Spatial Perspectives on Canadian Provincialism and Regionalism*

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In the introduction of a recent book, Coffey and Polèse (1987: 1) claim that Canada is "one of the world's leading proponents and practitioners of regional development policy". In Canada the aim of such policy continues to be the alleviation of socio-economic disparity between the various subareas of the country. Especially since the mid-fifties, Canada has invested substantially in removing these discrepancies, either through a federal regional development department or through specific regional programmes within traditional departments (Lithwick 1986: 145-151). Yet despite these policy and practical efforts, the MacDonald Commission recently reported that the "general [economic] disparity has changed little over the last 60 years for which data are available, although individual rankings [of provinces] have occasionally altered" (MacDonald Commission 1985: Vol. 3, 201). At the same time it recognized that "in a federal system regional economic disparity is an inherent contentious issue" (198). When the Commission tried to identify the causes of the ineffectiveness of Canada's regional policies and efforts, it came to the rather harsh conclusion that "Canadians have a history of handling the [regional development] process badly, and they know little about how it actually works" (199). On closer analysis they concluded that "it is extremely difficult to sort out cause and effect" (203) in the regional development field. When one further considers that federal and provincial initiatives in this field frequently clash (Lander and Hecht 1980), it is not surprising that such policies have not worked.

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Not understanding cause and effects in any relationship, especially in the regional economic development area, makes policy suggestions risky. The difficulty in understanding the causes of Canadian regional disparities stems in part from the fact that regional economic conditions are not the only ones affecting them. Social, ethnic, political, linguistic, educational, and geographical conditions also correlate with economic disparities in Canada (Bonin and Verreault 1987; Clement 1982; Economic Council of Canada 1977; Hecht 1988; Matthews 1983; Matthews and Davis 1986; Porter 1965; Semple 1987), and it is highly likely that they interact in a causal way. Thus, general socio-economic conditions may be more fundamental indicators of regional disparities than purely economic conditions. One could even argue that only after general socio-economic conditions have become more equal across Canada will economic conditions also converge across space. Without a doubt, this convergence is one of the most cherished aims of the federal government (Wonders 1982).

That Canadian society is quite distinct over geographic space cannot be disputed. Quebec's society is quite different from Ontario's, which in turn is quite distinct from those societies in the Prairie and Atlantic provinces. Even within a province, especially one as large as Ontario, geographically distinct subcultures can develop with different socio-economic characteristics (Hecht 1986). In part, such differences reflect historical forces and are the result of different ethnic groups having settled in different regions of Canada. Others are more economic in nature and represent differences in provincial/regional resource distribution. Governments are another source of such differences. For example, much of Quebec's "distinct society" stems from its different language status, tax collection system, family allowance program, higher education system, and separate charter of rights. Together these and other factors such as power relationships (Clement 1982) produce the differences within Canadian subsocieties. The concern in this paper, however, is not with overt differences but with the more subtle socio-economic differences that are not so obvious visually across Canada.

As alluded to above, the differences over space are not all produced "naturally". Each provincial government tries to provide for its citizens a quality of life that is distinct from that of the other provinces. Political scientists frequently refer to the political effort required to achieve this as "province-building" (McMillan and Norrie 1980). Provincial government policies, in combination with regional economies and historical settlement patterns, form a very broad province-building force, which has produced strong regional or provincial differences and identities that are, in some instances, stronger than the Canadian national identity (Matthews and Davis

1986: 101-120). But then, confederation of the colonies in 1867 was never intended to remove their unique socio-economic structures but rather to add a "nation-building" (federal) component to provincial life. Thus, since 1867 Canadians have lived under two broad forces influencing their society: the province-building force, which is bent on making the provincial scene the focus of life, and the nation-building force of the federal government. One of the major tasks of the latter is to provide each citizen with equal opportunities and options, no matter in which province or region he or she lives. Thus, while the federal government actively pursues regional policies and programmes to produce greater equality within Canadian geographic space, the provinces, in response to their mandate and actions, attempt to produce unique provincial societies. The question to be answered in this paper is which of these has been the more dominant.

While Canadian society is moulded by both federal and provincial building forces, a third major development trend leads to social differentiation. It is embodied in the development of large metropolitan-dominated urban hierarchical systems, as well as fragmented rural peripheral enclaves. In Canada such development produces both cities and city regions that interact highly and have closely related socio-economic characteristics and separate, fragmented rural components. On the one hand, such a force should produce greater homogeneity between the major centres of Toronto, Montreal, Vancouver, Edmonton, Calgary, Winnipeg, Hamilton, Quebec City, and Halifax, than what exists between each city and the respective rural areas of the provinces in which they are found. On the other hand, because federal regional development efforts in Canada have been mainly rural and small town oriented, one might expect these rural areas to converge into one homogeneous group.

Given the above broad converging and diverging regional forces operating in Canada, it is evident that any comprehensive analysis of Canadian regional disparities should not restrict itself to any one measure. Instead, it should explore a wide range of conditions over space and time. The aim of this paper, however, is more restricted because we examine the relative strengths of these provincial and regional forces in terms of socio-economic conditions at a single point in time. This limitation is prompted by both the exploratory nature of our study and our desire to relate it to Canadian regional development policy. It is expected that further research will allow us to extend the analysis to other conditions and over time.

One way of determining the strength of the province-building force is to measure how distinctive each province is with respect to the others in terms of its socio-economic characteristics. Any of several multivariate statistical procedures can be used. The most obvious

candidates are some form of cluster analysis (Aldenderfer and Blashfield 1984) or discriminant analysis (Klecka 1980). Here the latter procedure was selected for conceptual and practical reasons.

Conceptually, discriminant analysis provides a way of studying the nature and extent of differences between previously defined groups of objects. Cluster analysis is more appropriate when no such *a priori* groups exist and the individual objects must be formed into classes. The emphasis in the clustering procedure is on identifying similarities between objects in the same group rather than the differences between groups. Because the provinces provide an existing set of groups, discriminant analysis can be used in a confirmatory fashion to test the appropriateness of these classes.

Practically, although relatively efficient computer algorithms are available, the application of cluster analysis to a large data set such as that used in this study is still extremely costly in terms of both computer memory and time. Thus, such data matrices are usually screened prior to the cluster analysis by means of some form of factor analysis. The resulting classification is therefore partly conditioned by the particular type of factor analysis chosen. But more important, the resulting clusters often vary considerably in terms of their membership when different grouping procedures are used. Finally, there are fewer such subjective decisions to be made in discriminant analysis, a fact considered pertinent in an exploratory study such as this one.

Thus, using discriminant analysis one can consider subareas of each province as members of the same group and can create, using socio-economic variables, a set of discriminant functions that distinguish between the groups. These functions can be used to create a set of theoretical groups whose memberships can be compared to those of the actual groups (provinces). The higher the degree of correspondence between the two sets of groups, the less arbitrary will be the original grouping—in this case implying the greater will be the distinction between the provinces. This is equivalent to considering the provinces as groups and examining how many of the subareas in each group are correctly classified in terms of the discriminant functions. The higher the proportion of correctly classified subareas, the more distinctive and less arbitrary will be the provincial groups.

The Analysis

Data

Values were extracted from the 1981 Census for 25 variables for each of the 260 census divisions constituting the 10 provinces. The six census divisions that constitute the two territories were not included. These

variables (listed in Table 1) are considered representative of those contained in larger variable sets used in previous multivariate analyses of the Canadian system (for example, King 1966; Ray 1969; Ray and Murdie 1972; Simmons 1978; Simmons and Speck 1986). Because the 25 variables represent different aspects of socio-economic characteristics, they have been grouped under six headings: employment, economic, demographic, housing, cultural, and educational. All variables are in rate form, primarily to remove the direct impact of the large variation (from 1,953 to 2,137,395) in total population among the census divisions which otherwise would dominate multivariate analyses of the type undertaken in this study.

The Discriminant Analyses

The data were subjected to four different but related discriminant analyses. In the first, each province comprised a group, and all 25 variables listed in Table 1 were included. In the second, the provinces again formed the groups but the two language variables, FRHOME and OMTONG, were excluded. The reason for this is discussed below. The provinces were then grouped into the five traditional Canadian regions—Atlantic, Quebec, Ontario, Prairies, and British Columbia (Putnam and Putnam 1970)—and a third analysis, with these regions as groups and using all the variables, was undertaken. The final analysis also used the regions as groups but excluded the variables FRHOME and OMTONG.

Table 2 summarizes the canonical discriminant functions that resulted from each of the four discriminant analyses. For both of the provincial analyses, the associated eigenvalues, per cent of variance explained, and canonical correlations all suggest that four discriminant functions are appropriate. The total variance explained by all four discriminant functions in each provincial analysis was very similar (94.1 per cent for the analysis with all variables and 93.9 per cent for the analysis excluding the language variables). For the regional analyses three discriminant functions were extracted in both cases (see Table 2) which explained a total of 92.6 per cent of the variance when all variables were used and 90.7 per cent of the variance when the language variables were excluded.

As for an analysis of the discriminant functions in terms of the input variables, Table 3 shows all the structure coefficients greater than 0.25 in magnitude for all functions in all analyses. Although it is possible to use these structure coefficients to attempt to "interpret" each of the discriminant functions, we have refrained from doing so. Instead, the structure coefficients were used collectively to indicate

Table 1

VARIABLES USED IN THE ANALYSIS

Employment

RPUBDEF	Number of people employed in public administration and defence as a per cent of the total labour force
RAGRIC	Number of people employed in agriculture as a per cent of the total labour force
RMINES	Number of people employed in mines, quarries, and oil wells as a per cent of the total labour force
RMANUF	Number of people employed in manufacturing industries as a per cent of the total labour force
WCEMP	Number of people employed in the managerial, administrative, natural sciences, engineering, mathematics, social sciences, and related fields as a per cent of the total labour force
MPARTI	Male labour participation rate
FPARTI	Female labour participation rate
MUNEMP	Male unemployment rate
FUNEMP	Female unemployment rate

Economic

AVGFAMI	Average family income
LOWINCF	Number of families with an income of less than $5,000 as a per cent of all families
HIGHINCR	Number of families with an income of greater than $40,000 as a per cent of all families
HOUSEV	Average value of owner-occupied non-farm dwellings

Demographic

CPPFAM	Average number of people per family
MFRATIO	Male/female ratio
OVER65R	Number of people 65 years of age and older as a per cent of total population
UNDER19	Number of people under 19 years of age as a per cent of total population

Housing

SDHOUSE	Number of single detached dwellings as a per cent of all private dwellings
POST45DW	Number of dwellings built since 1945 as a per cent of all private dwellings
OWNDW	Number of owner-occupied dwellings as a per cent of all private dwellings

Cultural

FRHOME	Number of people speaking French most frequently at home as a per cent of total population
OMTONG	Number of people with neither English nor French as mother tongue as a per cent of total population
IMMIG	Number of people born outside of Canada as a per cent of total population

Education

LOWED	Number of people with less than Grade 9 as a per cent of all persons over 19 years of age
HIGHED	Number of people with some university or a degree as a per cent of all persons over 19 years of age

Table 2

CANONICAL DISCRIMINANT FUNCTIONS

Analysis	Function	Eigen-value	Per cent of Variance	Canonical Correlation	Wilk's Lambda	Chi-square	Degrees of Freedom	Signifi-cance
Provinces (all variables)	1[a]	12.02	46.3	0.961	0.0002	2067.0	225	0.0
	2[a]	6.21	23.9	0.928	0.0250	1447.2	192	0.0
	3[a]	4.28	16.5	0.900	0.0180	970.2	161	0.0
	4[a]	1.92	7.4	0.811	0.0951	568.3	132	0.0
	5	0.72	2.8	0.648	0.2779	309.2	105	0.0
Provinces (excluding FRHOME and OMTONG)	1[a]	8.45	45.5	0.946	0.0007	1771.4	207	0.0
	2[a]	4.03	21.7	0.895	0.0064	1226.7	176	0.0
	3[a]	3.07	16.5	0.868	0.0320	835.0	147	0.0
	4[a]	1.89	10.2	0.808	0.1300	494.7	120	0.0
	5	0.44	2.4	0.511	0.3751	237.8	95	0.0
Regions (all variables)	1[a]	10.66	55.7	0.956	0.0019	1529.5	100	0.0
	2[a]	4.84	25.3	0.910	0.0221	930.2	72	0.0
	3[a]	2.22	11.6	0.831	0.1291	499.6	46	0.0
	4	1.40	7.3	0.764	0.4162	213.9	22	0.0
Regions (excluding FRHOME and OMTONG)	1[a]	7.40	53.9	0.939	0.0043	1336.6	92	0.0
	2[a]	2.94	21.5	0.864	0.0359	815.3	66	0.0
	3[a]	2.09	15.3	0.823	0.1415	479.1	42	0.0
	4	1.28	9.4	0.750	0.4378	202.4	20	0.0

[a]Functions used in the analysis.

which of the original 25 variables have discriminating power with respect to either the provinces or regions.

Nine of the variables do not have any structure coefficients greater than 0.25 (RPUBDEF, RMINES, WCEMP, MPARTI, FPARTI, LOWINCF, SDHOUSE, OWNDW, HIGHED), indicating that these variables do not display marked spatial variation at either the provincial or regional level. Of the 16 variables that do have structure coefficients greater than 0.25, the highest values are recorded for FRHOME in both the provincial and regional analysis (-0.82 and -0.79, respectively). Since these are by far the largest structure coefficients and since in both cases they are associated with the first discriminant function, this clearly (and not unexpectedly) indicates that this is the most influential discriminating variable. In view of this, and because it might be argued that FRHOME is a cultural rather than a socio-economic variable, we chose to undertake additional analyses excluding this variable. And because a similar argument could also be made with respect to OMTONG, this variable was excluded as well from the revised analysis.

As Table 3 shows, however, the pattern of structure coefficients does not change markedly in the two analyses in which these variables are excluded. This indicates that the remaining variables are collectively just as able to discriminate between the various census divisions as the language variables. For all analyses, the most persistent variables, and thus those that indicate the greatest measure of variation at both the provincial and regional levels, are FUNEMP, IMMIG, HOUSEV, and LOWED. The variables MFRATIO and POST45DW appear in both provincial analyses but are absent from both regional analyses, indicating that they show variation only at the provincial level. Conversely, one variable, AVGFAMI, appears in both regional analyses but in neither of the provincial analyses. Finally, three variables—CPPFAM, OVER65R, and UNDER19—appear only once in all four analyses and in every case are associated with the discriminant functions with the lowest explained variance, thus suggesting that these variables are only of minor importance.

When the discriminant functions in Table 2 were used to classify the original census divisions, in all four analyses the proportion of correctly classified cases was high, indicating that both the provinces and the regions differ considerably among themselves and suggesting that broad province-building forces are extremely strong. In these classification procedures the prior probabilities were weighted in proportion to the number of census divisions in each province.

For the two provincial analyses the successful classification rates were almost identical (88.1 per cent using all the variables and 88.5 per cent with FRHOME and OMTONG excluded). In the

Table 3
STRUCTURE COEFFICIENTS IN DISCRIMINANT FUNCTIONS ≥ 0.25

Variables	Provinces (all variables)				Provinces (excluding FRHOME and OMTONG)				Regions (all variables)			Regions (excluding FRHOME and OMTONG)		
	1	2	3	4	1	2	3	4	1	2	3	1	2	3
Employment														
RAGRIC	–	–	0.39	–	–	0.42	–	–	–	0.26	0.38	–	0.37	0.30
RMANUF	–	–	–	–	–	-0.28	–	–	–	–	-0.27	–	–	-0.28
MUNEMP	–	–	–	0.27	-0.27	–	–	0.31	–	–	–	-0.28	–	–
FUNEMP	-0.25	-0.29	–	0.28	-0.34	–	–	0.34	-0.28	–	–	-0.36	-0.29	–
Economic														
AVGFAMI	–	–	–	–	–	–	–	–	–	–	0.31	–	–	-0.35
HIGHINCR	–	0.26	–	–	–	–	-0.29	–	–	–	-0.30	–	–	-0.34
HOUSEV	–	–	-0.28	–	0.29	-0.35	–	–	–	–	-0.52	–	–	-0.51
Demographic														
CPPFAM	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MFRATIO	–	–	–	0.30	–	–	–	0.29	–	–	–	–	–	0.25
OVER65R	–	–	–	-0.25	–	–	–	–	–	–	–	–	–	–
UNDER19	–	–	–	–	–	–	–	0.25	–	–	–	–	–	–
Housing														
POST45DW	–	–	–	0.35	–	–	–	0.33	–	–	–	–	–	–
Culture														
FRHOME	-0.82	–	–	0.30					-0.79	0.42	–			
OMTONG	0.29	0.27	–	–					0.33	0.28	–			
IMMIG	0.26	–	-0.29	–	0.37	–	–	–	0.27	–	-0.48	0.35	–	-0.45
Education														
LOWED	–	–	–	0.29	–	-0.26	–	–	–	–	0.34	–	–	0.31

Note: Variables not appearing in this table have structure coefficients < 0.25 for all functions in all analyses.

Table 4

GROUP MEMBERSHIP: PROVINCES

Province	Group 1	2	3	4	5	6	7	8	9	10	Total
NFLD	9 (8)	1 –	– –	– (2)	– –	– –	– –	– –	– –	– –	10
PEI	– –	2 (3)	1 –	– –	– –	– –	– –	– –	– –	– –	3
NS	– –	1 (1)	16 (15)	– (2)	– –	1 –	– –	– –	– –	– –	18
NB	– –	1 (1)	7 (4)	5 (10)	1 –	– –	– –	– –	– –	– –	15
QUE	– –	– –	– –	1 (3)	75 (73)	– –	– –	– –	– –	– –	76
ONT	– –	– –	– –	– –	2 (2)	50 (50)	– –	– –	– –	1 (1)	53
MAN	– –	– –	– –	– –	– –	1 (3)	15 (15)	6 (5)	1 –	– –	23
SASK	– –	– –	– –	– –	– –	– –	4 (3)	14 (15)	– –	– –	18
ALTA	– –	– –	– –	– –	– –	– –	– –	– –	14 (14)	1 (1)	15
BC	– –	– –	– –	– –	– –	– –	– –	– –	– (2)	29 (27)	29
Total	9 (8)	5 (5)	24 (19)	6 (15)	79 (75)	52 (53)	19 (18)	20 (20)	16 (16)	31 (29)	260

Note: Group 1 = Mainly Newfoundland (NFLD); Group 2 = Mainly Prince Edward Island (PEI); Group 3 = Mainly Nova Scotia (NS); Group 4 = Mainly New Brunswick (NB); Group 5 = Mainly Quebec (QUE); Group 6 = Mainly Ontario (ONT); Group 7 = Mainly Manitoba (MAN); Group 8 = Mainly Saskatchewan (SASK); Group 9 = Mainly Alberta (ALTA); Group 10 = Mainly British Columbia (BC). Numbers in parentheses are for the analysis excluding FRTOME and OMTONG.

provincial analysis involving all variables the most marked misclassifications occurred for New Brunswick and Manitoba (see Table 4 and Figure 1). Census divisions in New Brunswick were redistributed primarily to a group dominated by census divisions from Nova Scotia (Group 3), although two census divisions joined with Group 5 (essentially Quebec,) and one went to Group 2 (basically Prince Edward Island). Only five of New Brunswick's 15 census divisions remained to dominate a small Group 4. This clearly suggests a spatially transitional role for New Brunswick between Atlantic Canada and Quebec. Manitoba also displays aspects of a spatially transitional province. While 15 of its 25 census divisions remained

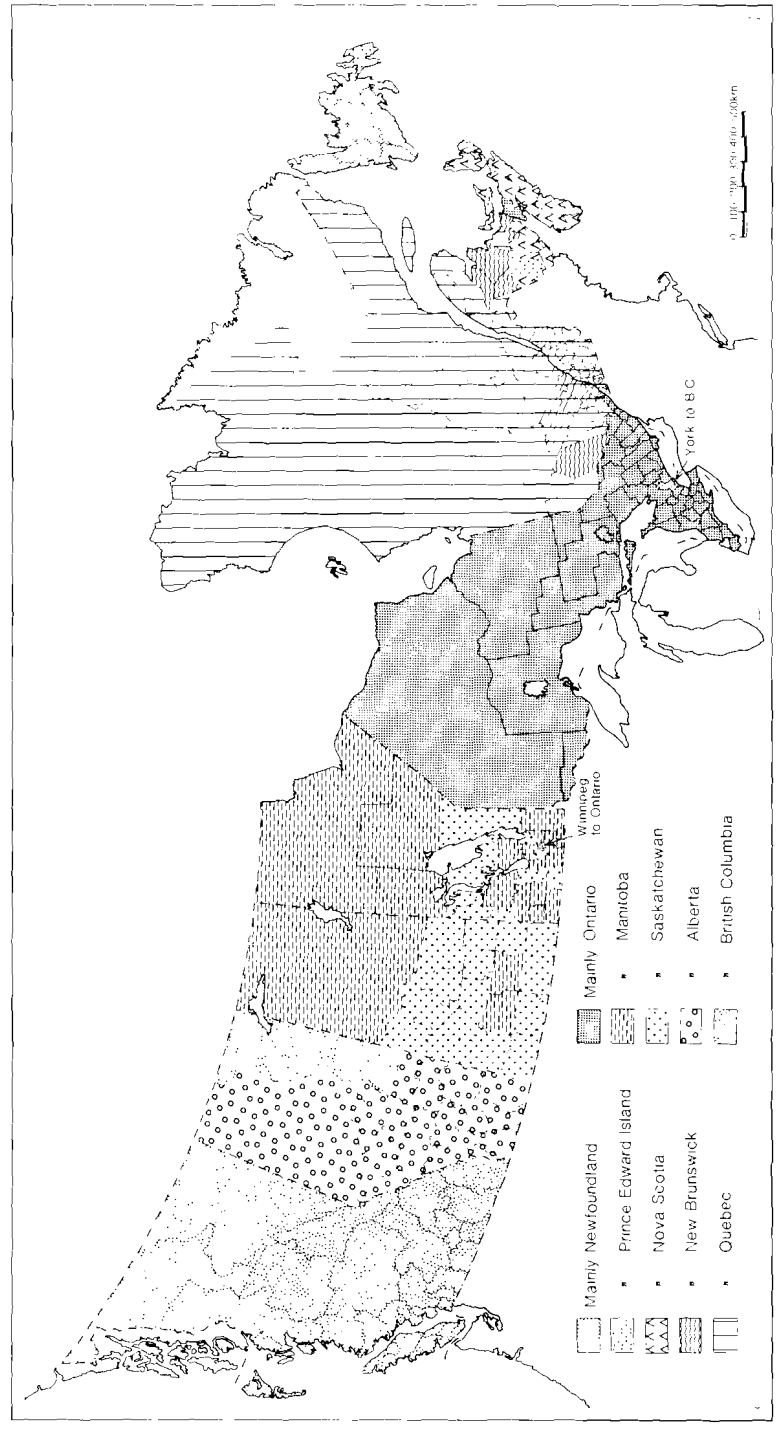

Figure 1
GROUP MEMBERSHIP FOR PROVINCIAL ANALYSIS (ALL VARIABLES)

together to dominate Group 7, six census divisions were assigned to Group 8 dominated by census divisions from Saskatchewan. British Columbia was the only province whose census divisions all ended up in the same group (Group 10). Finally, only three misclassifications of census divisions were to non-adjacent provinces (one each in Nova Scotia, Ontario, and Manitoba). These and all individual misclassifications are discussed in detail below.

Table 4 also indicates that essentially similar results were obtained for the provincial analysis that excluded the language variable. In this analysis, however, the census divisions in both New Brunswick and Manitoba showed a higher level of cohesiveness, and British Columbia no longer had all its census divisions in the same group. Again, only three misclassifications were to non-adjacent provinces (two in Newfoundland and one in Ontario).

Table 5 shows the corresponding regional analyses. In each case the percentage of correctly classified census divisions was very high (95.4 per cent for all variables and 94.6 per cent excluding the language variable). In the analysis using all variables, Quebec and British Columbia were the most distinctive regions, while Ontario and Atlantic Canada were the least distinctive (see Figure 2). This picture changed slightly in the analysis excluding FRHOME and OMTONG; Atlantic Canada and British Columbia then appeared as the most distinctive, while the Prairies joined Ontario as the least distinctive. Only Ontario had census divisions that were assigned to a non-adjacent region (three census divisions were assigned to British Columbia).

Table 5

GROUP MEMBERSHIP: REGIONS

	Group					
Region	**1**	**2**	**3**	**4**	**5**	**Total**
Atlantic	43	3	–	–	–	46
	(46)	–	–	–	–	
Quebec	–	75	1	–	–	76
	(1)	(73)	(2)	–	–	
Ontario	–	2	48	1	2	53
	–	(1)	(48)	(1)	(3)	
Prairies	–	–	1	53	2	56
	–	–	(5)	(50)	(1)	
B.C.	–	–	–	–	29	29
	–	–	–	–	(29)	
Total	43	80	50	54	33	260
	(47)	(74)	(55)	(51)	(33)	

Note: Numbers in parentheses are for the analysis excluding FRHOME and OMTONG.

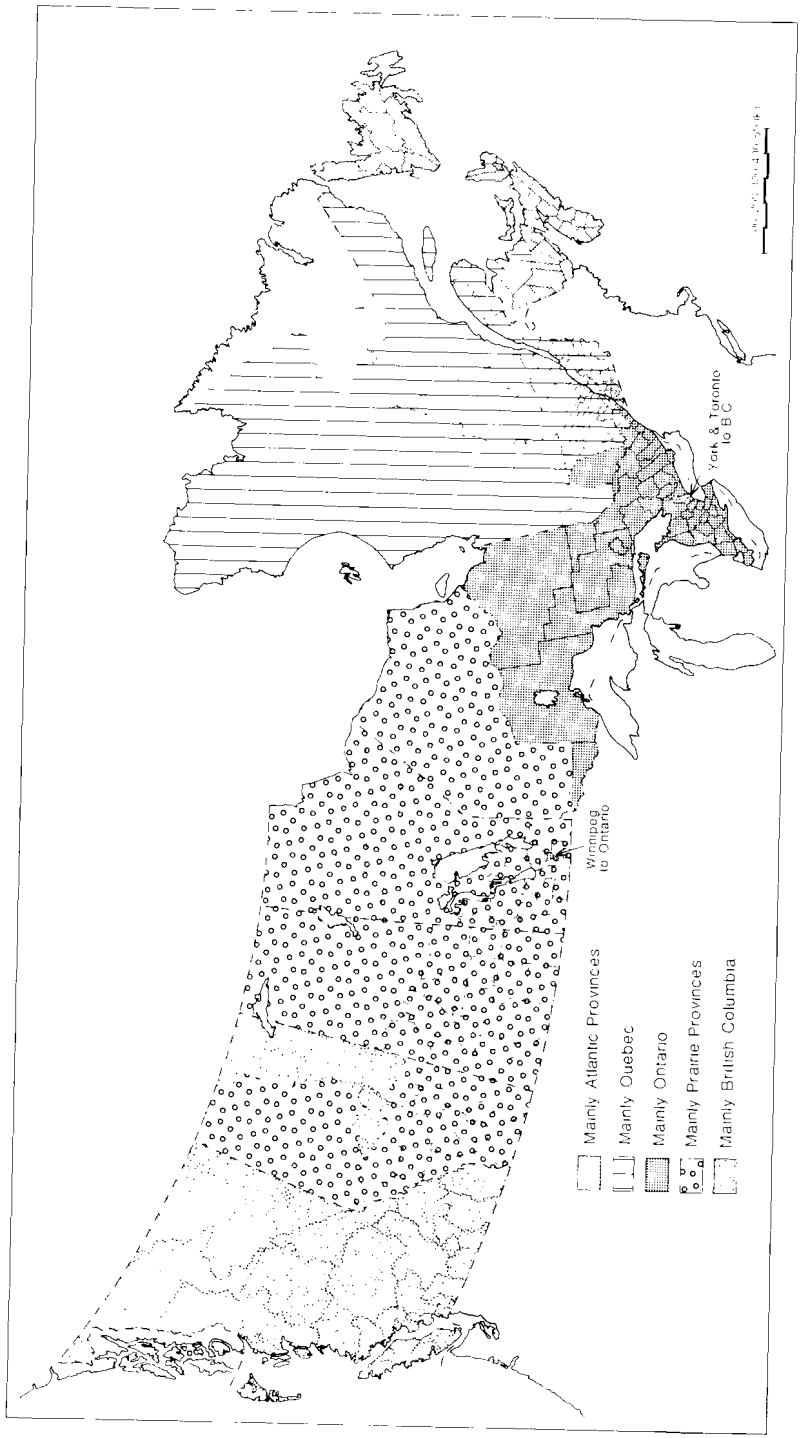

Figure 2

GROUP MEMBERSHIP FOR REGIONAL ANALYSIS (ALL VARIABLES)

Provincial Misclassifications: All Variables

Discriminant analysis allows one to calculate the first and second highest group membership probabilities for each census division whose highest group membership probability is not associated with the provincial group in which it is located. In addition, a centrality value, in the form of another probability, can be calculated for the group with the highest associated membership probability. This value ranges from a high of 1.0, indicating that the census division is located at the centre of the group to which it is assigned, to a low of 0.0, indicating that it is a highly peripheral member of its assigned group. All of the misclassifications for the analyses involving all variables have been mapped in Figures 1 and 2 to emphasize their geographic locations.

A closer look at Figure 1 shows some interesting and revealing misclassifications. Fourteen of the 31 total misclassifications occurred in the Atlantic provinces, the smaller political and geographical units in Canada. Of these, only three were relocated outside of the Atlantic Region. One was to Ontario (Cumberland, N.S.) with a probability of 0.96 and a centrality indicator of 0.34. Similarly, the two census divisions that transferred to Quebec (Kent, N.B., and Madawaska, N.B.) also had high probability values (0.96 and 1.00, respectively) but low centrality values (0.02 and 0.10, respectively). This suggests that both census divisions are to some extent unique. Madawaska is located adjacent to Quebec, and its misclassification is somewhat understandable, but Kent, located in north-eastern New Brunswick, needs to be analyzed more closely.

Of the 14 misclassifications in the Maritime provinces, 10 occurred in New Brunswick alone, all but three of which were assigned to Nova Scotia (Figure 1). The probabilities ranged from 0.54 to 1.00, yet only two, Charlotte and Carleton, also had high centrality values (0.95 and 0.87, respectively). All others were below the 60th percentile. Because most of these misclassifications were located in the eastern area of the province, across the Bay of Fundy from Nova Scotia, it is rational to conclude that New Brunswick is a transition province with some Anglo-Saxon settlement areas closely tied to Nova Scotia. The remainder of New Brunswick (the west and north-west), however, is not linked to Quebec but forms an independent group. Because much of this area was originally settled by Acadians, it may be hypothesized that this region provides the socio-economic characteristics that make the province unique.

Within the Atlantic Region all misclassified census divisions except two had the home provincial group as their second group. One exception was St. John's, Newfoundland, which was assigned to

Group 2 (Prince Edward Island) for its first probability. Its centrality value of 0.58 within this group was also relatively high. The second highest probability put it in Group 3. This suggests that St. John's has socio-economic characteristics more in common with the Atlantic mainland than with the rest of Newfoundland.

The other census division with both first and second location probabilities higher than its own provincial one was Antigonish, Nova Scotia. Its highest probability (0.72) assigned it to Prince Edward Island and its second (0.20) to Newfoundland. Its location on the north-west corner of the Nova Scotian mainland again makes its first association with Prince Edward Island understandable.

Only one census division in Quebec—Pontiac, on the northern shore of the Ottawa River—was classified outside the Quebec group and with the Ontario group. Thus, this analysis underlines the fact that the vast majority of Quebec's socio-economic space is distinctive and forms its own group.

Of Ontario's 53 census divisions three were classified outside of Ontario. Two divisions—Prescott and Russell in eastern Ontario—went to Quebec with probabilities of 1.00 and 0.91, respectively, and centrality indexes of 0.42 and 0.03, respectively. A third one, York, was interestingly assigned to British Columbia with a probability of 0.71 and a centrality index of 0.15. With its high mixture of ethnic groups and its rapid urban expansion, York seemingly is closer to what is happening on the west coast than in Ontario. One could possibly associate these areas with "frontier" settlement characteristics.

Most of the misclassifications in the Prairies occurred between Manitoba and Saskatchewan. Six census divisions went from Manitoba—mainly in the agricultural, southern part of the province—to Saskatchewan, while four from Saskatchewan—mainly in the northern part—were assigned to Manitoba (Figure 1). Thus, the traditional agricultural areas were grouped more with Saskatchewan, while the northern and the marginal agricultural areas were classified with Manitoba.

The other interesting aspect of Manitoba was that its capital, Winnipeg, was grouped with Ontario census divisions with a high probability (0.98) but a somewhat low centrality value (0.10). Winnipeg's greater industrial base and its stable growth characteristics probably account for this.

In Alberta, only one census division—the Fort McMurry area of north-eastern Alberta—was misclassified, having been assigned to British Columbia. None of the census divisions of British Columbia were assigned to any other group. It was the only province for which this was the case.

Provincial Misclassifications: Excluding Language Variables

As indicated earlier, in the second provincial analysis the two language variables, French home language (FRHOME) and other than English or French mother tongue (OMTONG), were removed. Surprisingly, the overall proportion of misclassifications did not increase as first anticipated but even decreased slightly from 31 to 30. Of the 10 misclassifications in the Atlantic provinces, eight again were between Nova Scotia and New Brunswick. Halifax and Lunenburg went to Group 4, (New Brunswick) with high probabilities (0.83 and 0.80, respectively) as did St. John's (0.80). It seems that Group 4, besides being identified with northern and north-eastern New Brunswick, is also strongly typified by urban Atlantic Canada, as the high centrality values for St. John's (0.90), Halifax (0.98), Lunenburg (0.98), and Moncton (0.86) would indicate.

Also surprisingly, removal of the language variables only increased the misclassified divisions in Quebec from one to three. Of these, Gatineau and Pontiac, located north-west of Ottawa, are understandable; Brome, on the U.S. border south of Montreal, is the third. All three were assigned, however, to Group 4 (Nova Scotia) and not Ontario, with probabilities of 0.60, 0.90, and 0.48, respectively, and centrality values of 0.33, 0.38 and 0.06, respectively. Pontiac's second highest probability was with Ontario. In Ontario, Prescott was again strongly identified with Quebec in terms of both membership probability (1.00) and centrality (0.51). Interestingly, Ottawa, the nation's capital, was now assigned to Quebec with a probability of 0.46 and a centrality value of 0.04, indicating its marginal location in this group. Its association probability with Ontario, its second probability, was reasonably close with a value of 0.35. The third Ontario census division misclassified was York. Again, it went to British Columbia with a probability of 0.46 and a centrality value of 0.06. Although these values were not that high, the probability of association with Ontario was somewhat lower at 0.38.

Most of the reassignment in the Prairies was again between the two provinces of Manitoba and Saskatchewan. But now three census divisions in Manitoba were assigned to the Ontario group, including Winnipeg, as was the case in the discriminant analysis using all variables. In Alberta, the Fort McMurry region again went to British Columbia with a high probability (0.82). British Columbia, however, was not as solid a block of census divisions as in the all-variables case, as now the Peace River district (0.51) in the north-east went to Alberta as did the Okanagen region (0.62). Both regions have been settled in part by people from the Prairies. Their centrality values are, however, in the low 20th percentile range.

Regional Misclassifications: All Variables

By grouping the 260 census divisions into the traditional five regions of Canada and running a discriminant analysis, first using all variables, a clear, strong picture of regionalism in Canada was presented. It supports Wonders's (1982: 8) qualitative statement that "given the enormous area of Canada...it was and is inevitable that regions and regionalism should occur". From the Atlantic Region, only three census divisions—Kent, Madawaska, and Gloucester—all in New Brunswick and two on the Quebec border, went to Group 2 (Quebec), with high probabilities (≥ 0.99) but low centrality values (≤ 0.05). The latter values indicate the uniqueness of these three divisions and may reflect the spatially transitional nature of New Brunswick with respect to the Atlantic Region and Quebec (Figure 2).

Only one census division in Quebec was transferred out of the region—again Pontiac. It went to Ontario with a probability of 0.99 and a centrality value of 0.25.

At the regional level, Ontario surprisingly was less cohesive than any other region. In fact, five of the 53 census divisions had first-group probabilities that assigned them to other regions. For example, Prescott and Russell in eastern Ontario went to Group 2 (Quebec) with high probabilities. Prescott even had a relatively high centrality value of 0.41. Interestingly, York and Toronto were now associated with Group 5 (British Columbia) with probability values of 0.88 and 0.76, respectively, and high centrality measures of 0.59 and 0.48, respectively. It is possible that the high growth and ethnically diverse characteristics of these divisions led them to be grouped with British Columbia, which in certain ways is still the frontier province. Not surprisingly, Kenora, traditionally tied closely to Winnipeg, was assigned to the Prairie province group, yet Winnipeg continued to affiliate with Ontario on the whole, having high probability and centrality values of 0.84 and 0.25, respectively. The latter's manufacturing base and stable population status may well be similar to what was found in many southern Ontario census divisions in 1981. Edmonton and the Fort McMurry area had high enough first-group probabilities (0.53 and 0.52, respectively) to be associated with British Columbia but only barely so. The low centrality values of only 0.04 and 0.06, respectively, underline the weakness of this association. Again, all of British Columbia's census divisions stayed together as an independent group.

Regional Misclassifications: Excluding Language Variables

Surprisingly, by removing the language variables, the regional nature of Canada did not change very much; the number of "misclassified"

census divisions was still only slightly over 5 per cent. Now the Atlantic Region's census divisions stayed together solidly as one group. Three divisions from Quebec were reassigned, two to Ontario (Brome, 0.84, and Pontiac, 0.98) and one to the Atlantic Region (Gatineau, 0.70). Of Ontario's census divisions, five (but somewhat different than the five discussed above) were again assigned to different regions. Three—York, Toronto, and Peel—are highly urbanized areas and were all assigned to British Columbia. Prescott again went to Quebec, and Bruce went to the Prairies. Because all five centrality values were relatively high, these reassignments were fairly strong.

Of the six divisions from the Prairies that were assigned to different regions, five went to Ontario, including all three major cities—Winnipeg, Edmonton, and Calgary—although it must be noted that the latter two had low centrality values (both 0.03). All second probabilities retained them in the Prairie group. As in previous analyses, Fort McMurry was assigned to British Columbia.

Conclusion

From the above results it can be seen that in 1981 the Canadian socio-economic geographic space clearly had far stronger provincial than national dimensions embodied in it. Discriminant analysis of 25 socio-economic rate variables showed that census divisions tend to group in relation to existing provincial boundaries. The "correct" classification of over 85 per cent of the census divisions by provinces suggests a socio-economic space that has a strong provincial base. Even the removal of the two language variables did not decrease this provincial cohesion to any great extent. Clearly, one can speak of unique "province states" in Canada, suggesting the existence of a strong "province-building" force. The implications for regional development policies and programmes of the federal government, which have as their basic aim the equalization of the socio-economic dimension in Canada across all provinces, are that they will continue to encounter tremendous conflicting forces. One should remember that the ultimate success of the federal "nation-building" force would be reflected in a discriminant analysis in which census divisions grouped randomly together in geographic space. No evidence of this was found in this analysis.

A reclassification of the census divisions according to the five traditional regions in Canada, disregarding for the moment Cameron's (1981: 501) claim that for policy purposes such regions have no meaning, presents an even stronger geographic clustering of Canada's socio-economic dimensions. With or without the language variables in the analysis, about 95 per cent of the census divisions are classified

into their "proper" regional groups. Interestingly, the eastern- and westernmost regions—Atlantic and Pacific Canada, respectively—were the most cohesive. Quebec, frequently viewed as the most unique region in Canada, is no more cohesive than the other regions.

Although not examined in this paper, some of the results of the analyses suggest the presence of an additional metropolitan-rural dimension in the socio-economic space of Canada as hypothesized in the beginning of the paper. Because such a dimension is produced without direct federal or provincial involvement, steps to counter it through federal or provincial development programs would be difficult.

When political scientists have spoken of "province-building" versus "nation-building" processes taking place in Canada, the emphasis frequently has been on the political process. Either the federal or the provincial governments are seen to be attempting to attract more power. The assumption is frequently made that province-building endeavours should create equality among the provinces (Young et al. 1984). In our view, however, such a strengthening of provincial political power would only enhance the broader province- or region-building forces that have as their outcome the kind of spatial patterns identified in this paper. Differences in socio-economic conditions over geographic space can be seen as the product of different physical, cultural, economic, and political landscapes. At present, most of these tend to be province-building, with only a few nation-building in nature. How the relative strengths of these forces have changed will be the subject of future research.

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