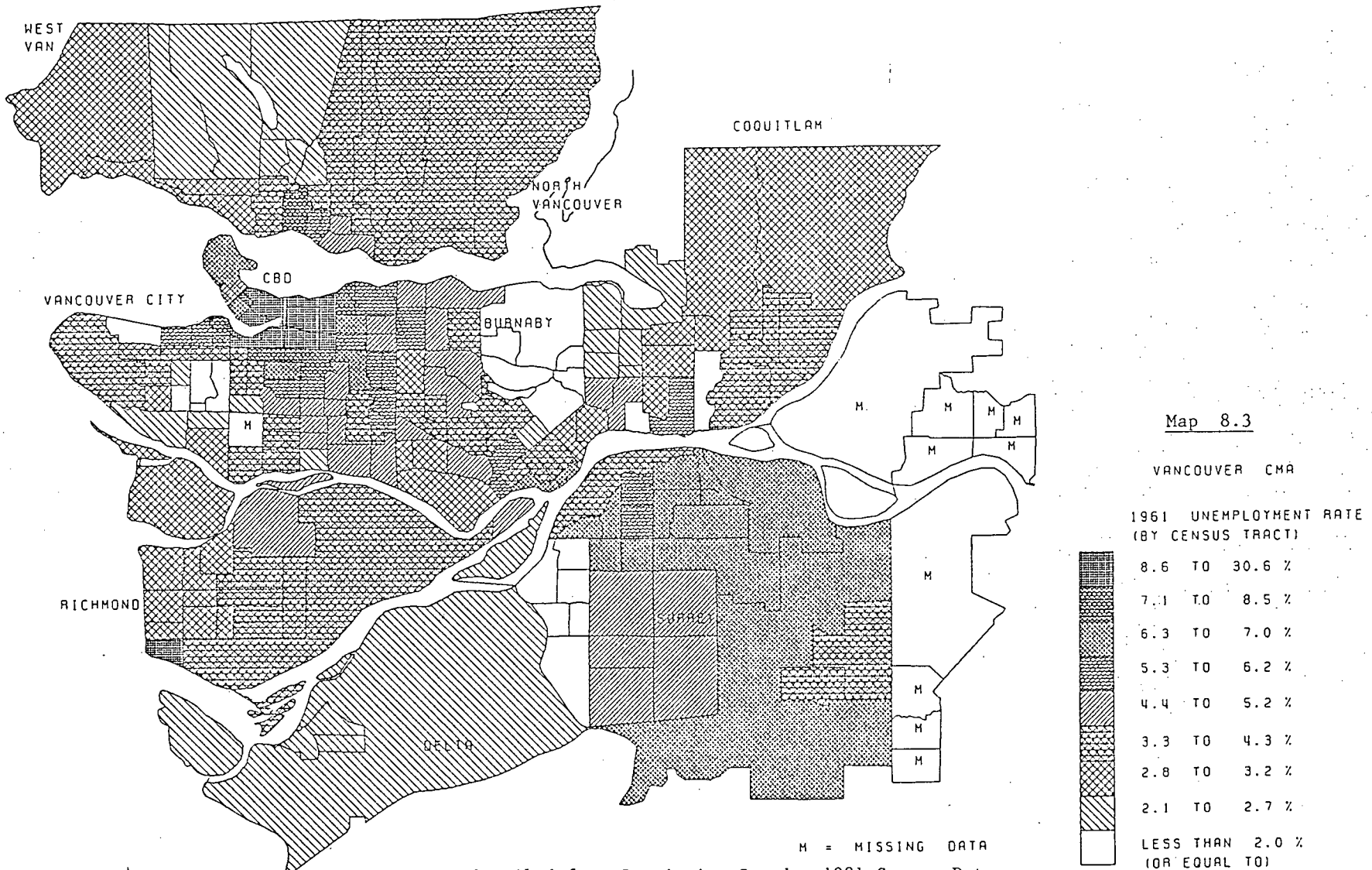
## B. CHANGES IN THE PATTERN OF UNEMPLOYMENT IN THE VANCOUVER CMA STUDY AREA

By splitting CTs into classes containing the same percentages of the total number of CTs (as used for the 1981 unemployment maps) and by utilizing an identical shading system for each class, the 1961 and 1971 ranked unemployment rate patterns can be compared to MAP 8.1. Although the classification procedure has resulted in different class interval boundaries, the changing location of the top 5%, 10% and so forth, of the CTs, ranked in terms of their unemployment rates, can be readily identified over the 20 year period (see MAP 8.3 and MAP 8.4). [3]

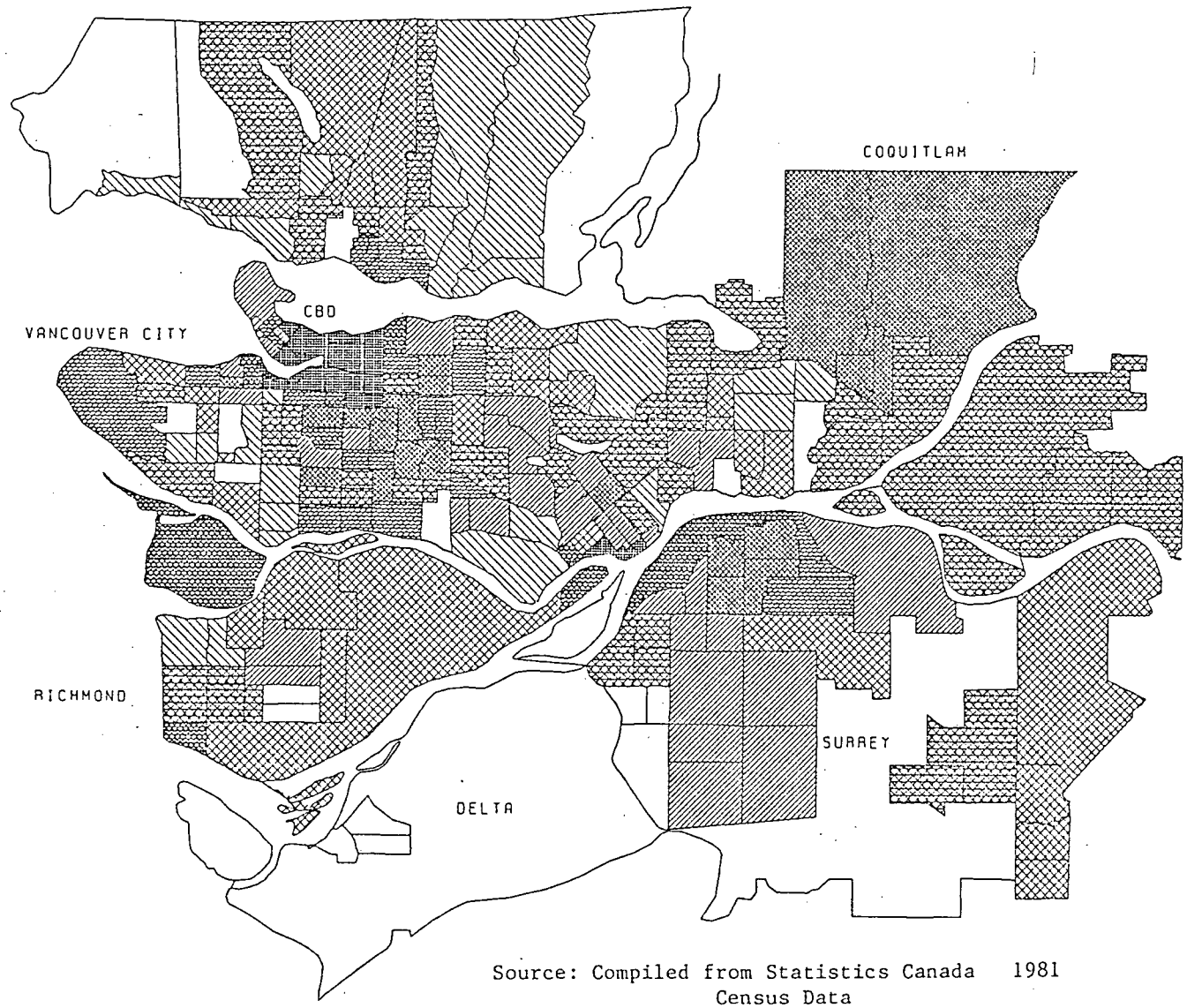
A comparison of the three maps of the distribution of total unemployment rates shows that the inner city concentration of high unemployment in the CMA is by no means a recent phenomenon. If any change can be discerned, it would entail a slight dispersal of the high unemployment areas from the inner area, particularly from

---

[3] With reference to Maps 8.1, 8.3 and 8.4, the percentage of the total number of CTs contained in each class from the highest to lowest unemployment rate levels is as follows: 1) five percent, 2) five percent, 3) ten percent, 4) ten percent, 5) fifteen percent, 6) twenty-five percent, 7) approximately thirteen percent, 8) ten percent and 9) approximately five percent.




Source: Compiled from Statistics Canada 1981 Census Data




Map 8.4

VANCOUVER CMA
(PRINCIPAL REGION)

1971 UNEMPLOYMENT RATES

| | | | |
|---|---|---|---|
| 14.7 | TO | 43.8 | % |
| 12.0 | TO | 14.6 | % |
| 11.0 | TO | 11.9 | % |
| 10.0 | TO | 10.9 | % |
| 9.0 | TO | 9.9 | % |
| 8.0 | TO | 8.9 | % |
| 7.0 | TO | 7.9 | % |
| 6.0 | TO | 6.9 | % |
| 0.0 | TO | 5.9 | % |

Source: Compiled from Statistics Canada 1981 Census Data

around the south bank of False Creek, "to" the New Westminster area. Although the municipality of Surrey does have quite a few CTs with high unemployment levels in the top 10% in 1961 (that is, with unemployment rates over 7.0%), the non-core areas generally have low levels of unemployment in the two earlier census survey years.

This observation contradicts the outcome expected from the operation of recent processes of decentralization of industry from the core area acting to decrease accessilbility, and hence, the ability to find work, of inner city residents. The influence of accessibility and "trapped" hypothesis processes should exacerbate or increase the inner city unemployment problem resulting in a relative greater concentration of unemployment in core areas (Chesire, P. (1979) p.38). However, this scenario is not instantiated in the map comparison - unemployment was probably more concentrated in core areas in 1961 than in 1981.

Although the relative reduction in the concentration of unemployment in the core areas may be the result of a number of other factors (such as the movement of workers with jobs or the possibility that workers have found jobs in new downtown service jobs), this result does indicate that inner city unemployment from inaccessibility to suburbanized production jobs has not caused a marked increase in total inner city unemployment and hence contributes little to the observed intra-urban unemployment variations.

A Spearman's rank correlation test on the unemployment rate levels for the three years supports the apparent stability of the unemployment distribution pattern over time. A coefficient of 0.5 (significant at the 1% level) was obtained for the 227 CTs compared between 1961 and 1981.[4] Significant correlations of 0.63 and 0.55, for the periods 1961-71 and 1971-81 respectively, also indicate that there has <u>not</u> been a dramatic change in the structure of the spatial distribution of unemployment over this

---

[4]Although this correlation coefficient is fairly low in comparison with the 0.92 coefficient found by Metcalf & Richarson (1976) in London boroughs, it does indicate a reasonable level of stability in view of the far longer time period and the far larger number of cases considered.

time period.

Hence, inner city unemployment in the CMA appears to be a persistent historical problem. The long-term existence of a core concentration of the unemployed has also been found in cities in Britain (Metcalf, D. & Richardson, R. (1976) p.174; Evans, A. (1980) p.208) and in the U.S. (Hall, (1970)). In addition, the inner city unemployment problem does not appear to have been exacerbated during the study period by the operation of relatively new processes such as the suburbanization of industry (possibly from availability of new downtown service jobs) - in fact a slight dispersal of unemployment may be occurring. As a result, a fundamental necessary condition for the saliency of accessibility and trapped hypotheses cannot be evidenced in the study area. It should also be noted that the persistence of high unemployment in inner city areas in times of high overall employment demand (1981 for example) indicates that the concentration of unemployment is not just a product of decreased aggregate demand (that is, demand-deficient unemployment).

Because the actual unemployment rates of the divided categories are somewhat obscured in the previous analysis, unemployment rates have been calculated for the "inner" versus the "outer" metropolitan area as described in the methodological chapter.

In 1961, the "inner" 25 CTs (defined as those lying within 12 minutes travel time of the CBD) clearly have a higher aggregate unemployment rate than the balance of the 1961 definition of the CMA. 9.3% of the labour force in the inner area was unemployed while only 4.2% of the outer area labour force were "looking for work". However, by 1981, the inner area had an unemployment rate of only 6.9% and the outer area, 4.9%. [5]

If processes such as decentralization are acting to disadvantage core area workers seeking employment, and if this process is to be considered as having a significant effect on unemployment probabilities, the unemployment rate in the inner

---

[5]Statistics calculated from 1961 and 1981 metropolitan socioeconomic census data.

area should increase by more, or at least decrease by less, than that of the outer area. However, the unemployment rate in the "inner" city decreased by 2.4 percentage points over the 20 year interval while the unemployment rate in the balance of the CMA decreased by less than one-half of a percentage point. High unemployment levels seem to be undergoing a redistribution away from the central city area. Once again, the basic condition of demand-side spatial theories of intra-urban variations in unemployment rates cannot be observed in the study area over the period examined.

More recent data, covering both total and manufacturing production unemployment rates, is available from Employment and Immigration Canada. By aggregating statistics for the three CECs selected as a reasonable approximation of the "central city" area, unemployment levels and changes in unemployment levels for total and manufacturing production occupations have been calculated and compared with those in the remainder of the CMA.

In 1980, the rate of unemployment for manufacturing production workers in the central city area was two percentage points higher than in the outer area (8.4% versus 6.4%). Although this observation does provide some evidence of a higher probability of unemployment for inner area production workers, total unemployment rates were also higher in the inner area (5.2% compared to 3.7%) and, by 1984, the manufacturing production unemployment levels were virtually identical in inner and outer areas. The unemployment rate in the "outer city" had increased by 15.5 percentage points (to 21.9%) compared to a 13 percentage point increase (to 21.4%) in the inner CECs. Thus, although total unemployment rates remained higher in the inner area in 1984, the greater increase and higher levels of manufacturing production unemployment expected in these areas, by proponents of the job dislocation causes of differential intra-urban unemployment rates, has not occurred.

Admittedly, this 1980-84 study period is only very short and is far from ideal for attempting to assess longer-term trends in spatial variations in unemployment rates.

However, the greater increase in suburban manufacturing production unemployment rates does suggest that the recent, rapid growth in this type of unemployment is not from causes that disadvantage the inner urban area resident *vis-a-vis* the suburbanite. The entire urban area manufacturing production labour force has fallen victim to the employment ramifications of the economic downturn of the 1980's in B.C.

## C. THE SUBURBANIZATION OF THE MANUFACTURING PRODUCTION LABOUR FORCE

If manufacturing production workers are "trapped" in the inner city housing market, one would expect comparatively lower levels of suburbanization of these groups relative to other occupational groups – particularly the skilled occupations (assumed as covering managerial, professional, technical, administrative and related jobs). From the analysis of the change in the residential distribution of the total CMA labour force (for each occupational group), there is little evidence of a slower growth in suburbanization by the manufacturing production labour force between 1971 and 1981 (see TABLE 8.1).

Manufacturing production workers and the "professional" occupations have suburbanized out of the core municipality of Vancouver City at almost identical rates. The share of the higher skilled occupation's labour force (managerial, administrative, professional, technical and related) in Vancouver City dropped by 7.7 percentage points while the share of the manufacturing production workforce in this municipality declined by eight percentage points.

Although manufacturing production workers "relocated" (share changes would actually include new additions to, and losses out of, the CMA) to the suburban municipalities of Richmond and Delta at slightly lesser rates than for the skilled occupations, the opposite is true for the outer municipalities of Surrey and Langley (City and D.M.) combined. Any overall, greater rates of growth in the share of the manufacturing production labour force in the suburban municipalities is too marginal

Table 8.1 Comparative Suburbanization Rates of Manufacturing Production and other Workers

| | Change in the Share of the Total CMA Labour Force (for each Occupational Group) Residing in each Area 1971 - 1981 | | | | |
|---|---|---|---|---|---|
| | VANCOUVER CITY | RICHMOND | SURREY | DELTA | LANGLEY (City and D.M.) |
| All occupations | - 8.9 % | + 2.4 % | + 3.0 % | + 1.8 % | + 2.1 % |
| Manufacturing Production | - 8.0 % | + 1.6 % | + 2.9 % | + 1.5 % | + 2.4 % |
| Managerial, Admin., Prof., Tech., and rel. | - 7.7 % | + 3.2 % | + 2.3 % | + 2.1 % | + 2.0 % |

Source: Compiled from Statistics Canada 3I-209 "Manufacturing Industries of Canada:Sub-Provincial Areas"

for interpretation as evidence of the trapped hypothesis and associated constraints on the suburbanization of manufacturing production workers as the cause of higher inner city unemployment levels.[6]

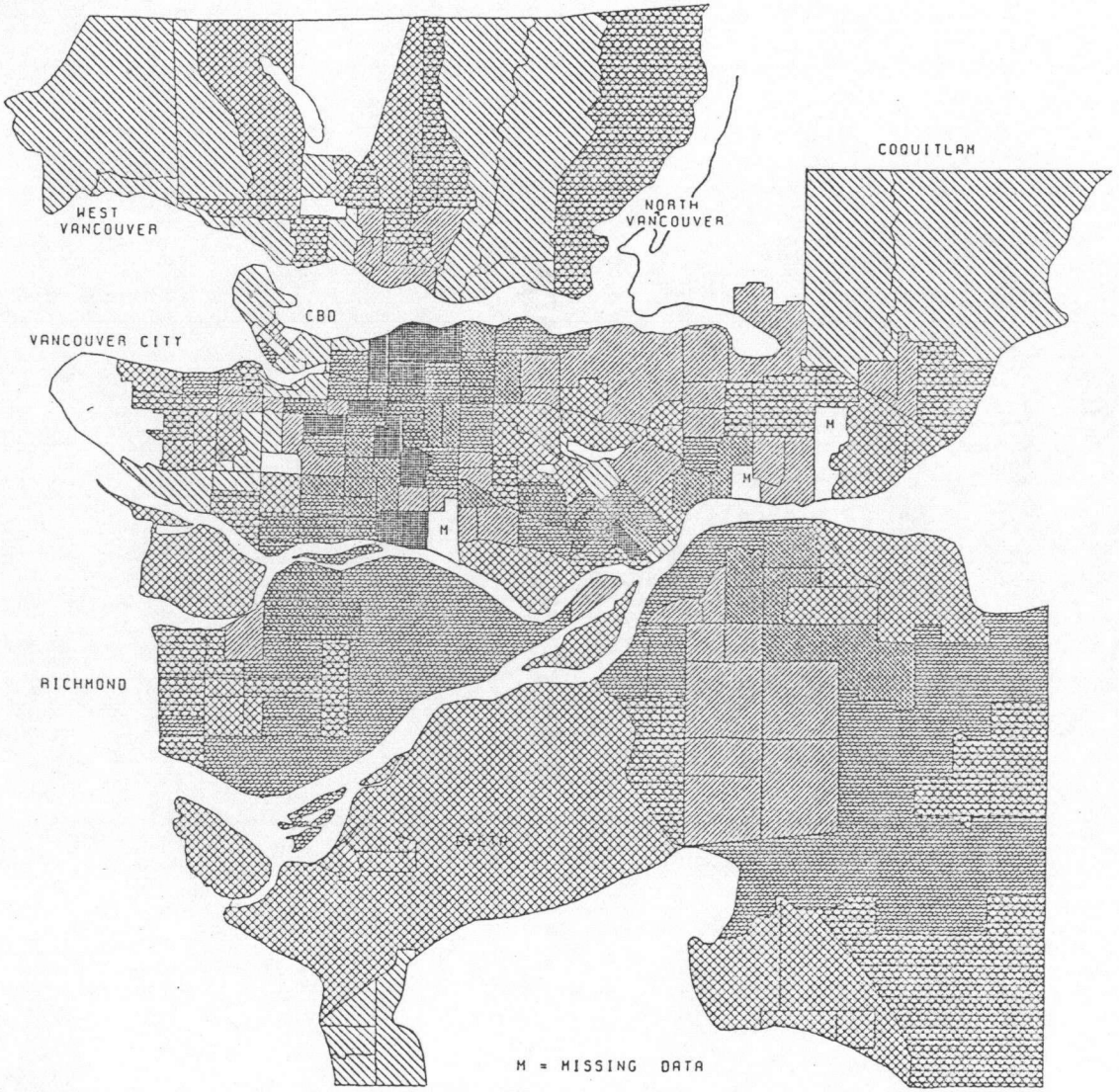
Residential pattern changes can also be observed in the two maps showing the percentage of the total manufacturing production labour force held by each CT in 1971 and 1981 (see MAPS 8.5 and 8.6) Langley D.M. and City, Maple Ridge D.M. and Pitt Meadows D.M. have been omitted due to data limitations.

The residential location of the manufacturing production labour force is concentrated in the east Vancouver City and the New Westminster areas in 1971. The higher intensity shading levels in 1981 suggests that a considerably larger share of the total CMA manufacturing production labour force has redistributed away from the older core areas. This tendency is particularly obvious in the municipalities of Surrey and Richmond. West Vancouver City has undergone a conspicuous decline in its diminutive 1971 portion of the manufacturing production labour force. Slight increases are apparent in North Vancouver City and Delta while Burnaby, Port Coquitlam and Coquitlam municipalities have all accommodated moderate growth in their percentage shares of the relevant labour force.

In addition, a correlation of 0.247 (significant at the 1% level) between CT travel time from the CBD and the percentage of the CT labour force in manufacturing production occupations suggests that the 1981 manufacturing production labour force was <u>less</u> concentrated in the inner areas than in the balance of the CMA. This association does not support the contention of the trapped hypothesis that manufacturing production workers are disproportionately confined within the inner urban area and are the primary source of higher overall inner city unemployment rates.

---

[6]This conclusion assumes 1) that suburbanized manufacturing production labour force members have increased their accessibility to decentralized industrial activity and, 2), that suburbanization has been voluntary and is not simply a result of displacement from inner city gentrification and revitalization.




VANCOUVER CMA 1971

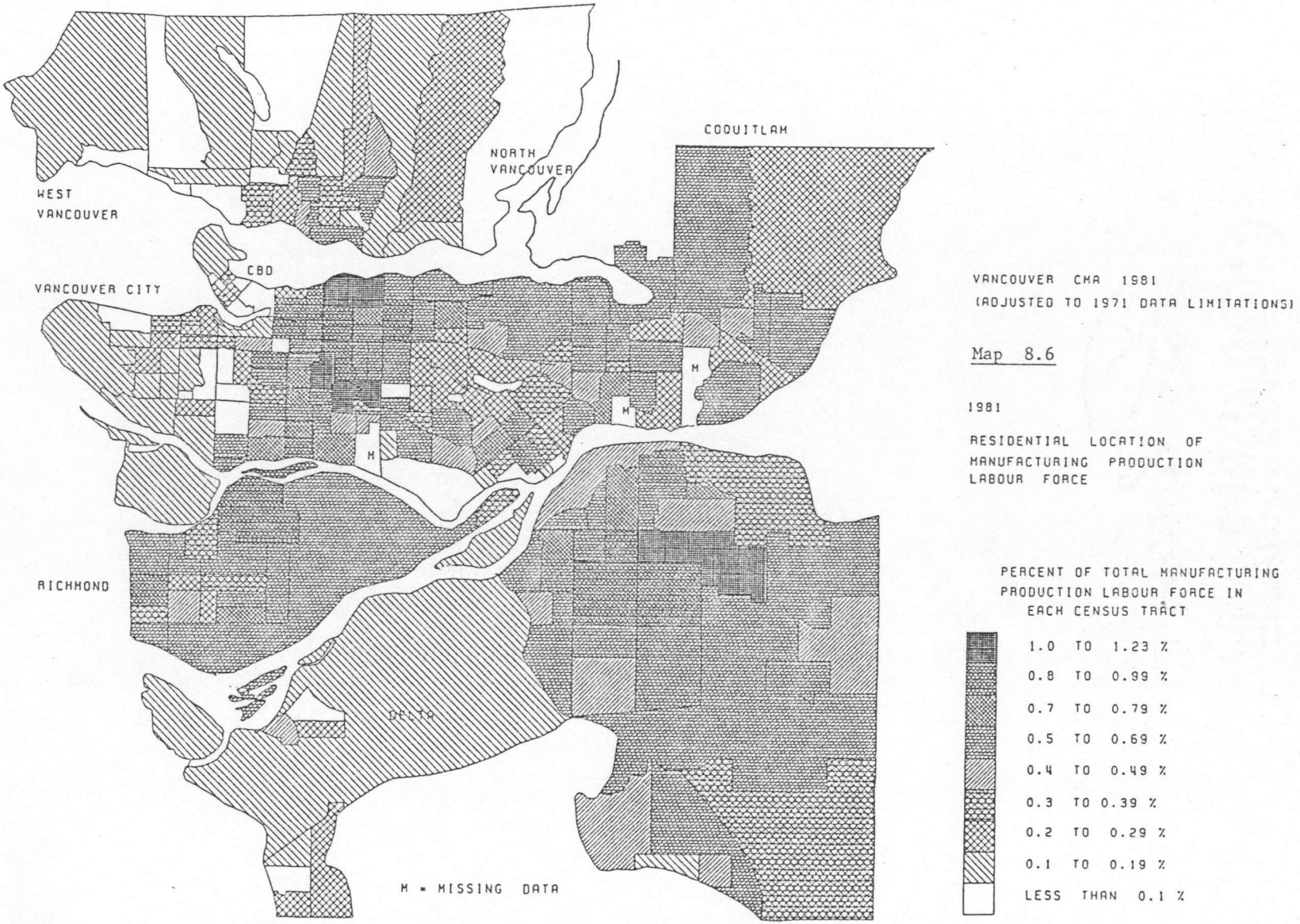
Map 8.5

1971
RESIDENTIAL LOCATION OF
MANUFACTURING PRODUCTION LABOUR
FORCE

PERCENT OF TOTAL MANUFACTURING
PRODUCTION LABOUR FORCE IN
EACH CENSUS TRACT

- 1.0 TO 1.23 %
- 0.8 TO 0.99 %
- 0.7 TO 0.79 %
- 0.5 TO 0.69 %
- 0.4 TO 0.49 %
- 0.3 TO 0.39 %
- 0.2 TO 0.29 %
- 0.1 TO 0.19 %
- LESS THAN 0.1 %

Source: Compiled from Statistics Canada 1971
Census Data



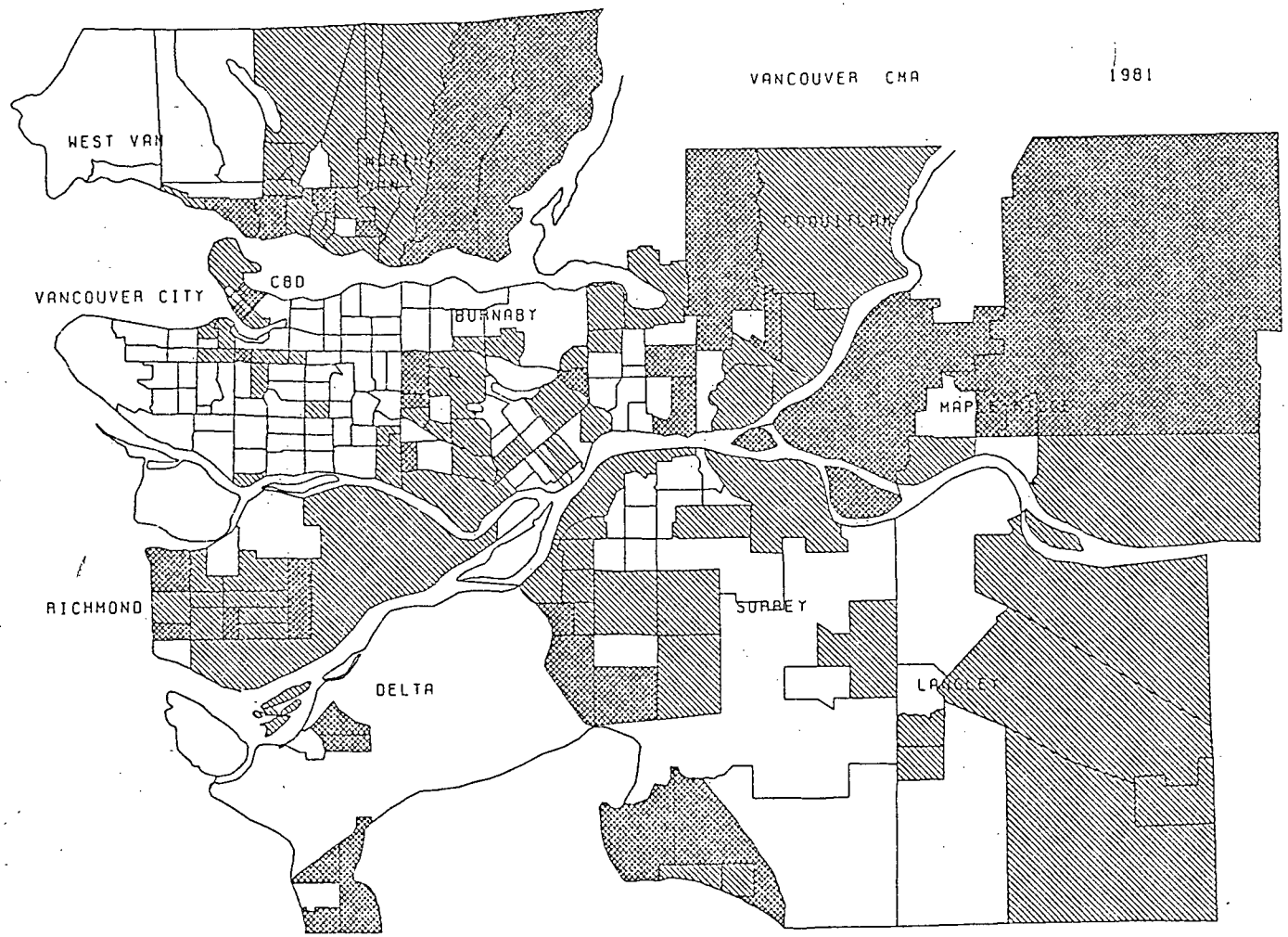

Source: Compiled from Statistics Canada 1981 Census Data

However, the trapped hypothesis cannot be completely dismissed on the grounds of the apparent "normal" suburbanization of the manufacturing production labour force. Treatment of the manufacturing production labour force as a homogeneous group of individuals and households with identical constraints on, and equal capacity for, relocation and commuting may well mask important differences within these occupational groups.

For example, it is impossible to assess to what extent the observed suburbanization has been a selective process allowing only certain strata (such as the skilled or high income members) of the manufacturing production labour force to move to desired suburban residential locations. It is possible that the more highly skilled members of the manufacturing production workforce have been disproportionately represented in the move to the suburbs.

MAP 8.7 shows the percentage of each CT's total labour force with a trades, university, or non-university certificate or diploma in 1981. Although this educational variable unavoidably covers all occupational categories, it would tend to represent the more "skilled" manufacturing production workers.

The conspicuous low levels of skill qualifications in and around the core area (particularly in the inner east Vancouver City area) and, to some extent, in the New Westminister area, do correspond with the areas of high unemployment. The suburban municipalities all appear to have a larger portion of their CTs with a higher percentage of their labour force holding a certificate or diploma of some kind. This phenomenon may suggest that the inner core areas have retained considerably higher proportions of the lower-skilled manufacturing production labour force who <u>could</u> be trapped in and around the "stagnating" (in terms of manufacturing production activity) core areas. This stratum of the manufacturing production workforce may suffer reduced chances of finding work due to the frictions of distance (on commuting, information dissemination and so forth) and would probably have more severe income-related




Map 8.7 Distribution of Labour Force with Trades, Univ., or Non-Univ. Certificate or Diploma

Source: Compiled from Statistics Canada 1981 Census Data

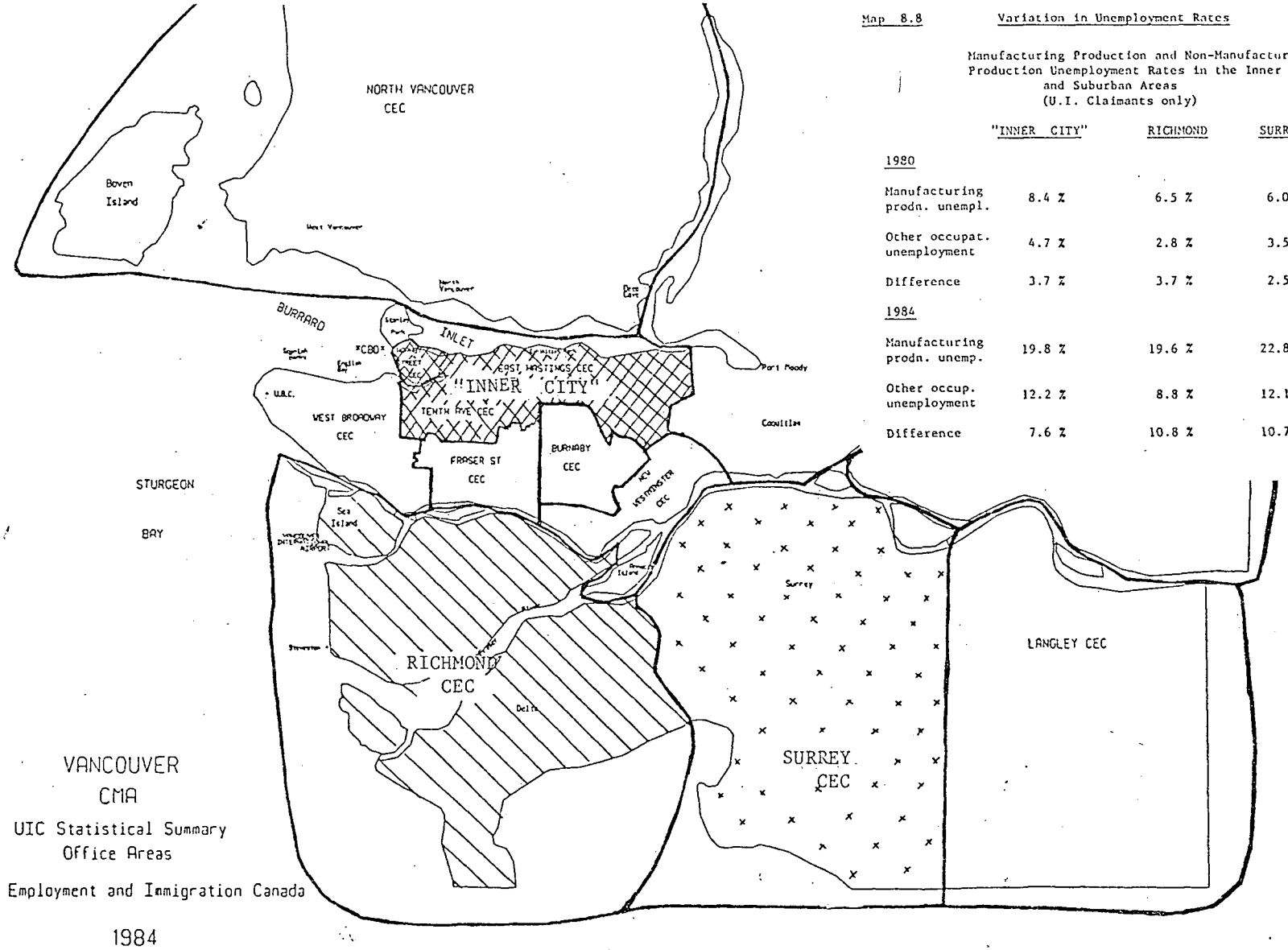
constraints on their potential daily work-trend mobility.

## D. COMPARISON OF INTRA-URBAN VARIATIONS IN UNEMPLOYMENT RATES OF MANUFACTURING PRODUCTION WORKERS WITH OTHER OCCUPATIONS

The unemployment rates of manufacturing production workers should differ by more in the inner city area than in the suburban areas if core manufacturing production workers are experiencing high unemployment rates as a result of reduced accessibility to decentralized appropriate employment demand. According to the demand-side explanations of unemployment, manufacturing production unemployment rates should be considerably higher in the core area while other occupations should not be disadvantaged, in terms of finding work, by the industrial decentralization process. Accessibility problems would constrain the job search process of inner area manufacturing production workers only.

A comparison of the "inner city" area (based on the aforementioned CEC definition) and the suburban municipalities of Richmond and Surrey (which collectively received 54% of the manufacturing production employment demand over the 1971-81 period) reveals that the 1980 manufacturing production unemployment (U.I.) rate is about two percentage points higher in the central city area than in the suburban CECs (see MAP 8.8). This higher rate suggests that inner city manufacturing production workers may have a higher probability of unemployment than their suburban counterparts and access to new, suburbanized industrial employment demand may be an underlying causal factor. However, the unemployment rates for other, non-manufacturing occupational groups is also more than one percentage point higher in the inner area than in the suburban CECs.

The differences between manufacturing and non-manufacturing production labour force unemployment rates in the inner city area and Richmond CEC (comprising




VANCOUVER
CMA
UIC Statistical Summary
Office Areas
Employment and Immigration Canada
1984

Map 8.8 Variation in Unemployment Rates

Manufacturing Production and Non-Manufacturing Production Unemployment Rates in the Inner City and Suburban Areas (U.I. Claimants only)

| | "INNER CITY" | RICHMOND | SURREY |
|---|---|---|---|
| 1980 | | | |
| Manufacturing prodn. unempl. | 8.4 % | 6.5 % | 6.0 % |
| Other occupat. unemployment | 4.7 % | 2.8 % | 3.5 % |
| Difference | 3.7 % | 3.7 % | 2.5 % |
| 1984 | | | |
| Manufacturing prodn. unemp. | 19.8 % | 19.6 % | 22.8 % |
| Other occup. unemployment | 12.2 % | 8.8 % | 12.1 % |
| Difference | 7.6 % | 10.8 % | 10.7 % |

Richmond and Delta municipalities) are identical. However, the Surrey CEC does have a substantially lower difference between occupational category unemployment rates than for the core (only 2.5% compared to 3.7%). Although it is difficult to draw a generalized conclusion from these ambiguous research results, there is no clear evidence of a consistent greater difference in the unemployment levels of manufacturing production and non-manufacturing production workers in the inner versus the outer CECs. Manufacturing production workers and other occupations (aggregated) tend to have higher unemployment levels in the inner area.

Thus, in 1980, the inner area contained labour force members of both manufacturing production and non-manufacturing production occupations with a higher propensity to be unemployed. However, by 1984, some rather startling changes had occurred in the distribution of unemployment rates. Both Surrey and Richmond had greater increases in the unemployment rate of their manufacturing production workers than rate increases experienced in the core. Over the 1980-1984 period, Surrey CEC climbed to the highest level with a manufacturing production unemployment rate of 22.8% while the "inner city" and Richmond had similar unemployment rates of a little over 19.5%. Although the unemployment rates of other occupations remained well below the manufacturing production rates in all three areas, by 1984, the rates differed by more in the suburban areas.

The rapid unemployment growth of this recent period appears to have been concentrated in the non-core areas and accessibility to decentralized industry, as a contributing cause of spatial variations in unemployment, would pale into insignificance given this scenario. As of 1984, the inner city no longer held the highest manufacturing production unemployment rates and the "necessary condition" for the spatial explanations of intra-urban unemployment variations did not exist. Although this initial condition is apparent in 1980, unemployment growth through the 1980's, is surely a result of other factors. Greater increases in the unemployment rate of suburban

manufacturing production workers may be indicating that longer-term structural unemployment aspects "create" inner city concentrations of unemployment in high employment demand times while redundancies amongst the suburban manufacturing production labour force, as in recent times, are primarily the result of demand-deficiency.

## E. CAR OWNERSHIP FINDINGS

Simple correlations between 1971 CT car ownership levels (the number of cars per 100 labour force members), selected socioeconomic variables, and travel-time distance to the CBD have resulted in a number of interesting associations which may support a link between low mobility levels (and possible, related access problems) and higher total unemployment rates, lower travel-time distance to the core area and lower skill levels. The outer suburban CTs in Langley (City and D.M.), Pitt Meadows and Maple Ridge have been omitted due to the lack of detailed data.

The coefficient of −0.5647 (significant at the 1% level), found for the correlations of CT car ownership levels and total unemployment rates suggests that a relatively strong, negative association exists between these two variables (see TABLE 8.2). Although unemployment may reduce income and undermine the worker's ability to purchase or maintain a car, it is possible that low car ownership levels may contribute to the incidence of high unemployment rates in the study area CTs.

There also appears to be a very strong positive association between travel-time distance from the core and the level of car ownership ($r = 0.706$). Hence, inner area residents are more likely to have lower potential mobility levels (if auto ownership can be assumed to reflect greater daily commuting possibilities) and may incur greater disadvantages in accessing outer suburban job potential. Lower levels of car ownership in inner city areas has been observed in a number of other studies (see Thrift, N. (1979) p.183 for a review of the U.K. evidence).

Table 8.2 Correlation Coefficients with Car Ownership Levels in Census Tracts (CAROWN)

| Variable | Variable Description | Correlation with CAROWN |
|---|---|---|
| TOTUNRAT | CT total unemployment rate 1981 | -.5647 ** |
| PMANPROD | % of labour force in manuf. production occupations | -.1879 ** |
| PERSERV | % of labour force in service occupations | -.6850 ** |
| TCBD | auto travel time to central city | .7061 ** |
| LOWSCH | % of labour force with less than Gr.12 educat. and no other qualific. | -.5315 ** |

** = significant at less than .001

The percentage of the labour force in manufacturing production occupations in each CT is only very weakly associated with car ownership levels (r=-0.1879). Thus, it cannot be assumed that the manufacturing production labour force *per se* tends to have lower levels of mobility than the rest of the workforce. However, it is quite likely that the commuting mobility of manufacturing production workers varies widely between members of this occupational category.

Car ownership levels are significantly and inversely associated with the skill composition of the CTs' labour force (a coefficient of -0.532 is obtained from the correlation of LOWSCH and CAROWN) and it is reasonable to propose that the lower skill strata of the manufacturing production labour force would probably have lower levels of auto mobility than the more skilled groups.

There is a great deal of interdependence amongst the numerous socioeconomic and accessibility variables correlated and inferences drawn from this analysis must be

considered as tentative at best.[7] Although this underlying complexity places limits on the interpretive utility of the correlation procedures, there does appear to be a greater probability that those living in the inner areas, or having lower skill levels, or suffering higher probabilities of unemployment (or any combination of these traits), will not have access to a car and will have a more geographically constrained daily activity pattern. The potential daily commuting field would be a key aspect of this more confined pattern - particularly with respect to suburban destinations not directly served by the radically-oriented public transport system.

A distinct positive gradient of car ownership levels exists radiating out (on auto travel-time criteria) from the core area. These findings will be incorporated into the overall discussion of the evidence for and against the two alternative hypotheses on intra-urban variations in unemployment rates.

## F. RESULTS OF THE REGRESSION ANALYSIS OF TOTAL CT UNEMPLOYMENT RATES 1981

As described in Chapter 7, selected socioeconomic characteristics and the travel time indices to 1) the downtown Vancouver area and 2) to industry land use zones, were regressed on 1981 CT total unemployment rates as the dependent variable. The natural log of the unemployment rates for each CT (LUNRAT) was calculated and used in all final analyses due to the presence of a few extreme outliers which would act to distort the regression results. The distribution of logged unemployment rates was approximately normal.

The inclusion of socioeconomic variables with a reasonably strong correlation with the dependent variable, or possessing significance in previous research findings,

---

[7]For example, car ownership levels may be lower among inner city residents due to lower mobility requirements as a result of proximity to the high access high-amenity downtown area. A necessary link between car ownership levels and mobility constraints on the job search process cannot be verified at this aggregated level of analysis. Similar problems exist from the confounding influence of income levels on skill, unemployment and carownership levels.

alongside the various accessibility indices has enabled a preliminary assessment of the separate influence of both spatial and socioeconomic factors on the (natural log of) total unemployment rates.[8]

Stepwise regression techniques are usually adopted as a search procedure for identifying which variables, previously thought to be of some importance, appear to have the strongest relationship with the dependent variable (Hauser, D. (1974) p.149). A forward selection procedure adds the variables on the basis of their partial correlations with LUNRAT, so that, at each stage, the variable with the highest partial correlation is added.

In many respects, the analytic orientation of this research is exploratory. Rather than attempting to clearly identify all variables which explain the total unemployment rates, the principal objective is to ascertain whether the spatial variables seem to have an influence on the dependent variable once the heterogeneity of the labour force and housing characteristics is controlled for. The limited scope for a "total" explanation of unemployment in the following regressions becomes apparent in recognition of the pervasive multicollinearity problems faced.

## 1. STEPWISE REGRESSION OF SELECTED PERSONAL CHARACTERISTIC VARIABLES AND TRAVEL TIME TO THE CBD, ON TOTAL 1981 UNEMPLOYMENT RATES

After considerable experimentation with the regression model specifications, the final regression analysis selected six out of the original set of 15 independent variables (see TABLE 7.2) as the most "important" influences on the 1981 unemployment rate of CTs in Vancouver CMA.

The stepwise regression procedure actually involved eight steps as the variable measuring the percentage of dwellings rented (PERENT) was entered, and then

---

[8]A regression analysis of total unemployment rates, excluding the accessibility indices, has been completed and is described in Section 8.G.

removed, from the equation. This phenomenon hints at the presence of multicollinearity amongst the independent variables - a major weakness of the regression analyses completed.

The eight steps and the major regression coefficients for the significant independent variables are shown in TABLE 8.3. It is important to provide a brief step-by-step description of the regression analysis to evaluate its utility for overall explanatory purposes.

Step 1 The variable measuring the percentage of the labour force in service occupations (PERSERV) is entered into the equation explaining 31% of the variation in the dependent variable. After taking into account the influence of PERSERV, the partial coefficients for the variables "not in the equation" are quite low (all below 0.23) and increments in variance to be explained are expected to be minimal.

PERSERV has some reasonably strong correlations with the other independent variables (for example, with the low-education variable (LOWSCH r = 0.7477), an ethnicity variable (PNCUSEUK r = 0.6853), and the level of car ownership (CAROWN r = 0.685)) and this interdependence is likely to unduly affect the explanatory power and probability of inclusion for these independent variables. However, the variable with the highest partial (PERENT), after PERSERV is regressed on the dependent variable, is entered on the next step.

The partial correlation coefficient for the travel-time to the CBD index (TCBD) changes from a negative to a positive value after accounting for the variance in LUNRAT explained by PERSERV and remains positive throughout the other seven steps.

Table 8.3

Regression Results for the Analysis of Personal Characteristics, Acessibility to the CBD, and Total Census Tract Unemployment Rates in Vancouver CMA 1981.

Dependent Variable: Natural logarithm of the total CT unemployment rate (LUNRAT)

| Step | | Variable Added/ Removed | Coefficient of Determination ($R^2$) | Change in $R^2$ | Standardized Regression Coefficient | Partial Correlation | T-ratio |
|---|---|---|---|---|---|---|---|
| 1 | IN | PERSERV | 0.3092 | 0.3092 | 0.248 | 0.232 | 3.5*** |
| 2 | IN | PERENT | 0.3442 | 0.035 | | | |
| 3 | IN | PMANPROD | 0.4039 | 0.0607 | 0.393 | 0.325 | 5.1*** |
| 4 | IN | MARRIED | 0.4350 | 0.031 | -0.46 | -0.322 | -5.0*** |
| 5 | OUT | PERENT | 0.4348 | -0.002 | | | |
| 6 | IN | TCBD | 0.4546 | 0.0198 | 0.469 | 0.313 | 4.9*** |
| 7 | IN | AVALDW | 0.4835 | 0.029 | 0.322 | 0.281 | 4.3*** |
| 8 | IN | CAROWN | 0.5003 | 0.017 | -0.359 | -0.18 | -2.7*** |
| | Constant = 1.72 (t = 9.7)*** | | | $R^2$ = 0.5003 | | | |

*** =sign. at 99% C.I. ** =sign. at 95% C.I.

Step 2 A further 3.5% of the variance in the total CT unemployment rates is explained by the inclusion of PERENT in Step 2. Already, the increments to R Square values have dropped off to a rather meagre amount. The future introduction of a number of other potential independent variables will be affected by the correlation of PERENT with 1) the percentage of the CT labour force under 15 (YUNG, r = 0.71), 2) the percentage of the labour force married (MARRIED, r = −0.87), 3) the number of non-adult dependents per 100 members of the labour force (DEPEND, r = 0.67), 4) the percentage of non-family, one-person households (PSINHO, r = −0.933) and 5) the number of cars per 100 members of the labour force (CAROWN, r = −0.6324)

Step 3 Another occupational variable, the percentage of the labour force in manufacturing production occupations (PMANPROD), enters the equation and adds six percentage points to the variance explained. The partial correlation coefficient for "average dwelling value" (AVALDW, which is not yet in the equation) changes from negative to positive with the incorporation of PMANPROD. Partials for YUNG, DEPEND and LOWSCH drop considerably.

Collinearity between PMANPROD and housing variables (for example, with 1) the average number of people per room PEROOM, (r = 0.6539 and 2) AVALDW, (r = −0.59) is likely to detract from the explanation and significance attributed to housing factors in the final regression equation.

Step 4 The percentage of the labour force married variable (MARRIED) enters the equation in this step explaining a further 3.1% of the total

variance in the dependent variable. Strong correlations exist betwwen this variable and 1) YUNG (r = 0.6822), 2) DEPEND (r = 0.711), 3) PSINHO (r = −0.93), 4) CAROWN (r = 0.757), 5) PERENT (r = −0.87) and 6) TCBD (r = 0.64). The partial correlation coefficient for PSINHO decreases substantially after this variable is entered.

Step 5 PERENT is removed from the equation primarily as a result of its strong correlation with the variable MARRIED.

Step 6 The travel-time to the CBD accessibility index (TCBD) is selected into the regression equation adding only two percentage points to the total R Square value. TCBD is correlated with MARRIED (r = 0.64), CAROWN (r = 0.7) and the ethnicity variable (PNCUSEUK, r = −0.504) for which the partial decreases considerably after introducing TCBD.

Step 7 and 8 Average dwelling value and car ownership variables are added to the equation. However, the model becomes very unstable by this stage and only another 4.5% of the variance is explained by their inclusion.

After the 0.1 PIN (probability into the equation) level is reached, only 50% of the variance is explained (which is ,however, acceptable with the large number of observations included in the analysis) and considerable multicollinearity is evident throughout the forward selection procedure. High correlation among the independent variables detracts heavily from an attempt at explaining the variance in the dependent

variable - particularly in terms of the non-spatial variables. The high intercorrelations result in high standard errors for regression coefficients and the subsequent exclusion of many potentially relevant variables purely on the grounds of collinearity (Hauser, D. (1974) p.151). The independent variable deemed significant would depend critically on the order in which variables are introduced into the regression set.

Hence, the increasing instability of the regression equation makes it difficult to accept beyond about Step 4 thus retaining the stepwise results indicating the significant effect of occupational composition (PERSERV, PMANPROD) and marital status (MARRIED) on the expected unemployment rate.

Fortunately, the explanation of unemployment rates in terms of the range of socioeconomic variables is not so important, in this analysis, as is the attempt to isolate the separate influence of spatial and non-spatial factors. The accessibility index (TCBD) does end up in the equation (in Step 6) in a significant and positive relationship with the dependent variable though only an additional two percent of the variance is explained from its inclusion and the model becomes rather unstable by this stage.

It is interesting to note that the original correlation of unemployment rates and TCBD is a negative (though rather low) value. However, after the influence of PERSERV is accounted for, the partial of TCBD indicates that the net correlation between the two variables changes direction and a weak positive relationship is evident through all subsequent steps.

Although the inherent weaknesses of this analysis have made the results of the stepwise regression rather tenuous, the significant and positive relationship between TCBD and LUNRAT could be interpreted as implying that unemployment rates tend to rise away from the urban centre once the impact of spatial variation in worker housing, job, mobility and other personal characteristics are separated from possible spatial frictions (in the form of access to CBD jobs).

To some extent, the existence of a positive unemployment gradient supports theorists and researchers who propose that spatial factors will play some part in observed intra-urban variations in unemployment. The significance and direction of the relationship between travel-time to the CBD and unemployment rates (with labour force heterogeneity effects removed) is consistent with the findings of Joan Vipond (1984) analysis of 1976 and 1981 data in Sydney, Australia. If a positive unemployment gradient in the Vancouver context can be accepted, it would support Vipond's conclusion that greater spatial separation from the CBD increases the spatial "frictions" (for example, information flow and commuting barriers) on the job-matching process which, in turn, increase the probability of unemployment.

The differential impact of spatial frictions on the job-matching process would tend to throw doubt on the efficacy of the conception of the CMA as the appropriate local labour market. By definition, the local labour market is assumed to be an area of perfect accessibility in which constraints on daily commuting should play no part in the chances of finding, or being able to obtain, work for labour force members within its boundaries.

However, this test does not entail a direct evaluation of the two alternative hypotheses, on intra-urban variations in unemployment rates, outlined in Chapter 4. A central contention of the demand-side explanations is that spatial variations in unemployment (usually high inner versus outer city unemployment) are, in large part, a product of low levels of access to suburbanized industry, rather than access to central city jobs. If the demand-side explanations are operative, unemployment rates should rise (particularly manufacturing production unemployment rates) with decreased access to industrial work locations undergoing a relative decentralization throughout the urban area. This relationship is tested in the following section.

Spatial factors are obviously not the only source of influence on CT variations in unemployment rates. One outstanding aspect of the research findings is that the

socioeconomic and housing composition and aggregated mobility levels of CT populations do appear to have a very marked effect on expected unemployment rates. This is reflected in the fact that, once the occupational composition variables (and marital status, average dwelling value and carownership level variables) have been accounted for, the intra-urban unemployment gradient changes from a weak negative gradient (observed in the various tests in 8.A) to a weak positive gradient.

Increasing percentages of manufacturing production and service occupations in the CT labour force are associated with higher levels of unemployment (see TABLE 8.3). As observed, the skill variable (LOWSCH) is quite highly correlated with the occupational variables ($r = 0.75$ for PERSERV and $r = 0.72$ for PMANPROD) and it drops out of the stepwise regression procedure utilized. High levels of married members of the CT labour force (that is, high percentages for MARRIED) tend to cause a reduction in CT unemployment rates.

Even after the effect of TCBD is controlled for, high levels of car ownership are associated with reduced unemployment rates. As discussed, causality is extremely difficult to infer for these two variables, but the direction of the resulting significant relationship (negative) does support the proposition that high auto mobility levels in CTs (proxied by CAROWN) will be accompanied by lower unemployment rates.

Variable specification problems have probably contributed to the rather incongruous relationship observed for the AVALDW variable (included in the equation in Step 7). According to the resultant beta coefficients, CT unemployment rates rise with greater average dwelling value (controlling for the access and other socioeconomic variables). This spurious result is probably a result of multicollinearity or the exclusion of the rental housing market from AVALDW calculations.

With respect to the socioeconomic variable associations, the regression results are quite different from (and notably inferior to) the findings of Vipond (1984). In her study in Sydney, Australia, all six of her socioeconomic independent variables were

found to have their expected impact on male, female and teenage unemployment rates. The non-spatial factors linked to unemployment rates included: 1) "youthfulness" (positive), 2) "migrants" (positive), 3) "lack of skills" (positive), 4) "immobility" (negative), 5) "occupation/industry" (positive).[9]

Two major caveats of this regression research need to be reiterated at this point.

Firstly, there are a number of clear indications of multicollinearity amongst independent variables. Although few of the independent variables display pairwise correlation coefficients in excess of the arbitrary 0.8 figure assumed as evidence of serious collinearity (Hauser, D. (1974) p.152), there are many instances where the coefficients exceed a recommended tolerance limit equal to the multiple correlation of the whole equation (0.69) (see APPENDIX B) (Klein, (1962) p.101). Many potentially relevant variables are discriminated against and drop out of the regression equation and some odd relationships result - the sign of the AVALDW association is a case in point.

The plot of the standardized residual on the dependent variable indicates that a linear relationship exists between the residuals and the log of the total unemployment rate. This phenomenon suggests a misspecification of the independent variables but, despite the extensive modification, substitution, combination and permutation of a whole range of potential independent variables (including participation rates, CT areas, and total population-based work and housing measures), the linear form of this relationship could not be corrected.

---

[9]"Immobility" was defined as the summation of the proportion of the population who did not move last year and the proportion of the labour force now married. This is quite different from the auto mobility concept utilized in this study. The occupation/industry category is also incompatible. Vipond's R Square values are higher and multicollinearity does not seem to be a problem - she notes that distance to the CBD was not closely associated with any of the non-spatial variables. This is not the case in the Vancouver study. However, the logic behind some of Vipond's combined variable definitions, is questionable (see Vipond (1984) p.386-7).

The significance of the Durbin-Watson statistic (1.8) indicates that serial correlation (and probably spatial autocorrelation) exists and that the "explanatory" variables cannot be accepted as independent with any degree of confidence. Hence, the regression results must be recognized as inconclusive and interpretations are only presented as fulfilling an exploratory and suggestive role. Unfortunately, time and data constraints have prohibited attempts at adjustment solutions such as the use of new data or principal components factor analysis.

In summary, the regression of socioeconomic and access to CBD variables on total CT unemployment rates has shown that a positive unemployment gradient may exist in the Vancouver CMA **after** accounting for CT occupational composition factors, car ownership, marital status and average dwelling value levels.[10] Though multicollinearity and modest R Square values must be acknowledged, this finding lends some evidence to the thesis that spatial separation from the CBD may be a factor underlying total unemployment rate differentials within the CMA in 1981. Perhaps more importantly, a positive unemployment gradient could be interpreted as meaning the CMA may be less than a perfect daily commuting field and its applicability as a relevant and true local labour market could be questioned.

However, the various non-spatial factors included in the regression and the substantial proportion of the variance explained by their variation (despite apparent collinearity amongst many of the potential independent variables), could also be interpreted as evidence of the supply-side explanations of intra-urban unemployment differentials. In fact, the relationship between the unemployment rates and non-spatial

---

[10]A similar regression procedure was performed on male and female unemployment rates, and TCBD was found to be in a positive and significant relationship with the dependent variables in both cases. Apart from the occupational variables, different sets of socioeconomic variables were included in each equation. Unfortunately, discussion of these results must be omitted due to resource limitations.

factors appears to be far stronger than the link to the spatial variable. The socioeconomic mobility and personal characteristics of the labour force figure heavily in the determination of unemployment rates - as described, removing their influence causes a reversal in the observed negative unemployment gradient from the CBD.[11]

Hence, the findings remain rather inconclusive (particularly in view of the multicollinearity problems) in relation to the evaluation of the two alternative hypotheses of Chapter 4. Both socioeconomic and spatial factors are influencing the 1981 unemployment rate. However, given the primary aim of this part of the research was just to see if spatial factors have an influence on unemployment rates, after personal characteristic heterogeneity is controlled for (and vice versa), the results obtained are considered as useful.

There is little direct evidence of the two alternative hypotheses because the effect of the decentralization of industry on the accessibility and unemployment probability of manufacturing production workers is buried in the aggregated analysis. Unemployment rates tend to rise away from the CBD after socioeconomic and mobility variables are accounted for, but the higher rates of unemployment actually observed in inner city areas appears to be largely a result of greater residential concentrations of those more likely to be unemployed. Access to manufacturing production employment demand and manufacturing production unemployment rates are ignored in this analysis and hence, the effect of the location of these workers *vis-a-vis* the location of potential, appropriate employment demand, cannot be ascertained. This omission is a fundamental weakness of the unrealistic assumption of the core area as the sole source of employment demand. Access to manufacturing production employment demand is considered in the following section.

---

[11]A significant, negative relationship ($t = -2.276$, significant at the 5% level) was obtained from a regression of the CBD access index, alone, on CT unemployment levels. This relationship is very weak - only a little over 2% of the variation is unemployment rates is explained without the introduction of socioeconomic variables.

## 2. REGRESSION ANALYSES WITH INDICES OF ACCESSIBILITY TO MANUFACTURING PRODUCTION EMPLOYMENT ZONES

As described in the methodological description, two weighted travel time indices were determined to measure the accessibility of each CT to manufacturing production employment areas collectively containing 80% of the relevant CMA jobs. The first "spatial separation" variable (WGTT1) represents an attempt to measure the relative accessibility of CTs to existing employment demand. Raw travel time values were weighted by the proportion of total manufacturing production employment demand located in each zone. The second spatial variable (WGTT2) was derived from the travel times weighted by the proportion of the increase in manufacturing production employment demand (1971-81) in the municipality containing each destination zone to approximate access to additions to the employment demand stock.

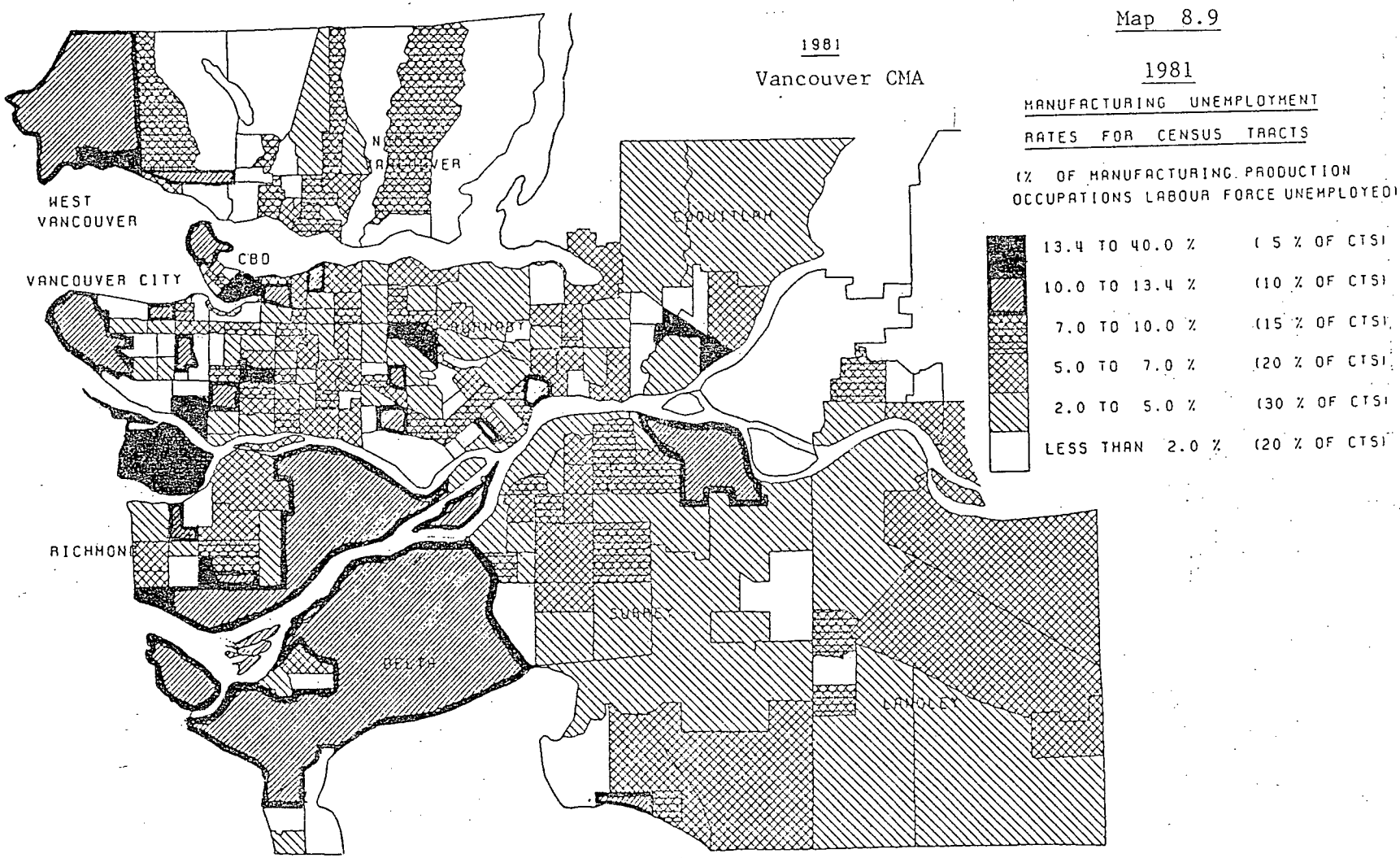
In a preliminary analyses, selected pertinent socioeconomic variables (excluding PMANPROD and PERSERV for obvious reasons) were regressed on CT manufacturing unemployment rates in separate runs with WGTT1, and then WGTT2, as the relevant accessibility independent variables.

Neither of the accessibility variables were found to be significantly associated with CT manufacturing production unemployment rates. The only variables entered into the regression equation were the socioeconomic and housing variables MARRIED and AVALDW and the variation in these independent variables accounted for a meagre 13.5% (in both cases) of the variation in the transformed unemployment rates. The exclusion of the spatial variables indicates that accessibility to manufacturing production employment demand has an insignificant influence on expected manufacturing production unemployment rates. The socioeconomic variables included also provide very little "explanation" of the variation in the dependent variable. Multicollinearity problems also pervade these analyses.

However, as explained, the CT occupational unemployment rates derived from 1981 census data are highly tenuous and could be a contributing factor in the non-significance of the spatial variables and the very poor results in general. Due to the exclusion of inexperienced and longer-term unemployed and the sampling techniques utilized in the census survey, the occupational unemployment statistic is very unreliable (often being very low or sometimes even negative!) The suspect nature of the unemployment rates is also reflected in the map showing their distribution across the CMA (see MAP 8.9). According to this data, high manufacturing production unemployment rates are not concentrated around the core but are dispersed randomly over the metropolitan area. If this situation is accepted, there would be no evidence of the basic condition for demand-side theories attempting to explain intra-urban total unemployment rate variations in terms of higher inner city manufacturing production unemployment rates impelled by limited access to suburbanized industrial employment opportunity. However, the apparent random distribution of manufacturing production unemployment rates contradicts more reliable research results. For example, Employment and Immigration Canada U.I. data shows that "inner city" manufacturing production unemployment rates were substantially higher than in the outer suburban areas in 1980.

In an attempt to overcome the inaccuracy that appears to be inherent in the manufacturing production unemployment rate statistics, the weighted accessibility indices were regressed, in two separate analyses directly on 1981 CT <u>total</u> unemployment rates. Selected socioeconomic factors were also included as potential independent variables.

The rationale for this analysis is based on the assumptions that 1) manufacturing production unemployment comprises a considerable portion of the unemployed labour force (over 25% in 1980) and 2) differential access constraints for manufacturing production workers could result in different unemployment rates observed for each CT.




Source: Compiled from Statistics Canada 1981 Census Data

Up to Step 6, the results of these stepwise regressions are very similar to the analyses with the accessibility index based on travel time to the CBD (see TABLE 8.4). PERSERV, PMANPROD and MARRIED are accepted into the equations while PERENT enters on Step 2 only to drop out in Step 5. The manufacturing production accessibility indices (WGTT1 and WGTT2) are selected on Step 6 in each regression run (as with TCBD) and add a scant two percentage points to the total variance explained in the dependent variable. In addition, a positive, significant relationship with the (natural log) of the unemployment rates is observed. However, the minimal variance explanation contribution and the unstable nature of the model by this stage requires extreme caution in the unconditional acceptance of the significance of the travel-time indices' influence on total CT unemployment rates.[12]

Similar multicollinearity problems to those experienced in the previous analysis are again apparent throughout these two regressions. PERENT drops in and then out of the equations, many potentially relevant independent variables are discarded, the Durbin-Watson statistic is significant, and a linear relationship exists between the two sets of residuals and the dependent variable.

However, there is less collinearity between the accessibility indices and the non-spatial variables and a weak <u>positive</u> unemployment gradient can be discerned moving away from the major manufacturing production employment demand zones. Although the link is tenuous, this gradient does suggest that spatial frictions (based on location *vis-a-vis* manufacturing production employment demand) may be acting to differentiate unemployment probability levels of the manufacturing production workforce. Higher levels of unemployment among these workers could result in higher CT unemployment levels overall.[13] This tendency would be reinforced by interpreting the regression results as indicating that increases in the travel-time distance from existing

---

[12]WGTT1 is only signficant at the 95% confidence level. Given the likely presence of serial correlation in the analysis, the size of the various confidence intervals is probably underestimated and this result would be even less reliable.

[13]Admittedly the net effect would depend on the occupational composition of the CT.

Table 8.4

Regression Results for the Analysis of Personal Characteristics, Accessibility Indices to Manufacturing Production Employment Zones and Total Census Tract Unemployment Rates in Vancouver CMA

Dependent Variable: Natural logarithm of CT total unemployment Rate (LUNRAT)

| Step | | Variable Added/ Removed | Coefficient of Determination $R^2$ | Change in $R^2$ | Standardized regression coefficient | Partial Correlation | T-ratio |
|---|---|---|---|---|---|---|---|
| a) With access index to existing manufacturing production employment demand (WGTT1) | | | | | | | |
| 1 | IN | PERSERV | .3092 | .3092 | .335 | .255 | 3.9*** |
| 2 | IN | PERENT | .3442 | .0350 | | | |
| 3 | IN | PMANPROD | .4039 | .0597 | .548 | .430 | 7.0*** |
| 4 | IN | MARRIED | .4350 | .0310 | -.487 | -.422 | -6.9*** |
| 5 | OUT | PERENT | .4348 | -.0002 | | | |
| 6 | IN | WGTT1 | .4537 | .0189 | .143 | .16 | 2.4** |
| 7 | IN | AVALDW | .4692 | .0154 | .199 | .194 | 2.9*** |
| 8 | IN | PNCUSEUK | .4759 | .0067 | -.130 | -.113 | -1.7* |

Constant = 1.312 (t = 7.68)*** $R^2$ = 0.4759

** = significant at 95 % confidence level *** = significant at 99 % confidence level

Table 8.4 (contd.)

| Step | | Variable Added/ Removed | Coefficient of Determination ($R^2$) | Change in $R^2$ | Standardized Regression Coefficient | Partial Correlation | T-ratio |
|---|---|---|---|---|---|---|---|
| b) With access index to new manufacturing production employment demand 1971 - 1981 (WGTT2) | | | | | | | |
| 1 | IN | PERSERV | .3092 | .3092 | .233 | .236 | 3.5*** |
| 2 | IN | PERENT | .3442 | .0350 | | | |
| 3 | IN | PMANPROD | .4039 | .0597 | .536 | .422 | 6.9*** |
| 4 | IN | MARRIED | .4350 | .0310 | -.51 | -.443 | -7.3** |
| 5 | OUT | PERENT | .4348 | -.0002 | | | |
| 6 | IN | WGTT2 | .4547 | .0191 | .18 | .216 | 3.3*** |
| 7 | IN | AVALDW | .4704 | .0159 | .168 | .171 | 2.6** |

Constant = 1.45 (t = 9.22)*** $R^2$ = 0.470

*** = significant at the 99% confidence level ** = significant at the 95% confidence level

and new manufacturing production employment demand increase the total unemployment rate even after variation from the occupational composition of the labour force is controlled for. Hence, it is not just the proportion of the labour force in manufacturing production or service occupations, or of single marital status, with increasing distance from the zones, that is resulting in higher total unemployment levels.

AVALDW enters in Step 7 in both regression procedures. The positive relationship with LUNRAT is incongruous and is similar to that found in earlier regressions. In the second regression (with WGTT2 as the independent variable, the ethnicity (or perhaps more accurately "racial") variable PNCUSEUK (the percentage of the CT population born outside Canada, the U.S., U.K. or Europe) enters on Step 8. However, PNCUSEUK adds very little to the explained variance (less than one percentage point) in a weak positive relationship with the dependent variable and could probably be dismissed from a meaningful interpretation of the regression equation.

Although the inherent multicollinearity problems must be acknowledged, and the variance explained by the manufacturing production access variables is very small (around two percent), the positive and significant association of WGTT1 and WGTT2, with total CT unemployment rates, does suggest that increasing distance from the manufacturing production employment demand locations tends to increase the 1981 CT unemployment rates after accounting for the occupational composition (the percentage of the labour force in manufacturing production and service occupations), marital status mix, and average dwelling values. A link between spatial frictions and variations in unemployment rates would align with the demand-side hypothesis proposing that the suburbanization of industry has decreased accessibility to jobs (and increased unemployment probability) for the inner area manufacturing production labour force.

However, to this school of thought, spatial factors are posited as a major cause of unemployment variation. In fact, the influence of the spatial variables in the

regression equations is rather weak and is probably secondary to the socioeconomic variables which explain a far greater proportion of the variance. Hence, there is some evidence that spatial frictions may influence the observed unemployment rate, but they certainly do not appear to be having the powerful effect postulated in the spatial cause theories.

Overall, the analysis probably suggests that labour supply, personal characteristic variables have more influence in accounting for the variation in unemployment rates. Multicollinearity removes many of the potentially relevant non-spatial variables from the regressions. However, all three accessibility indices are reasonably independent of the socioeconomic variables - correlation coefficients are quite low and remain so throughout the stepwise procedure (see TABLE 8.4).[14]

Once again, the existence of some influence on unemployment levels, from the spatial separation of home and workplace, does throw some doubt on the assumption of the CMA as the ideal **local** labour market.

## G. CHARACTERISTICS OF THE UNEMPLOYED IN VANCOUVER CMA AND THE RELATIONSHIP BETWEEN THE HOUSING MARKET AND THE SOCIOECONOMIC CHARACTERISTICS OF THE CT LABOUR FORCE

The primary purpose of this section of the research is to attempt to identify the major personal characteristics of the unemployed and to assess whether apparent links between unemployment probability, socioeconomic characteristics and the housing market can help explain the nature, distribution and growth of unemployment in the CMA. This analysis can only proceed with an explicit recognition of the tautological nature of many inferences made in an effort to "prove" the supply-side theories. Obviously, the characteristics of those most likely to be unemployed (when probability

---

[14]The only correlation coefficients of note over 0.5 are those between 1) TCBD and CAROWN (r = 0.706), 2) TCBD and MARRIED (r = 0.6396) and 3) WGTT1 and CAROWN (r = 0.5011).

of unemployment is defined on the basis of stock unemployment rates at a given survey point in time) will be over-represented in areas of high unemployment. This dilemma places severe limits on an attempt at verifying the supply-side hypothesis and supportive evidence probably stems more from the default of other theories - such as the decentralization and trapped hypothesis. However, the correlation of labour force and housing market factors may help in making some overall assessment of the two hypotheses and should serve to illuminate the sources of unemployment or at the least the nature of the supply-demand mismatch in the relevant study area.

The occupational breakdown of the unemployment pool has already been examined in some detail in Section 8:A. As a proportion of the total body of the unemployed in 1980, the major occupational contributions come from manufacturing production (25%), clerical (21%), service (13.6%), managerial, administrative, professional and technical (13%) and construction (11%) occupations (see TABLE 8.5). Although the absolute quantities of unemployment per group are an important consideration and should be kept in mind for the discussion in Chapter 10, they are largely a function of the classification procedure used and unemployment probability is more accurately reflected in the unemployment rates for occupations.

According to Employment and Immigration Canada U.I. statistics, the highest unemployment rate for any occupation in 1980 was 10.8% for the primary occupations' labour force. Manufacturing production (6.8%), construction (6.7%) and service occupations' (4.3%) unemployment rates followed the primary groups, in that order.

At least two other sources of data reaffirm the apparent higher unemployment of these occupations.

The correlation coefficients derived from 1981 CT data indicate a distinct association between high unemployment rates and CTs with high concentrations of manufacturing production occupations ($r = 0.317$) or service occupations ($r = 0.58$) in their labour force. High percentages of managerial, administrative, professional, technical

Table 8.5

Unemployment Rates and the Composition of Total Unemployment by Occupation in Vancouver CMA (1980 - 1984)

| Occupation | Unemployment Rates (U.I. Claimants only) 1980 | 1984 | Percentage point Change 1980-84 | Composition of Unemployment (U.I. Claimants only) 1980 | 1984 |
|---|---|---|---|---|---|
| PRIMARY | 10.8 % | 14.1 % | + 3.3 % | 3.7 % | 3.0 % |
| SERVICE | 4.3 % | 12.5 % | + 8.2 % | 13.6 % | 13.0 % |
| MANUFACTURING PRODUCTION | 6.8 % | 21.9 % | + 15.1 % | 24.4 % | 22.8 % |
| TRANSPORT | 3.4 % | 11.7 % | + 8.3 % | 3.3 % | 3.8 % |
| CONSTRUCTION | 6.7 % | 22.8 % | + 16.1 % | 10.6 % | 12.5 % |
| CLERICAL | 3.9 % | 10.3 % | + 6.4 % | 21.3 % | 19.1 % |
| SALES | 2.6 % | 8.3 % | + 5.7 % | 7.0 % | 7.0 % |
| MANAGERIAL, ADMIN. TECHNICAL, PROF., | 2.1 % | 5.2 % | + 3.1 % | 13.4 % | 14.4 % |

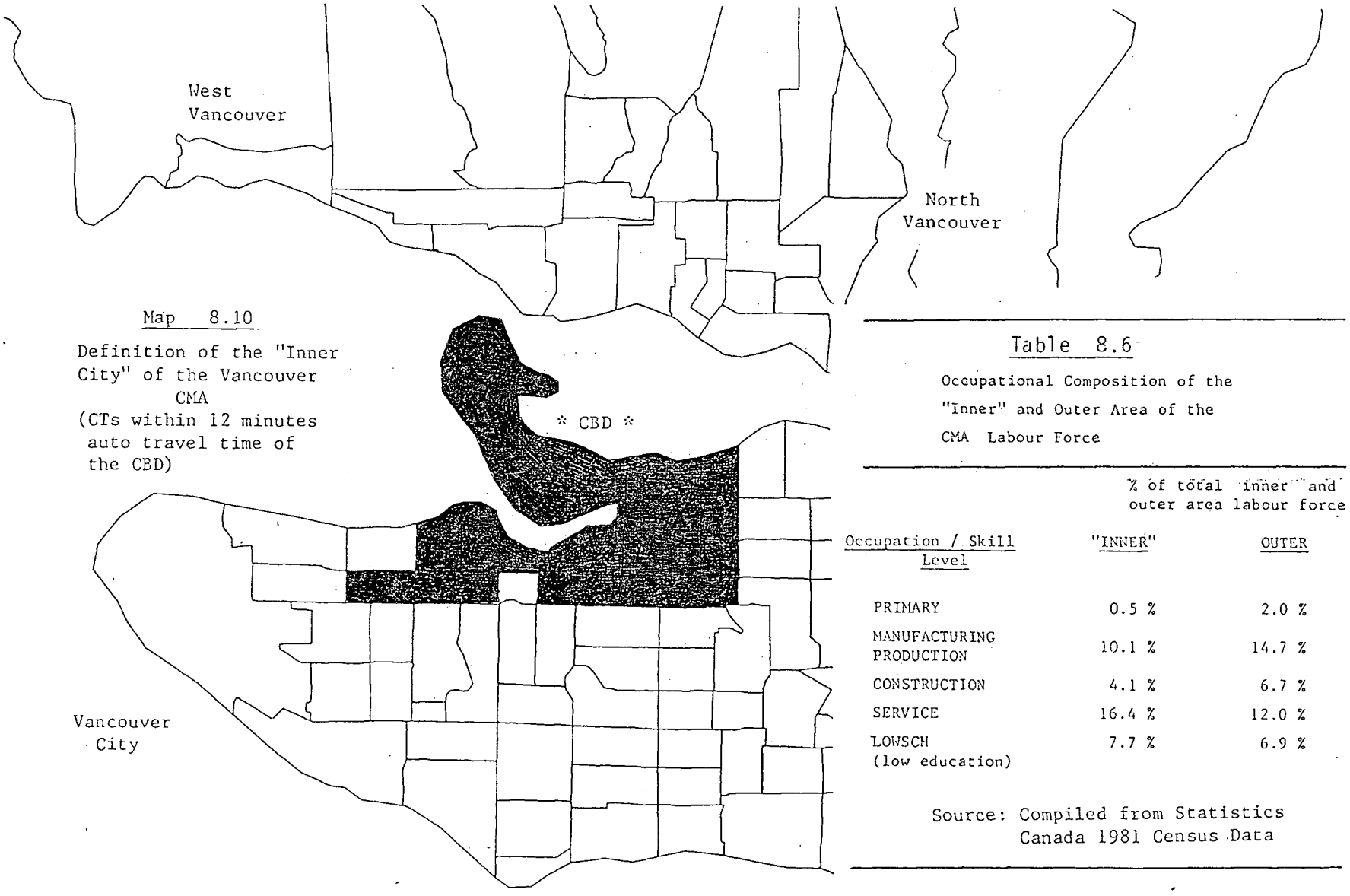
Source: Compiled from Employment and Immigration Canada VP8840 U.I. Claimant Summary Statistics

and related occupations (hereafter abbreviated as the "professional" occupations) were inversely related to unemployment rate levels ($r = -0.409$). The correlation between the concentration of construction workers and unemployment levels ($r = 0.2$) is less marked than for the manufacturing production and service occupations while the percentage of the labour force in primary occupations has no significant association. These two occupations have considerably lower overall proportions of the labour force (6% for construction and 2% for primary) and their influence on unemployment rates would probably be overwhelmed by the rates of other occupational groups.

Crosstabulations of labour force activity with occupation classification from the 1:50 sample of **individuals** in the "Personal User Summary Tapes" suggest a similar concentration of high unemployment among the same four occupations (primary 7.4%, service 4%, manufacturing production 3.2%, and construction 3%). The "professional" occupations have unemployment rates of around 2%. These figures are rather low and there is undoubtedly some weakness in the use of this data source. Unemployed individuals would probably tend to forego their "occupational classification". However, the results are generally consistent with Employment and Immigration Canada data.

Given that all three data sources support the occupational-based differentiation in unemployment rates, members of the manufacturing production, service, construction and primary occupations can be assumed to face a considerably higher than average risk of unemployment.

Recalling the higher total and manufacturing production unemployment rates in the inner area in 1980 (see MAP 8.8), one would expect a greater concentration of these occupations in the "inner" area. However, utilizing the definition of the inner area as those CTs within 12 minutes travel time of the CBD (see MAP 8.10), the only occupation with higher proportions in the inner city labour force is the service occupations. All other occupations have stronger compositional representation away from the core area (see TABLE 8.6).




Map 8.10

Definition of the "Inner City" of the Vancouver CMA
(CTs within 12 minutes auto travel time of the CBD)

Table 8.6

Occupational Composition of the "Inner" and Outer Area of the CMA Labour Force

| Occupation / Skill Level | % of total inner and outer area labour force "INNER" | OUTER |
|---|---|---|
| PRIMARY | 0.5 % | 2.0 % |
| MANUFACTURING PRODUCTION | 10.1 % | 14.7 % |
| CONSTRUCTION | 4.1 % | 6.7 % |
| SERVICE | 16.4 % | 12.0 % |
| LOWSCH (low education) | 7.7 % | 6.9 % |

Source: Compiled from Statistics Canada 1981 Census Data

If an inner city concentration of unemployment is to be accepted, the lower concentration of manufacturing production workers in the inner versus the outer area contradicts the basic tenet of the trapped hypothesis (spatial causes of manufacturing production unemployment are thought to be a major cause of intra-urban variations - particularly high inner city unemployment).[15] Unless there is a considerable range of unemployment probabilities for groups within the manufacturing production occupations, this situation is likely to jeopardize any possible relevance of the demand-side hypotheses based on industrial decentralization as a root cause of unemployment variation within the urban area.[16]

The absence of a corresponding decrease in the proportion of the labour force in the unemployment prone occupations with increasing distance from the CBD is inconsistent with the marginally higher levels of unemployment found in the inner area. This paradox could be a result of the different definition of the "inner city" or problems in the data. However, it could also suggest the existence of unemployment probability differentials within these occupations. The unemployment probability of labour force members and intra-urban spatial variations in unemployment cannot be predicted on the basis of occupational composition alone.

One important link between occupational traits and the probability of unemployment could be skill or education levels. Using the proportion of each occupational stratum with less than Grade 13 education (and without trade or other certificates or diplomas) as the relevant index, measures of the low-skill content can be obtained and compared for occupations.[17] With the exception of the transport occupations, those categories with the highest unemployment rate also have the highest

---

[15] This would require an acceptance of the assumption that the group is homogeneous. Although there is some evidence of the concentration of total and manufacturing production unemployment in the inner city areas (see MAPS 8.8 and 8.1 to 8.4), the distinction is not sharp. For instance, the correlation between TCBD and the unemployment rate is only about -0.2.

[16] This is consistent with the conclusion in Section 8.D.

[17] Data is derived from crosstabulations of individual personal characteristics in the "Personal User Summary Tapes".

proportion of low-skilled members (primary (56%), service (50%), manufacturing production (43%), and construction (40%) compared to the "professional" (12.4%), clerical (27%) and sales (35%) occupations). This tendency is also supported in the 1981 CT correlations of an identical low-skilled variable (LOWSCH) with 1) PMANPROD ($r$ = 0.718), 2) PERSERV ($r$ = 0.748) and 3) the percentage of the labour force in the "professional" occupations (PERSKILL, $r$ = −0.733).

Over the entire CMA labour force, more than 40% of those unemployed have not completed high school and do not possess any other form of trade certificate or higher qualifications, compared with under 30% of the employed labour force.[18]

The higher incidence of unemployment among those with low skills is a very common phenonemon and is supported in a plethora of studies (for example, see Metcalf & Richardson's (1976, p.197) study of male unemployment in London). Hence, it is quite reasonable to propose that a major cause of variation among, and possibly within occupations, is related to skill differences. The association between skill levels and unemployment is also predicated in the nature of the correlation between LOWSCH and TOTUNRAT ($r$ = 0.5214) and the higher unemployment rates among the low-skilled observed in the crosstabulation of 1981 Vancouver CMA individual characteristics. Although this second data source is a little dubious, 5.1% of those with low-skill levels were unemployed compared to less than 3.0% for every other category.[19]

In order to gain further insight on the influence of various labour force characteristics on total, male, and female unemployment rates, a series of stepwise regression analyses were completed. These 1981 CT-based regressions were identical to those described previously excluding the accessibility (spatial) variables. The results of the regressions with (logged) total, male and female unemployment rates are

---

[18]This data is derived from crosstabulations of individual personal characteristics in Statistics Canada's (1981) "Personal User Summary Tapes".
[19]The same definition of "low-skill" applies here as in the previous analyses.

summarized in APPENDIX C.

High multicollinearity and the exclusion of many potentially relevant variables has meant that this analysis adds little to insight gained from the regressions **with** the spatial variables. One major exception is that the LOWSCH variable does enter in a significant and positive relationship with male unemployment rates. PMANPROD also enters the equation even after accounting for the variation in the low-skill composition of CTs. As discussed, these two variables are correlated (r = 0.717) and their independent inclusion into the equation reasserts their importance as influences on (male) unemployment rates.

However, the total variance explained is low in all equations (dropping from about 46% for total and male unemployment rate regressions to a dismal 20% for the female equation) and, together with the regression serial correlation problems, the simple correlations are probably just as, if not more, informative and reliable as the regression results. The discussion of correlations between personal characteristics and total, male and female unemployment rates shall de-emphasize skill, occupational and mobility aspects to avoid undue repetition. An analysis of associations involving housing variables shall also be deferred until later in this section. A complete correlation matrix for all relevant variables is given in APPENDIX B.

Of the remaining personal characteristic variables, the strongest correlations with the CT total unemployment rates are those with MARRIED (r = 0.479) and PSINHO (r = 0.403) These two variables are obviously strongly inter-correlated (r = -0.926) and the apparent lower unemployment rate among the married is consistent with the previous regression results. The two ethnic/racial variables (PNCUSEUK and PASIABOR (the percentage of the population born in Asia)) have moderate positive correlations with the total unemployment rates of CTs. However, it is difficult to interpret these correlations as inferring that ethnic workers tend to have higher unemployment probability levels because of confounding correlations between TOTUNRAT (CT

unemployment rate), LOWSCH and the occupational variables.

The age composition variables YUNG (r = 0.21) and OLD (r = −0.043) seem to have only a very weak association with unemployment levels. The negative relationship between the percentage of the labour force under 24 years of age and the CT unemployment rate contradicts the endemic high levels of youth unemployment in the CMA. However, the non-significance of age variables in area-based correlation and regression analyses, has also been found in Metcalf & Richardson's (1976) study of male unemployment in London.

In addition, the MARRIED variable and the DEPEND (number of non-adult dependents per 100 labour force members) variable were quite strongly and negatively associated with male unemployment rates (r = −0.614 and r = −0.326 respectively). This inverse relationship between high unemployment and married and child-bearing stages of the life cycle, is consistent with the findings of Metcalf & Richardson (1976) who propose that greater stability and a higher marginal utility of income relative to leisure for the married with dependents, possible discrimination in favour of married workers, or greater need to work from increased family members to support, may comprise the underlying explanation of this phenomenon.

The ethnicity variables also have a significant positive association with male unemployment rates (r = approximately 0.3) but further interpretation faces the same problems as in the relationship with TOTUNRAT. LOWSCH (r = 0.448), PERSERV (r = 0.568), CAROWN (r = −0.639) and PSINHO (r = 0.523) all have their expected relationships with male unemployment rates paralleling those found for the total unemployment rates.

For the female unemployment rates, there are notably few strong correlations - even the MARRIED and CAROWN variables are only very weakly related. Apart from the occupational variables (PERSERV and PMANPROD) and, to a limited extent, the LOWSCH variable, the range of socioeconomic variables used in the analysis do not

appear to "explain" variations in female unemployment rates. A similar situation is found as a result of the regression analysis with female unemployment rates as the dependent variable (see APPENDIX C).

Further investigation of the relative explanatory power of the two alternative hypotheses on intra-urban variations in unemployment was undertaken by examining some links between occupational and skill attributes and housing market factors.

One significant association between labour force activity and the housing market is that between higher unemployment levels and the "inferior" sections of the housing market. Although the correlation coefficients are somewhat low, there is a positive association between total unemployment rates and the percentage of CT dwellings "old and in need of repair" (PEOLREP) and the average number of people per room (PEROOM). There is also a slight negative association between total unemployment rates and the average dwelling value in CTs ($r = -0.248$). High unemployment CTs also tend to have higher levels of rented dwellings (PERENT, $r \doteq 0.4059$). Hence, the unemployed seem to live disproportionately in certain sections of the housing market which can be discerned using these "quality of housing" variables. Unfortunately, it is impossible to tell if prolonged unemployment draws people to areas of "worse" housing, or whether people with personal characteristics making them more vulnerable to unemployment "choose" to live in certain types of housing in accordance with their incomes and preferences, or whether these groups are trapped in distinct housing sub-markets.

PMANPROD, PERSERV, and LOWSCH share similar correlations, in the same direction, as total unemployment rates did with the lower standard housing stock variables. In a sense, this association is tautological and is not paricularly fruitful for explaining the distribution or nature of unemployment as, by definition, these groups (manufacturing production, service and low-skill labour force members) are more likely to be unemployed. However, it does reaffirm the tendency for a higher propensity for

unemployment among individuals with any or a combination of these personal characteristics.

The level of income accruing to these groups probably provides a vital link between 1) high unemployment rates, 2) high percentages of manufacturing production, service and low-skill workers and 3) inferior housing market conditions. CTs with a large proportion of the highly skilled occupations (managerial, administrative, profession, technical and related occupations) tend to have high average income levels (measured by AVINC). This is indicated by the strong positive correlation coefficient ($r = 0.835$) between PERSKILL and AVINC. High skill levels in CTs are also associated with higher average dwelling values (for PERSKILL and AVALDW, $r = 0.732$).

Conversely, LOWSCH (the percentage of the CT labour force whose highest level of schooling completed is less than Grade 13 and who do not possess a trade or any other diploma or certificate) is negatively correlated to AVINC ($r = -0.6$) and AVALDW ($r = 0.377$). The manufacturing production and service occupation variables have very similar correlations with AVINC and AVALDW - the higher the percentage of these workers, the lower the average income and average dwelling value levels.

It is therefore quite likely that these groups, who are the most vulnerable to unemployment, are restricted to, or have a resultant "trade-off" housing choice preference for the low income, lower standard housing of the metropolitan area. If this housing was found to be concentrated in the inner area and if the suburbanization of manufacturing production employment demand could be shown to present daily commuting access problems, the basic setting for the trapped hypothesis explanations of intra-urban spatial variations in unemployment would exist. The older and poorly maintained housing (measured by PEOLREP) is negatively correlated with TCBD ($r = -0.382$). However, AVALDW is only very weakly correlated (and in the wrong direction) with TCBD.[20] Hence, there is no real rationale for low-skill,

---

[20]The association between AVALDW and TCBD could be distorted by variable measurement problems. The average value of dwellings only includes private

unemployment-prone labour force members to be drawn into central city low-income housing locations.

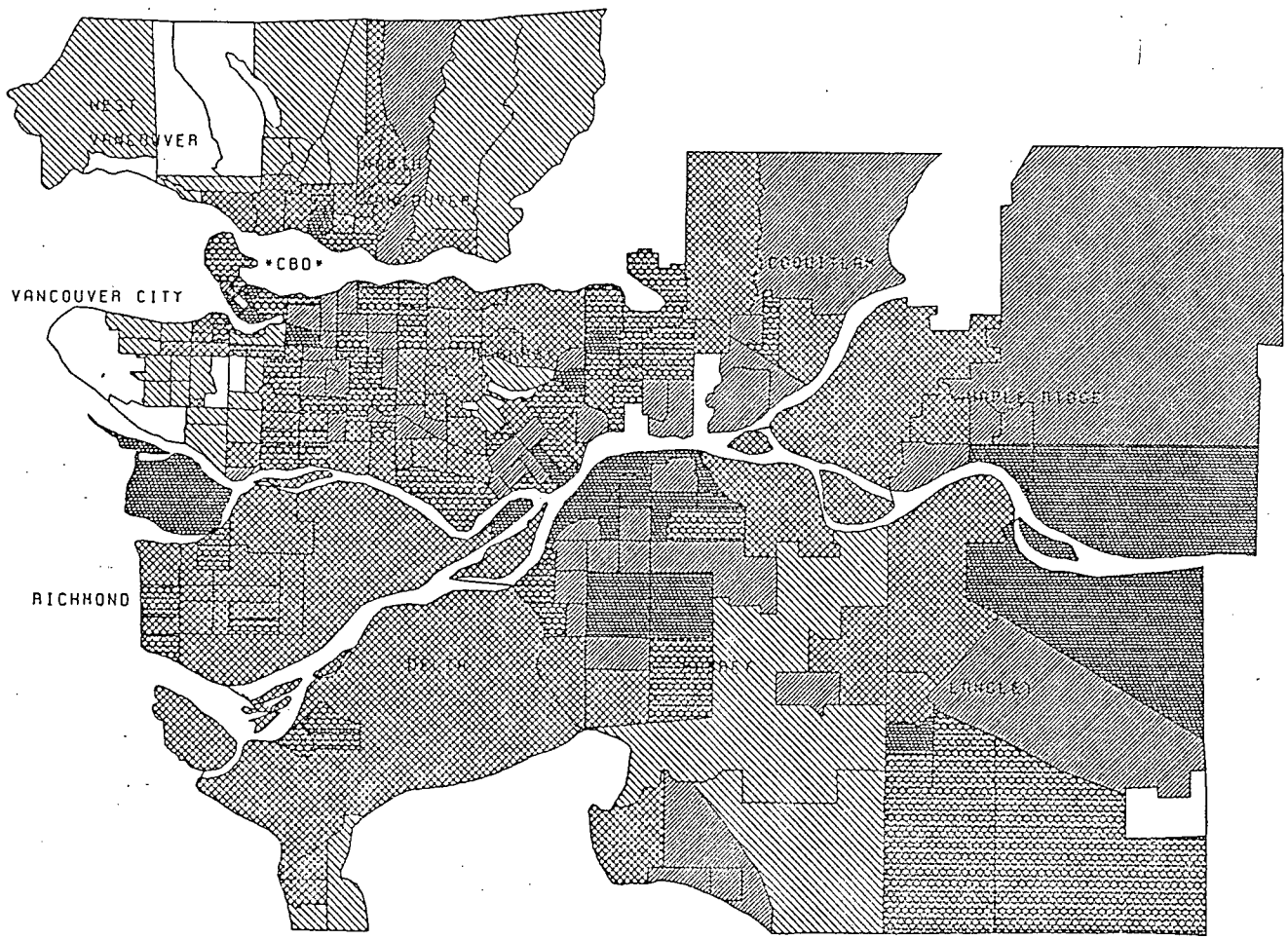
However, the map showing the distribution of low-cost (private) housing (see MAP 8.11) highlights the concentration of below average dwelling values in the inner city area, the east side of Vancouver City, and in the New Westminister area where unemployment levels are high. Comparison with the map of the distribution of the low-skilled labour force (MAP 8.12) hints at a correspondence between low-skill and low average dwelling values and illuminates the distinct concentration of both in the inner city, eastside Vancouver, and New Westminister areas. There are many exceptions to this pattern (for example, the extensive areas of low-cost housing in Surrey and Coquitlam and in a few CTs in Maple Ridge and Langley) and, as a result, the correspondence between high unemployment, low skill and low-income housing around old core areas is by no means definitive.

However, the apparent association between high unemployment, low skill levels, high percentages of manufacturing production and service workers, and low average dwelling values (and the results of the many other correlations between occupational, skill, and housing variables described) does support the basic premises of the supply-side theories of intra-urban variations in unemployment. Those individuals with the greatest chance of unemployment live disproportionately in certain areas of the city - possibly as a result of allocation to a differentiated housing market (which has developed historically) on the basis of those personal characteristics which affect the probability of unemployment.

As described, this is not evidence for the supply-side thesis at the expense of the demand-side explanations but it does indicate the existence of the necessary

---

[20](cont'd) owner-occupied dwellings and hence, excludes the rental housing market which tends to have a lower representation of the more highly-skilled occupations (the correlation between PERSKILL and PERENT is -0.7). The correlation coefficient could also be distorted by the disproportionate effect of increasing distance from the CBD and the presence of cheap housing in and around the old core area of New Westminister.




VANCOUVER CMA
1981

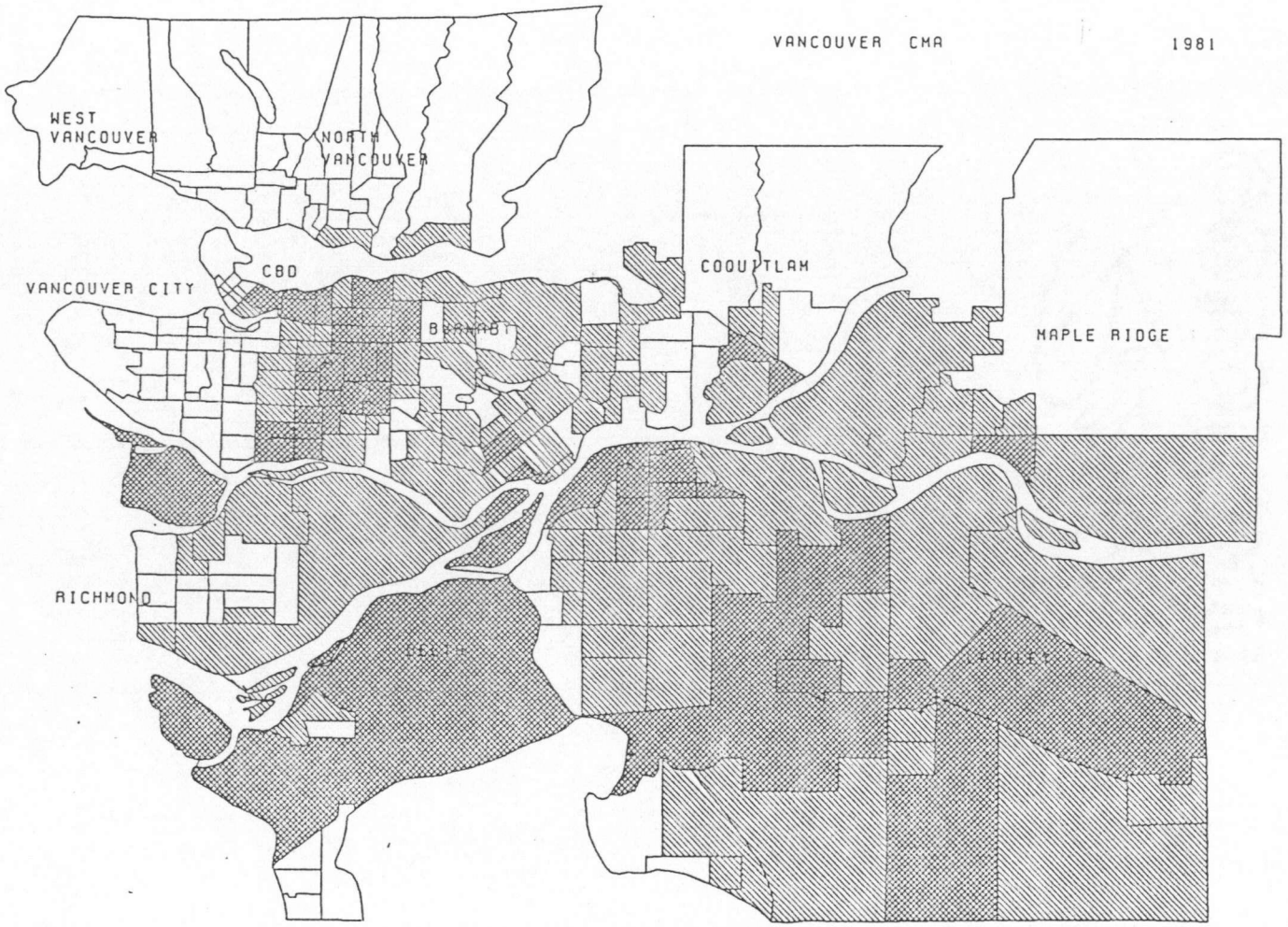
Map 8.11

DISTRIBUTION OF LOW-VALUE HOUSING

AVERAGE VALUE OF DWELLINGS IN EACH CENSUS TRACT

- $0 TO $120 000
- $120 000 TO $140 000
- $140 000 TO $160 000
- $160 000 TO $200 000
- $200 000 TO $350 000
- MORE THAN $350 000

Source: Compiled from Statistics Canada 1981 Census Data




Map 8.12

DISTRIBUTION OF LABOUR FORCE WITH EDUCTION BELOW SECONDARY CERTIFICATE (and having no other qualifications)

% OF CT LABOUR FORCE WITH HIGHEST LEVEL OF COMPLETED SCHOOLING BELOW GRADE 13

- 45 TO 62 %
- 35 TO 45 %
- LESS THAN 35 %

Source: Compiled from Statistics Canada 1981 Census Data

conditions for the explanation of spatial variation in unemployment as a result of personal characteristics of labour supply and their association with characteristics of the housing market. Default of the demand-side hypothesis would reinforce the probability that the personal characteristics-housing supply processes were the principal determinants of observed CT unemployment level variations.

Another clear conclusion to be drawn from this research is the major influence of skill and occupational personal characteristics on the unemployment probability of labour force members. Marital status also appears to play an important role. Finally, individual travel mobility (proxied by 1971 car ownership levels) has a consistent and strong association with unemployment rates though its collinearity with many other variables (such as TCBD, occupational, skill, marital status and a number of other life cycle variables) confounds interpretation.

The previous discussion of research on the characteristics of the unemployed in the CMA has focused primarily on data for the low unemployment census year 1981. More recent data on changes in the nature of unemployment is limited to the industry, age, duration and occupational detail at CEC level from Employment and Immigration Canada and highly aggregated welfare statistics from the provincial "Ministry of Human Resources". A detailed analysis of changes in Standard Industrial Classification (SIC) structure of employment and unemployment would undoubtedly be of great interest. However, due to resource constraints, this research focus has been foregone in favour of an emphasis on the changing occupational composition and trends in employment supply and demand on the basis of an assumed greater mobility for workers across industries, than between occupations, and in order to complement the considerable existing body of literature and research on industry by industry changes (for example, Employment and Immigration Canada regularly release "Labour Market Bulletins" focused on SIC employment changes).

Some of the occupational group changes over the 1980–84 period have been outlined in section 8.A. However, there are a few additional points to be considered which stem from the research discussion throughout this chapter .

A closer examination of the occupational composition of unemployment since 1980 reveals that there has been very little change in those occupations occupying the "top" of the unemployment rate, and percentage of total unemployment, ladders (see TABLE 8.5). In 1984, manufacturing production occupations made up 22.8% of the unemployment pool followed by clerical (19.1%), the professional occupations (14.4%), service (13.0%) and construction (12.5%). However, in terms of unemployment rates and increases in unemployment rates over the 1980–84 period, the skilled and clerical occupations do not suffer to the same extent as the other occupations.

In 1984, the construction group had the highest unemployment rate of all occupations (22.8%) increasing 16.1 percentage points since 1980. Following close behind, the unemployment rate for manufacturing production occupations increased by 15.1 percentage points to 21.9% in 1984. Primary occupations fell to third place in the unemployment rate order (14.1%) with only a 3.3 percentage point increase probably as a result of low labour force growth in this group. Transport and service unemployment rates also increased substantially over this period (by 8.3% and 8.2% respectively) followed by clerical, sales and finally, the "professional" occupations.

Thus, although the quantity of unemployed in the managerial, administrative, professional, technical and related occupations grew considerably, their unemployment rate remained the lowest of all groups (at 5.2%). The probability of unemployment for the "professional" labour force member is about four times less (in 1984) than for the severely affected manufacturing production and construction workers.

As the rapid growth in unemployment rates has only been underway since about 1981, it is very difficult to assess to what extent the worker displacement is "cyclical" versus "structural" (in the sense of a long-term change in the occupational

demand requirements of the CMA and region as a whole). The manufacturing production occupations are selected as a case study to attempt to throw some light on this question in the following chapter.

The large increase in the unemployment rate of the construction occupations may be indicative of short-term changes in demand that tend to be exaggerated in this "cyclically-sensitive" industry and stable unemployment conditions in the primary occupations suggest that occupational-structural impediments have had a limited effect on this sector. However, the manufacturing production occupations (approximating the traditional industrial "blue-collar" workforce sector) comprise the largest absolute pool of unemployed and have the second highest unemployment rate. Once again, the short time-period involved prevents any generalization as to the relative importance of cyclical versus structural effects.

The only clear trend to be identified in the changes in unemployment over the 1980-84 period is the exacerbated detrimental effects of the economic downturn on the same groups that had had the highest unemployment rates in times of high unemployment demand. Extrapolating the occupational-skill association found within this section, the largest increase in unemployment rates (excluding the "primary" occupational groups) have been in the lower-skilled and/or "blue-collar" occupations (manufacturing production, construction, transport and service occupations). However, the size of the unemployment pool for the professional and clerical occupations has increased substantially.

As observed in section 8.D, the unemployment growth of the CMA since 1980 has little to do with direct spatial causes. A marked redistribution of both total and manufacturing production unemployment rates occurred in more recent times. The core concentration of total and manufacturing production unemployment diffused throughout the CMA region so that, by 1984, these rates were roughly equivalent in inner and outer areas.

## H. OCCUPATIONAL UNEMPLOYMENT IN BRITISH COLUMBIA

The nature of, and changes in, the occupational composition of unemployment can also be examined at the B.C. regional level by tracing and comparing the levels of total and employed labour force for each occupational group. The Statistics Canada "Labour Force Survey" data, at the provincial level, is the finest occupational and geographic breakdown available and is available monthly, at a fairly detailed level, over the past 10 years.[21] Trends in unemployment for occupations can be observed in absolute terms and in relation to changes in the labour force or employment demand required (see FIGURE 8.2). Although frictional and some types of structural unemployment detract from the accuracy of the employed labour force schedules as the true measure of labour demand, the "gap" between total labour force and employed labour force does give some indication of the absolute level of unemployment faced by particular occupational groups.

The occupations have been arranged in order (in a sequence shown by the arrows) from the lowest skill occupations (service) to the highest skill occupations (managerial, administrative, professional, technical and related). This classification is based on the percentage of the labour force with less than Grade 13 schooling and without a trade , university or non-university certificate, diploma or degree (50% for the service occupations and 12% for the professional occupations). Thus, the ordering is necessarily a generalization and there would be a wide variety in skill-levels of labour force members within each occupational category. The primary occupations have the highest low-skill content (56%) but have been omitted from the graphs due to space limitations and their very low labour force figures.

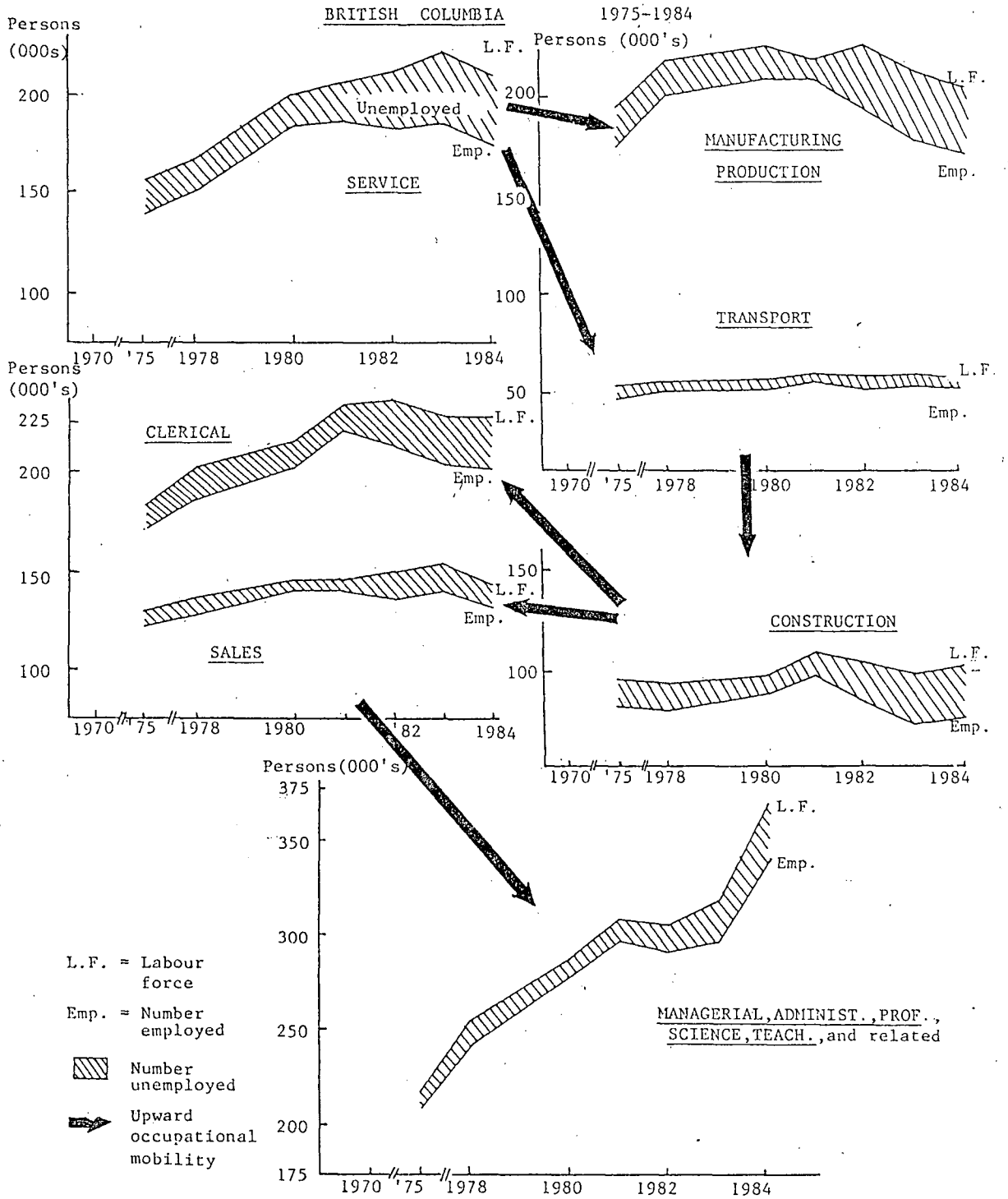
The total and employed labour force graphs illustrate which occupational groups have undergone the largest increase in employment demand, labour force, and excess

---

[21]"Labour Force Survey" data is available monthly (71-001) or in averaged annual form (71-529). It should be noted that this labour force data is based on a sample of less than one percent of households.

Figure 8.2 UNEMPLOYMENT (LABOUR FORCE-EMPLOYED) COMPARISON ASCENDING THE OCCUPATIONAL-SKILL LADDER

BRITISH COLUMBIA 1975-1984




Source: Statistics Canada 71-001 Monthly Labour Force Survey
71-529 Labour Force Survey Annual Averages

supply of labour. A comparison between occupations and with CMA figures assists in the identification of the degree of structural-occupational and structural-geographic unemployment. Job-training to facilitate occupational mobility, and incentives to stimulate residential relocation are favoured tools for ameliorating unemployment - particularly in the specific labour market policies adopted in monetarist theory where unemployment is perceived as primarily a result of growth in the natural rate of unemployment.

FIGURE 8.2 illustrates the high absolute levels of unemployment in service, manufacturing production, clerical and the "professional" occupations and the alarming growth in all occupations since 1981. Growth in employment demand has been very limited in all of the "blue-collar" occupations and the low-skilled service occupations while the increases in the professional occupations have been quite spectacular over the past 10 years. Only the concomitant mushrooming of the managerial, administrative, professional, technical and related labour force has kept absolute levels of unemployment high for this group.

Employment demand in the clerical occupations grew steadily up to the recessionary period beginning in 1981. However, the quantity of labour demand for the lower-skilled "office" workers has continued to decline since 1981.

A **reduction** in manufacturing production employment demand (and a delayed reduction in the size of the appropriate labour force) has occurred throughout the 1980's. However, the drop-off in the labour force has been insufficient to offset the fall in employment demand and the large gap between the two schedules is indicative of the severe unemployment problems to be found in these occupations. A stagnation in employment demand for the service occupations, since 1980, has resulted in a substantial growth in unemployment in this group as the labour force has continued to increase over most of this more recent period [22]

---

[22]this trend could be the possible result of displaced manufacturing production workers searching for potential jobs in blue-collar service sectors.

Probably the largest growth in unemployment is for the two lowest skill occupational groups (service and manufacturing production occupations). An incipient growth in the disparity between employment demand and supply is visible for clerical occupations and the construction industry has been severely affected by declining demand in other sectors.

Alternately, the higher-skill occupations (assumed as the "professional" occupations) have undergone rapid increases in provincial employment demand and labour force. However, there has been a growing number of unemployed people classified in these occupations over the 1980-84 period.

The high relative and absolute levels of unemployment in all occupations - even as the occupational-skill ladder is ascended - suggests the unemployment in recent years is not simply the result of a mismatch of labour supply skills available and those demanded by the various forms of industry. In addition, intra-provincial migration would not aid in ameliorating CMA unemployment as the excess in labour supply is as severe in, if not worse, in most occupations at the B.C. regional level.

Thus, there appears to be little hope for isolated job-training and intra-regional residential mobility schemes as the means of coping with the large-scale unemployment experienced in B.C. throughout the 1980's. Although the bulk of the unemployment lies in the blue-collar and lower-skilled white-collar occupations, large unemployment "pools" are faced by the displaced or new worker even if he or she could effortlessly climb the occupational "ladder" and move to anywhere in the province to obtain work.

If the scenario depicted in FIGURE 8.2 is representative of the actual state of the mismatch between supply and demand for each occupational stratum, unemployment growth in the 1980's (at the B.C. level) appears to be predominantly of "demand-deficiency" origins rather than from frictional, structural-occupational, or structural-geographic sources. However, it is extremely difficult to ascertain, without detailed additional analysis (on non-existent data), to what extent it is a cyclical or

short-term phenomenon or a product of long-term changes involving a redefinition of B.C.'s role (or "comparitive advantage") in a world economy undergoing profound economic structural change. A closer look at the nature of structural changes in manufacturing production employment activity in B.C. throughout the 1970's, will be examined in Chapter 9.

Chapter IX

# STRUCTURAL AND LOCATIONAL CHANGES IN MANUFACTURING PRODUCTION ACTIVITY IN BRITISH COLUMBIA

## A. GENERAL TRENDS IN MANUFACTURING PRODUCTION ACTIVITY IN BRITISH COLUMBIA

Up until 1979, aggregate demand for manufacturing production output (if assumed to be adequately proxied by the value-added measure) had grown considerably in B.C. (see FIGURE 9.1). It is only in the more recent period, for which data is available (1979-81), that there appears to be a decline in demand for production output paralleling B.C.'s (and to a lesser extent Canada's) economic malaise of the early 1980's witnessed by persistent high levels of unemployment in the Vancouver CMA and in the province as a whole since 1981 (see FIGURE 1.2).

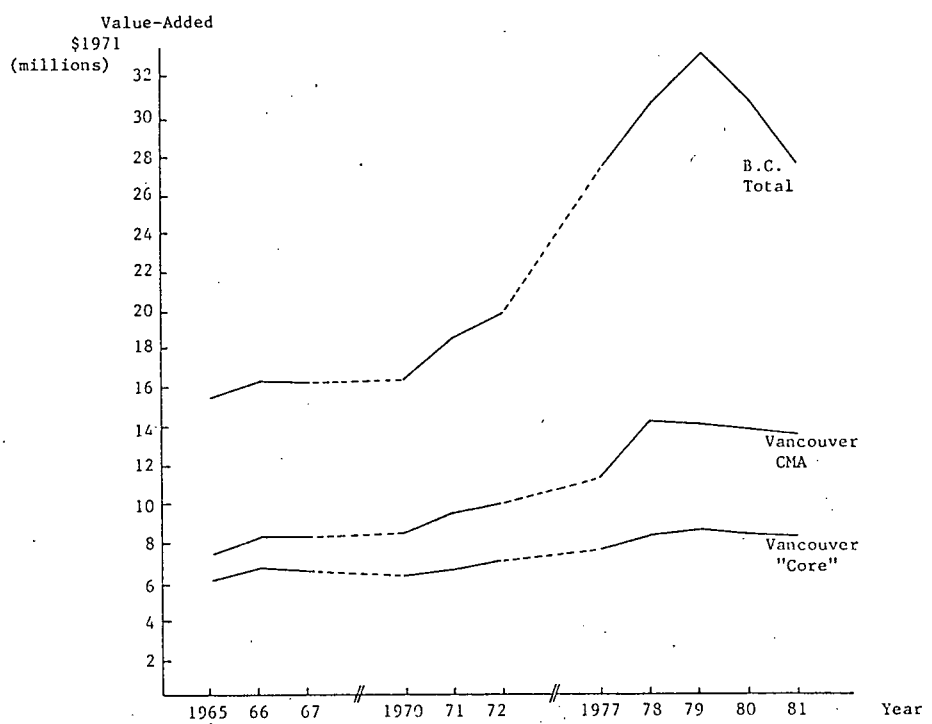



Figure 9.1 Manufacturing Output Value-added in British Columbia, Vancouver CMA, and the Vancouver "Core" area 1965-1981

Source: Compiled from Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level"

Non-core areas grew at the fastest rate over the boom 1965-1979 years representing a marked, relative decentralization of manufacturing activity from its traditional concentration in the inner municipalities of the Lower Mainland area to the suburban CMA and the nonmetropolitan region. B.C. as a region experienced an overall real increase of 114% in value-added in manufacturing production activities. The core area (Vancouver City, Burnaby, New Westminster, and North Vancouver (City and D.M.)) only added 42% to its admittedly substantial base while the total CMA expanded its output at a higher rate (but still below the provincial average) of 89% over the 14 year period.

Therefore, a relative decentralization of manufacturing output, already observed at the intra-urban level in Chapter 5, can also be discerned at the regional level where both the CMA and, in particular, the "core" have conceded a considerable **share** of the manufacturing production value-added (see TABLE 9.1) Spatial differentials in growth rates in manufacturing production worker employment are even more pronounced than in the redistribution of value-added (see FIGURE 9.2) - absolute manufacturing production employment in the Vancouver "core" area declined by 3.2% over the period 1966-81 (though output increased by 42% as noted).[1] This trend, contraposed to a 22% and 29% increase in absolute manufacturing employment in the CMA and the province respectively, contributed to the reduced share of the provincial manufacturing employment to be found in the "core" (from 40 to 30 %). The CMA also slipped three percentage points in its total share of the employment "pie" (see TABLE 9.1). Thus, the CMA gained 10558 (40%) of the **new** manufacturing production jobs while the rest of B.C. gained 15919 (60%) of these additional positions. The relative decentralization of manufacturing in terms of employment location is consistent with the decentralization identified in value-added terms. The proportional changes are

---

[1]The employment figures only include "production and related" workers. Administrative and office white-collar employees and other non-manufacturing employees are excluded from the manufacturing employment statistics.

Table 9.1 Distribution of Provincial Manufacturing Production Output and Employment in Vancouver CMA and "Core" Areas 1966 and 1981

| Year | % of B.C. Value-Added | |
|---|---|---|
| | CMA | "Core" |
| 1966 | 51 % | 40 % |
| 1981 | 49 % | 30 % |
| | % of B.C. Employment | |
| | CMA | "Core" |
| 1966 | 51 % | 40 % |
| 1981 | 48 % | 30 % |

Source: Statistics Canada 31-209 Manufacturing Statistics of Canada: Sub-provincial

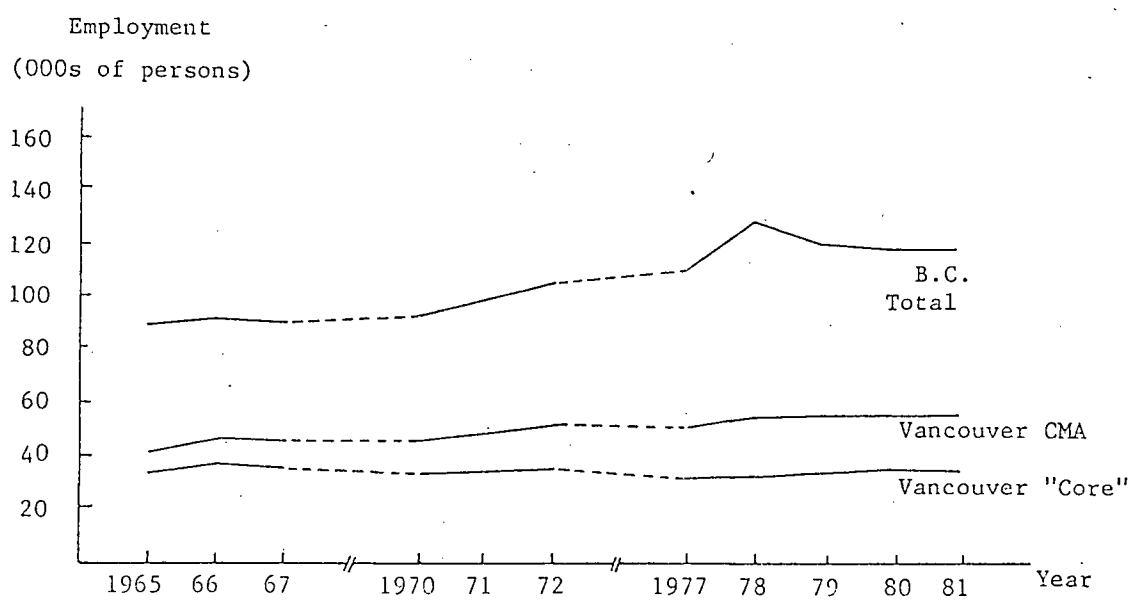



Figure 9.2 Manufacturing Production Employment Trends in British Columbia, Vancouver CMA, and Vancouver "Core" Area

Source: Compiled from Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level"

almost identical.

Comparing the employed labour force changes over the 1966–81 period in the CMA and the province in total, the manufacturing production workforce of the CMA received far less of the total employment creation and, without geographic or occupational mobility, it is possible to conceive of disadvantages on the metropolitan area's manufacturing production labour force in terms of access to employment created from expanded manufacturing production activity. However, this inference would be spurious in the absence of more detailed data and a consideration of geographic local labour market aspects for the non–CMA employment growth.

Although productivity increases and capital–intensification proceeded quite rapidly province–wide over the 1966–81 study period, the number of "person–hours" used in manufacturing production activity decreased slightly in the core area, while the labour hours supplied for the CMA increased by 28% and, at the total provincial level, by 30%. Hence, with the possible exclusion of the "core" area, automation in the Marxist sense of new technology increasing productivity more rapidly than it increases output, is not apparent in the study area during the 1970's (Jordan, B. (1982) p.99).

Manufacturing production output growth has outpaced manufacturing employment demand increases (114% versus 29%) and is directly linked to productivity (output/person–hour) gains within the sector. This phenomenon is fairly typical of secondary activities in the industrialized world and is largely the result of the continued restructuring of industry, via the adoption of improved technology, organizational modes, and the utilization of scale economies and "superior" better–trained human capital, and is primarily motivated by cost–efficiency criteria. Any form of competition for product markets (or declining demand in relation to supply) usually instigates the need to increase productivity (particularly in the face of a relative increase in the price of labour versus capital).

The effect of productivity gains outpacing demand increases is most apparent in the core and CMA areas where employment (person-hours) has grown only marginally, if at all (employment actually declined in the core) though total manufacturing production value-added ($1971) had risen almost 100% over the 1966-79 period. B.C. as a whole did, however, experience considerable gains in utilized person-hours though at a lesser growth rate than increases in output. Productivity levels at all three scales remained remarkably similar from 1966-71 (see FIGURE 9.3) though productivity actually increased to considerably higher levels in B.C. as a whole, than in the core and CMA areas, in the boom years of 1972-79. This situation suggests that relatively greater employment growth in the nonmetropolitan areas had only been sustained by substantially greater growth in output.

Surprisingly, the sharp downturn in demand (value-added to output) in the province in the 1979-81 period has not initiated a similar decline in employment (see FIGURE 9.2). Possible reasons could include:

1. A tendency to hoard labour in response to an anticipated business cycle movement which is only short-run in nature.
2. Reduced substitution of labour for capital as a result of a negative impact of recessionary periods on technical innovation - particularly in the short-run (as described in Standing, G. (1984)). A decline in B.C. capital-intensity levels and stabilization at the CMA and "core" scales can be noted for the 1979-81 period (see FIGURE 9.4). However, declining profit would eventually require some restructuring to improve the cost-efficiency of production and the competitiveness of output in domestic and international markets.
3. A levelling off of real wage costs (see FIGURE 9.5) which would inhibit capital-labour substitution.

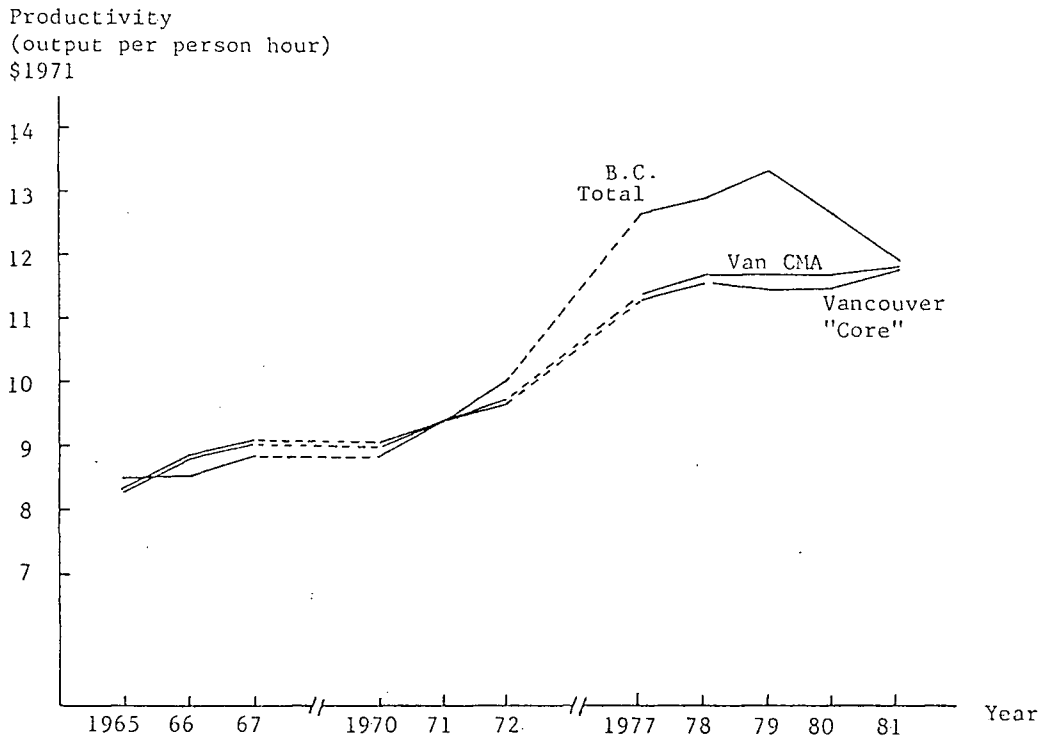



Figure 9.3 Productivity Trends in British Columbia, Vancouver CMA, and Vancouver "Core" area 1965-1981

Source: Compiled from Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level"

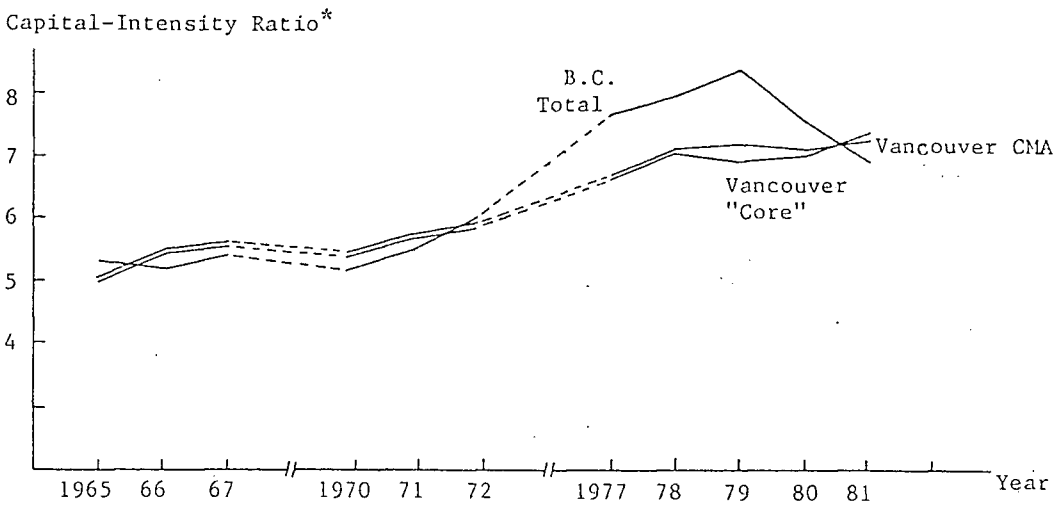



Figure 9.4 Capital-Intensity Trends in Manufacturing in British Columbia, Vancouver CMA and the Vancouver "Core" Area 1965-1981

*See text for description of the capital-labour ratio (Chapter 7)

Source: Compiled from Statistics Canada 31-209 "Manufacturing Industries of Canada: Sub-Provincial Level"

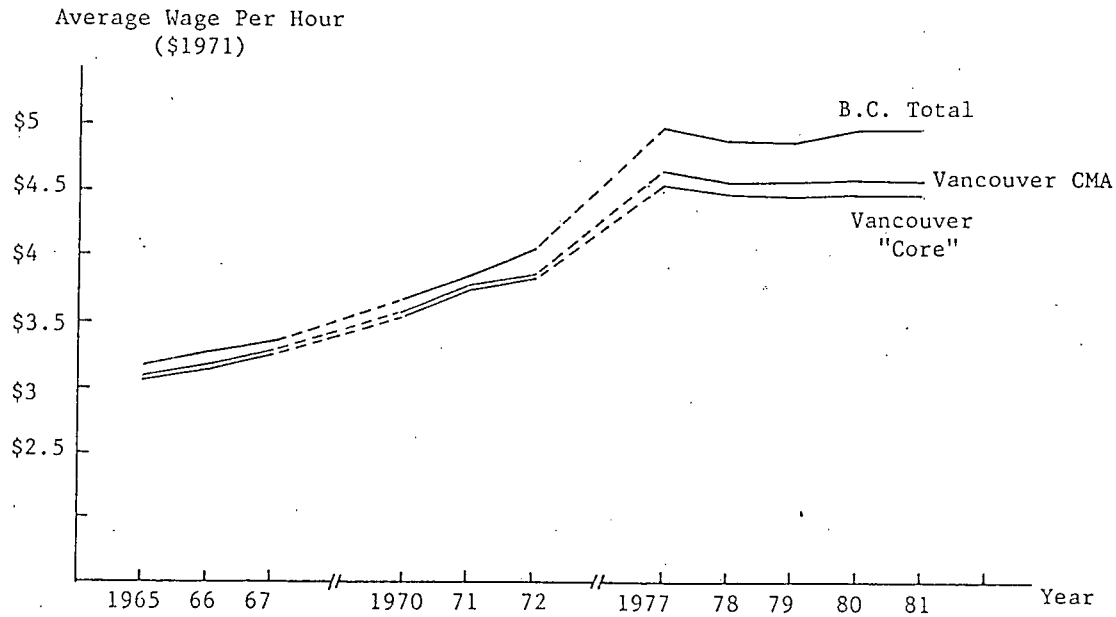



Figure 9.5 Hourly Wage Trends in British Columbia, Vancouver CMA and Vancouver "Core Area 1965-1981

Source: Compiled from Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level"

4. The existence of a "lag" effect which has inhibited the decline in employment demand until after 1981 (the more recent year for which this type of data is available). Manufacturing production employment in the period 1981-85 can be seen to have undergone considerable losses since 1981, in the "Labour Force Survey" data in FIGURE 8.2.

Wage increases in the 1965-1977 period, which could be a result of increased demand for labour, collective bargaining and similar movements in other occupational labour markets, have probably been facilitated (without reductions in the rate of return on capital) by increasing productivity in the secondary sector.[2] The real wage increases of the 1960's and 1970's may have acted as a stimulus for the rapid

---

[2]However, increased productivity is not a requirement for wage increases in the radical critique of the labour market operation. Under this perspective, wages are seen as a result of the social relations of production and the relative power of labour and capital.

capital-intensification within the sector during the 1970's (see FIGURES 9.3 and 9.5). Related to the productivity gains, capital-deepening occurred at all three spatial scales at similar rates up to the early 1970's when greater increases can be identified for B.C. overall than in the "core" and CMA areas. However, possibly as a result of undercapacity problems distorting the value-added based data, the capital-intensity index for B.C. fell to the same level as the two sub-regions in 1981.

Although causality cannot be inferred at this level of analysis, higher capital-intensification levels in B.C. overall were accompanied by higher wage rates, at this scale (during the 1970's), than in the metropolitan area. Aggregated, hourly manufacturing production wage rates seem to be only marginally higher in the CMA than in the core (and only since the mid-1970's).

The importance of labour as a cost of production is often stressed in radical theory on changes in the capitalist production system (for example, see Storper, M. and Walker, R. (1983)). At the B.C. level, the cost of labour (wages only) as a percentage of total production costs rose from 23 to 25 percent from 1965-71 but fell to 21% in the following ten years (Statistics Canada 31-209). Similar trends are observed for the CMA and "core" areas except for the higher overall proportion of labour costs in the CMA in 1981. However, in B.C. as a whole, labour costs appear to have undergone a slight decline in importance as a factor cost of production.

In terms of the occupational activities of its labour force, B.C. is undergoing deindustrialization. According to Statistics Canada's "Labour Force Survey: Annual Averages" (71-529) and "Manufacturing Industries of Canada at the Subprovincial Level" (31-209), manufacturing production employment has fallen from 26.6% of the total employed labour force in 1966 to only 18.5% in 1981 (although the percentage remained fairly stable in the 1975-80 period).

However, deindustrialization is more often framed in the context of reduced importance of manufacturing in external trade or a relative decline in the value-added or value of shipments from manufacturing activity in comparison to total gross domestic product (GDP) (Rose, D., Vogler, C., Marshall, G. & Newby, H. (1984)).

Although the rather short time period for which data is available (1973-83) severely delimits possible generalizations, there does **not** appear to be any long-term structural trends in the $1971 value of manufacturing exports of origin in B.C. [3] (see FIGURE 9.6). However, from 1979 to 1982 there was a distinct decline in the standardized value of manufacturing exports from B.C.

In addition, the ratio of the value of manufacture exports to GDP does not display an obvious, consistent trend over the study period but has remained fairly stable with a slight bulge in the mid to late 1970's. These variable, short-term trends make it very difficult to ascertain whether deindustrialization is occurring at the provincial level in terms of trade-based definitions.

The graph of the ratio of the value of manufacturing shipments to Gross Provincial Product (GPP) (see FIGURE 9.6) shows that the relative importance of manufacturing activity rose in relationship to GPP over the period 1971-79.

The only marked trend in the measures of the importance of manufacturing activities in the provincial economy is the downward trend after 1979. The value of manufacturing exports falls substantially and, even after accounting for the recessionary impact on the provincial economy, the contribution from the selected manufactures declines after 1979 and remains fairly stable from 1981 to 1983. The highly cyclical nature of the plot reflects the buoyancy of export markets of B.C. resource-based products and this decrease is impossible to distinguish from a purely cyclical phenomenon. Unfortunately, statistics were not available to assess whether or not this downward trend continued.

---

[3] "Fabricated goods", "inedible goods" and "end products" are the categories included in this analysis

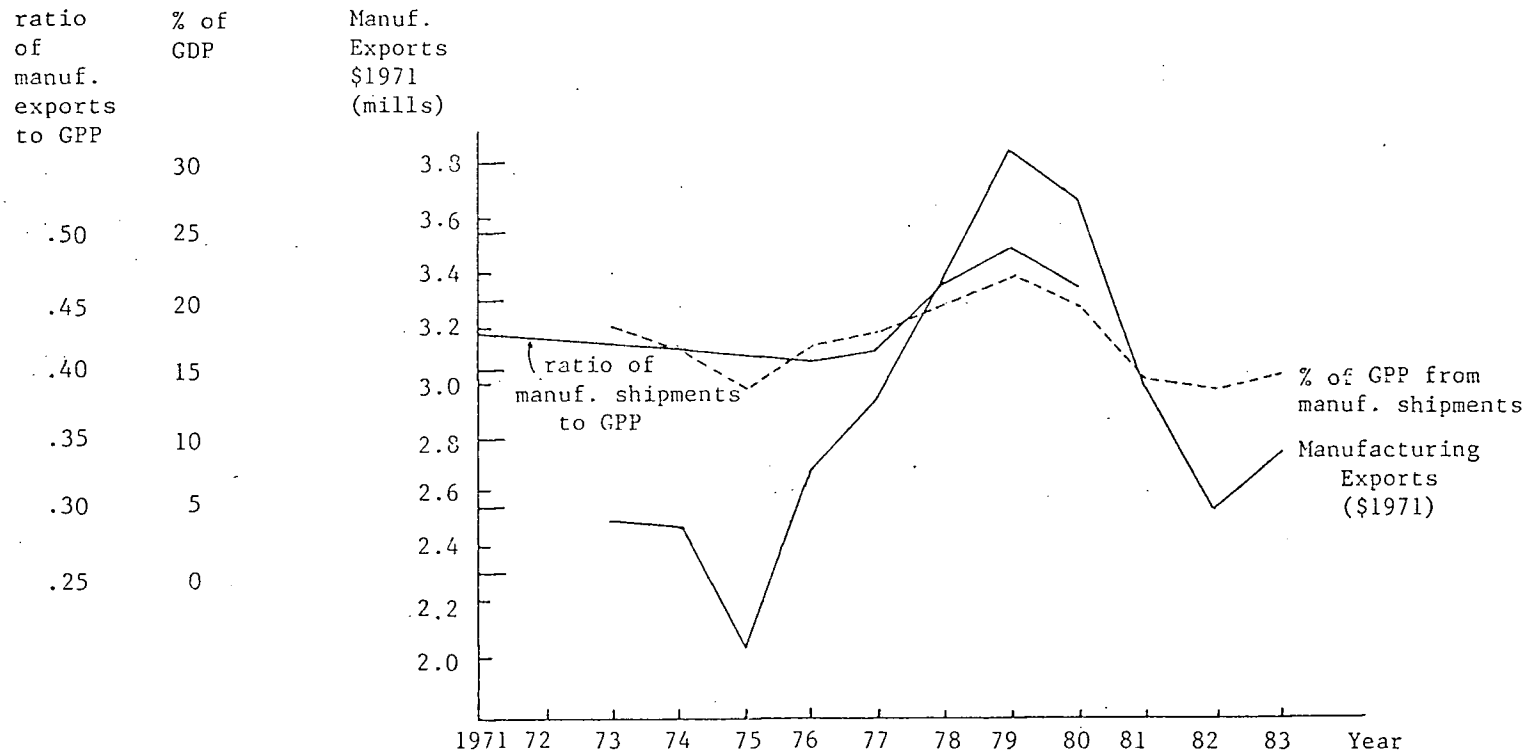



Figure 9.6 Manufacturing Exports from B.C., Percentage of Provincial G.D.P. from Manufacturing Exports, and the Ratio of Manufacturing Shipments to GPP 1971-1983

Source: Based on 1) Statistics Canada 65-001 "Summary of External Trade"

2) Statistics Canada 13-213 "Provincial Economic Accounts"

3) D.P.A. Consulting Ltd. (1981)

Given the many exogeneous variables involved and the lack of distinct evidence of long-term trends in the demand for the province's manufacturing output, it is extremely difficult to predict the future scenario for product demand and output. However, even if growth recovers to the levels achieved throughout the 1970's, expansion in the manufacturing sector is likely to entail jobless growth if capital-intensification trends and resultant stagnation (or even decline) in production employment demand, experienced over the study time period (particularly in the Vancouver CMA), continue to be major products of the dominant restructuring processes. If the decline in value-added (at all scales) persists throughout the 1980's from increasing international competition and declining world demand, labour redundancies are likely to be more severe as cost-efficiency criteria necessitate long-term changes in the production process and as temporary labour hoarding is relinquished in realization of the non-cyclical, structural nature of changes in demand for this "factor of production".

## B. SPATIAL CHANGES IN BRITISH COLUMBIAS MANUFACTURING PRODUCTION OUTPUT, EMPLOYMENT, CAPITAL-INTENSITY AND WAGES 1971-81

### 1. CAPITAL INTENSIFICATION IN THE CORE

There is little doubt that capital-intensification has occurred province-wide at the aggregated industry level and in all the individual industries examined except for "wood", "furniture", and "food and beverage" industries (see TABLE 9.2). While the decline in capital-intensity indices for "wood" and "furniture" industries can probably be accounted for by severe undercapacity problems on Vancouver Island in 1981 (this area is included in the B.C. total figure but is excluded from the nonmetropolitan definition), the production process changes in the "food and beverage" industries are

Table 9.2 Percentage Increase in Capital-Intensity (1971-81), Percentage of Industry Output and Employment in the Core, and Wage Rates by Industry 1971 and 1981.*

| Industry | % increase in K/L | | | | Year | % in core | | wage | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B.C. total | core | suburbs | nonmetro | | output | employment | core | CMA | nonmetro |
| Labour Intensive Industries: | | | | | | | | | | |
| FURNITURE | -3.0% | +6.0% | +2.8% | -89.0% | 1971 | 69 % | 69 % | 3.0 | 3.0 | 2.5 |
| | | | | | 1981 | 50 % | 49 % | 3.2 | 4.0 | 2.9 |
| WOOD | -3.0% | -7.0% | +8.0% | +3.0% | 1971 | 22 % | 23 % | 4.2 | 4.0 | 4.9 |
| | | | | | 1981 | 12 % | 12 % | 5.4 | 5.3 | 5.3 |
| TRANSPORT EQUIPMENT | +69.0% | +100.0% | +21.0% | +21.0% | 1971 | 47 % | 36 % | 3.9 | 3.9 | 3.3 |
| | | | | | 1981 | 50 % | 35 % | 5.4 | 5.3 | 4.0 |
| METAL FABRICATION | +27.0% | +22.0% | +40.0% | +6.0% | 1971 | 68 % | 46 % | 4.0 | 3.8 | 3.6 |
| | | | | | 1981 | 66 % | 46 % | 4.7 | 4.5 | 4.1 |

* Industries have been classed into either "labour-intensive" or "capital-intensive" on the basis of 1971 capital-intensity ratios.

Table 9.2 (contd.)

| Industry | % increase in K/L 1971-81 | | | | Year | % in core | | wage | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B.C. total | core | suburbs | nonmetro | | output | employment | core | CMA | nonmetro |
| Capital Intensive Industries: | | | | | | | | | | |
| FOOD & BEVERAGE | -5.0% | -2.0% | -20.0% | +1.0% | 1971 | 45 % | 41 % | 3.6 | 3.2 | 3.2 |
| | | | | | 1981 | 48 % | 44 % | 4.6 | 4.0 | 4.4 |
| PRINTING | +17.0% | +10.0% | +68.0% | +30.0% | 1971 | 65 % | 57 % | 4.5 | 4.0 | 3.4 |
| | | | | | 1981 | 62 % | 56 % | 5.1 | 5.1 | 3.9 |
| PAPER & ALLIED | +60.0% | +53.0% | +21.0% | +135.0% | 1971 | 5 % | 7 % | 3.7 | 4.1 | 4.9 |
| | | | | | 1981 | 4 % | 6 % | 4.6 | 5.1 | 5.9 |
| NON-METALLIC | +41.0% | +58.0% | +7.0% | +96.0% | 1971 | 25 % | 31 % | 4.0 | 3.1 | 3.7 |
| | | | | | 1981 | 10 % | 11 % | 5.8 | 5.0 | 4.9 |
| All Industries: | | | | | | | | | | |
| TOTAL | +27.0% | +30.0% | +20.0% | +40.0% | 1971 | 36 % | 36 % | 3.8 | 3.8 | 4.0 |
| | | | | | 1981 | 30 % | 30 % | 4.5 | 4.8 | 5.2 |

Source: Statistics Canada 31-209 Manufacturing Industries of Canada:Sub-Provincial Level

more difficult to explain.

However, in view of the aggregated nature of the analysis undertaken, it is not possible to ascertain, with any degree of certainty, the cause of capital-intensification and variation in trends between the three spatial units examined. Two common alternative explanations of capital-deepening include 1) increases in the capital-labour ratio as a direct response to increased labour costs stimulating factor substitution (a thesis shared by neoclassical and Marxian theorists) and 2) capital-intensification to indirectly increase the pool of unemployed to keep wages down in the labour market and provide a reserve of labour in the functionalist sense of the radical "labour process" structuralists (as described in Storper, M. & Walker, R. (1983) p. 17).

In radical theory, the basis for expectations of greater capital-intensification in the "core" areas is founded on the assumption of the location of a more militant, organized, mobilized labour force in the urban areas containing the older traditional blue-collar employment demand locations [4](Gertler, M. (1984) p.158).

Utilizing union membership statistics as a suitable measure of worker organizational capacity, the percentage of the total and "blue-collar" labour force unionized, is compared for each area, in 1970 and 1981, in TABLE 9.3. The CMA does appear to have considerably higher levels of unionization than the nonmetropolitan area in both 1970 and 1981. In fact, the total and blue-collar unionization levels have tended to decline in the nonmetropolitan area while unionization increased in the CMA over the same period - particularly for the "total occupations" group. As expected, overall blue-collar unionization appears to be considerably stronger than in other occupations but the CMA level is almost 40 percentage points higher in the supposedly "militant" metropolitan area. Thus, the first condition of the radical thesis appears to be supported (that is, substantially higher levels of unionization can be found in the "core" area).

---

[4]Due to data constraints on this part of the study the "core" has to include the entire Vancouver metropolitan area.

Table 9.3 Estimated Total and "Blue Collar" Unionization Levels in Vancouver CMA and the Rest of B.C.

| | B.C. | | Vancouver CMA | | Rest of B.C. | |
|---|---|---|---|---|---|---|
| | 1970 | 1981 | 1970 | 1981 | 1970 | 1981 |
| Blue Collar Unionization Rate | 52.5 % | 48.0 % | 74.0 % | 75.0 % | 38.0 % | 31.0% |
| Total Labour Force Unionization Rate | 28.0 % | 28.0 % | 33.0 % | 37.0 % | 21.0 % | 18.0 % |

Source: 1) Statistics Canada 71-529 "Labour Force Survey: Annual Averages"
2) Statistics Canada 71-202S "Corporations and Labour Unions Returns Act"

However, there is little evidence that *in-situ* capital-intensification has been focused disproportionately on the metropolitan area (versus the nonmetropolitan area) to reduce the collective power of labour. Although the CMA had slightly higher capital-intensity levels than the periphery in 1981, the level in the "militant" core only increased by 28% over the 1971-81 period while the capital-labour ratio increased by 40% in the nonmetropolitan area.[5] Hence, capital-intensification has proceeded most rapidly in the "poorly-organized" peripheral area - an observation which directly challenges radical propositions hypothesizing that active capital-intensification would be the appropriate response for capital wishing to "control" militant core labour.

At the two-digit industrial level, this pattern is reflected in three of the five appropriate industries examined ("paper and allied", "non-metallic", and "printing"). Unfortunately, interpretation of trends in capital-intensity indices, as *in-situ* changes, is

---

[5]Statistics derived from Statistics Canada's "Manufacturing Industries of Canada: Subprovincial Level" 31-209.

confounded by the possible countervailing tendency of capital-intensive operations to relocate or prefer nonmetropolitan areas to utilize non-labour factors of production.

Scott's (1982, p.116) discussion indirectly suggests that inner city core areas are less militant and organized than the more unionized intra-urban periphery areas. [6] Thus, capital-intensification could be expected to proceed faster in the more militant outer metropolitan area while labour-intensive industries continue to reap the advantages of cheap, exploitable labour in the inner core. This trend would reinforce (and be indistinguishable from) increases in the capital-labour ratio of the suburbs by decentralization of capital-intensive plants requiring greater land inputs and lower labour levels.

While it is recognized that the "core" area selected in this study is probably a poor representation of Scott's proposed inner city secondary labour market concentration, the aggregated industry capital-intensity level increased by 30% in the core and only by 20% in the suburbs (see TABLE 9.2). Thus, capital-deepening occurred at a greater pace in the hypothetical major area of exploitable labour supply - a tendency contradicting both Scott's (1981) comparative advantage thesis and radical "labour process" theorists' visions of capital-intensification as a ploy to suppress militant labour union demands.[7] Surprisingly, 1981 capital-intensity indices are equal in core and suburban areas (see TABLE 9.4).

The stagnation of employment demand and the lower rates of output growth in the "core" area (see TABLE 9.5) could be interpreted as presenting some support for the radical labour process theorists who see a reduction of employment demand in the core areas as a vital aspect of maintaining or increasing control over this volatile

---

[6]This assumption contradicts other radical propositions that core labour is, in fact, better organized against capital than its peripheral counterpart. This paradox illustrates the significant ambiguity to be found within radical theory on the labour market and the spatial structure of economic activity.

[7]Scott's (1981) "comparative advantage" thesis centres upon the suitability and attraction of the core areas for labour-intensive industry in the high access inner city area close to larger pools of appropriate labour which capital-intensive plants move to the more favourable peripheral locations.

Table 9.4

Capital-Intensity Levels for the Three Study Areas in 1971 and 1981 (by two-digit industry class)

| Industry | | "Core" | Suburbs | Nonmetropolitan |
|---|---|---|---|---|
| FURNITURE | 1971 | 3.6 | 2.9 | 4.7 |
| | 1981 | 3.8 | 3.7 | 0.5 |
| WOOD | 1971 | 2.8 | 3.7 | 3.4 |
| | 1981 | 2.6 | 4.0 | 4.5 |
| TRANSPORT EQUIPMENT | 1971 | 3.0 | 2.8 | 3.4 |
| | 1981 | 6.0 | 7.0 | 8.5 |
| METAL FABRIC. | 1971 | 5.4 | 5.3 | 5.1 |
| | 1981 | 6.6 | 7.4 | 5.4 |
| FOOD & BEVERAGE | 1971 | 9.4 | 9.7 | 6.7 |
| | 1981 | 9.2 | 7.7 | 6.8 |
| PRINTING | 1971 | 9.7 | 5.9 | 5.5 |
| | 1981 | 10.7 | 9.9 | 7.1 |
| PAPER & ALLIED | 1971 | 6.6 | 8.4 | 6.6 |
| | 1981 | 10.1 | 10.2 | 15.5 |
| NON-METALLIC | 1971 | 5.2 | 11.5 | 5.1 |
| | 1981 | 8.2 | 12.3 | 10.0 |
| GRAND TOTAL | 1971 | 5.6 | 6.1 | 5.0 |
| | 1981 | 7.3 | 7.3 | 7.0 |

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level".

input. However, this interpretation would require a rejection of the assumption of the secondary labour market concentration in the "core" area in this case study. In addition, the relative growth of employment and output cannot be isolated as an *in-situ* phenomenon but implicates a consideration of relative decentralization trends (which has been deferred to subsequent sections.)

Real labour costs are assumed to be a major negative outcome of greater organization by labour for firms attempting to minimize input costs. In 1971, average industry wage rates per hour were equal in the core and suburbs and were actually slightly higher in nonmetropolitan industry ($3.8/hr and $4.0/hr respectively) thus providing little direct incentive for concentrated capital-intensification directly in the core to subdue collective labour wages pressures.[8](see TABLE 9.2)

The marginally higher average wage levels of the nonmetropolitan area could be ascribed as the motive for the greater capital-labour ratio increases in these areas. However, this situation is quite different from the typical, hypothetical scenario of inner area production process changes for control purposes. The absence of an expected positive association between unionization levels and average hourly wage rates would be part of the reason for these odd results. Nonmetropolitan areas have lower unionization levels but higher wage rates.

Wage rates in the highly-unionized CMA are not only lower than in the nonmetropolitan area but have increased by less over the period despite rising versus declining levels of unionization. The nonmetropolitan local labour market supply-demand situation may well have predominated union-related wage changes.

If variations in unionization levels and output expansion are temporarily ignored, the association between higher levels of capital-intensification and the high-wage nonmetropolitan area could be interpreted as evidence of a process of technical substitution of capital for labour as a response to high wages, or to indirectly suppress

---

[8]All dollar values are standardized to 1971.

Table 9.5

Growth in Output and Employment for the Three Study Areas (1971 - 1981)

| Industry | "Core" | | Suburbs | | Nonmetropolitan | |
|---|---|---|---|---|---|---|
| | Output | Emp.(N) | Output | Emp.(N) | Output | Emp.(N) |
| All Industries | | | | | | |
| % change in output/N | +26% | -1% | +86% | +53% | +77% | +32% |
| % of total B.C. change in output/N | +20% | 0% | +27% | +41% | +53% | +59% |
| Wood | | | | | | |
| %change in output/N | -35% | -43% | +50% | +25% | +52% | +29% |
| % of total B.C. change in output/N | -32% | -152% | +33% | +57% | +99% | +195% |
| Furniture | | | | | | |
| %change in output/N | +3% | -3% | +143% | +147% | +122% | +380% |
| % of total B.C. change in output/N | +6% | -2% | +85% | +94% | +9% | +8% |
| Printing | | | | | | |
| %change in output/N | +48% | +32% | +55% | +2% | +105% | +66% |
| % of total B.C. change in output/N | +63% | +63% | +13% | +1% | +24% | +36% |
| Metal Fabrication | | | | | | |
| %change in output/N | -2% | -18% | +143% | +87% | +138% | +118% |
| % of total B.C. change in output/N | -3% | -81% | +82% | +131% | +21% | +49% |

(contd. over)

Table 9.5 (contd.)

| Industry | "Core" | | Suburbs | | Nonmetropolitan | |
|---|---|---|---|---|---|---|
| | Output | Emp.(N) | Output | Emp.(N) | Output | Emp.(N) |
| Transport Equipment | | | | | | |
| %change in output/N | +105% | +23% | +144% | +89% | +242% | +182% |
| % of total B.C. change in output/N | +38% | +20% | +23% | +34% | +55% | +46% |
| Non-Metallic | | | | | | |
| %change in output/N | -33% | -55% | +139% | +117% | +142% | +44% |
| % of total B.C. change in output/N | -1% | -70% | +55% | +111% | +46% | +59% |
| Food and Beverage | | | | | | |
| %change in output/N | +44% | +35% | +4% | +6% | +56% | +38% |
| % of total B.C. change in output/N | +60% | +56% | +35% | +5% | +37% | +39% |
| Paper and Allied | | | | | | |
| %change in output/N | +27% | -11% | +36% | +11% | +97% | +6% |
| % of total B.C. change in output/N | +3% | -21% | +8% | +37% | +89% | +84% |

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level".

wage pressures. However, nonmetropolitan areas also experienced the largest increase in wages over the 1971-81 period despite intensive capital-deepening. This apparent contradiction is probably the result of the rapid growth in employment demand in that part of British Columbia. 59% of all new employment growth occurred in the nonmetropolitan area together with the 40% increase in the capital-labour ratio (see TABLES 9.1 and 9.5).

At the urban level, greater increases in the capital-labour ratio in the core (than in the suburbs) has been associated with a slower rate of wage increase.[9] Difficulties are involved, however, in attempting to distinguish if this tendency is a product of capital-intensification or the lack of growth in demand for labour (the core experienced a slight decline while the suburbs gained 41% of the total manufacturing production employment growth).

Another factor subsumed within the aggregated wage figures is the change in employment demand characteristics, with the restructuring of industry, which may well influence resultant area wage rates. For example, possible deskilling accompanying capital-intensification in the core would also stifle wage growth relative to nonmetropolitan areas (though real wage rates did rise overall in all three areas over the study period). Deskilling with capital-deepening is <u>not</u> indicated from the substantial wage increases of the nonmetropolitan areas unless the employment demand increases have offset a tendency for deskilling to reduce wage rates (see TABLE 9.2).

Once again, the complexity and interdependence of the factors studied, and the aggregate perspective adopted, prevent any clear delineation of operative effects. The only relatively consistent association is the growth of wages in areas with the highest employment demand gains (the suburban and nonmetropolitan areas) - a phenomenon which aligns with both the neoclassical and radical theory. Even within this broad

---

[9]Differentiating between the suburban core area in terms of the relationship between capital-intensity changes, wage rates, employment growth and location of the labour supply rests on the contentious assumption of these two areas as separate (or at least dicontinuous) local labour markets.

trend in the relationship between changes in the capital-labour ratio, employment demand and wage levels, there are anomalies to be found at the 2-digit industry level. In the more labour-intensive industries in 1971 ("metal fabrication" and "transport equipment"), wages increased more in the core area despite higher levels of capital-intensification and minimal growth (or even decline) in relevant employment demand in the central area. Trends in the more capital-intensive "printing", "paper and allied", and "non-metallic" industries also illustrate the tenuous nature of the relationship.

Wages in the core and nonmetropolitan printing industries increased by less than in the suburban areas though capital-intensification proceeded most rapidly in these areas and the largest shares of employment and output went to the core. Wage increases in the paper and allied industries were similar across all three areas despite greater capital-intensification and output and employment growth in nonmetropolitan areas.[10]

This situation illustrates the difficulties in gauging to what extent wage contracts dampen wage variation across space - though a "floor" setting effect has been proposed as dominant over "ceiling" limitations (Scott, A.J. (1982) p.118). Non-metallic industry in the core underwent greater increases in the capital-labour ratio in the suburbs and actually lost employment but managed to keep similar wage levels and has retained the highest wage of the three areas.

## 2. CAPITAL INTENSIFICATION ALLOWING DECENTRALIZATION

Changes in production processes leading to the adoption of more capital-intensive techniques have been suggested as releasing the firm from the locational constraints of the inner city as the area of high accessibility to large pools

---

[10]However, the hypothetical effects of capital-intensification and output and employment growth on wages are offsetting. Wages remained highest in nonmetropolitan paper and allied industries for both periods.

of labour and as the area of greatest agglomeration economies (Scott, A.J. (1982) p.129; (1981) p.1). Such process modifications often involve the use of horizontal plant layout (resulting in a greater demand for land) and the standardization of production (Webber, M.J. (1982) p.218). Firms are conceived as being able to meet reduced demands for labour from the relatively cheaper supply in peripheral areas (due to reduced commuting costs for the suburban matching of supply and demand) as long as the increased demand for labour is not too substantial (Scott, A.J. (1981)).

If capital-intensification is related to the relative decentralization of industrial output, we would expect a positive relationship between the degree of growth in the capital-labour ratio in an industry and the percentage reduction of the total industry output held in the core. Scott (1980, p.50-51) found evidence of this association in Vancouver (and Montreal and Toronto) over the period 1956-74.

A similar analysis was completed for eight industries to compare the reduction in the percentage held by the core and the increase in the capital-labour ratio in B.C. as a whole (see TABLE 9.6). The "core" was also reduced to the two oldest industrial municipalities (Vancouver City and New Westminster). The results were similar in both tests. The positive association found between increases in capital-intensity and the percentage of the total industry output lost from the core is not as pronounced as in Scott's analysis - five of the eight industries fit the proposed association (at least in terms of the direction of the relationship). However, this relationship is not a directly proportional one in which greater capital-intensification necessarily means a greater reduction in the core by that industry in comparison to an industry where the increase in the capital-labour ratio is smaller.

"Furniture", "wood", and "transport equipment" industries do not fit the expected relationship at all. "Transport equipment" industries underwent substantial capital-intensification but actually centralized in relative terms. "Wood" and "furniture" suffered slight declines in capital-intensity but continued to "move out" (proportionally)

Table 9.6

Capital-Intensification and the Relative Decentralization of Industries from the "Core" Area

1971 - 1981

| Industry | % increase in capital-labour ratio | % decrease in share of industry in Van. City and New Westminster | % decrease in share of industry in "Core" Area |
|---|---|---|---|
| PRINTING | + 17% | + 12% | + 5% |
| FOOD | - 5% | - 9% | - 6% |
| PAPER & ALLIED | + 60% | 0% | + 20% |
| NON-METALLIC | + 41% | + 50% | + 60% |
| FURNITURE | - 3% | + 35% | + 28% |
| WOOD | -- 3% | + 33% | + 45% |
| TRANSPORT EQUIPMENT | + 69% | - 62% | - 6% |
| METAL FABRICATION | + 27% | + 34% | + 3% |

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada: Sub-Provincial Level"

from the core area.[11]

If there is a tendency for capital-intensive firms to seek out cheap land inputs at relatively inaccessible peripheral locations or, as Scott (1982, p.125) proposes:

> As the historical process of the displacement of labour by capital in manufacturing industry has gone forward, so firms have steadily dispersed away from core areas within the metropolis

we would expect growth in periphery (suburban and nonmetropolitan) areas to be more capital-intensive in nature.

As previously described, capital-intensification in the nonmetropolitan area **has** proceeded at a faster pace than in the core but the suburbs have actually experienced a slower rate of growth in the capital-labour ratio than the core.[12] Only the "wood" and "printing" industries have had more capital-intensive growth in suburban Vancouver CMA. Thus, the relative decentralization of industrial activity, within the CMA, does not seem to be associated with less labour-intensive process techniques. It should be noted, however, that capital-intensification has occurred in the core and the suburban areas (by 30% and 20% respectively) over the 10 year period so that many of the production process changes may well have altered the relative importance of factors of production such as land and labour.

The lower rate of capital-intensification in the suburbs could possibly be interpreted as an indication that 1) the process is proceeding at a more rapid rate in the core to deliberately reduce dependence on labour,or 2) cost-minimization strategies by the firm do not nececessarily require relocation or new investment in cheap land areas. Unfortunately, it is impossible to make a more detailed investigation of motives and the nature of production process change without far more detailed data.

These intra-urban results contradict most theory on industrial decentralization at this geographic level - including both the "mainstream" views (for example Kain, J.

---

[11]Undercapacity effects in 1981 probably render the wood and furniture indices as meaningless.

[12]However, the industry aggregate capital-labour ratio, as of 1981, was still lower in the nonmetropolitan area than in either the suburbs or the core.

(1968) and Keeble, D. (1973)) and radical treatises such as Scott's (1982, p.116 and 125) conception of an increasing labour-intensive/capital-intensive dichotomy, realized in space, as part of the internal dynamics of capitalist commodity production.

In addition, average manufacturing production hourly wage rates in the suburbs have been pushed up (from an equal base) to higher levels than those in the core area. The proportion of total costs attributed to wages increased in the suburban areas, over this period, in comparison to a decline in the core and nonmetropolitan areas (see TABLE 9.7). This outcome is quite different from Scott's scenario of capital-intensive suburban growth which should not raise actual wage rates in these employment demand locations, beyond the core wage.[13]

However, the process leading to higher wage rates in the suburbs is consistent with Scott's and neoclassical theorists conceptions of geographically-bound labour markets with separate supply and demand schedules and unique wage level determinations. The 53% growth in employment in the suburbs, as opposed to a slight decline in the core (see TABLE 9.5) could be the reason for greater wage increases (depending on changes in local labour supply).

As the greatest increase in capital-intensification has occurred in the nonmetropolitan areas, there is some support for the hypotheses proposing a relative decentralization/capital-intensification process favouring the periphery - at the regional scale. However, this phenomenon does not support Norcliffe's (1984, p.39) proposition that nonmetropolitan areas would tend to attract more labour-intensive industries than the metropolitan suburban area because of lower real labour costs in the outer peripheral areas.

---

[13]Scott's analysis is based on L. Moses' (1962) seminal paper on intra-urban wage differentials and their influence on travel patterns.

Table 9.7 Labour Costs (Wages) as a Proportion of Total Manufacturing Production Costs

| Area | % of Total Production Costs from Wage Costs | | |
|---|---|---|---|
| | 1965 | 1971 | 1981 |
| British Columbia | 23% | 25% | 21% |
| Vancouver CMA | 15% | 24% | 19% |
| Vancouver "Core" | 23% | 25% | 20% |

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada: Sub-Provincial Level"

## 3. THE RELATIVE DECENTRALIZATION OF INDUSTRY TO LOW COST LABOUR AREAS

Another process commonly referred to in studies on the contemporary restructuring of industrial activity is the movement or, at least, the relative decentralization of fixed capital to cheap labour areas. The considerable diversity of perspectives, geographical contexts and possible spatial scales of resolution mean that identification of the location of cheap labour (on a "core-periphery" spectrum) is highly problematic. The only broadly accepted generalization is the existence of substantially lower real labour costs in "developing" and underdeveloped nations which are purported to act as the major stimulus for the redistribution of capital investment at a global scale.

At sub-national levels, there is considerably greater cause for deviation from any ideal-type specification, and hence, less scope for generalization. The core area is often postulated as accommodating a concentration of cheap, exploitable labour for labour-intensive industries with higher demand for skilled and unskilled labour (Danson, M. (1982); Norcliffe, G. (1984); Scott, A.J. (1982) p.125). However, even within radical theory, the core area is also sometimes perceived as the location of the more militant primary labour market workers (Clark, G.L. (1981b); Gordon, D. (1978)). This apparent contradiction is difficult to resolve and is probably a partial result of unjustified generalization and definitional problems in the delineation of the core area. In this case study in Vancouver, the "core" area definition is unlikely to realistically approximate the inner city areas of large, traditional industrial metropolitan areas (for example, an expected major differentiating criteria, wage rates, are equal in suburban and "core" areas in 1971 (see TABLE 9.1).[14] Lower real labour costs have also been asserted as a characteristic of nonmetropolitan areas thus encouraging overall industrial growth and growth of a more labour-intensive nature than in suburban metropolitan areas (Norcliffe, G. (1984) p.39).

Contrary to an anticipated positive association between low labour cost (assumed as the average industry wage rate in 1971) and the relative growth of industrial activity, the nonmetropolitan areas received the major employment growth over the 1971-81 period despite having higher average wages. The nonmetropolitan area gained 53% of the new value-added in the province and 59% of the additional employment regardless of the fact that it had the highest wage level in 1971 (see TABLES 9.2 and 9.5).

However, of the individual industries examined, seven out of eight had <u>lower</u> wages in both the suburbs and nonmetropolitan areas - the important "paper and

---

[14]Average, aggregated hourly industrial wage rates are assumed as being acceptable measures of real labour costs. Exclusion of fringe benefits and other non-wage benefits and the neglect of differing industrial mixes detract from reliable comparisons.

allied" industries seem to unduly distort the pattern observed at the aggregate level.

There are several anomalies in the expected relationship between output and employment growth, and 1971 wages. For example, "metal fabricating" industries grew by more in the (industry-specific) high-wage, suburban metropolitan area than in the low-wage, nonmetropolitan area. The "food and beverage" industries had the largest gains in output and employment in the high-wage (for that industry) setting of the CMA. However, "non-metallic" industries did have the highest growth in the low-wage suburban metropolitan area.

Unfortunately, the recursive nature of employment growth and wage levels (and the exclusion of a whole range of other possible "exogeneous" influences such as changes in availability, skill and other characteristics of labour supply) thwarts a satisfactory intepretation of these results. For example, a low wage in the core, while possibly indicative of a potential attraction for greater industry growth then in the high wage areas, may also be the result of severe downward wage pressures from declining levels of employment demand relative to supply.

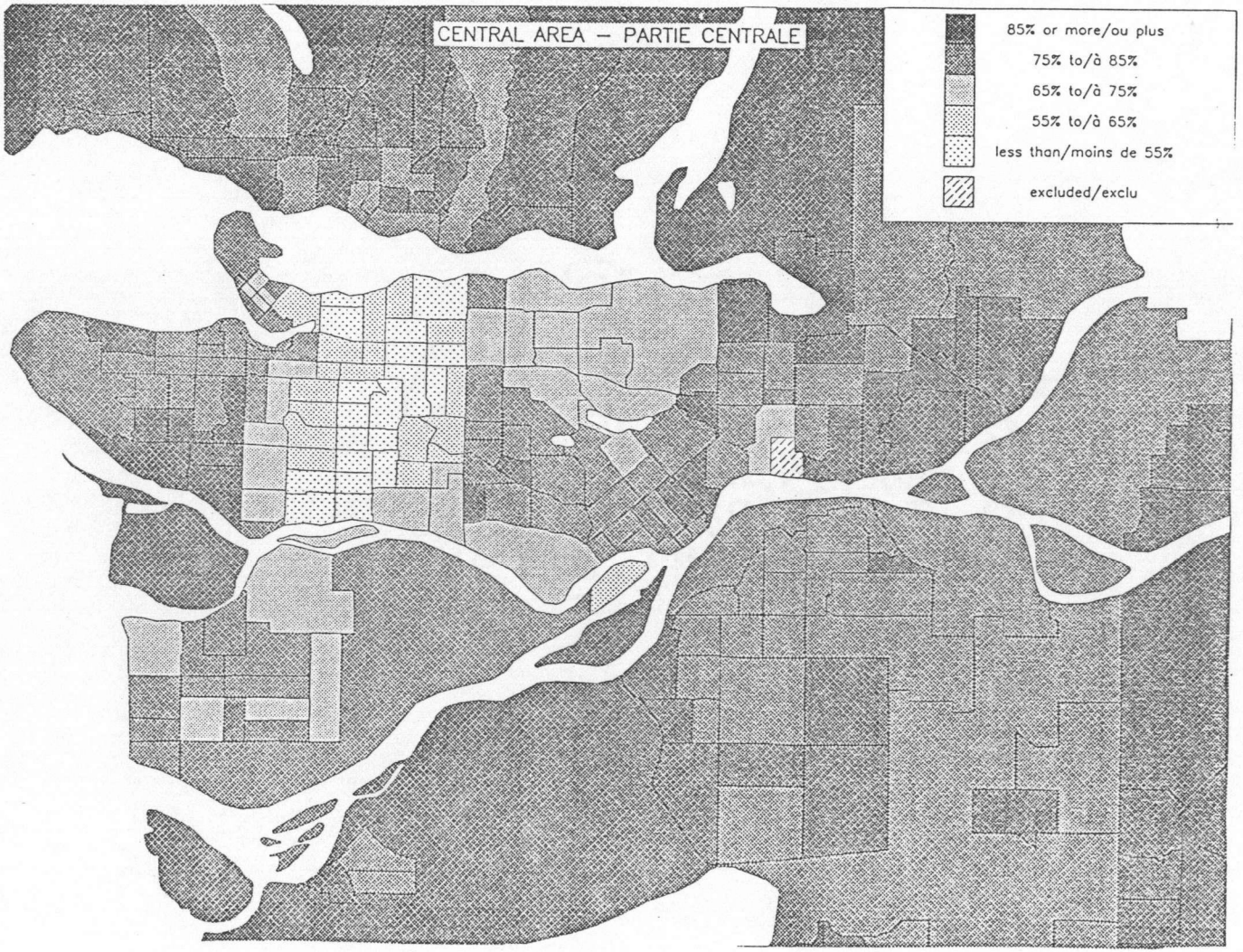
Agglomeration economies and lower wages of the core (in comparison to the nonmetropolitan area), in 1971, could be expected to favour new and expanding labour-intensive industry. The affinity of core areas (as centres of highest accessibility to the urban labour pools) for labour-intensive urban labour pools) for labour-intensive industries is the corollary of Scott's (1982) capital-intensive/periphery location thesis. Under a peculiar form of the Hecksler-Ohlin theorem, the core area is perceived as having a comparative advantage for firms requiring labour techniques as a result of product and product demand characteristics which require small and variable quantities of inputs and outputs and unstandardized linkages. Consequently, transport costs per unit are thought to be relatively high on inputs, outputs and linkages and these tend to induce spatial clustering of firms in the maximum accessibility core locations. Advantages from agglomeration economies and maximum access to labour and other

input and output linkages would be greater than those to be gained from economies of scale from automation and large scale production process. Such techniques are often not viable for certain industries given the nature of the product and the product market (often requiring a rapid shift in product demand and quality and a production process unsuitable for standardization).

The dense clustering of labour-intensive firms in core areas is proposed as creating a massive collective demand for labour and a strong upward pressure on wages (Scott, A.J. (1982) p.127). Firms would, therefore, seek out central city locations with maximum access to concentrated areas of appropriate labour supply - preferably with secondary labour market characteristics (assumed to include a heavy use of female, ethnic and part-time workers) to keep labour organization and wage bargaining to a minimum and reduce additional commuting cost required to attract sufficient labour demand.

Alternately, the secondary labour force characteristics of peripheral (nonmetropolitan and even suburban) areas have been suggested as a motive for the relocation of industry or new industrial investment (in peripheral areas) by other radical theorists (Massey, D. & Meegan, R. (1979) and Gordon, D. (1978) p.54). Closer examination of changes in employment demand job characteristics, and labour force and other personal characteristics of the population in different labour market areas, would be required to assess whether any particular part of the core-periphery spectrum offered superior access to secondary labour markets.

There are heavy concentrations of ethnic and "blue-collar" workers in the study core area (see MAPS 9.1 and 8.6). However, the suburban growth of the manufacturing production and total workforce (see section 8.C), a predilection for short-range commuting trips of suburban married women (as a ready and willing potential suburban labour force), and high levels of unemployment in non-CMA areas are some aspects which prevent an unconditional acceptance of the core as the centre




Map 9.1 Percentage of Total CT Population with English as Mother Tongue

Source: After Statistics Canada 99-921 "Metropolitan Atlas Series"

of exploitable labour supplies for labour-intensive industry. Hence, the "true" location of the secondary labour market supplies, in terms of the core, suburbs, and peripheral areas, remains uncertain.

Whatever the intuitive acceptability of the assumptions of Scott's comparitive advantage thesis may be, the logical result of his theory is an increase in the capital-intensity and size of plants with distance from the central city (at least at the intra-urban level) (Scott, A.J. (1984) p.243). If this process is operating over the study period in the Vancouver CMA context, we would expect the labour-intensity of the core area to increase relative to the suburban (and possibly the nonmetropolitan) areas.

As concluded in the previous section, there is only scant evidence of the spatial labour-intensive/capital-intensive dichotomy in B.C. In 1981, the core and the suburbs had the same average, industry-aggregate capital-intensity level and the nonmetropolitan area was actually more labour-intensive than the suburbs and "core".

There are only two pieces of evidence, in the B.C. context, supporting the existence of this dichotomy described by Scott.

Firstly, in 1971, the suburbs were more capital-intensive than the core (but the changes in the following ten year period were the opposite to those expected). As discussed, the reason for the relatively greater capital-intensification of the core is impossible to identify with any certainty given the limited depth of the analysis.

Secondly, dividing the two-digit industries examined into two categories, based on their 1971 capital-intensity indices, does reveal a greater proportion of the labour-intensive industries output and employment in the core than for capital-intensive industries. Of the four most labour-intensive industries, 34% of total output was value-added in the core while only 27% of the capital-intensive industry output was produced in these central municipalities (see TABLE 9.2). However, in 1981, the situation had reversed with the core containing 23% of the labour-intensive and 25% of the capital-intensive industry - a result directly contradicting the positive association

suggested by the analysis of capital-intensification and decentralization from the core analysis in section 9.B.2.[15]

The cheap labour of the core (only in relation to the nonmetropolitan area) does not seem to be attracting a greater share of the labour-intensive industry in the province. In addition, greater wage pressure in the core (versus the suburbs) has not occurred over the 1971-81 period. However, Scott (1982, p.126) acknowledged that the wage outcome is contingent upon the success of alternative strategies of capital. Slower wage increases in core areas may be indicative of the successful control of labour in the core.

Directly related to Scott's urban labour-intensive core/capital-intensive periphery concept is his assertion that average firm plant size should increase with distance from the core (Scott, A.J. (1980) p.248). Although the criterion for "plant size" is never clearly defined by Scott as to whether it refers to employment or output, the underlying idea is that more standardized plants require greater capital inputs (such as land) in relation to labour. Deskilling is often suggested as a product of such organizational and technical rationalization or restructuring (Massey, D. & Meegan, R. (1979)).

Two alternative measures were used to test whether employment and output size of "typical" firms increased with distance from the core in B.C. in 1981 (see TABLES 9.8 and 9.9). Simply dividing the number of employees or output for each industry by the number of plants, to arrive at an average plant size measure for each area, is probably of very limited utility for comparing "typical" plant sizes. Due to the likelihood that plant sizes are not normally distributed, considerable distortion can result from the existence of one or two very large firms.

---

[15]This inconsistency is possible, given the rather crude classification scheme for the labour-intensive and capital-intensive industry division and the different weights of industries lost in the averaging procedure for the analysis.

Table 9.8

Plant Size Comparison Using Median Employment Cohort Size (MECS) Measure for Selected Areas*

| Area | MECS (using totals from aggregating component municipalities) | MECS (using actual totals from categorical estimation) |
|---|---|---|
| Vancouver City | 79 | -- |
| Vancouver City and New Westminster | 89 | -- |
| Vancouver "Core" | 93 | 108 |
| Vancouver Suburbs | 73 | 95 |
| Nonmetropolitan British Columbia (excluding E.R. 6 'Vancouver Is.-Coast') | 246 | 185 |

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada: Sub-Provincial Level"

* For aggregated industries and employment figures have included blue and white collar manufacturing workers

Table 9.9 Plant Size Comparison Using Average Employees Per Plant and Average Output Per Plant Measures - Selected Areas 1981

| Industry | Vancouver City | | Vancouver "Core" | | Vancouver CMA Suburbs | | Nonmetropolitan | | British Columbia | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Emp./ est. | Out./ est.* | Emp./ est. | Out./ est.* | Emp./ est. | Out./ est.* | Emp./ est. | Out./ est.* | Emp./ est. | Out./ est.* |
| WOOD | 113 | 1555 | 82 | 1206 | 45 | 807 | 52 | 863 | 54 | 863 |
| FURNITURE | 9 | 134 | 7 | 132 | 17 | 219 | 4 | 28 | 9 | 124 |
| PRINTING | 14 | 437 | 13 | 381 | 11 | 300 | 8 | 178 | 12 | 327 |
| METAL FAB. | 22 | 512 | 21 | 482 | 22 | 541 | 8 | 153 | 17 | 397 |
| TRANS. EQUIP. | 33 | 594 | 54 | 1284 | 26 | 440 | 32 | 815 | 33 | 774 |
| NON-METALLIC | 25 | 743 | 19 | 520 | 32 | 372 | 15 | 813 | 19 | 591 |
| FOOD & BEVER. | 44 | 1232 | 42 | 1130 | 35 | 804 | 26 | 590 | 30 | 751 |
| PAPER & ALLIED | 19 | 470 | 40 | 1271 | 63 | 1961 | 431 | 18587 | 214 | 7796 |
| TOTAL | 27 | 573 | 27 | 634 | 26 | 619 | 38 | 904 | 31 | 723 |

* Output per establishment in $000s (1971) derived by dividing total value-added by the number of establishments

Source: Statistics Canada 31-209 "Manufacturing Industries of Canada:Sub-Provincial Level".

A far more accurate measure can be obtained by determining the median employment cohort size (MECS).[16] This probability figure represents the median plant employment size of any individual worker randomly selected in the particular area and is found at the point where 50% of the total employment intersects with the cumulative distribution plot of employment by plant size. Unfortunately, the data for this analysis is only available at the aggregated industry level.

The average plant size indices, which **are** available at the two-digit industry level have been calculated and displayed in TABLE 9.9.

Referring to TABLE 9.8, it appears that the core areas (examined separately as 1) the core area definition used previously and 2) as Vancouver City alone) actually have larger MECSs than for the suburban areas. Incorporation of productivity measures for 1981 provides a means of translating employment size to an equivalent output size indicator.[17] Multiplying average productivity measures ($11.9/hr for the core and $12.1/hr for the suburbs) by the MECS suggests that the core has larger median plant sizes, in terms of output, as well as employment, than the suburban area.

Because the nonmetropolitan area has even greater output per hour overall than either component of the metropolitan area, the median nonmetropolitan industrial plant would probably be of substantially greater employment and output size than plants in the CMA.

The somewhat more tenuous measure of average plant size derived by dividing total employees and total output by the total number of establishments, reaffirms the results of the MECS study though the core-suburban differentiation is less marked (see TABLE 9.9).

From the evidence in this analysis, Scott's (1984) proposition that average plant size should be positively related to the core does not seem to apply in the B.C.

---

[16]The methodology for determining typical plant sizes via the MECS was conceived by Raymon Torchinsky (Geography, UBC).

[17]This calculation assumes that there is no substantial difference between the average number of hours worked per employee in the three areas.

context in view of the anomalous results of the suburban area.[18] There are, however, exceptions at the disaggregated industry level - only the employment and output ratio for "paper and allied" industries fits the exact pattern resulting from the aggregation of all industries. The strength of this industry sector in the determination of total industrial value-added and employment statistics would explain their substantial influence on the resultant aggregate pattern. However, none of the individual industries examined have patterns consistent with Scott's average plant size thesis - in terms of either output or employment.

Together with the analysis of capital-intensity levels for these areas, these results suggest that the capital-deepening of industry (involving higher capital-labour ratios, standardization of production processes and linkages, and large plant size) cannot be directly associated with suburban industry in 1981 or growth in suburban industry over the 1971-81 period. However, there is evidence of higher capital-labour ratios and greater increases in capital-intensification in the nonmetropolitan area than in the core.

## 4. THE RELATIVE DECENTRALIZATION OF INDUSTRIAL ACTIVITY TO BREAK THE BILATERAL RELATIONS BETWEEN LABOUR AND CAPITAL

As reviewed in Chapter 6, a number of radical theorists (for example, Clark, G.L. (1981a; 1983a); Cooke, P. (1983, p.559); Gertler, M. (1984); Gordon, D. (1978, p.418)) espouse the view that decentralization and new capital investment in peripheral areas can act to segment the labour force via geographic separation and the utilization of more docile, passive reserves of labour. Clark (1981b, p.424) in particular, has suggested that the externalization of labour markets is a primary motive in nonmetropolitan economic decentralization.

---

[18]Scott (1983b, p.365) found that average plant size increased with distance from the city centre in his study of the printed circuits industry in Los Angeles. However, Scott used a different, and probably more accurate measure of plant size derived from his questionnaire data.

Relatively strong capital-intensification has occurred in the core area, accompanied by the stagnation of employment demand, while suburban and nonmetropolitan areas have received all the new manufacturing production employment demand in the province with strong growth in all of the labour-intensive industries (see TABLE 9.2).[19] To some extent, this scenario is not inconsistent with the basic premises of both 1) the "bilateral relations" perspectives and 2) for the core at least, propositions that capital-intensification is advantageous for the "labour climate" faced by core industry previously dependent on geographically-concentrated and potentially well-organized pools of labour. However, this consistency is contingent upon the reality of the presupposition that the core is indeed the optimal setting for collective labour action (contradicted by Scott (1982, p.125)) and consistency is obviously not a sufficient condition for causality.

The relative decentralization of industrial employment is also compatible with a tendency for increasing capital-labour ratios to facilitate the greater mobility of capital and to result in a shift in the optimal location of some industry to the new comparative advantage of peripheral areas and their superior provision of non-labour factors of production. Peripheral employment growth, under this scenario, would be a by-product of locational change from the restructuring of industry. However, the evidence for a positive association between capital-labour ratio increases within industries and the reduction in the percentage of industry activity in the core, is unconvincing. And finally, but not insignificantly, peripheral growth could be just the result of other constraints on core growth, such as the scarcity of land for expansion, municipal or provincial policy, or the existence of obsolete capital in core areas.

As the strong peripheral growth in industrial activity has remained relatively labour-intensive (the nonmetropolitan area still had the lowest capital-labour ratio in 1981 (see TABLE 9.4) despite having the largest MECS), geographical variations in

---

[19]Overall capital-intensity levels of the nonmetropolitan area, however, had the largest increase over the 1971-81 period.

unionization levels were re-examined to see if this employment growth was associated with lower unionization levels in the periphery. It should be reiterated, at this point, that average hourly wage costs were found to be slightly lower in the core and suburbs in 1971, and therefore wage rates do not offer a satisfactory explanation of differentiated growth - that is, lower wage rates have not been the cause of peripheral employment growth.

The procedure for attempting to determine spatial variations in unionization levels, which are only available at the metropolitan and total provincial levels, has been outlined in Chapter 7.

Total occupational unionization levels are considerably lower in the nonmetropolitan areas in 1970 (21% of the labour force compared to 33% of the labour force in Vancouver CMA)(see TABLE 9.3). Furthermore, this level actually decreased over the 1971-81 period (to 18% of the labour force) while the CMA level **increased** by four percentage points.

Although the blue-collar labour force is, as in much of the developed world, more highly unionized than the overall labour force, a pattern of geographical variation similar to the total occupational levels can be discerned for these strata of the labour force. The CMA has approximately three-quarters of its blue-collar labour force unionized in both 1970 and 1981, while the nonmetropolitan area had only 38% unionized in 1970 and this level declined to 31% in 1981. Consequently, these findings parallel the relative shift of manufacturing growth in the U.S. to lower unionized, but also lower wage (unlike the B.C. context), "Sunbelt" areas (de Souza, A. & Foust, J. (1979) p.325). However, the delimited regional scale of this analysis, with its metropolitan-nonmetropolitan focus is not directly equivalent to the broad regional comparison of the Sunbelt shift studies.

The growth of manufacturing employment in the relatively low-unionization level nonmetropolitan region is consistent with Clark's (1981b) bilateral relations theory of

decentralization but, of course, a causal link cannot be inferred - far better micro-level studies, particularly of the dynamic characteristics of labour demand (such as skill level, gender and work tenure) and existing labour supply environments (such as unemployment levels), would need to be investigated. In addition, more intimate knowledge of the location decision-making process of management and the relative importance of labour versus non-labour factors in such decisions, would be vital for a more accurate analysis.

Unfortunately, a major caveat remains in the inability of the research completed to disentangle the relative unionization levels for the core and suburban areas. Although employment in the CMA overall only grew by 15% over the study period compared to nonmetropolitan manufacturing production employment which grew at twice the rate (capturing 59% of new jobs) the suburban areas did, in fact, outpace the nonmetropolitan rate of increase in employment demand.

Scott (1982, p.127) has suggested that suburban areas tend to be more unionized than core areas. If this were indeed the case, stronger employment growth in the suburbs would contradict the bilateral relations propositions.

One final piece of evidence which could support the view that decentralization of industrial employment helps to balkanize the labour force is the substantial decline apparent in blue-collar unionization levels in nonmetropolitan areas (from 38 to 31%) and in the province overall, despite employment growth increase, while CMA levels remained fairly constant.

## C. REVIEW OF FINDINGS

It is useful at this point to recapitulate the major findings of this somewhat lengthy analysis for subsequent discussion of possible implications for future manufacturing production employment in B.C.

The process of capital-intensification seems to be occurring most rapidly in the nonmetropolitan areas of B.C. - the portion having the lowest level of unionization. Although this high-wage area would provide incentive for the substitution of labour by capital, employment growth has been strong and wages have continued to grow at the fastest rate of the three areas, probably as a result of rising demand for labour relative to supply, over the 1971-81 period.

Capital-intensity level increases have been greater in the core than in the suburban areas and overall industrial employment demand has actually dropped in the core area. However, wage differentials (in 1971) for the two areas were non-existent and differences in unionization levels cannot be determined. Although wage increases were slower in the core area over the study period, there seems to be little evidence of direct labour-based motives for capital-intensification given the absence of unionization data at the intra-urban level. The continued concomitant capital-intensification and growth in wages of nonmetropolitan areas is also inconsistent with this aspect of radical interpretations of restructuring strategies. Deskilling effects of changes in the nature of production processes cannot be gauged from the wage data.

The evidence for postulated relationships between capital-intensification within industries (at the provincial level) and relative decentralization from the core is also inconclusive. Although some of the industries undergoing rapid capital-intensification do have significant reductions in the percentage held by the core, there are several inconsistencies and the core actually lost a greater share of its labour-intensive industry (than its share of capital-intensive industry) over the 1971-81 period.

Surprisingly, the greater capital-intensification of the Vancouver CMA suburban (versus the core) areas does **not** seem to be occurring as proposed in most intra-urban decentralization theory. However, the peripheral capital-intensification trend is supported at the nonmetropolitan level. The existence of suburban industrial areas which are more labour-intensive than nonmetropolitan areas is inconsistent with the

predictions of theorists such as Norcliffe (1984, p.39) who assume lower real costs for labour will draw labour-intensive industry to the nonmetropolitan areas.

The high-wage nonmetropolitan area received the bulk of new output and employment in industry between 1971 and 1981. Aggregated average hourly wage rates were equal in core and suburbs in 1971 and slightly lower than in the nonmetropolitan area but only the suburbs gained additional industrial employment in the CMA. As a consequence, there appears to be (at an aggregated level) a very limited effect of 1971 spatial wage differentials on the redistribution of total provincial industrial employment - low wage rates have resulted in the decentralization of industry. However, some individual industries have lower wage rates in the suburbs and nonmetropolitan areas and any generalization must be tenuous.

The core is not becoming relatively more labour-intensive in terms of its industry composition and wage increases have been comparatively low in this area over the study period.

The median and average size of employment and output for individual plants is greatest in the nonmetropolitan areas, followed by the core, and then the suburban area. Thus, in this B.C. case study, plant size does not seem to be positively related to distance from the core counter to theoretical expectations of greater capital-deepening and standardization of the suburban production processes.

Finally, the major employment growth of the province did occur in the nonmetropolitan area which has far lower total and blue-collar unionization levels. Despite the substantial nonmetropolitan increase in manufacturing production employment levels over the period 1971 to 1981, blue-collar unionization levels actually declined. However, the low level of unionization has not meant low wages for the nonmetropolitan area. In addition, the suburban area of the CMA, which may well be highly unionized, received a substantial portion of new employment demand

created.

The inconclusive results overall and the lack of support for many of the processes theoretically proposed in contemporary literature on labour and the location of industry, highlight the dangers of generalizations about spatial units (such as those defined on a core–periphery spectrum) as discrete, universally–comparable and internally–homogeneous area. The radical geography school, in particular, has been most actively utilizing such generalizations.

In light of the results for the B.C. study, industry locational and structural outcomes can be seen as not just historically specific (as suggested by Webber, M. (1982) p.203) but as a product of unique regional aspects such as the function or role of particular regions in relation to dynamic national and global economic systems and the cultural and political context underlying the particular geography of production systems.

Resolution on broader spatial scales (such as the international level) and a redefinition of the appropriate core–periphery study areas may have proferred more interesting and informative results.

Although there are many constraints on an attempted evaluation of theoretical propositions that stem from the inadequate availability and nature of the data utilized, it also becomes apparent in the analysis that adherence to an empirical approach can be frustrating and results are ambiguous in view of the diverse possibilities for interpretation. Even at two–digit industry classification levels, many causes can be attributed to the same empirical outcome. In addition, widely disparate perspectives can share similar components of their theories of industrial restructuring and can only be differentiated at higher order levels of abstraction (such as in the Marxian domain of

the social relations of production), the fundamental nature of causality and historical changes, and in the sphere of morality and other value-based judgements.

Chapter X

# DISCUSSION OF THE URBAN AND REGIONAL ANALYSIS AND IMPLICATIONS FOR UNEMPLOYMENT IN THE VANCOUVER CMA AND BRITISH COLUMBIA

## A. EVALUATION OF THE URBAN ANALYSIS

The urban level of analysis of unemployment has primarily involved a series of tests of the applicability of the demand-side explanations of spatial variations in unemployment within the Vancouver CMA.

However, a preliminary investigation indicates that the necessary condition for the alternative supply-side explanations does appear to exist in the study area. Although the association of personal socioeconomic traits, housing supply characteristics, and unemployment levels is somewhat tautological in nature, a higher propensity for unemployment can be identified, at the metropolitan area level, in certain occupations and (related) skill groups and, in turn, these groups do have definite links to the housing market - usually with the indicators of inferior housing market quality (such as PEOLREP, PEROOM, AVALDW, and PERENT).

Although poor housing is not confined to the inner urban areas, high unemployment levels are also not contained exclusively within the core area (even in 1981) and the link between the housing market and unemployment levels cannot be dismissed.

However, the inner area does encompass extensive areas of poorer quality housing and the relatively strong association of unemployment-prone occupational and skill group levels in CTs (found to be the best predictors of unemployment probability), with housing market indicators, suggests that allocation to the housing market, probably through income and personal preferences, may be the major cause of observed spatial variations in unemployment rates.

The test of the relative importance of the two alternative hypotheses of variations in intra-urban unemployment rates has been based on the premise that evidence against the demand-side explanations would support the supply-side thesis. However, although the necessary condition for the personal characteristics / housing market explanations does exist, a causal link cannot be established within the scope of the research completed.

The bulk of the evidence obtained to evaluate the relevance of the demand-side hypothesis (in which decentralization and housing "entrapment" figure as the prime culprits) indicates that spatial separation of the home and workplace would only play a minor role as a direct contributing cause of CT unemployment variation within the CMA.

Firstly, the two travel-time indices representing access to manufacturing production employment show no association with manufacturing production unemployment rates. Unfortunately, the manufacturing production unemployment rates are rather unreliable and this evidence would not be a satisfactory test alone.

A second source of evidence countering the demand-side hypothesis stems from the similarity in unemployment rates for manufacturing production and non-manufacturing production groups in the inner city area. Although high 1981 unemployment levels for manufacturing production workers in the inner area is consistent with the demand-side theories, unemployment rates also tend to be higher in other occupations in this area. The phenomenon suggests that it is not just location *vis-a-vis* suburban manufacturing production activity that is at the root of high unemployment in the inner area. Other occupational groups residing in inner areas suffer a similar high propensity for unemployment. Those members with higher unemployment probabilities tend to live disproportionately in the inner city regardless of their occupational classification. However, the results are not indubitable and the evidence remains inconclusive. By 1984, the high manufacturing production

unemployment is no longer concentrated in the inner area and there would be no reason to propose that spatial causes of unemployment (from the decentralization process) have had a predominant influence on the unemployment mosaic in this more recent period.

An inner city concentration of unemployment (at least in relative terms) is the corollary of the demand-side hypothesis based on a positive relationship between unemployment levels and access to suburbanized jobs. Although there is a distinct concentration of high unemployment to the south and east of the city centre in 1981, there are many other areas of high unemployment and access to suburban areas would not apply as an explanation of high unemployment in the peripheral areas. In addition, there does not appear to be an increased concentration of unemployment in the inner city area between 1961 and 1981. As the decentralization of manufacturing production activity has proceeded quite rapidly in the CMA over the past two decades, the apparent dispersal of the highest unemployment CTs across the metropolitan area does not support the existence of relatively recent processes operating to disadvantage the inner area labour force in terms of gaining employment. Rather, inner city unemployment in the study area seems to be a historical phenomenon that has displayed considerable stability over time - if any trend can be identified, it would be one of decreased concentration of unemployment in the core area. Over the 1981-84 period, the focus of unemployment on the inner area was greatly reduced and spatial separation from suburban employment opportunity could not be considered as a significant source of CT unemployment rate differentials.

Another research result which questions the validity of the demand-side hyphothesis is the lack of evidence for the housing "trap" aspect of this explanation. Manufacturing production and professional workers suburbanized from the central municipality of Vancouver City at similar rates over the 1971-81 period. In fact, in 1981, the percentage of the labour force of each CT in manufacturing production

occupations tended to increase with distance from the core (the correlation coefficient for PMANPROD and TCBD was 0.247). Of the occupational groups with high unemployment vulnerability, only the service occupations had higher concentration levels in the core area. Hence, on an occupational basis, there is little reason to assume manufacturing production workers are restricted from suburban housing locations close to new suburban manufacturing production employment demand opportunity. Unfortunately, differential skill levels within this occupational stratum are subsumed within this analysis and it has not been possible to assess whether the apparently "normal" suburbanization levels of the manufacturing production labour force have been skill-specific – leaving the lower-skilled, lower-income groups in the central area. Another weakness of this part of the research stems from the assumption that the suburbanization of the manufacturing production labour force is necessarily associated with higher levels of access to suburban manufacturing production employment demand.

The final evidence intimating the relative unimportance of the spatial dimension in the determination of spatial variations in unemployment rates is the far stronger influence of the socioeconomic factors in the total and manufacturing production unemployment regression equations. Approximately 20 times as much variance in the unemployment rate dependent variables is explained by the socioeconomic independent variables, than by any of the three accessibility variables found to be significant. The much higher levels of variance explained by the socioeconomic variables occurs despite the strong collinearity and exclusion of many of the potentially relevant variables based on personal trait criteria. Hence, overall, the regression analyses probably yield greater support for the explanations of unemployment rate variations as a function of the personal characteristic composition of CTs.

However, there is evidence that space may play <u>some</u> part in the unemployment probabilities of people residing in certain locations within the urban area.

After accounting for the influence of the socioeconomic variables, all three accessibility variables (TCBD, WGTT1 and WGTT2) do enter their separate regression equations in a positive and significant association with the unemployment dependent variable. Although the variance explained by their inclusion is minimal (around 2% in each case), this result implies that spatial frictions between the home and potential workplace of the CT labour force could have differential effects on unemployment probabilities within the CMA.

The possible effect of differential constraints on the job-matching process, from spatial separation, could also be exacerbated by lower levels of auto mobility for the inner area residents. The accessibility indices are based on auto travel times and may underestimate the effects of spatial separation on inner area residents. The strong correlation between unemployment levels and lower car ownership (although possibly a result of lower-income **from** unemployment) could also be interpreted as suggestive of a link between mobility levels and unemployment probability amplifying the effect of spatial separation for certain groups which can be identified in space.

Therefore, the daily commuting range of inner city area residents may be reduced and, for the manufacturing production worker in these areas (whose employment demand locations have undergone considerable suburbanization over the past 20 years), a combination of lower mobility levels and non-radial journey requirements to suburban locations may push these suburban destinations beyond their potential daily commuting fields. However, car ownership levels have a stronger association with income, access to the CBD, and skill levels, than with the occupational composition of CTs, and the link between the probability of being a manufacturing production worker and the probability of owning a car is not clear. Once again, skill heterogeneity within the manufacturing production occupational groups may be obfuscating the analysis. It would not be unreasonable to propose that the inner area low-skilled could be disadvantaged in relation to their suburban counterparts in terms of access to a good

potential source of work in the suburbanized manufacturing production employment.

Attempting to evaluate which of the alternative hypotheses on intra-urban spatial variations in unemployment is "correct" in the Vancouver CMA context is difficult in view of the somewhat ambiguous results from the completed research. However, the sketchy evidence for, and the considerable evidence against, the existence of the expected conditions and outcomes of the demand-side theories does throw doubt on its applicability as the dominant process underlying the observed variations in unemployment within the study area in 1981.

One definite conclusion of urban analysis of unemployment is the markedly different nature of the processes operating on unemployment that are relevant for the 1981 study focus in comparison to those operative in the more recent 1981-84 period. For the 1971-81 period, it appears that the personal characteristics ("supply-side") hypothesis is the most salient in the Vancouver CMA setting. There is not a lot of support for the demand-side explanations. The lact of evidence for processes hypothesized to influence intra-urban unemployment variation, based on the suburbanization of industry, can probably be explained in terms of a number of a number of characteristics of the Vancouver CMA setting:

1. Industrialization in the metropolitan area is only of fairly recent orgiin (early twentieth century) (Hardwick, W. (1972) p.50).
2. Vancouver is not a heavily industrialized metropolitan area in relation to many Canadian or other North American and European cities (for example, only 11.5% of its labour force was in manufacturing activity in 1981 compared to 21.9% in Toronto and 26.2% in Hamilton) (Statistics Canada (31-209 and 1-529).
3. The metropolitan area is quite small in comparison with the

major metropolitan areas where decentralization of industry to outer "rings" would comprise a greater constraint on potential commuting trips.

Hence, observed intra-urban variations in unemployment rates in the CMA are probably the result of demand-deficient, frictional or other structural sources (not geographic separation) which differentially affect groups based on their occupational or other personal characteristics which, in turn, "allocate" them to distinct areas of the housing market. Spatial variations in unemployment would be an indirect result of employment demand (and changes in the nature of employment demand) or segmentation within the labour market which is carried over into the dynamic form of housing market. Space would simply reflect where those with higher unemployment probability live rather than being a fundamental cause of unemployment.

However, spatial separation may be having a secondary impact on the pattern of unemployment though its effect is difficult to evaluate on the sole basis of the occupational criteria emphasized. An incoporation of other personal characteristics (such as skill levels), other potential mobility measures, and alternative job location destination considerations could help to further elucidate the possible constraints imposed by spatial separation.

Although the impact of space on observed unemployment rates seems to be weak in comparison to the influence of socioeconomic variables, geographic separation between home and workplace could be an important consideration in an understanding of the labour market operation. The existence of some effect from spatial constraints, operating within the metropolitan area, questions the unconditional acceptance of the CMA as the universally-applicable local labour market area. Employment policy focused on the CMA and theory on urban labour markets could need to consider the possible existence of a series of discontinuous overlapping labour markets (based on personal and area characteristics) <u>within</u> metropolitan areas. If the CMA is inappropriate as the

ideal local labour market, a balance of overall labour supply and demand characteristics in the area would not guarantee that spatial barriers would not impede the equilibrium adjustment of the labour market.

Hence, a major conclusion of this research is the proposition that the two alternative hypotheses used to explain unemployment variations are not antithetical in character but their effects can exist to mutually determine the intra-urban mosaic of unemployment. While it is quite likely that both sources contribute to the 1981 CT unemployment rate differentials, the supply-side explanations clearly predominate. Both personal characteristics and location *vis-a-vis* jobs may influence the unemployment probability of individuals within the urban area.

In the more recent 1981-84 period, spatial constraint aspects may have been a necessary consideration for the perfect matching of labour supply and demand in the CMA (if the available and required labour quantity and quality were balanced). However, the contribution of spatial causes to the total unemployment pool and intra-urban variations in unemployment rates is probably insignificant. The large increase in the "gap" between employment supply and demand in every occupation, since 1981, illustrates the likely demand-deficient nature of unemployment in the province over this period. The growth in unemployment does not seem to have a discriminating effect on, or within, occupations that can be identified in the housing market as intra-urban unemployment rate changes.[1] Occupational and geographic-structural unemployment can only be attributed a minor role in the unemployment growth in this period.

---

[1]Admittedly, unemployment rates in the 1981-84 period were only examined at the larger CEC scale.

Over both study periods, there is a consistent tendency for high unemployment probabilities to be focused on certain groups within the labour force. Workers with low-skill levels and the occupations with the largest labour force content of low-skilled labour (manufacturing production, service, construction and primary occupations) appear to be the most vulnerable to unemployment even in high-demand times and have suffered the largest relative and absolute increases in unemployment in the recent economic recessionary period. Labour force members of single marital status also seem to be far more prone to unemployment than married members (as a result of the various research investigations) but this result has been de-emphasized due to its limited direct policy relevance.

Car ownership levels are also strongly related to unemployment levels (in a positive association). However, as a result of the highly-intercorrelated nature of this variable, further discussion of the ramifications of this finding has been limited.

Although high relative unemployment probabilities are faced by labour force groups defined on the basis of these socioeconomic criteria, there are also large "pools" of unemployed in the CMA in the higher-skilled white-collar clerical and "professional" occupations. However, while the professional occupations (including managerial, professional, administrative and technical groups) have experienced large absolute increases in unemployment with the rapid growth in their labour forces, the unemployment probability of these groups has remained less than one-quarter of the highest rates found within the manufacturing production and construction categories in 1984.

As discussed in Chapter 7, the higher propensity for unemployment among the low-skilled is a common and widespread phenomenon. The existing range of explanations of this higher incidence of unemployment among the lower-skilled include:

1. The hoarding of skilled labour by employers even in low-demand times due to the relatively high human capital investments, made by the firm,

in these workers (usually via on-the-job training) (Oi, W. (1961)). In comparison, low-skilled labour can be released during downturns because labour of this quality can be easily rehired if demand were to increase again. By definition, low-skilled labour has minimal human capital investment and there is little training cost lost with the displaced low-skill worker.

2. Higher skill workers can do lower-skill jobs (as well as their own higher-skill jobs) but lower-skill workers cannot perform higher-skill tasks (Reder, M. 1957). The greater flexibility of higher-skilled labour would encourage the employer to retain this type of worker.

3. The most common explanations for low-skilled unemployment in labour economic theory (outlined in Chapter 2) relate to the detrimental effects of wage rigidities on the employment probability of the lower-skilled worker. Minimum wage legislation and high wage levels from collective bargaining are thought to raise the marginal cost of low-skilled labour above the value of marginal productivity that accrues to the firm from the use of this labour. Hence, less low-skilled labour or more capital-intensive techniques would be used than if low-skilled labour costs were allowed to fall to "equilibrium" levels and the unemployment probability of the low-skilled worker increases (Fleisher, B. & Kneisner, T. (1984) p.472-3).

4. A related aspect commonly proposed as a major cause of higher unemployment among the low-skilled in labour economic theory is the increase in the "reservation wage" for these workers as a result of social security provision (often in combination with fringe benefits and taxation schemes favouring the receipt of transfer payments). High overall real benefits that can be obtained while unemployed are thought

to prevent the low-skilled worker from taking low-wage jobs (Fleisher, B. & Kneisner, T. (1984) p.155).

5. A low-skill unemployment explanation emphasized in the dual labour market perspectives is the boring nature of jobs for the low-skilled and the poor prospects for career advancement which are thought to result in higher quit rates and frequent job changes (Corkindale, J. (1980) p.184).

6. Finally, there are a number of explanations which primarily relate to the disproportionate growth in unemployment among the lower-skilled occupations - particularly in the more "advanced" Western economies. Firstly, the deindustrialization of the "developed" world (in terms of a relative decrease in the importance of production-related activity measured by jobs and output) and the tendency for automation to proceed most rapidly on routine, standardized, basic functions previously performed by low-skill workers is a common explanation of the reduced demand for blue-collar (particularly low-skilled blue-collar) labour which has increased the chances of unemployment for the lower-skilled worker.[2] The persistence of this technological and structural unemployment is dependent on the ability of the displaced lower-skill workers to upgrade their skills and the capacity of alternative sectors to absorb excess labour supply.

This broad structural change is often considered to be the cause of the decline of the percentage of "blue-collar" jobs in the labour force of developed Western economies. However, interestingly enough, the blue-collar component of the Canadian labour force (comprised of

---

[2]This process would ignore the potential for deskilling from automation. Deskilling involves a general redistribution of employment demand to low skill levels as a result of process changes which decrease the demand for the more skilled manual functions.

manufacturing goods production and construction occupations) only decreased by about 4 percentage points (from 29 to 25%) over the period from 1950 to 1983 (see FIGURE 10.1). The rapid growth in the professional, technical, managerial, administrative and related occupations has proceeded mainly at the expense of the primary occupations.

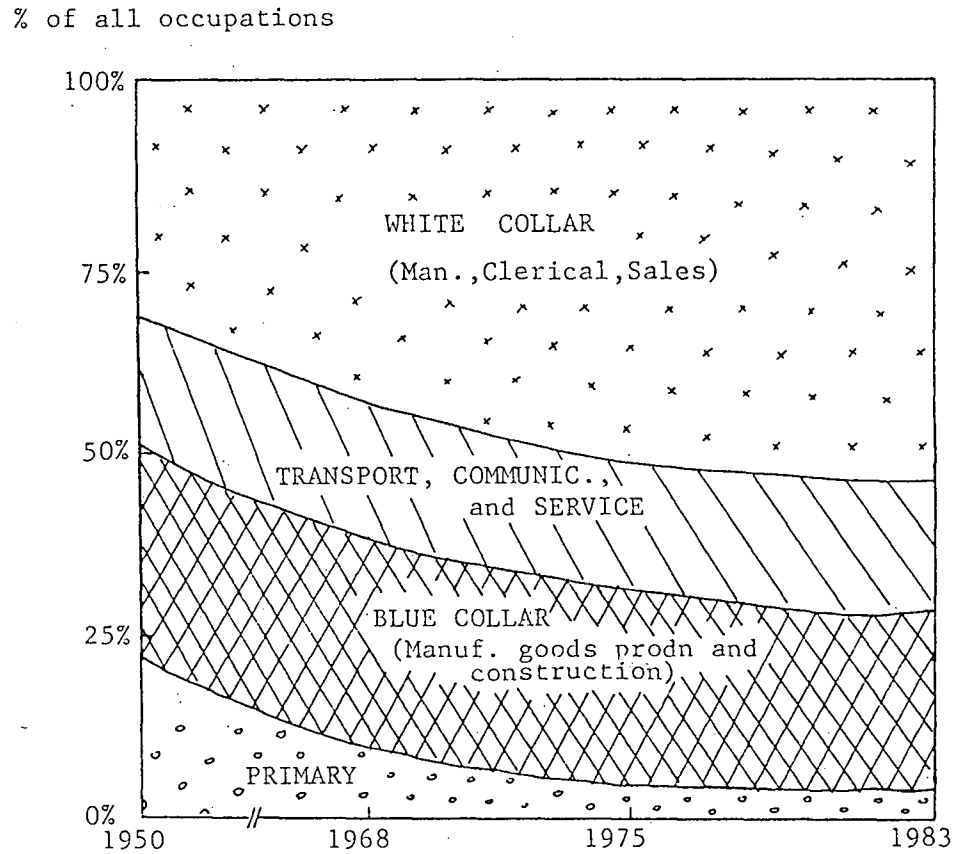
A closely related explanation of declining demand for high low-skill unemployment is based on trends such as the globalization of capital (resulting in the increased locational flexibility of production investment) and the relative decentralization of labour-intensive economic activity to cheaper wage; low-skilled labour markets in "developing" nations. The high unemployment rates of the low-skilled are thus perceived as a product of the expansion of the low-skilled labour force available for the functioning of international capitalism.

Thirdly, declining levels of aggregate demand at global levels (for a whole host of hypothesized reasons) can be seen as directly reducing total demand for labour even with fixed capital-labour ratios. Low-skill unemployment growth would be a result of the tendency for low skilled labour to be the "first to go" under these conditions (for reasons 1) and 2)).

In the Vancouver CMA setting, any of these factors could be the underlying determinants of high unemployment observed in the low-skilled groups (which have disproportionate representation in the manufacturing production, service, and construction occupations). The net result is a differentiation of unemployment probability according to the personal characteristics of individuals (in which skill levels undoubtedly play a major role) and this variable impact is reflected across space because of heterogeneity

Figure 10.1

OCCUPATIONAL SHIFTS IN THE EMPLOYED LABOUR FORCE IN CANADA 1950 - 1983




Source: Compiled from Statistics Canada. "Labour Force Survey" 71-001

in the housing market.

Over the 1981-84 period, unemployment has grown more rapidly in the low-skilled occupational groups. As the effects of the first five explanations of low-skill unemployment have probably remained fairly stable over this period, growing levels of low-skill unemployment are likely to be a product of one or more of the final factors considered (deindustrialization, capital-intensification, the international decentralization of capital and low-skilled jobs and declining aggregate demand). This aspect will be further discussed in section 10.B. However, there are a number of implications of the urban level analysis that should be addressed at this stage of the thesis.

Even if it can be assumed that spatial separation of home and workplace is a significant barrier on the job-matching process in the CMA (for which the evidence is weak), isolated policy to increase access to employment demand locations from workers' residences, by decreasing geographic separation or by enhancing personal travel mobility, would be unlikely to substantially reduce unemployment, or spatial variation in unemployment, in this study area. An excess supply of labour is probably the major barrier to the achievement of low unemployment levels rather than a simple geographic mismatch of labour supply and demand within the metropolitan area.

Hence, transport solutions or housing programs to overcome the possible detrimental effect of residential confinement to certain areas of the city with low access to job opportunities would be very limited unless other areas of the city have a surplus of the job-type that is under-represented in the area in question (Gillespie, A. (1983) p.182). "Balanced dispersal" urban development programs would not ensure a substantial reduction in unemployment, given the overall supply-demand mismatch in the Vancouver CMA study area, though they may help reduce other urban problems such as congestion and pollution and may increase the efficient use of fuel.

In many respects, it would be irrational for industrial firms to locate beyond a potential commuting field for its required labour force if total labour supply and demand were balanced. A surplus of relevant labour supply across the metropolitan area would enhance the locational flexibility of firms if spatial constraints on commuting trips did apply within the CMA.

The second major implication is dependent on the spatial separation of home and workplace (within the CMA) as having some effect on the probability of finding work. Although the evidence provided from the regression and correlation (mainly the lower car ownership levels of the inner city labour force) analyses is rather weak, the existence of spatial constraints on the job-matching process would question the acceptance of the CMA as the local labour market within which commuting is unimpeded for all groups. Those groups with the highest probability of unemployment - low-skilled and lower-income members - are less likely to have cars and could well have more delimited "sub-CMA" potential commuting fields. For those living in the inner area, suburban low-skilled industrial jobs could lie beyond a "reasonable" commuting trip range (with too high a cost and time requirement for job acceptance and possible constraints on information dissemination). This is consistent with Dicken and Lloyd's (1981, p.207) conclusion on the existence of strongly localized labour markets for some groups in the population.

This scenario would suggest that decentralization and accessibility aspects, within the CMA, cannot be completely disregarded in theory and policy on the effective operation of the labour market as it actually functions in space. Job dislocation resulting in unemployment and higher transport costs is a "waste" of private and social resources and the balancing of jobs and workplaces would still comprise a salutary goal for urban and regional planning.[3]

---

[3]The balancing of jobs and workplaces in municipalities is a major goal of the Greater Vancouver Regional District's "Livable Regional Plan" for the regional Vancouver area.

However, although space must eventually delimit the daily commuting trip possibilities for all occupational groups, and for some groups this range is likely to be less than the CMA, spatial separation is not the dominant cause of unemployment in the CMA in 1981.

A third implication of the urban analysis stems from the examination of employment supply and demand broken down by occupations (though statistics are actually only available at the total provincial level) in section 8.H. As high unemployment levels are experienced, in all occupations, throughout the province, it is unlikely that facilitating household residential mobility, to enable relocation to any region within the B.C. province, would act to substantially reduce CMA unemployment. That is, geographic mobility is not the appropriate policy solution - blue-collar and service occupations have had stagnating employment demand and high unemployment conditions throughout the province since 1981.

The highest unemployment rates and the largest growth in unemployment during the 1980's have been concentrated on the lower-skill occupations. However, the "professional" skilled groups also have a large number of unemployed in 1984. Hence, the occupational analysis suggests that isolated job-training programs, the essence of human capital investment approaches to unemployment, would be rather futile on their own in view of the high unemployment levels confronted in every occupational group. Even the two occupational groups held to be the major potential areas of absorption of displaced production, blue-collar and lower-skilled service workers do not offer much hope in the short-term in B.C.. Employment demand in clerical occupations has not grown since 1981 and the skilled, "professional" occupations have experienced a simultaneous rapid growth in employment demand <u>and</u> labour force, and absolute levels have grown substantially (by over 200% between 1980 and 1984).

Vocational training does not necessarily provide a skilled job - particularly in low aggregate demand conditions (Elias, P. & Keogh, G. (1982) p.29; Thrift, N. (1979)

p.177). Clark (1981a, p.572; 1983, p.281) fears that job-training funding by public agencies, without concomitant employment creation, may just externalize the cost of training from the private sector allowing an increase in turnover. He believes this situation is indicative of the weakness of relying on the private sector for placing unemployed clients.

However, the arguments against isolated job-training programs as the cure to the unemployment experienced in the CMA are not meant to imply that policies for the long-term adjustment of supply and demand for labour would not require the skill-upgrading of considerable portions of the metropolitan area's labour force. There is little doubt that increases in skill levels would enhance the work flexibility of the labour force (and hence, reduce occupational-structural unemployment) (Thrift, N. (1979) p.207). Nevertheless, given the current employment demand situation in the province, human investment policies will not alleviate unemployment without the creation of additional employment demand.[4]

Another point of interest emerging from the urban analysis is the intimated close relationship between the urban housing and labour markets as a result of the support for the supply-side hypothesis of spatial variations in unemployment. Labour segmentation and the differential unemployment probabilities, that can be attributed on the basis of socioeconomic dimensions within the labour force, are carried over into the housing market and are manifested as spatial variations in unemployment rates (Walker, R. & Storper, M. (1983) p.32).

A final implication of the urban level research findings is related to the reaffirmation of unemployment-vulnerability in the low-skill strata of the labour force. Not only do the lower-skilled suffer higher unemployment rates but their

---

[4]In marginal productivity theory, increased human investment in individuals should increase their marginal productivity and hence, increase the demand for labour. However, there is little empirical proof of this relationship and employment demand is probably far more complex than is depicted in the neoclassical economic models (see Chapters 2 and 6 for the critique of marginal productivity).

unemployment situation appears to be worsening in the study area with little hope of respite in the short-term future (and possibly even in the longer-term as discussed in the following section).

Cheshire (1979, p.33) believes that the personal characteristics of the unemployed in one single spatial labour market tell nothing of the causes of unemployment. However, the characteristics of the unemployed must give some indication of the supply-demand mismatch and would be useful in an overall examination of trends in the labour market by hinting at the changing nature of labour employment demand requirements of the economic system. In addition, an evaluation of the personal characteristics of the unemployed would provide an idea of the basic type of job requirement creation (or employment demand increase) or the concomitant job creation and skill upgrading necessary to fulfil some *a priori* concept of the nature of employment supply and demand desired in the labour market in question. Unfortunately, there are many weaknesses of policy prescriptives restricted to this data source. Far more detailed data on the changing nature of employment demand requirements and the quality of the labour actually filling these positions would be required for a more accurate assessment of the supply-demand mismatch.

The results obtained do support Cheshire's (1979, p.30) proclamation that demand differences play only a minor role in explaining the high relative unemployment rates in certain intra-urban areas (such as the inner city). However, he believes that regional demand differences <u>are</u> crucial in explaining unemployment variations over time and the absolute level of spatial variations in unemployment. Cheshire contends that intra-urban unemployment rate <u>relative</u> differences stem from the logic of the urban structure and the residential location pattern whereas regional unemployment differences are attributed to differences in the level of excess demand for labour in regional labour markets. Thrift (1979, p.33) considers that the actual processes that produce inner city problems are only partly understood and require a

concrete historical study of political and economic relations which are "reflected in geographic inequality and are located in the processes of social inequality".

Hence, an understanding of the dynamics of the distribution of unemployment in the CMA probably requires a focus on broad structural economic changes and their specific regional impact on the metropolitan area and its hinterland.[5] Perspectives attributing priority to society-wide (and even global) processes, which transcend the narrow spatial explanations, are consistent with the conclusions of many researchers on the "inner city" problems - particularly in the U.K. The problems of the inner city are perceived as inseparable from the dynamics of the spatio-economic system (Hall, P. (1981) p.11).

On these grounds, macroeconomic strategies would figure heavily in integrated policy measures designed to deal with unemployment growth and concentrations of unemployment in particular problem areas of the urban environment (Bramley, G. (1980) p.292). Individual groups within the urban labour market are likely to have their own unique local labour market geographically circumscribed by space-time constraints on their daily activity pattern. The potential daily commuting field for many groups may well be less than the standard CMA definition assumed in geostatistical studies. Both occupational and geographic structural aspects would need to be considered in the implementation of efficacious policy to achieve "full employment" (or at least the significant reduction in involuntary unemployment) within the community. The analysis has thrown some doubt on the effectiveness of the CMA as the ideal local labour market area for implementation of such policy and distinct socioeconomic groups and their appropriate local labour market areas may need to be identified within the CMA boundaries.[6]

---

[5]The intra-urban spatial distribution of unemployment would also depend on the changing nature and form of the urban housing market.
In retrospect, the methodological approach adopted in this study could be criticized as embracing an overly spatially determinist perspective. An emphasis on spatial distribution aspects can obscure more fundamental causes of inequality (Badcock, B. (1984) p.39).
[6]A questioning of the CMA as the perfect local labour market would probably be far

## B. REGIONAL STRUCTURAL CHANGES IN MANUFACTURING PRODUCTION ACTIVITY AND PROSPECTS FOR REDUCED UNEMPLOYMENT IN THE PROVINCE

The review of the urban analysis of unemployment in the Vancouver CMA has demonstrated that the observed pattern of unemployment in the recent period leading up to 1981 is probably the principal result of the higher unemployment propensity of certain socioeconomic groups and the process of allocation of these groups to distinct areas of the urban housing market. Although there is some indication that spatial causes may contribute to the mosaic of unemployment, the evidence is very limited.

However, a spatial perspective has still proved useful in the overall analysis of urban unemployment. The correlation of CT data (though prone to "ecological fallacy" problems) has helped to suggest possible associations between the range of variables considered. Many of these variables would not be available from other sources. Changes in the spatial distribution of unemployment can provide clues about the changing nature of unemployment in the CMA. A spatial perspective would also be beneficial for identifying those areas containing the most intensive cases of unemployment as a social "pathology". Spatial variations in unemployment in this context would provide a social indicator for potential application in guiding policy. Finally, the incorporation of spatial considerations has resulted in a recognition of the possibility that geographic separation between home and workplace may be an important factor in labour market policy particularly in regard to the existence of various socioeconomic groups within the metropolitan area, each of which is likely to have their own unique local labour market boundaries. Space will eventually comprise an ultimate constraint on the job-matching process for any group.

However, to understand the reasons behind changes in the pattern of unemployment (such as the marked spatial redistribution of unemployment over the

---

[6](cont'd) more cogent in the larger metropolitan areas.

1981-84 period), one has to implicate broad structural trends in the economic system (if long-term) or at least closely examine the nature of effects from shifts in the business "cycle". An assumption of purely "cyclical" effects is probably inadequate for explanatory purposes given that the economic system does evolve and the form of the labour market is never identical at two points in time (for example, the occupational or employment demand structure is continually changing). However, demand-deficient unemployment does appear to be the major type of additional worker displacement after 1981.

The analysis of manufacturing production employment demand in B.C. in Chapter 9 has been completed as a case study to examine trends in one of the labour force strata most severely affected by the economic downturn in the province during the 1980's. These occupational groups did suffer relatively high unemployment rates and absolute levels at the end of the 1970's, but they have also undergone a rapid increase in unemployment since 1981. Unfortunately, the bulk of the data available on manufacturing production activity is limited to the 1970's and up to and including 1981 - an interval which does not match the recent unemployment crisis period in the province (1981 to 1985). Nevertheless, the precursory examination of this sector over the 1971-81 period has given some indication of the nature and direction of trends in production activity in the province as a whole and at each of the three study area scales delineated. An identification of dominant processes does suggest some clues as to the future employment prospects of this group of workers. Possible specific impacts on the CMA manufacturing production labour force, as the major study focus, can also be extracted from the regional analysis.

It is realized that this sector is only one part of the labour force and the capacity for generalization to other sectors (even low-skilled blue-collar occupation groups) is necessarily quite limited. However, the manufacturing production occupations comprise a major source of unemployment at metropolitan and provincial levels and it

is reasonable to assume that the production sector is one of the major alternative potential sources of employment for the other low-skilled labour force members who also suffer considerably higher unemployment probabilities.

With the increased integration of the world economy (in recent decades) through decreased linkage costs and massive improvements in communications technology, there is an increased scope for the specialization of regions in accordance with their human and natural resource "comparative advantage". Hence, it would be unrealistic to propose that manufacturing production activity is the basic economic activity upon which the economic health of the province depends. The region could probably prosper in a service and information-based economic role.

However, at present, the province is heavily reliant on resource-based and "upstream" production activities.[7] In addition, the concomitant decline of the production and service sectors during the 1980's (at least in terms of unemployment) does indicate the importance of resource and production activities in the provincial economy. A transition from a resource-based to a service, "hi-tech", and informational economic role for B.C. cannot be assumed to proceed without major adjustments involving profound effects on the provincial labour market.

Structural trends at a global scale are changing the specific role of the B.C. economy and are likely to have a significant impact of the employment chances of the low-skilled worker (in particular) even in the short-term future. Hence, manufacturing production sectoral employment demand has been examined as a good representation of production activities in the province and because the manufacturing sector offers the most detailed sources of data available for any industry group (of the Standard Industrial Classification) in the province.

One of the major aims of the focus on manufacturing production activity has been to ascertain whether some of the theory on labour and the location and

---

[7]From the Ministry of Small Business Development's "B.C. Industry Review - 1983".

characteristics of industry (primarily that proposed from the radical geography "school") can be applied in the B.C. context. The operation of hypothesized processes would have very important ramifications for the nature of employment demand in the province as a whole and differential impacts would be expected at each of the three spatial scales examined.

Admittedly, there are many weaknesses in the attempted search for empirical verification of these processes. These limitations stem from:

1. The existence of offsetting effects of processes postulated as acting on manufacturing production activity, even within the same theoretical schools (for example, in radical theory, capital-intensification has been proposed as a means of controlling "core" labour while labour-intensification is also thought to occur to utilize pools of exploitable labour existing in and around the core).
2. The same outcome is often predicted for competing theories.
3. Data limitations. The short-time period for which data is available stifles any attempt at a historical perspective allowing the identification of longer term structural trends. In addition, the data analysis has been completed at fairly aggregated levels - partly as a result of data constraints and partly as a consequence of resource restraints on the researcher.
4. A more detailed examination of the qualitative changes in employment demand (covering aspects such as tenure, skill level and real total labour costs) has not been completed. Much of this data is simply not available. In addition, an examination based on actual local labour markets has not been possible.
5. The arbitrary selection of the three spatial scales for the

comparison of trends is contentious and would necessarily involve an unjustified simplification of reality.

Assuming these weaknesses do not render the analysis as meaningless, there appears to be surprisingly little support for the radical theories on labour and the restructuring of industry in the B.C. context. Even widely accepted mainstream theories involving expected higher levels of capital-intensity in industrial activity with decentralization in the metropolitan area are not consistently supported in the study findings. Inconclusive and ambiguous results may be a product of data and methodological limitations and errors. However, there is a conspicuous absence of distinct trends in most of the factor measurements monitored.[8]

In general, the nature of manufacturing production employment demand outcomes at the two different points in time does **not** tend to verify the existence of processes motivated by direct labour-control goals. Hence, the more functionalist radical interpretations of labour's role in the restructuring of capital do not seem to apply in the B.C. setting over the period 1971-81. The only clear indication of a direct labour motive in the changing nature of manufacturing production employment demand is the substantial employment (and output) growth in the low-unionization nonmetropolitan area and the decline in unionization levels also focused on this area. In comparison, the core area (situated in the highly-unionized CMA) suffered an absolute loss in person-hours utilized. However, the suburban metropolitan area has also experienced a strong increase in employment demand and, although it has been impossible to ascertain suburban unionization levels, they are likely to be relatively high. This latter situation would contradict the "bilateral relations" theory which does receive some

---

[8]For example, the lack of detailed data on labour supply and demand characteristics at local labour market levels has made it extremely difficult to identify the optimal "location" for the utilization of labour with secondary labour market characteristics.

support in the employment growth statistics for the nonmetropolitan area.

Although it is difficult to ascertain whether the unclear and often frustrating results are an indication of the lack of consistent trends in study areas, or simply the product of data and methodological problems, the role of labour in the restructuring of industry (including locational and production process changes) does not seem to be as important as stressed in much of the contemporary theory (particularly in radical theory).

In fact, there appears to be instances of an almost complete "disregard" for labour in production, organizational and locational change decisions.[9] The highest growth in employment occurred in the high-wage areas (the "nonmetropolitan" and "suburban" areas). Hence, development has proceeded in peripheral locations despite the effects of greater demand for labour and high and rising labour costs. The location and nature of industrial change in the 1970's may have been predominantly guided by non-labour factors. Wage differentials have apparently had little effect on the location and characteristics of industry (at the broad regional scale). Capital-intensification did not progress most rapidly in the high wage areas.

An expected positive association between wage levels and unionization rates was not found in the study area. The coexistence of high wages and low unionization rates in nonmetropolitan areas detracts from the unionization-based evidence for the bilateral relations theory and the supposed exploitation of secondary labour market conditions with the regional decentralization of industry.

However, capital-intensification trends <u>are</u> strong in the core and, with declining manufacturing production employment demand, this scenario could be interpreted as evidence of labour-control motives.

---

[9]However, labour costs, as a percentage of total production costs did not decline significantly over the 1971-81 study period. Labour costs constituted 23% of the total provincial factor supply costs in manufacturing in 1971 and 21% in 1981 (Statistics Canada 31-209).

Another countervailing process hypothesized in radical (and mainstream) theory is the movement of capital-intensive industry to peripheral areas (particularly the suburban areas). The evidence for this trend is weak and ambiguous. Industry in the core tends to be more capital-intensive and plant size (in output and employment terms) tends to be greater than in the suburban area. In addition, the core had a greater share of the capital-intensive industries output in 1981 than in 1971. This trend opposes an expected polarization of industry favouring labour-intensification in the inner area.

There is, however, some evidence of a positive relationship between increases in the capital-labour ratio and distance from the core area particularly in regard to the nonmetropolitan area. This peripheral area underwent the largest increase in the capital-labour ratio over the 1971-81 period and had the largest plant size (employment and output) in 1981. A rather tenuous positive association can also be identified for the percentage increase in the capital-labour ratio for each industry and the percentage reduction of the output of the relevant industry produced in the core area.

Results are equally ambiguous at the two-digit industrial classification level presenting little consistent support for labour-control theories or the capital-intensive / peripheral location hypothesis.

Although the regional analysis has many obvious inherent problems, it has still proved useful in testing to see if there is **clear** evidence of some of the hypothesized trends discussed in Chapter 6. In most cases, there appears to be very little indication of these trends in the B.C. context over the study period. However, the apparent impartiality of investment decisions with regard to spatially-variable labour characteristics could be changing in the recessionary period following the boom times of the 1970's study period. Some trends, such as the relationship between the capital-labour ratio and output are distinct and may have important ramifications on the future nature of employment demand in the manufacturing production sector. This relationship shall be

discussed in subsequent sections.

However, the lack of evidence for the existence of spatial and other production investment strategies oriented toward decreasing the power and cost of labour (at least in a manipulative, functionalist sense), suggests that restructuring changes cannot be attributed the same degree of deliberation as is attempted in much of the radical theory. Rather, the restructuring process probably involves necessary changes instigated as a response to maintain profit levels in the face of declining demand overall and loss of competitiveness in international markets. However, the effect of these pressures is not captured in the available data examined which is limited to the 1970's and up to, and including, 1981. Overall, the labour "factor" has fared well during the study period.

The regional analysis results (which are often inconclusive or inconsistent with the major theoretical explanations reviewed) illustrate the dangers of attempted core–periphery definition and generalization. As discussed, the findings stress the need for a consideration of the uniqueness of regional contexts in addition to the historical specificity espoused in radical theory. Although resource–exploitation has comprised the major economic function of the province in the past, the changing role of the region, within the national and global economic systems, must be considered (Walker, D. (1980) p.210).

B.C. is not a good microsm of economic structural changes occurring at the global scale. The province has enjoyed continued high levels of prosperity throughout the 1970's, has limited spatial differentiation in labour costs and quality across the region (at least in terms of the manufacturing production labour force in the three study area examined) and has never been, or has never really had, an industrialized core area in the traditional sense. In addition, the region in question is quite unusual in terms of the sharp polarization between labour and business interests and the coexistence of high wage levels and high unemployment (Brewis, T. (1969) p.84;

Cohen, B. & Shannon, K. (1984) p.168).

There are a few distinct trends in the manufacturing production sector in B.C. that may be useful for an attempt to predict the future scenario faced by low-skilled workers (and in particular, manufacturing production workers) in this region encompassing the Vancouver CMA.

From 1965 to 1979, value-added in manufacturing production activity in B.C. increased by 114% with the nonmetropolitan area gaining the largest "slice" of provincial output and employment growth (53% and 59% respectively). The suburban CMA had the highest growth rates in employment and output capturing 27% of the addition to production output and 41% of the new employment while the "core" area gained 25% of new value-added but underwent a slight decline as a source of provincial manufacturing production employment. Hence, a relative decentralization of output and employment from the core is occurring.

Strong growth in output during the 1970's in B.C. has not been matched by similar gains in employment (which increased only by 29% over this period) as a result of increases in productivity. Overall, automation in the Marxian sense of productivity improvements outstripping output growth (and resulting in a net loss of employment demand) has not occurred in the province due to the rapid growth in demand for provincial manufacturing product over this period. However, the marginal growth in employment demand (person-hours) has only been maintained by the considered effect of the strong developments in manufacturing production activity in peripheral areas. Productivity increases in the core metropolitan area did outpace output growth and the number of people employed in manufacturing production activity fell by 3.2% - even during the "boom" period.[10] Hence, employment creation did not favour the core but instead employment actually fell with higher capital-intensification levels than the suburbs and limited value-added growth. Capital-intensity increases were

---

[10]Figures include 1980 and 1981 as well as the 1970's.

the highest in the nonmetropolitan area which also received the bulk of new employment and output and had the highest increases in wage levels.

From Statistics Canada manufacturing statistics for sub-provincial levels (which is the only data available up to 1981), total B.C. manufacturing production employment demand did not fall immediately with the onset of the recessionary period (around 1981) and the decline in manufacturing production aggregate demand (proxied by value-added). This stability is reaffirmed in the "Labour Force Survey" data (Statistics Canada, 71-529). However, according to this second source of data, which is available monthly up to 1985, manufacturing production employment demand in the province did drop by 18% (a loss of approximately 37,000 jobs) between 1981 and 1984. Unfortunately, it is difficult to gauge the relative and separate effects of capital-intensification (though the capital-labour ratio actually declined in 1980 and 1981 and data is not available beyond this period). Continued constant or declining capital-labour ratios for the 1982-84 period would suggest that employment demand has been lost primarily as a direct result of decreased output demand.

Manufacturing production employment demand in 1984 is less than for 1978 despite higher value-added, totals (in standardized $1971), as a result of capital-intensifying production process changes. Hence, over this more extended time period (which takes into account the effect of faltering output demand), automation is occurring. Manufacturing production employment demand did not even expand during the 1978-81 high economic growth conditions and there is some evidence of a long-term structural decline in demand for this type of labour in B.C.

Although distinct "deindustrialization" (under a trade importance definition) trends cannot be identified in B.C. over the study time period, a decline in manufacturing production exports has occurred since 1979 (see FIGURE 9.6). In addition, the stagnation and decline in the absolute level of manufacturing production workers and the relative decrease in the percentage of the total workforce in manufacturing

production occupations (from 26.6% in 1966 to 18.5% in 1981) does suggest that the deindustrialization of B.C. is occurring in an occupational sense. Cyclical buoyancy in export markets and the short-term study focus make is extremely difficult to ascertain to what extent these trends are structural or simply an effect of movements in the business cycle. D. Walker (1980, p.204) notes that B.C. has always had cyclical problems (for example, the province fared poorly in the 1974-75 recession). However, Walker fears that provincial economic problems may be becoming structural due to declining competitiveness in world markets associated with increased production in Third World nations (that is, the international decentralization of production activity), higher labour costs, and a relative decline in productivity.

Despite the uncertain association between the capital-labour ratio, employment demand and output during the 1979-81 period, and the lack of data to examine this relationship in subsequent years, it is clear that productivity growth was keeping manufacturing production labour demand down to reasonably constant levels even in the high output growth conditions. With declining output demand conditions, employment demand is likely to diminish - particularly if capital-intensification proceeds in the sector (as it ususally does under sustained conditions of increased competition and the need for cost-efficient production process changes).

Hence, fairly high capital-intensity increases across all three study areas has meant that resultant employment demand trends in each area have been dependent on the relative growth of output demand. The effect of high levels of capital-intensification and only moderate value-added growth in the core has resulted in an overall decline in employment demand in this area. If the value-added decline is a long-run structural trend, it is quite likely that the core will undergo a continued and exacerbated decline in its role as a potential work source for production employees. If space plays some part in the differentiated employment chances of workers within the CMA (of which there is some evidence), the inner area production

labour force may be further disadvantaged by core decline. However, the evidence for spatial constraints on the job-matching process within the CMA is weak and suburban employment growth (while perhaps giving some access advantages to the suburban manufacturing production labour force) may well help to sustain employment prospects for the inner area manufacturing production labour force.

However, this situation would have to assume that total levels of manufacturing production employment demand will increase. In fact, manufacturing production employment demand levels have actually declined since 1981 and there is little reason to believe employment growth in this sector will be revived. Unfortunately, it is impossible to differentiate and compare growth in the three areas after 1981, but it is quite likely that the core area has been severely afflicted (in terms of employment demand) in the more recent economic crisis times - a trend which would probably exacerbate inner city problems. However, manufacturing production unemployment increased more in the suburban areas over the 1980-84 period (see section 8.D) suggesting that 1) accessibility has little to do with the recent deteriorating nature of the urban unemployment problem and 2) that the inner area unemployment is more likely to be composed of the "unemployables" (who remain unemployed in high aggregate labour demand times) while suburban unemployment growth stems from the redundancies in low-skill and industrial labour as a result of declining aggregate demand for provincial manufacturing production output.

In summary, the employment prospects for the manufacturing production worker in B.C. do not look promising. Employment demand in these occupations has remained fairly stable even in high economic growth years. Hence, even a revival of growth in demand for manufacturing output in the province is unlikely to result in a substantial increase in labour demand. In addition, if fears of long-term structural decline in

B.C.'s role as a resource supplier actualize, the decline in labour demand for these occupational groups is likely to be more dramatic.

Admittedly, one cannot assume that the rather grim outlook for this sector, as one of the major providers of low-skilled jobs in the province, can be automatically applied to the other lower-skilled occupational groups such as the service, construction and primary groups and the lower-tiers of the clerical occupations. In addition, manufacturing production cannot necessarily be assumed as the basic activity as in much of the past theory on regional economic development. However, other low-skilled groups appear to have suffered in a similar way to the manufacturing production sector and the long-term future for their employment demand does not look bright.

Of course, the eventual outcome ultimately depends on developments in relevant world export markets and the complex operation of an increasingly global economic system which cannot be examined in detail within this research. However, continued declining demand for those resources and products which currently comprise B.C.'s major export revenue source will undoubtedly have a disproportionate, severe effect on the lower-skilled worker and even a highly optimistic perspective could not consider goods-production in the province as a potential growth sector for increasing employment levels.

Employment hopes are often pinned on the information and service (and possibly the "hi-tech") industry sectors to revive the B.C. economy and provide the much-needed employment growth (for example, see Vancouver Economic Advisory Commission (1982)). Some discussion of the growth potentiality of these sectors will be included in the following, concluding section of the thesis.

Chapter XI

# CONCLUSION

The primary objective of this study has been to contribute to the understanding of unemployment in the Vancouver CMA in the 1980's. This attempt has been made in two fundamental research orientations.

Firstly, the urban level forcus has entailed the more detailed and thorough procedure to identify the dominant processes acting on intra-urban variations in unemployment in 1981 on the presumption that the findings may help illuminate the nature of unemployment in the CMA. The empirical method utilized has centred upon the assessment of the relevance of the two major alternative hypotheses of intra-urban variations in unemployment: 1) the "demand-side" theories based on spatial causes of unemployment from the suburbanization of manufacturing production employment demand locations and accessibility problems from the entrapment of a portion of the appropriate labour force in inner-city low income housing and 2) the "supply-side" thesis which simply attributes the relationship between personal characteristics of individuals (determining their unemployment probability) and the housing market (which "allocates" people to distinct areas of the city on the basis of these personal traits) as the underlying cause of the intra-urban mosaic of unevenness. This investigation has also proved useful for a general description and breakdown of the changing nature of unemployment in the CMA over the 1980's.

Secondly, a broad regional perspective (at the B.C. level) has been adopted to examine manufacturing production activity as one of the major occupational sources of unemployment and as one of the major lower-skilled occupational groups in order to ascertain or assess the existence of structural trends (over varying periods between 1966 and 1984) and to provide possible clues as to the nature of future trends in lower-skilled employment demand (at least for production workers).

Overall, the urban level research findings tend to support evidence found in most of the British studies of unemployment rate variation within metropolitan areas - the supply-side theories appear to have a far stronger influence in the determination of observed unemployment rate variations. Hence, the pattern of unemployment in the CMA would tend to reflect residential segregation that is a result of persistent status and income divisions in society (as proposed by Cheshire (1979, p.41). Under this perspective, **spatial** inequality is just another fairly unimportant dimension of **social** inequality.

The analysis has revealed some evidence of a spatial separation (of home and workplace) effect on the pattern of unemployment in 1981. The possibility of unique overlapping socioeconomic group-based local labour markets within the metropolitan area would call for a re-evaluation of the conception of the CMA as the ideal extent of work commuting fields for all individuals and households in theory and policy involving urban labour markets.

However, the urban results do imply the superficiality of a search for causes and solutions to social "pathologies" focused principally upon spatial criteria (such as accessibility). That is, the methodological orientation has probably been tainted by spatial determinism in which space is treated as a metaphysical object or a unique determinant of economic performance (Clark, G. (1978) p.10). The attempt at the evaluation of the housing supply / personal characteristics hypothesis is indicative of the rather circular descriptions and explanations which often result from an over-reliance on space as the major analytic unit. This perspective can deflect interest from issues of the integrated character of the total space-economy and the dynamics of the over-arching social, economic and political context.

It has been suggested that the necessary level of focus for an understanding of (urban) unemployment should involve an analysis of the structural evolution of the total economy (Clark, G. (1978) p.10). Political economic aspects and broad structural

trends and processes that operate to distribute social wealth, and result in the inequality in life chances, would lie at the heart of those processes that attribute unemployment probability and and act to form the spatial pattern of unemployment reflecting the differentiated urban housing market (Cheshire, P. (1979); Thrift, N. (1979)). Hence, spatial variations in unemployment are **not** well explained by spatial aspects as the causal agent. Although there is some evidence that spatial separation (probably in conjunction with other personal characteristic traits) can affect unemployment probability, far deeper and more entrenched processes are likely to be dominant.

According to the results of the urban unemployment research, space is reflexive (in the sense of the built form having some influence on social processes). However, those processes which are directly social in character probably have far more influence on the spatial form (rather than vice-versa). This situation is reflected in the apparent impact of the process of decentralization of industrial activity from the older core areas of B.C. on the production labour force. Decentralization is not a direct cause of unemployment through the spatial separation of worker residence and work location (though at international levels it may well have a greater effect on regional and national unemployment). Rather, decentralization seems to be part of an overall restructuring process in the production (and total economic) system that has resulted in growing unemployment.

However, a spatial perspective in research on unemployment would still be very useful. Using space as the analytic basis is convenient for descriptive purposes in breaking down the characteristics and nature of unemployment. Unfortunately, although correlations based on CT or other spatial units may help to suggest much about unemployment in the particular study area, this method cannot provide proof of causal links.

Space must also be the ultimate delineator of the job-matching process (for almost all occupations) and hence, the effective identifier of study relevance. However, it is obvious that one must look beyond the urban environment (particularly the physical built environment) to identify the major causes of unemployment.

Spatial units are also useful for identifying areas where societal goals are not being fulfilled or to assess the impact of policy decisions. Space provides a practical tool for rational planning and in social accounting systems for monitoring change and the intended redistribution of resources. Physical planning also has obvious implications for decreasing spatial inequality (Smith, D. (1977) p.105). However, there are many limitations to be recognized in the use of space in the implementation of employment and other social and economic policy decisions (see Smith, D. (1977) p.165-166 and Thrift, M. (1979) p.127).

There is a notable lack of evidence for many aspects of the nature of the capital restructuring process, as proposed by radical theorists, in the B.C. regional context. However, this conclusion must remain tentative given the severe limitations of this part of the research including 1) data availability which is restricted to one or two decades, primarily during economic boom times for the province, 2) the arbitrary and generalized spatial study units utilized, 3) the exclusive focus on manufacturing production activity, 4) the rather aggregated nature of the data analysis and 5) the unique industrial situation of the B.C. setting.

The only distinct major trend to be identified in manufacturing production activity in B.C. over the study period - the capital-intensification process - is by no means, restricted to Marxian interpretations. Capital-intensification has helped to stifle employment demand growth in the production sector as the economic base evolves through stages in which it requires different forms and quantities of employment demand. Prospects for employment growth in the production sector appear worse in the

light of a possible long-term redefinition of B.C.'s role in an increasingly global economy (involving a diminished value of its function in a traditional resource exploitation and "upstream" production role).

The "upstream" production activities (which involve little processing beyond raw material stages) and the more advanced manufacturing operations in the province are suffering increased competition from developing nations. Declining levels of demand for B.C.'s natural resource products (from the persistent world recession effect on demand and the growth of new competing suppliers (often from developing nations with cheaper labour costs)) has restricted output demand for resource supply and upstream production functions. The growth of activities involving higher levels of processing of natural resources is believed to be inhibited in B.C. as a result of:

1. High wage levels (which decrease the cost-competitiveness of B.C. products). Basic hourly wage rates of around $20 per hour comprise far higher "factor supply" costs than in developing nations. For example, in Mexico the minimum wage is $5(Canadian) per day and in Korea, hourly rates of $0.80(U.S.) are common (Multinational Monitor (1984) p.18); The Vancouver Sun, (1985a)).
2. High foreign ownership, external control by multinationals and the "staple trap" theory. Resource supply areas are thought to be deliberately kept "dependent" (and in excess supply) to keep production costs low and to allow greater profits to be made from trade after further processing of the resources (Weaver, C. & Gunton, T. (1982)). Labour-intensive production would not be favoured in Canada due to high wage levels.

If the likely decline in employment demand for manufacturing production occupations can be extended to other "blue-collar" occupations, the future prospects for low-skilled employment demand growth in B.C., are bleak. The changing nature of employment demand will probably be reflected in the residential distribution of these people in the urban environment. However, the dynamic form of the urban housing market would need to be considered.

There are many obvious caveats in this research though the more severe methodological limitations probably arise in the second section on the B.C. manufacturing production sector. Although major weaknesses have generally been confronted and exposed throughout the discussion, it is important to stress the potential source of error from the aggregated level of analysis and the neglect of micro-level data which necessarily precludes individual perceptual and experiental dimensions. These aspects would probably be very important for a more complete understanding of the processes analyzed. Unfortunately, it has been impossible to provide a useful micro-level analysis within the imposed resource constraints. A consideration of employment demand and supply characteristics is also very limited and **actual** local labour market boundaries are ignored in the second section of the research.

The major hope for the amelioration of unemployment resulting from the displacement of labour from production and low-skill jobs in the "advanced" Western economies is the potential employment demand to be created by tertiary and quaternary growth sectors. The replacement of production by service employment in the "developed" world economies could be conceived as a more efficient utilization of the higher-skill levels and knowledge "comparitive advantage" of these nations.

However, the idea of a service-based economy stems from D. Bell's (1973) conception of the post-industrial society as the eventual stage all nations would reach as a result of the long-term transformation of the economic base. Bell's post-industrial vision did not foresee any conflict associated with the transition from the stage of

industrialization (Montagna, P. (1977)). Under this perspective, the transition to a post-industrial society could be seen to possibly result in a similar short-term displacement of labour, as in the change to the industrial society, as the economy undergoes a comparitively rapid transformation in the economic base and in the consequent nature of employment demand.

Hence, growing unemployment would be considered as primarily occupational-structural or technological in nature - a mismatch of available labour quality and potential labour skills demanded. The change in the form of employment demand would displace labour only as a short-term maladjustment and unemployment would be expected to decrease in the long-run as appropriate labour market responses take effect. That is, the detrimental impacts of deindustrialization on employment would only be transitory.

This view is opposed by many theorists including G. Standing (1984, p.143) who believes the shift to service occupations has not resulted in structural unemployment but has involved a redistribution of joblessness in part reflecting the influx of labour force entrants due to the changing nature of jobs. He considers the growth in service occupations as having attracted females to the labour force. The new jobs created have often been part-time or have allowed for job-sharing and dual job-holding thus being relatively suitable for those combining a labour force activity with some other role. The result has been a substitution of men by women, an increase in the relative unemployment of youth (seeking full-time career jobs) and older workers whose skills are obsolete. Hence, the movement toward a post-industrial society would not only include a change in the nature of tasks performed (production to non-production) but may well be involving a major reorganization of the work process.

Some trends observed throughout the "advanced" Western economies also give reason to doubt the "adequate" absorption of displaced blue-collar workers into the

service sector. High unemployment levels have persisted in many of the "deindustrializing" nations for almost a decade (for example, in the U.K.) and there is little sign of remission in the forseeable future. There has also been a recent slowdown in the service employment growth in many nations (for example, in Europe in the 1970's) (Standing, G. (1984) p.143). Slower world-wide economic growth, and overcapacity and oversupply, will continue to stifle growth in overall employment demand at least in the short-term future. Even if growth in the service sector revived, it is generally thought to be of little benefit for inner city unemployment problems (see Sternlieb, G. & Hughes, J. (1980) p.51; Thrift, N. (1979) p.163).

In the specific context of B.C., trends in the service sector over the past few years offer little grounds for optimism with regard to a "full" employment situation in the province in the immediate future. Over the 1982-84 period, there was little, if any growth in the service industries (particularly in "Community, Business and Personal Services" (once direct job creation impacts are excluded), "Financial" Industries, and the "Public Sector" (Regional Economic Services Branch (1984) p.4)). Within the Community, Business and Personal Service industries, fewer work hours, a shift towards part-time work and more work-sharing tended to mask a real fall in employment in terms of hours worked. However, considerable growth in employment in these industries is predicted after 1985.

The Regional Economic Service Branch of Employment and Immigration Canada (1984, p.1) report on the labour market outlook for the province proposes that the 1980's will be a time of major social and economic change and retrenchment. The major elements in the formulation of this forecast include:

1. The expectation that the economic recovery of the U.S. (upon which B.C.'s economy is highly dependent) will be limited. In addition, imports to the U.S. will be unlikely to increase (for forest products in particular) with the possible introduction of protectionist legislation by

the U.S. in 1985.

2. The fact that there was little planned investment in B.C. at the time of the report (1984).

3. Government spending and employment cutbacks resulting from the provincial government's "restraint" program. The Socred government's approach is consistent with monetarist economic policy and is based on the assumption that deregulation and withdrawal of the state from the economy will stimulate private sector expansion and reduce any economic woes. However, the revitalizing effect on market demand from reduced government spending (as the stimulus for private investment) is contentious. Employment losses in the public sector are a direct result of the program policy. Fears of job loss, negative multiplier effects on consumption and lower total disposable income levels (from high unemployment) are thought to inhibit consumer spending and indirectly decrease employment demand further.

4. Greater pressure for labour-displacing technological change in the production sector to maintain international competitiveness.

5. The rather minimal effect of "Expo 86" construction on the employment demand situation and skepticism about the ultimate permanent employment creation of the 1986 world fair.

According to the "Labour Market Outlook" report, a partial recovery for economic activity in B.C. is predicted sometime in the 1980's.[1] However, without a sufficient increase in output and, in the face of continued capital-intensification, the spectre of "jobless growth" (at least for production activities) is very real in the province. Once again, the bleakest job prospects are for the low-skilled worker.

---

[1]The Regional Economic Services Branch (1984) predicts that the resource industries will recover somewhat but only to modest levels in comparison to the 1970's.

Low-skilled production labour is threatened by faltering output demand and capital-intensification. The B.C. forest industry lost 25% of its jobs, while retaining the same output level, in the three-year period up to 1984 (Cohen, D. & Shannon, K. (1984) p.164). Even a sustained recovery in the resource industries' market demand and prices is reckoned to be associated with employment loss because of technological change - particularly in the forest industry (Globe & Mail, (1984)).

White-collar employment growth (particularly in the routine and lower-skilled clerical areas) may well be adversely affected by the introduction of mainframe and microprocessor computer facilities. Although it is difficult to predict, with any accuracy, the impact of computer technology on information-based employment demand, Dicken, P. & Lloyd, P. (1981, p.178) contend that many routine clerical tasks have already been affected (even in 1981) by developments in computer and data-processing technology, photocopying and so forth. G. Standing (1984, p.144) also refers to the projected fall in office employment from the introduction of information technology (IT) leading to smaller offices, a restructuring of the division of labour (involving more subcontracting and casual and part-time labour use) and the displacement of workers.

In B.C., the Regional Economic Services Branch (1984, p.14) report predicts that micro-electronic technology will start adversely affecting the employment level for clerical workers in sectors like Utilities, Finance, Insurance and Real Estate, Trade, Service, and Public Administration toward the end of the 1980's.[2] For example, given the available information technology, Bell Canada could (and would if governed strictly by profit-maximization criteria) cut its labour force in half (Cohen, D. & Shannon, K. (1984) p.57).

Those occupations predicted to have the best employment growth prospects in the province, throughout the 1980's, lie primarily within the professional, technical, administrative, managerial and related classifications (Vancouver Sun (1984b)). These

---

[2]However, some delays in the implementation of such technology are though to be likely as a result of reduced wage demands.

occupations include those in 1) engineering and technical fields (especially electronics, mechanical engineering, robotics, computers, and communications), 2) accounting and business administration (preferably with high qualification levels and computing knowledge), 3) health care, 4) higher level clerical work (specialist services, word processing and computer accounting) and 5) hospitality and tourism. The employment growth potential in these more professional occupations could be used as the basis for policy responses emphasizing human capital investment. However, skill-upgrading alone does not ensure that skilled positions are available and there is no guarantee that all displaced lower-skilled workers can be trained and placed in "higher-productivity", higher-skilled jobs.

The possibility of continued growth in demand for professional occupations (but insufficient growth to absorb displaced lower-skilled workers) coupled with the ongoing automation and overseas movement of low-skilled production and service jobs, has provoked some theorists to envisage an ominous polarization or bifurcation of the labour force, reflected in the socioeconomic structure as sharper class divisions, with an associated greater inequality in wealth (Cooke, P. (1980) p.561; Danson, M. (1982); Thrift, N. (1979) p.208).

Under this scenario, there would be a relative decline of the middle class accompanied by an emergent distinct upper class comprised of the owners and managers of capital and the highly-skilled whose tasks technology had not penetrated and yet were necessary for the functioning of this future form of the economic system. These jobs would be high-wage, secure positions within primary and internal labour markets. The other major class would consist of a large number of workers (often termed "technopeasants") with secondary or lower primary labour market characteristics for whom technology and excess labour supply had acted to break collective bargaining power and decrease wages. Some theorists presage the need for an authoritarian regime to maintain social order imperiled by this volatile class distinction

(Hamm, B. (1983) p.282). This setting is not too far removed from Marx's preconditions for the breakdown of capitalism. However, a marked polarization of the social structure would require dramatic politico-institutional change and is certainly vulnerable to criticisms of over-pessimism, Luddism, and for its implicit lack of faith in the employment growth potential of the service sector.

The possible causes of unemployment in the study area context have by no means been investigated exhaustively in this research. Changes in the demographic structure, participation rates, the exact nature of employment demand, and immigration policy have been ignored. In addition, a major aspect has been overlooked in the failure to address youth unemployment (the unemployed between 15 and 24 years of age) which, in September 1984, comprised one-third of B.C.'s unemployment (which totalled more than 200,000) with an unemployment rate of 21% (Vancouver Sun (1984b)).[3]

There is a vast quantity of literature on the potential "cures" for unemployment and it is impossible to review this material within the constraints of this research. Some of the appropriate policy responses suggested for decreasing unemployment, within the current democratic capitalist framework, in general, and specifically within the B.C. context, include:

1. Import substitution and protectionism (as espoused by the Cambridge Keynesians) (Jordan, B. (1982) p.8).
2. Economic diversification and higher levels of processing and greater domestic ownership and control of investment in Canada (Weaver, C. & Gunton, T. (1982)).
3. Community development programs and local job creation (Kuenstler, P. (1984)).
4. Equity or asset or investment sharing (Badcock, B. (1984)).

---

[3]In many respects, high youth unemployment is probably linked to high unemployment levels in the low-skilled and inexperienced labour force.

5. Value changes (ranging from greater acceptance of a non-work ethic to a perceived need for the resurgence of the work ethic).
6. Shorter production runs to improve competitiveness and maintain demand (Tarshis, L. (1984)).
7. Greater and more profitable use of intellectual capital (Cohen, D. & Shannon, K. (1984)).
8. Earlier retirement, shorter work hour incentives, work-sharing.
9. A whole range of disincentives to a perceived unwillingness to work (such as reducing social security payments, removing minimum wage controls, compulsory military training, and decreasing wages in general). Many of these actions are consistent with monetarist economic policy.
10. Immigration policy and demographic changes (including an increase in the birth rate) (Cohen, D. & Shannon, K. (1984).
11. War (to stimulate economic activity) (Cohen, D. & Shannon, K. (1984).
12. Various post-Keynesian suggestions for stimulating demand (Tarshis, L. (1984)).

The appropriate response for efficacious policy to deal with unemployment obviously depends on the actual underlying causes and this study has only a very limited contribution to make to this objective given the immense complexity of the problem and the rather meagre resources utilized in this research. However, a few policy implications are suggested by the study findings and these are best viewed in relation to three proposed major elements of labour market policy in Canada (Employment and Immigration Canada (1981) p.17):

1. Facilitation of the operation of the labour market and the improvement of the supply-demand adjustment process (primarily through the provision of information functions through Canada Employment Centres) and to provide short-term unemployment relief by unemployment insurance.
2. The improvement of the quality of labour supply, including training, geographical mobility and immigration.
3. Direct employment creation and the assumed growth in employment demand from industrial incentive programs.

One implication of the study findings for labour market policy in B.C. is the apparent inefficacy of facilitating the geographic mobility of the unemployed at urban or intra-regional scales, as a means of substantially reducing CMA or provincial unemployment. However, there is some indication that the matching of jobs to people could require a consideration of the limits of the daily commuting trip which, for some socioeconomic groups, could well lie within the assumed CMA range. Although the policy decision of whether or not people have a right to work in their chosen residential area is a value-judgement of a very contentious nature, there is little doubt that geography would provide a basis for the implementation of local labour market and manpower policies which would depend upon an understanding of how local labour markets function (Clark, G. (1981) p.563). Spatial separation may not be a significant cause of unemployment over the study period but an appropriate policy response would require an explicit incorporation of the constraining role of space on the labour market operation.

Secondly, enhancing the dissemination of information to the actors in the labour market may help to reduce frictional unemployment but the effect would probably be

minimal given the likely nature of unemployment in the CMA and province. The frictional element of unemployment is probably negligible in comparison to the displacement resulting from the structural decline of some major employment sectors (particularly for the lower-skilled occupations) compounded by demand-deficient conditions of uncertain duration.[4]

Although the analysis of employment demand has been limited, it appears that significant part of provincial unemployment growth is the product of a long-term structural change shared by most of the "advanced" world economies. Hence, the increased unemployment in manufacturing production (and to some extent, in service and construction) in B.C. is at least a partial consequence of a general form of restructuring. In B.C. in particular, the impact of restructuring on employment demand would stem from a combined effect of three technological change-based and related trends - deindustrialization, the decentralization of production and low-skilled employment to cheaper labour areas and a redefinition of B.C.'s role as a resource supplier for the world economy.

Finally, skill-upgrading to increase occupational mobility and to increase employment demand (according to the tenets of human capital theory) is unlikely to provide an adequate solution on its own, to the unemployment crisis in B.C. Reasonably high unemployment levels are faced in the higher-skilled occupations which have already undergone rapid surges in labour force growth over the past decade.

Even though the labour force of most of the lower-skilled occupations has stabilized over the past ten years (except for service and clerical groups), unemployment levels are very high and may continue to increase. The provision of a skilled worker does not ensure the creation of a skilled job (Montagna, P. (1977) p.76). Employment demand in the higher-skilled groups would need to expand rapidly

---

[4]As discussed, the assumption of a short-term "cyclical" nature of declining demand for B.C.'s traditional major export revenue products, as simply reflecting the repetition of a certain stage in the endless rhythm of the business cycle, is highly questionable.

to absorb even the existing large pool of appropriate, unemployed skilled labour.

Although skill upgrading programs may help provide the occupational and work flexibility required for the transition to a service-based economy, there is no guarantee of sufficient growth in employment demand to reduce unemployment. Provincial cutbacks to education and reduced federal expenditure on manpower and training programs will probably decrease the potential role of skill-upgrading as a solution to the unemployment problem in B.C.

In summary, the role of the state as the "facilitator" of the natural operation of the labour market (which aligns with the dominant perspectives in contemporary labour economic theory) will probably be of limited effectiveness in coping with the persistent high unemployment levels experienced in the province. More direct moves to reduce wage rigidity to increase labour demand may have more success (by increasing regional and international competitiveness and by arresting capital-deepening) though changes of this rather radical nature would be highly provocative.[5]

As discussed in Chapter 2, monetarist economic philosophy shares the policy prescriptives of contemporary labour economic theory - at least at the microeconomic level. The constraints on the adjustment of a "free" market for labour (such as wage rigidities, high reservation wages and geographic immobility) are perceived as the principal cause of unemployment by increasing the "natural" rate of unemployment. Resultant labour market policy is structured to remove these impediments.

At the macroeconomic level, monetarist policy is conceived on the assumption that reduced government regulation and spending (except for action to "ease up" the operation of the labour market) will stimulate economic growth in the private sector and will result in increased employment demand. Under this neo-conservative philsophy,

---

[5]For example, in July 1985, admidst a great deal of opposition, the Conservative Government in the U.K. announced it will abolish minimum wages for people under 21 in order to reduce unemployment (now at a record 13%) (Vancouver Sun (1985c)).

which is now prevalent at Canadian federal and B.C. provincial political levels, direct job creation initiatives have fallen out of favour.

However, job creation programs have always been limited in scope. For example, many of the major employment creation programs of the past have been directed under the auspices of the Department of Regional Economic Expansion (DREE). Employment creation has really only been indirect in the DREE policies which are basically designed to encourage industrial expansion in "depressed" areas through the provision of grants and tax incentives (Martin, F. (1982) p. 268). Hence, the emphasis on infrastructure and skill provision to indirectly create jobs is also based on the assumption that increased private investment will increase employment in the targeted areas. More recently, the serious consideration of the creation of the contentious "(special) free enterprise zones" to attract industry to B.C. is based on the promise of lower taxes and the provision of a "suitable labour climate" (no unionization, low wage levels) within these areas in order to increase employment demand (Vancouver Sun (1985b)).

However, there is no guarantee of a direct link between increased private investment and (overall) employment growth as far as the production sector is concerned. For example, investment resulting from DREE program initiatives was biased towards capital-intensification (Clark, G. (1977) p.12). Continued and increased international competition will probably necessitate further cost-cutting in B.C. industry and productivity increases will probably be an essential aspect of any new investment. Hence, it is quite likely that any growth in the production sector will be "jobless growth" and the future for blue-collar employment demand in the province does not look bright.

It is far more difficult to predict the output and employment growth potential of the other sectors in the provincial economy. However, there is some reason for uncertainty in the growth capacity of the "hi-tech" industries (for which a multitude

of municipalities, states and provinces are competing) and for the service, information and knowledge-based sectors (due to the education and training cutbacks in the province, automation and considerable doubt overall as to the capability of employment growth in this sector to absorb displaced lower-skill workers).[6]

Direct output demand manipulation policies would probably be of limited help in stimulating a substantial growth in economic activity because the majority of the existing markets for labour lie outside of provincial, or even federal, jurisdiction.

The apparent direction of the change in B.C.'s role in the world economy does not look promising for the creation of low-skilled, and possibly even higher-skilled, employment demand. Although cyclical effects of the world-wide recession would obviously be having an impact on economic activity in B.C., there are probably long-term structural changes at work to increase the displacement of production labour by the introduction of new techniques resulting in a decline in labour demand for given levels of output and by an expansion in the potential labour force by the industrialization of the "developing" nations.

If substantial investment in production activitiy is made in B.C. in the future, it will invariably involve capital-intensification of existing processes. Even Canadian regional labour market policy has tended to be oriented toward increased productivity and competitiveness rather than the creation and growth of labour-intensive industry (Jenness, R. (1977) p.42).

The ability of the service industries, as the promised growth sectors, to absorb unemployment increases from the continued displacement in the production sectors, is uncertain and, if the trends over the past few years in B.C. can be considered as representative of future prospects, unemployment levels may well increase (without substantial outmigration or ameliorative effects from other unknown demographic or

---

[6]The infinitely replicable nature of information, particularly with the extensive implementation of integrated computer networks, may well cause a substantial decline in the labour input requirement for information-related tasks.

participation rate changes).

Policy to facilitate the "free market" forces (under a *laissez-faire* political philosophy) may help to speed the structural changes that have redefined the "comparative advantage" of B.C. (for an increasingly integrated, interdependent world economy) and have resulted in the detrimental effect on provincial economic activity and the associated severe ramifications on labour requirements in the province. Alternatively,the regional comparative advantage would need to alter to allow the utilization of "production factors" at competitive world prices. Although B.C.'s offerrings to a world economy may slowly change over time, the "labour factor" would play a key role in the ability of the province to maintain its resource supply role. Labour costs would have to be reduced either by actually decreasing the quantity used per output (and output is unlikely to increase substantially) or by reducing labour unit costs (real wages). Unfortunately, either option would have negative repercussions on labour.

# BIBLIOGRAPHY


Addison, J.T. & Siebert W.S. (1979) *The Market for Labor: An Analytical Treatment* Goodyear Pub. Co. : Santa Monica

Aberg, Yngve (1973) "Regional Productivity Differences in Swedish Manufacturing", *Regional and Urban Economics*, **3**, 2, 131-156.

Alexander, A.J. (1974) "Income experience and the structure of internal labour markets", *Quart. Journal of Economics*, **88**, 63-85.

Alonso, W. (1960) "A theory of the urban land market", *Papers and Proceedings of the Regional Science Association*, **6**, 149-157.

Althusser, L. (1969) *For Marx.* Penguin : Harmondsworth, U.K.

Althusser, L. (1976) *Essays in Self-Criticism* New Left Books : London

Armstrong, H. and Taylor, J. (1983) "Unemployment stocks and flows in the travel-to-work areas of the North-West Region", *Urban Studies*, **20**, 311-325.

Badcock, Blair (1984) *Unfairly Structured Cities* Basil Blackwell: Oxford

Ball, R.M. (1980) "The use and definition of Travel-To-Work Areas in Great Britain: Some Problems", *Regional Studies*, **44**, 125-139.

Bederman, S.H. and Adams, J.S. (1974) "Job accessibility and underemployment", *Annals of the Association of American Geographers*, **64**, 3, 378-386.

Bell, D. (1973) *The Coming of Post-Industrial Society* Basic Books Inc. : New York

Berry, B.J.L. and Kasarda, J.D. (1977) *Contemporary Urban Ecology* Macmillan : New York

Berthoud, Richard (1980) "Employment in a changing labour market". In (Evans, A. and Eversley, D. (Eds.) 1980) 232-252.

Blackaby, F. (Ed.) (1979) *Deindustrialization* Heineman Educational Books : London

Blackburn, R. (Ed.) (1972) *Ideology in Social Science* Fontana : London

Bergman, E.W. and Goldstein, H.A. (1983) "Dynamics and structural change in metropolitan economies", *Journal of the American Planning Association*, Summer 1983, 263-276.

Bluestone, B. and Harrison, B. (1982) *The Deindustrialization of America* Basic Books : New York

Bramley, G. (1980) "Employment problems in Lambeth". In (Evans, A. and Eversley, D. (Eds.) 1980) 271-293.

Braverman, H. (1974) *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century.* Monthly Review Press : New York

Brewis, T.N. (1969) *Regional Economic Policies in Canada* Macmillan Corp. : Toronto

Browett, John (1984) "On the necessity and inevitability of uneven spatial development under capitalism", *International Journal of Urban and Regional Research*, **2**, 155-175.

Bruno, S. (1979) "The Industrial Reserve Army, segmentation and the Italian labour market," *Cambridge Journal of Economics*,**3** 131-151.

Bullock, A. and Stallybrass, O. (Eds.) (1977) *The Fontana Dictionary of Modern Thought* Fontana Books : London

Cairncross, A. (1979) "What is deindustrialization?" In (Blackaby, F. (Ed.) 1979)) 5-17.

Canadian Conference of Catholic Bishops (1983) "Catholic Bishops Speak Out" *Canadian Ecumenical News*. Vol. 8, No. 1. February-March 1983, p. 6-7

Canadian Conference of Catholic Bishops (1984) *Ethical Choices and Political Challenges* Ottawa, Ontario.

Carmichael, C.L. (1978) "Local labour market analysis: It's importance and a possible appoach", *Geoforum*, **9**, 127-148.

Castells, M. (1977) *The Urban Question* Edward Arnold : London

Cheshire, P. (1977) "A Framework for Analysing Spatial Labour Markets: A Review of Progress and a Critique of the Inner Area Studies". Paper read at Urban Studies Conference, Oxford, Sept. 1977.

Cheshire, P. (1979) "Inner areas as spatial labour markets: A critique of the Inner Area Studies," *Urban Studies*, **16**, 29-43.

Cheshire, P. (1981) "Inner areas as spatial labour markets: A rejoinder", *Urban Studies*, **18**, 227-229.

Chiplin, B. (1982) "Unemployment and the labour market". In (Creedy, J. and Thomas, B. (Eds.) 1982) 274-312.

City of Toronto Planning Board (1975) "Industrial Relocation and Its Impact on Employees". Industry Work Group, Toronto.

City of Vancouver Planning Department (1977) "Understanding Vancouver". December 1977.

City of Vancouver Planning Department October, 1983. *Quarterly Review*. Vol. 10. No. 4.

Clark, G.L. (1977) "The spatial context of Manpower Policy: Implications of current Canadian Policy on regional development and planning," *Geoforum*, **8**, 11-17.

Clark, G.L. (1978a) "Critical Problems of Geographical Wage and Unemployment Models", Discussion Paper D73-28, Department of City and Regional Planning, Harvard University, Cambridge, Mass.

Clark, G.L. (1978b) "The Relationship betwen Canadian National and Regional

Unemployment: Implications for a Full Employment Policy", Discussion Paper D78-12, July 1978, Department of City and Regional Planning, Harvard University, Mass.

Clark, G.L. (1978c) "The State in Capitalism and the Capitalist State", Discussion Paper D78-18, Department of City and Regional Planning, Harvard University, Mass. September, 1978.

Clark, G.L. (1979A) "Cyclical Unemployment in an Urban Labor Market: A Dual Labor Market Perspective", Discussion Paper D79-18, Sept. 1979, Department of City and Regional Planning, Harvard University, Cambridge, Mass.

Clark, G.L. (1979b) "The Industrial Reserve Army, Reproduction, and Regional Economic Disparities", Discussion Paper D79-18, Sept. 1979, Department of Regional Planning, Harvard University, Mass.

Clark, G.L. (1980) "Capitalism and regional inequality", *Annals of the Association of American Geographers*, 70, 226-37.

Clark, G.L. (1980) "Critical problems of geographical unemployment models," *Progress in Human Geography*, **4**, 1, 157-180.

Clark, G.L. (1981a) "A Hicksian model of labour turnover and local wage determination," *Environment and Planning A*, **13**, 563-74.

Clark, G.L. (1981b) "The employment relation and spatial division of labour: A hypothesis", *Annals of the American Association of Geographers*, **71**, 3, 412-424.

Clark, G.L. (1983a) "Government policy and the form of local labour markets." *Urban Geography*, **4**, 1-15.

Clark, G.L. (1983b) "Fluctuations and rigidities in local labour markets: Part 1: Theory and evidence", *Environment and Planning A*, **75**, 165-185.

Clark, G.L. (1984) "The changing composition of regional employment", *Economic Geography*, **60**, 2, 175-193.

Clark, G.L. and Ballard, K.P. (1980) "The demand and supply of labour and interstate relative wages: An empirical approach", *Economic Geography*,**56**, 4, 95-111.

Clark, G.L. and Dear, M. (1978) "The Future of Radical Geography", Discussion Paper D78-11, Department of City and Regional Planning, Harvard University, Cambridge, Mass.

Clark, G.L. and Gertler, M. (1983a) "Migration and Capital", *Annals of the Association of American Geographers*, **17**, 1, 18-34.

Clark, G.L. and Gertler, M. (1983b) "Local labour markets: Theories and policies in the U.S. during the 1970's", *Professional Geographer*, **38**, 3, 274-285.

Cohen, Y. and Berry, B.J. (1975) "Spatial Components of Manufacturing Change", Research Paper No. 172, Department of Geography, University of Chicago.

Cohen, R.B. (1981) "The new international division of labor, multinational corporations and urban hierarchy". In (Dear, M. and Scott, A. J.)(Eds.) 1981) 287-315.

Cohen, D. and Shannon, K. (1984) *The Next Canadian Economy.* Eden Press : Montreal

Conkling, E.C. and Yeates, M. (1976) *Man's Economic Environment* McGraw-Hill Book Co. : New York

Cooke, Philip (1983) "Labour market discontinuity and spatial development", *Progress in Human Geography,* 7, 4, 543-565.

Corkindale, J.T. (1980) "Employment trends in the conurbations". In ( Evans, A. and Eversley, D. (Eds.) 1980) 157-192.

Creedy, J. and Thomas, B. (Eds.) (1982) *The Economics of Labour* Butterworth and Co. : London

Danson, M. (1982) "The industrial structure and labour market segmentation: Urban and regional implications," *Regional Studies,* **16**, 4, 255-265.

Dept. of the Environment (1977) "Inner Area Studies: Liverpool, Birmingham and Lambeth: Summaries of Consultants' Final Reports". H.M.S.O., London.

de Souza, A.R. and Foust, J.B. (1979) *World Space Economy* Charles Merrill Pub. Comp. : Columbus

de Vise, Pierre (1976) "The suburbanization of jobs and minority employment", *Economic Geography,* **52**, 4, 348-362.

Dear, M. and Scott, A.J. (Eds.) (1981) *Urbanization and Urban Planning in Capitalist Society* Methuen : London

Dennis, R. (1978) "The decline of manufacturing employment in Greater London: 1966-74," *Urban Studies,* **15**, 63-73.

Dicken, P. and Lloyd, P. (1981) *Modern Western Society* Harper and Row Publ. : New York

Doeringer, P. and Piore, M. (1971) *Internal Labour Markets and Manpower Analysis* D.C. Heath : Lexington, Mass.

D.P.A. CONSULTING LTD. (1981) "Vancouver Economic Data Base". Prepared for: Economic Development Office, City of Vancouver. October, 1981.

Drewett, R., Goddard, J. and Spence, N. (1975) "What's happening to British cities?", *Town and Country Planning,* **43**, 523-30.

Duncan, J. and Ley, D. (1982) "Structural Marxism and human geography: A critical assessment," *Annals of the Association of American Geographers,* **72**, 1, 30-59.

Economist, The (1984a) *Scargill Writes the Tories* October 13, p.63.

Edel, M. (1982) "Home ownership and working class unity," *International Journal of Urban and Regional Research,* **6**, 2, 205-21.

Ehrenberg, R.G. and Smith, R.S. (1982) *Modern Labour Economics: Theory and Public Policy* Scott, Foresman and Co. : Glenview, Ill.

Elias, P. and Keogh, G. (1982) "Industrial decline and unemployment in the inner city areas of Great Britain: a review of the evidence", *Urban Studies*, **19**, 17–31.

Employment and Immigration Canada. (1981) "Labour Market Development in the 1980's" Minister of Supply and Services, Canada.

Evans, A. (1976) "A portrait of the London labour market". In (Evans, A. and Eversley, D. (Eds.) 1980) 204–231.

Evans, A. (1980) "An economist's perspective." In (Evans, A. and Eversley, D. (Eds.) 1980) 445–459.

Evans, A. and Eversley, D. (Eds.) (1980) *The Inner City: Employment and Industry* Heinemann : London

Fleisher, B.M. (1970) *Labor Economics: Theory and Evidence* Prentice–Hall Inc. : New Jersey

Fleisher, B.M. and Kniesner, T.J. (1984) *Labor Economics: Theory, Evidence, and Policy* Prentice–Hall Inc. : New Jersey

Fothergill, S. and Gudgin, G. (1979) "Regional unemployment change: A subregional explanation", *Progress in Planning*, **12**, 3, 155–219 .

Frankena, Mark W. (1981) "Intrametropolitan location of employment", *Journal of Urban Economics*, **10**, 256–269.

Gertler, M.S. (1984) "The dynamics of regional capital accumulation", *Economic Geography*, **60**, 2, 150–174.

Gillespie, A.E. (1983) "Population and employment decentralization and the journey to work". In (Goddard, J.B. (Ed.) 1983) 160–186.

Globe and Mail, The (1984) November 9, 1984.

Goddard, J.B. (Ed.) (1983) *The Urban and Regional Transformation of Britain* Methuen : London

Gordon, D. (1972) *Theories of Poverty and Unemployment: Orthodox, Radical, and Dual Labour Market Perspectives* Lexington : Mass.

Gordon, D.M. (1978) "Capitalist development and the history of American cities", In (Tabb, W. and Sawers, L. (Eds.), 1978) 25–63.

Gordon, I.R. and Lamont, D. (1982) "A model of labour–market interdependencies in the London region," *Environment and Planning A*, **14**, 237–264.

Gunderson, M. (1980) *Labour Market Economics: Theory, Evidence and Policy in Canada* MacGraw Hill : Toronto

Greater Vancouver Regional District Planning Dept. (1981) "Population, Housing, Labor Force and Employment Growth". February, 1981.

Greater Vancouver Regional District Planning Dept. (1982) "Greater Vancouver Growth Prospects : Trends and Forecast". . October, 1982.

Hall, P. (1981) (Ed.) *The Inner City in Context* Heinemann : London.

Hall, R. (1970) "Why is the unemployment rate so high at full employment", Brookings Papers on Economic Activity, 3.

Hamm, B. (1983) "The coming crisis of urban society", *Ekistics*, July-August, 277-284.

Hardwick, W. (1972) *Vancouver* Collier-Macmillan Canada Ltd. : Ontario

Harlow, M. (Ed.) (1977) *Captive Cities* John Wiley : London

Harloe, M. and Lebas, E. (Ed.) (1981) *City, Class and Capital* Edward Arnold : London

Harvey, D. (1973) *Social Justice and the City* Edward Arnold : London

Harvey, D. (1978) "On countering the Marxian myth - Chicago style," *Compatitive Urban Research*, **6**, 2, 3, 28-45.

Harvey, D. (1982) *The Limits to Capital* Basil Blackwell : London

Hauser, D. (1974) "Some problems in the use of stepwise regression techniques in geographical research", *Canadian Geographer*, **18**, 2, 148-58.

Hayter, R. and Watts, H.D. (1983) "The geography of enterprise: A reappraisal", *Progress in Human Geography*, 7, 2, 157-181.

Heilbroner, R. (1972) *The Worldly Philosophers* Simon and Schuster : New York

Herbert, D.T. and Johnston, R.J. (Eds.) (1979) *Geography and the Urban Environment Vol.2* John Wiley and Sons : Chichester

Hewings, G. (1977) *Regional Industrial Analysis and Development* Methuen and Co. Ltd. : London

Hicks, J.R. (1974) *The Crisis in Keynesian Economics* Basic Books : New York

Holterman, Sally (1978) "Unemployment in urban areas", *Urban Studies*, **15**, 231-233.

Hoover, E.M. and Vernon, R. (1939) *Anatomy of a Metropolis* Harvard University Press : Cambridge, Mass.

Hyman, G. and Palmer, D. (1980) "A causal analysis of unemployment and vacancies in British Regions 1969-74", *Regional Studies*, **14**, 353-365.

James, F.J. and Hughes, J.W. (1973) "The process of employment location change: An empirical analysis", *Land Economics*, November 1973, 404-13.

Jenness, R.A. (1977) "Unemployment Effects of Alternative Patterns of Public Expenditures and Revenues" Discussion Paper No. 88, Economic Council of Canada, April 1977.

Johnston, R.J. (1980) *City and Society: An Outline of Urban Geography* Penguin : London

Johnston, R.J. (1981) *The Dictionary of Human Geography* Basil Blackwell Pub. Ltd. : Oxford

Johnston, R.J. (1983) *Philosophy and Human Geography* Edward Arnold : London

Jordon, B. (1982) *Mass Unemployment and the Future of Britain* Basil Blackwell : Oxford

Kahn, R. (1979) "Unemployment as seen by the Keynesians", In (Worswick, G. (Ed.) 1976) 119-34.

Kain, J.F. (1968) "The distribution and movement of jobs and industry", In (Wilson, J. (Ed.) 1968) 1-39.

Keeble, D. (1978) "Industrial decline in the Inner City and conurbation," *Transactions of the Institute of British Geographers*, 3, 101-114.

Kennett, S. (1980) "The inner city in the context of the urban system", Social Science Research Council, Inner City in Context, Paper 7.

Kennett, S. and Hall, P. (1981) "The inner city in spatial perspective." In (Hall, P. (Ed.) 1981) 9-51.

Kerr, C. (1954) "The balkanization of labour markets", In (Bakke, E. (Ed.) 1954) 92-110.

King, J.E. (1972) *Labour Economics* Macmillan : London

Kirwan, R. (1981) "The American experience". In (Hall, P. (Ed.) 1981) 71-87.

Klein, L.R. (1962) *An Introduction to Econometrics* Englewood Cliffs : New Jersey

Kuenstler, Peter (1984) "Local employment initiatives in Western Europe", *International Labour Review*, **123**, 2, 221-233.

Lambeth Inner Area Study (1973) "Changes in Socio-economic Structure" IAS/LA/2 Dept. of Environment , London.

Lavine, T. Z. (1984) *From Socrates to Satre: The Philosophic Quest* Bantam Books : Toronto

Levison, Andrew (1975) *The Working-Class Majority* Penguin Books Inc. : New York

Ley, D. (1980) "Liberal ideology and the post-industrial city", *Annals of the American Association of Geographers*, **70**, 238-258.

Ley, D. (1983) *A Social Geography of the City* Harper and Row : New York

Lojkine, J. (1976) "Contribution to a Marxist theory of capitalist urbanization". In (Pickvance, C. (Ed.) 1976) 119-146.

Long, L. and DeArc, D. (1983) "The slowing of urbanization if the U.S.", *Scientific American*, **249**, 1, 33-41.

Luger, M. (1980) "The regional employment consequences of business tax incentives."

Unpublished PhD dissertation, Department of Economics, University of California, Berkeley.

Macdonald, N. (1977) "A critical growth cycle for Vancouver 1900–1914". (In Stelter, G. and Artibise, A. (Eds.) 1977)

Malecki, E.J. (1983) "Technology and regional development: A survey", *International Regional Science Review*, **8**, 2, 89–125.

Mandel, E. (1968) *Marxist Economic Theory.* Merlin Press : London

Mandel, E. (1969) "Capitalism and regional disparities", *Socialism*, **17**, 2–13.

Marsden, D. (1982) *Workless* Croom Helm : London.

Martin, F. (1982) "Canadian regional policy: An overview", *The Canadian Journal of Regional Science*, **5**, 2, 267–273.

Marx, K. (1967) *Capital* International Publishers : New York

Massey, D. (1973) "Towards a critique of industrial location theory", *Antipode*, **5** 3, 33–39.

Massey, D. and Meegan, R. (1978) "Industrial restructuring versus the cities", *Urban Studies*, **15**, 273–288.

Massey, D. and Meegan, R. (1979) "The geography of industrial reorganization", *Progress in Planning*, **10**, 3, 155–237.

Mayer, Jean. (1984) "Regional employment development: The evolution of theory and practice", *International Labour Review*, **123**, 1, 17–34.

Metcalf, D. (1975) "Urban unemployment in England", *Economic Journal*, **85**, 578–589.

Metcalf, D. and Richardson, R. (1976) "Unemployment in London". In (Evans, A. and Eversley, D. (Eds.) 1980) 193–203.

Miller, R. (1981) "A time–geographic perspective on gentrification and displacement". Draft Manuscript, University of Minnesota, Minneapolis.

Montagna, Paul D. (1977) *Occupations and Society: Toward a Sociology of the Labor Market.* John Wiley and Sons : New York

Morrill, Richard (1970) *The Spatial Organization of Society* Duxbury Press : Belmont, USA.

Moses, Leon. (1962) "Towards a theory on intra–urban wage differentials and their influence on travel patterns," *Papers and Proceedings of the Regional Science Association*, **9**, 53–63.

Moses, L. and Williamson, H. (1967) "The location of economic activity in cities", *American Economic Review*, May 1967, 21122.

Multinational Monitor (1984) Vol. 5 No. 3. March 1984. "Welcome to the High Tech Age".

Myers, P.J. (1975) "Income Distribution and Beeker's Model of human investment". In (Culver, A. (Ed.) 1975) 94–112.

Myrdal, G. (1957) *Economic Theory and Underdeveloped Regions* Duckworth : London.

Needham, Barrie (1981) "Inner areas as spatial labour markets: A comment", *Urban Studies*, **18**, 225–226.

Nell, E. (1972) "Economics: The revival of political economy". In (Blackburn, R. (Ed.) 1972) 79–95.

Norcliffe, G.B. (1984) "Nonmetropolitan industrialization and the theory of production", *Urban Geography*, **5**, 1, 25–42.

Northern Region Strategy Team (1975) "The Characteristics of the Unemployed in the Northern Region, 1966–74." Technical Report, No. 6, HMSO, Sept.1975, Newcastle–upon–Tyne.

Norton, R. and Rees, J. (1979) "The product cycle and the spatial decentralization of American manufacturing", *Regional Studies*, **13**, 141–151.

Noyelle, T. (1983) "The rise of advanced services", *Journal of the American Planning Association*, Summer 1983, 280–290.

Oi, W.Y. (1961) "Labour as a quasi–fixed factor", *Journal of Political Economy*, **70**, 6, 538–555.

Owen, D.W. and Gillespie, A.E. (1982) "The changing relationship between local and national unemployment rates in Northern England, 1971–1981," *Environment and Planning A*, **14**, 183–193.

Pacific Group for Policy Alternatives. (1984) "Pacific alternatives" Newsletter. Vol. 1. No. 3 1984.

Pahl, R.E. (1975) *Whose City?* Penguin : Harmondsworth

Paulson, Phil. (1976) "Industrial Development: Views and Issues of the Industrial Community". Background Report for the Livable Region Plan. 1976–1986.

Peet, R. (1975) "Inequality and poverty: a Marxist–Geographic theory," *Annals of the American Association of Geographers*, **65**, 564–571.

Peet, R. (1979) "Social contradiction and Marxist Geography", *Annals of the American Association of Geographers*, **69**, 164–169.

Phillips, R. and Vidal, A. (1983) "The growth and restructuring of metropolitan economies", *Journal of the American Planning Association*, Summer 1983, 291–306.

Pickvance, C. G. (Ed.) (1976) *Urban Sociology: Critical Essays*. Tavistock Publish. : London

Piore, M. (1975) "Notes for a theory of labour market segmentation". In (Edwards, R., Reich, M. and Gordon, D. (Eds.) 1975)

Popper, K. (1957) *The Poverty of Historicism* Rootledge and K. Paul : London

Putnam, D. and Putnam. R. (1979) *Canada: A Regional Analysis.* J. Dent and Sons Ltd. : Canada

Radice, H. (Ed.) (1975) *International Firms and Modern Imperialism* Penguin : Harmondsworth

Reder, M.W. 1957 *Labour in a Growing Economy* Wiley & Sons : New York.

Rees, A. and Shultz, G.P. (1970) *Workers and Wages in an Urban Labor Market.* University of Chicago Press : Chicago

Regional Economic Services Branch. (1984) "Labour Market Outlook British Columbia-Yukon Territory". Canada Employment and Immigration Commission August 1984.

Reich, M., Gordon, D.M. and Edwards, R.C. (1973) "A theory of labour market segmentation", *American Economic Review*, **63**, 359-365.

Rice, D. (1984) "British Columbia Performance in Economic 1984". Presented to Pacific Group for Policy Alternatives Conference on Social and Economical Alternatives. February 11, 1984.

Robinson, J. (1966) *An Essay on Marxian Economics* MacMillan : London

Rose, D., Vogler, C., Marshall, G., and Newby, H. (1984) "Economic restructuring: the British experience", *Annals of the American Academy of Political and Social Science*, **475**, 137-57.

Rothwell, R. (1982) "The role of technology in industrial change: Implications for regional policy", *Regional Studies*, **16**, 5, 361-69.

Roy, Patricia (1980) *Vancouver: An Illustrated History* Lorimer and Co. Pub. : Toronto

Samuelson, P.A. (1967) *Economics: An Introductory Analysis* McGraw Hill : New York

Scott, A.J. (1980b) "Locational Patterns and Dynamics of Industrial Activity in the Modern Metropolis: A Review Essay". Discussion Paper No. 27, Department of Geography, University of Toronto.

Scott, Allen J. (1981) "The spatial structure of metropolitan labor markets and the theory of intra-urban plant location", *Urban Geography*, **2**, 1-30.

Scott, Allen J. (1982a) "Locational patterns and dynamics of industrial activity in the modern metropolis", *Urban Studies*, **19**, 111-142.

Scott, A.J. (1982b) "Production system dynamics and metropolitan development", *Annals of the American Association of Geographers*, **72**, 2, 185-200.

Scott, A.J. (1983a) "Industrial organization and the logic of intra-metropolitan location: I. Theoretical Considerations", *Economic Geography*, **59**, 3, 233-250.

Scott, A.J. (1983b) "Industrial organization and the logic of intra-metropolitan location: II. A case study of the printed circuits industry in the Greater Los Angeles

Region", *Economic Geography*, , **59**, 4, 393-367.

Scott, A.J. (1984) "Industrial organization and the logic of intra-metropolitan location: III. A case study of the women's dress industry in the Greater Los Angeles Region", *Economic Geography*, **60**, 1, 3-27.

Sinfield, A. (1976) In (Worswick, G. (Ed.) 1976) 221-246.

Slater, D. (1975) "The poverty of modern geographical enquiry", *Pacific Viewpoint*, **16**, 159-76.

Smith, David M. (1977) *Human Geography. A Welfare Approach* Edward Arnold : London

Smith, D.M. (1981) *Industrial Location: An Economic Geographical Analysis.* John Wiley and Sons : New York

Smith, N. (1981) "Degeneracy in theory and practice: Spatial interactionism and radical eclecticism", *Progress in Human Geography*, **5**, 111-18.

Soja, E. (1980) "The socio-spatial dialectic", *Annals of the Association of American Geographers*, **70**, 2, 207-25.

Standing, Guy. (1983) "The notion of structural unemployment", *International Labour Review*, **122**, 2, 137-153.

Standing, G. (1984) "The notion of technological unemployment", *International Labour Review*, **123**, 2, 127-147.

Statistics Canada (1981a) "Vancouver : Selected Social and Economic Characteristics" 95-978. Ottawa

Statistics Canada (1981b) "Metropolitan Atlas Series" 99-920. Ottawa.

Statistics Canada. "National Income and Expenditure Accounts". 13-201 1969-1984 Ottawa.

Statistics Canada. "Corporations and Labour Unions Returns Act". Reports. 71-202S 1970 and 1981. Ottawa.

Statistics Canada. "Manufacturing Industries of Canada: Subprovincial Areas". 31-209. 1966-1981 Ottawa.

Statistics Canada. "Summary of External Trade". 65-001. 1969-1984 Ottawa.

Statistics Canada. "Labour Force Annual Averages". 71-529. 1975-1983 Ottawa.

Steed, G.F. (1973) "Intra-metropolitan manufacturing: spatial distribution and locational dynamics in Greater Vancouver", *Canadian Geographer*, **17**, 3, 235-58.

Steinnes, Don. (1977) "Causality and intra-urban location", *Journal of Urban Economics*, **4**, 69-79.

Steinnes, D.N. (1982) "Do 'people follow jobs' or do 'jobs follow people'. A causality issue in urban economics", *Urban Studies*, **19**, 187-192.

Sternlieb, G. and Hughes, J.W. (1980) "The changing demography of the central city", *Scientific American*, **243**, 2, 48–53.

Stelter, G. and Arbitise, A. (Eds.) (1977) *The Canadian City* McClelland and Stewart Ltd. : Toronto

Storper,M. and Walker, R. (1983) "The theory of labour and the theory of location", *International Journal of Urban and Regional Research*, 7, 1, 1–43.

Struyk, R. and James, F. (1975) *Intra-metropolitan Industrial Location* D.C. Heath : Lexington, Mass.

Tabb, W.K. and Sawers, L. (1978) *Marxism and the Metropolis* Oxford Uni. Press : New York

Tait Montague, J. (1970) *Labour Markets in Canada: Processes and Insitutions.* Prentice Hall : Scarborough

Tarshis, L. (1984) *World Economy in Crisis* Lorimer and Co. : Toronto

Taylor, S. and Bradley, S. (1983) "Spatial variations in the unemployment rate: A case study of N-W England", *Regional Studies*, **17**, 2, 113–124.

Tennant, L. (1977) "Industry in Vancouver: A Report for Discussion". City of Vancouver Planning Department. June 1977.

Thirlwall, A. (1969) "Types of unemployment: With special reference to 'non-demand deficient' unemployment in Great Britain", *Scottish Journal of Political Economy*, **16**, 1–30.

Thompson, J.H. (1961) "Methods of Plant Site Selection Available to Small Manufacturing Firms" West Virginia University, Virginia.

Thorns, D.C. (1982) "Industrial restructuring and change in the labour and property markets in Britain", *Environment and Planning A*, **14**, 745–763.

Thrift, N. (1979) "Unemployment in the Inner City: Urban problem or structural imperative? A review of the British experience". In (Herbert, D.T. and Johnston, R.J. (Eds.) 1979) 125–226.

Tuan, Yi-Fu (1971) "Geography, phenomenology, and the study of human nature", *The Canadian Geographer*, **15**, 181–92.

Vancouver Economic Advisory Commission (1982) "An Economic Strategy for Vancouver in the 1980's". Prepared for the City of Vancouver, May 1982.

Vancouver Sun, The (1984a) *Redistributing the Work* July 14, 1984.

Vancouver Sun, The (1984b) *The Great Job Hunt* November 3, 1984.

Vancouver Sun, The (1985a) January 3, 1985.

Vancouver Sun, The (1985b) *Bennet Economic Plan Draws Cheers and Jeers* February 19, 1985.

Vancouver Sun, The (1985c) *Thatcher Tories Slipping in Popularity* July 19, 1985.

Vipond, J. (1974) "City size and unemployment", *Urban Studies*, **2**, 39–46.

Vipond, Joan (1980) "Intra-urban unemployment differentials in Sydney, 1971", *Urban Studies*, **17**, 131–138.

Vipond, Joan (1984) "The intra-urban unemployment gradient: The influence of location on unemployment", *Urban Studies*, 377–89.

Wachs, M. and Kumagai, T.G. (1973) "Physical accessibility as a social indicator", *Socio-economic Planning Science*, 7, 437–456.

Walker, David F. (1980) *Canada's Industrial Space-Economy* Bell and Hyman : London

Walker, R. (1981) "A theory of suburbanization" In (Dear, M. and Scott, A.J. (Eds.) 1981) 383–430.

Walker, R. and Storper, M. (1981) "Capital and industrial location", *Progress in Human Geography*, **5**, 4, 473–509.

Weaver, C. and Gunton, T. (1982) "From drought assistance to megaprojects: 50 years of regional theory and policy in Canada", *The Canadian Journal of Regional Science*, **5**, 1, 5–37.

Webber, M.J. (1982) "Location of manufacturing activity in cities", *Urban Geography*, **3**, 3, 203–223.

Wilson, J.Q. (Ed.) (1967) "The Metropolitan Enigma". Chamber of Comm. of U.S., Washington, D.C.

Wilson, T. (1977) *Industrial Location: Concepts and Techniques* Basil Blackwell : Oxford

Wolfbein, S. (1972) *Work in American Society* Scott, Foresman and Co. : Glenview, Ill.

Worswick, G.D.N. (Ed.) (1976) *The Concept and Measurement of Involuntary Unemployment* George Allen and Unwin Ltd. : London

# APPENDIX A

## SUMMARY OF FACTORS PROPOSED AS UNDERLYING DETERMINANTS OF THE DECENTRALIZATION OF INDUSTRY

### A. Factors "Pushing" Industry from Central Locations

**FACTORS CONCERNING SPACE:**

(i) The lack of space for in-situ expansion of growing inner city firms
(Keeble (1968); Dennis (1973); Cameron (1977))

(ii) Increased space requirements from changes in production processes (such as horizontal plant layout and longer production runs) and greater parking space requirements from increased employee auto use
(Kain (1967); Kitson and Monk (1982))

(iii) High central land prices
(Kenyon (1960); Keeble (1968); Moses and Wiliiamson (1967))

(iv) Capitalization of site values (vacate present site on cost-benefit cost-benefit criteria
(Gripaios (1977a))

**LABOUR FACTORS:**

(v) High central wages (Swan (1973); Lever (1975)

(vi) Central labour shortages (Keeble (1965); Dennis (1978))

(vii) Labour conflict and high levels of unionization in the inner city. inner city
(Gordon (1978); Clark (1983a))

**GOVERNMENT POLICY AND COMMUNITY FACTORS:**

(viii) Planning restrictions on industry and urban renewal in central areas (Keeble (1965); Lloyd and Mason (1978))

(ix) High central tax rates on industry (Hamer (1973))

(x) Community values (such as the "environmental awareness" movement) and interest group lobbying to remove "ugly" inner city industry and its associated pollution problems (Roy (1981))

(xi) Obsolete central plant and equipment (deSouza and Foust (1979)

(xii) Traffic congestion and other negative externalities (for example, crime of the inner city area (Kain (1968); Keeble (1978); Struyk and James(1975))

B. Factors "Pulling Industry to Peripheral Areas

**TRANSPORT AND COMMUNICATION TECHNOLOGY FACTORS:**

(i) Adoption of truck transport modes and circumferential highway dependency (Hoover and Vernon (1959); Moses and Williamson (1967); Kirwan (1981))

(ii) Proximity of suburban locations to major airports (Santini (1978))

(iii) Declining linkage costs (which become a smaller proportion of total firm costs) and the increased spatial field of urbanization economies (such as public service and utility provision (de Vise (1976); Thrift (1979))

FACTORS CONCERNING SPACE:

(iv) Cheap land in suburban and nonmetropolitan areas attracting firms with increasing land requirements (from expansion, horizontal plant layout and greater parking requirements)
(Kain (1968); Evans (1975))

LABOUR FACTORS:

(v) Favourable social climate of peripheral areas
(Parry (1963))

(vi) The prior decentralization of the working population. To Scott, A.J. (1981), suburbanized industry can take advantage of lower residual wages (total wage minus commuting cost) to satisfy required labour demand from the suburbs. Suburban workers are willing to accept lower wages because of reduced commuting costs to suburban jobs (other employment sources would be at the more distant core location). However, relatively low overall labour demand requirements would be required to keep wage levels below inner city levels
(Reder (1954); Evans (1975); Cameron (1977))

(vii) Accessibility of the periphery to existing residences of managers and administration staff or high-amenity decentralization destinations of appeal to potential managerial, technical, and professional personnel
(Rimmer (1969))

(viii) Availability of passive, unorganized labour force (such as female and willing part-time workers) in suburban and peripheral areas
(Kirwan (1981); Massey and Meegan (1979))

GOVERNMENT POLICY FACTORS:

(ix) Government activities such as the provision of industrial park facilities and fiscal municipality or provincialpolicy incentives to attract industry

MISCELLANEOUS FACTORS:

(x) Functional specialization within firms and the accompanying specialization of location requirements favouring geographical separation to obtain site-specific advantages (facilitated by economic concentration and scale increases, and linkage cost reduction). For

example, lower functional levels tend to be more sensitive to the traditional cost factors of production such as the availability of cheaper labour and wage "productivity"
(Smith (1981))

(Modified and extended adaptation of A.J. Scott's (1982, p.125) summary)

## Pearson Correlation Coefficients for Major Independent and Dependent Variables

### PART A

- - - - - - - - - - - - - - P E A R S O N  C O R R E L A T I O N  C O E F F I C I E N T S - - - - - - - - - - - - - -

| | TOTUNRAT | PERSERV | PMANPROD | LOWSCH | PERSKILL | YUNG | OLD | MARRIED | DEPEND | PNCUSEUK | PASIABOR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTUNRAT | 1.0000 | .5831** | .3166** | .5214** | -.4090** | -.2101** | -.0426 | -.4791** | -.2089** | .3031** | .3386** |
| PERSERV | .5831** | 1.0000 | .3853** | .7477** | -.5315** | -.1853* | -.0381 | -.4443** | -.1592* | .6853** | .6968** |
| PMANPROD | .3166** | .3853** | 1.0000 | .7177** | -.8938** | .3189** | -.3028** | .2288** | .2714** | .3470** | .3974** |
| LOWSCH | .5214** | .7477** | .7177** | 1.0000 | -.7329** | .0987 | -.0318 | -.1306 | .0929 | .7029** | .7509** |
| PERSKILL | -.4090** | -.5315** | -.8938** | -.7329** | 1.0000 | -.1702* | .2856** | -.0338 | -.1162 | -.3737** | -.4165** |
| YUNG | -.2101** | -.1853* | .3189** | .0987 | -.1702* | 1.0000 | -.1341 | .6822** | .6235** | -.0382 | -.0009 |
| OLD | -.0426 | -.0381 | -.3028** | -.0318 | .2856** | -.1341 | 1.0000 | -.1670* | -.2135** | .0531 | .0781 |
| MARRIED | -.4791** | -.4443** | .2288** | -.1306 | -.0338 | .6822** | -.1670* | 1.0000 | .7118** | -.1837* | -.1663* |
| DEPEND | -.2089** | -.1592* | .2714** | .0929 | -.1162 | .6235** | -.2135** | .7118** | 1.0000 | .0054 | .0262 |
| PNCUSEUK | .3031** | .6853** | .3470** | .7029** | -.3737** | -.0382 | .0531 | -.1837* | .0054 | 1.0000 | .9805** |
| PASIABOR | .3386** | .6968** | .3974** | .7509** | -.4165** | -.0009 | .0781 | -.1663* | .0262 | .9805** | 1.0000 |
| TCBD | -.1973** | -.3797** | .2473** | -.1793* | -.1847* | .4640** | -.3476** | .6396** | .4743** | -.5041** | -.4548** |
| PSINHO | .4025** | .3604** | -.2209** | .0422 | .0209 | -.7769** | .1383 | -.9262** | -.7197** | .0459 | .0355 |
| CAROWN | -.5647** | -.6850** | -.1879* | -.5315** | .3430** | .4745** | .0601 | .7570** | .4950** | -.5308** | -.5188** |
| PEOLREP | .2122** | .3148** | .1710* | .4185** | -.0925 | .0180 | .1595* | -.2056** | -.0956 | .3007** | .3319** |
| PEROOM | .3259** | .4994** | .6539** | .6240** | -.6746** | .1918* | -.3708** | .0942 | .1719* | .5076** | .5190** |
| PERDET | .2889** | .2268** | -.0967 | -.0236 | -.0464 | -.5315** | -.0671 | -.6749** | -.5211** | -.0002 | -.0103 |
| PERENT | .4059** | .3869** | -.1094 | .0769 | -.0932 | -.7097** | -.0287 | -.8739** | -.6709** | .0836 | .0643 |
| AVALDW | -.2483** | -.3570** | -.5909** | -.3770** | .7302** | .1045 | .3716** | .1196 | .0967 | -.0802 | -.0882 |
| POPINC | -.2251** | -.2946** | .0602 | -.2186** | -.0470 | .1900* | -.4270** | .4746** | .3204** | -.2292** | -.2446** |
| MALUNR | .9055** | .5680** | .1821* | .4482** | -.2988** | -.3345** | .0432 | -.6141** | -.3261** | .3112** | .3348** |
| FEMUNR | .6430** | .3265** | .4498** | .4034** | -.4366** | .1057 | -.2221** | .0087 | .1169 | .1693* | .2063** |
| WGTT1 | -.1722* | -.3249** | -.1817* | -.3347** | .2107** | .1927* | -.1563* | .3573** | .2601** | -.4410** | -.4166** |
| WGTT2 | -.1447 | -.2781** | -.1864* | -.3151** | .2025** | .1608* | -.1757* | .3242** | .2476** | -.4246** | -.4007** |

* - SIGNIF. LE .01  ** - SIGNIF. LE .001  " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

PART B

- - - - - - - - - - - - - - PEARSON CORRELATION COEFFICIENTS - - - - - - - - - - - - - -

| | TCBD | PSINHO | CAROWN | PEOLREP | PEROOM | PERDET | PERENT | AVALDW | POPINC | MALUNR | FEMUNR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTUNRAT | -.1973** | .4025** | -.5647** | .2122** | .3259** | .2889** | .4059** | -.2483** | -.2251** | .9055** | .6430** |
| PERSERV | -.3797** | .3604** | -.6850** | .3148** | .4994** | .2268** | .3869** | -.3570** | -.2946** | .5680** | .3265** |
| PMANPROD | .2473** | -.2209** | -.1879* | .1710* | .6539** | -.0967 | -.1094 | -.5909** | .0602 | .1821* | .4498** |
| LOWSCH | -.1793* | .0422 | -.5315** | .4185** | .6240** | -.0236 | .0769 | -.3770** | -.2186** | .4482** | .4034** |
| PERSKILL | -.1847* | .0209 | .3430** | -.0925 | -.6746** | -.0464 | -.0932 | .7302** | -.0470 | -.2988** | -.4366** |
| YUNG | .4640** | -.7769** | .4745** | .0180 | .1918* | -.5315** | -.7097** | .1045 | .1900* | -.3345** | .1057 |
| OLD | -.3476** | .1383 | .0601 | .1595* | -.3708** | -.0671 | -.0287 | .3716** | -.4270** | .0432 | -.2221** |
| MARRIED | .6396** | -.9262** | .7570** | -.2056** | .0942 | -.6749** | -.8739** | .1196 | .4746** | -.6141** | .0087 |
| DEPEND | .4743** | -.7197** | .4950** | -.0956 | .1719* | -.5211** | -.6709** | .0967 | .3204** | -.3261** | .1169 |
| PNCUSEUK | -.5041** | .0459 | -.5308** | .3007** | .5076** | -.0002 | .0836 | -.0802 | -.2292** | .3112** | .1693* |
| PASIABOR | -.4548** | .0355 | -.5188** | .3319** | .5190** | -.0103 | .0643 | -.0882 | -.2446** | .3348** | .2063** |
| TCBD | 1.0000 | -.4800** | .7061** | -.3816** | .1197 | -.3002** | -.4243** | -.2173** | .5824** | -.3318** | .1519* |
| PSINHO | -.4800** | 1.0000 | -.6360** | .0372 | -.1112 | .7538** | .9332** | -.1990** | -.3585** | .5254** | -.0005 |
| CAROWN | .7061** | -.6360** | 1.0000 | -.3688** | -.3116** | -.4271** | -.6324** | .3396** | .4323** | -.6398** | -.1663* |
| PEOLREP | -.3816** | .0372 | -.3688** | 1.0000 | .0104 | -.0792 | .0042 | .1219 | -.5223** | .2125** | .1217 |
| PEROOM | .1197 | -.1112 | -.3116** | .0104 | 1.0000 | -.0557 | .0153 | -.4416** | .1605* | .2360** | .3457** |
| PERDET | -.3002** | .7538** | -.4271** | -.0792 | -.0557 | 1.0000 | .8198** | -.1873* | -.1728* | .4189** | -.0415 |
| PERENT | -.4243** | .9332** | -.6324** | .0042 | .0153 | .8198** | 1.0000 | -.2647** | -.2752** | .5208** | .0448 |
| AVALDW | -.2173** | -.1990** | .3396** | .1219 | -.4416** | -.1873* | -.2647** | 1.0000 | -.1336 | -.1950* | -.2565** |
| POPINC | .5824** | -.3585** | .4323** | -.5223** | .1605* | -.1728* | -.2752** | -.1336 | 1.0000 | -.3062** | -.0002 |
| MALUNR | -.3318** | .5254** | -.6398** | .2125** | .2360** | .4189** | .5208** | -.1950* | -.3062** | 1.0000 | .2925** |
| FEMUNR | .1519* | -.0005 | -.1663* | .1217 | .3457** | -.0415 | .0448 | -.2565** | -.0002 | .2925** | 1.0000 |
| WGTT1 | .7502** | -.2412** | .5011** | -.3149** | -.0850 | -.2380** | -.2816** | .1001 | .4090** | -.2404** | .0233 |
| WGTT2 | .7264** | -.2076** | .4371** | -.3153** | -.0708 | -.2201** | -.2535** | .0886 | .4142** | -.2095** | .0297 |

* - SIGNIF. LE .01 ** - SIGNIF. LE .001 " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

PART C

- - - - - - - - - - - - - - - P E A R S O N  C O R R E L A T I O N  C O E F F I C I E N T S - - - - - - - - - - - - - -

| | WGTT1 | WGTT2 |
|---|---|---|
| TOTUNRAT | -.1722* | -.1447 |
| PERSERV | -.3249** | -.2781** |
| PMANPROD | -.1817* | -.1864* |
| LOWSCH | -.3347** | -.3151** |
| PERSKILL | .2107** | .2025** |
| YUNG | .1927* | .1608* |
| OLD | -.1563* | -.1757* |
| MARRIED | .3573** | .3242** |
| DEPEND | .2601** | .2476** |
| PNCUSEUK | -.4410** | -.4246** |
| PASIABOR | -.4166** | -.4007** |
| TCBD | .7502** | .7264** |
| PSINHO | -.2412** | -.2076** |
| CAROWN | .5011** | .4371** |
| PEOLREP | -.3149** | -.3153** |
| PEROOM | -.0850 | -.0708 |
| PERDET | -.2380** | -.2201** |
| PERENT | -.2816** | -.2535** |
| AVALDW | .1001 | .0886 |
| POPINC | .4090** | .4142** |
| MALUNR | -.2404** | -.2095** |
| FEMUNR | .0233 | .0297 |
| WGTT1 | 1.0000 | .9912** |
| WGTT2 | .9912** | 1.0000 |

* - SIGNIF. LE .01  ** - SIGNIF. LE .001  " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

## APPENDIX C

Regression Results for the Analysis of Personal Characteristics and Total, Male, and Female Unemployment Rates. Vancouver CMA 1981

Part A Dependent Variable: Total Unemployment Rate (natural logarithm)

| Step | | Variable Added/ Removed | Coefficient of Determination ($R^2$) | Change in $R^2$ | Standardized Regression Coefficient | Partial Correlation | T-ratio |
|---|---|---|---|---|---|---|---|
| 1 | IN | PERSERV | .3092 | .3092 | .376 | .285 | 4.41*** |
| 2 | IN | PERENT | .3442 | .0350 | | | |
| 3 | IN | PMANPROD | .4039 | .0597 | .51 | .408 | 6.6*** |
| 4 | IN | MARRIED | .4350 | .0310 | -.42 | -.396 | -6.4*** |
| 5 | OUT | PERENT | .4348 | -.0002 | | | |
| 6 | IN | AVALDW | .4447 | .0099 | .193 | .185 | 2.8*** |
| 7 | IN | PNCUSEUK | .4621 | .0174 | -.196 | -.177 | -2.7*** |

Constant = 2.97 (t = 7.3)*** $R^2$ = 0.4621

*** = significant at the 99% confidence level ** = significant at 95% level

* = significant at 90% level

APPENDIX C (contd.)

| Step | | Variables Added/ Removed | Coefficient of Determination ($R^2$) | Change in $R^2$ | Standardized Regression Coefficient | Partial Correlation | T-ratio |
|---|---|---|---|---|---|---|---|
| PART B | Dependent Variable: Male Unemployment Rate | | | | | | |
| 1 | IN | CAROWN | .3410 | .3410 | .187 | .161 | 2.4*** |
| 2 | IN | PERDET | .3831 | .0421 | | | |
| 3 | IN | LOWSCH | .4199 | .0368 | .1798 | .142 | 2.1*** |
| 4 | IN | MARRIED | .4500 | .0301 | -.758 | -.332 | -5.2*** |
| 5 | OUT | CAROWN | .4491 | -.0009 | | | |
| 6 | IN | PMANPROD | .4609 | .0118 | .2034 | .161 | 2.4*** |
| 7 | IN | PSINHO | .4718 | .0109 | -.318 | -.142 | -2.1*** |
| Constant = 2.97 (t = 7.3)*** | | | $R^2$ = 0.4718 | | | | |
| PART C | Dependent Variable: Female Unemployment Rate | | | | | | |
| 1 | IN | PMANPROD | .1673 | .1673 | .310 | .291 | 4.5*** |
| 2 | IN | PERSERV | .1870 | .0197 | .163 | .1653 | 2.5** |
| 3 | IN | OLD | .1999 | .0129 | -.119 | -.1259 | -1.9* |
| Constant = 1.29 (t = 9.6)*** | | | $R^2$ = 0.119 | | | | |