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7 Education and  
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Achievement

Donald E. Armstrong

*avec les hommages de la*  
COMMISSION ROYALE D'ENQUÊTE SUR  
LE BILINGUISME ET LE BICULTURALISME

C.P. 1508, Ottawa



Education and  
Economic Achievement

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**7** Economic  
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List of Tables vi

List of Figures vii

Chapter I Introduction 1

Chapter II Labour Force Productivity and Income Achievement 5

Chapter III Professional Education and Achievement 21

A Introduction 21

B Architects 23

C Science Graduates 27

D Engineers 38

E Ethnicity and Professional Achievement 50

F A Tentative Conclusion 57

Chapter IV Managerial Achievement 59

A Social Significance of Managerial Achievement 60

B Management Achievement Ratios 62

C Managerial Achievement of Architects, Scientists,  
and Engineers 73  
Architects 73  
Scientists 74  
Engineers 74

Chapter V Summary and Conclusions 91

Notes to Chapters 99

## List of Tables

## Tables in Chapter II

- II.1 Personal income per person and per member of the labour force by province, 1964 6
- II.2 Relative earnings of Quebec and Ontario, and of Quebec and Canada 7

## Tables in Chapter III

- III.1 Number and average salary of French and other science majors graduating prior to 1940 28
- III.2 Graduates of French-language universities working in Ontario compared with graduates of other universities 33
- III.3 Graduates with Master's or *licence* degrees working in Quebec who obtained undergraduate degrees at French-language universities compared with Master's graduates from other universities 34
- III.4 Graduates with Ph.D. degrees working in Quebec who obtained undergraduate degrees at French-language universities compared with doctoral graduates from other universities 35
- III.5 Graduates with Master's or *licence* degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with Master's graduates from other universities 37
- III.6 Graduates with Ph.D. degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with doctoral graduates from other universities 37
- III.7 The professional "mix" of engineers who graduated before 1940 40
- III.8 Engineering graduates at the Bachelor level of French-language universities working in Ontario compared with graduates of other universities 49

## Tables in Chapter IV

- IV.1 Managerial achievement ratios in Quebec for those earning \$10,000 and over per year 62
- IV.2 Managerial achievement ratios in Canada, excluding Quebec, for those earning \$10,000 per year and over 63

- IV.3 Educational distribution of executives occupying top positions, by highest level of education attained and by size of firm, in Canada 65
- IV.4 Expected distribution of managers in Quebec by ethnicity based on random selection 67
- IV.5 Refined managerial achievement ratios in Quebec for those earning \$10,000 and over per year 69
- IV.6 Distribution of 306 executives by language, level, and kind of education 71

### List of Figures

#### Figures in Chapter III

- III.1 Professional achievement of university graduates in Quebec, Bachelor level: Architecture 24
- III.2 Professional achievement of university graduates in Quebec, Bachelor level: All science 26
- III.3 Professional achievement of university graduates in Quebec, Bachelor level: Chemistry 30
- III.4 Professional achievement of university graduates in Quebec, Bachelor level: General science 31
- III.5 Professional achievement of university graduates in Quebec, Bachelor level: Engineering (all branches) 39
- III.6 Professional achievement of university graduates in Quebec, Bachelor level: Civil engineering 41
- III.7 Professional achievement of university graduates in Quebec, Bachelor level: Chemical engineering 42
- III.8 Professional achievement of university graduates in Quebec, Bachelor level: Electrical engineering 43
- III.9 Professional achievement of university graduates in Quebec, Bachelor level: Mechanical and industrial 44
- III.10 Professional achievement of university graduates in Quebec, Bachelor level: Mining and geological 45
- III.11 Professional achievement of university graduates in Quebec, Bachelor level: Metallurgical 46
- III.12 Professional achievement of university graduates in Quebec, Bachelor level: All engineering 48

- III.13 Professional achievement of university graduates in Quebec, Bachelor level, 1962 and 1964 surveys: Engineering (all branches) 53
- III.14 Professional achievement of university graduates in Quebec, Master's level, 1962 and 1964 surveys: Engineering (all branches) 54

Figures in Chapter IV

- IV.1 Management achievement of university graduates in Quebec, Bachelor level: Architecture 75
- IV.2 Management achievement of university graduates in Quebec, Bachelor level: All science 76
- IV.3 Management achievement of university graduates in Quebec, Bachelor level: "Other courses" in science 77
- IV.4 Management achievement of university graduates in Quebec, Bachelor level: Engineering (all branches) 79
- IV.5 Management achievement of university graduates in Quebec, Bachelor level: Civil engineering 80
- IV.6 Management achievement of university graduates in Quebec, Bachelor level: Chemical engineering 81
- IV.7 Management achievement of university graduates in Quebec, Bachelor level: Electrical engineering 82
- IV.8 Management achievement of university graduates in Quebec, Master's level: All engineering 86
- IV.9 Management achievement of French-language university graduates in Ontario, Bachelor level: All engineering 87
- IV.10 Management achievement of French-language university graduates in Ontario, Bachelor level: All engineering and science 88
- IV.11 Professional achievement of university graduates in Quebec, M.B.A. and Ph.D. levels: Engineering (all branches) 89



The purpose of this study is to examine the relationship between education and economic achievement. If this relationship can be established, it will be interesting in itself for a number of reasons; but for the particular purpose of this study, attention must be more narrowly focused on the role of education in explaining the relative achievement in commerce and industry of Canadians of different language groups.

The study here proposed is beset by more than the usual number of conceptual and measurement problems. One realizes very quickly that even the terms used in the title of this study, "education" and "achievement" are themselves difficult to define or measure. For lack of a better measure of education, we shall have to use years of formal schooling, but everyone who has ever been remotely connected with an educational institution knows that education neither begins nor ends with the formal educational programmes of schools and universities. Furthermore, educational institutions vary greatly in the qualifications of their teachers, the number of stimulating books in their libraries, the quality of their curricula, and the relevance to the world of commerce and industry, of what is taught.

Achievement is even more difficult to define or measure. Obviously it can be assessed only in relation to an agreed yardstick or goal, but in the realm of education the available yardsticks are many, uncalibrated and subjective. The actual, though perhaps the unstated, objectives of a school system might be to make sure that students continue to follow a particular religious faith, to cause the taxpayers a minimum of inconvenience, to discourage bilingualism, or to perpetuate the skills, attitudes and prejudices of the parents. If judged against some or all of these goals, the school system might be very successful. However, goals vary from person to person so that some people might regard such a school system as a complete failure because its students do not achieve other objectives such as high incomes or rapid promotions in industry.

This study is concerned with achievement in a materialistic sense. Our main concern is with income, productivity, and promotion. However, it must be conceded immediately that there is no way of proving that these are the most important aspects of achievement or the ones by which an educational system should be judged. The justification for looking at the materialistic aspects of achievement is the belief that French-speaking and English-speaking Canadians both aspire to higher incomes and better jobs whether their educational systems take these factors into account or not. We may further justify our examination of the materialistic aspects of achievement by the belief that the difference in per capita income between French- and English-speaking Canadians is large enough to be perceived and to be a source of friction and resentment. It seems important therefore to understand the reasons for apparent differences in income and promotion.

Another problem in considering achievement is that usually it is a relative term. Achievement may be judged by comparing one group or individual with another at one point of time, or it may be applied to the same group or individual at two points of time. Or again, the achievement of an individual or group may be measured against one or more objectives which, of course, may include the aim of doing as well economically as some other group, or increasing one's well-being relative to the past.

The fact that achievement may be measured against one or more objectives raises the interesting possibility that a single objective may not be in the range of the possible, or that two or more objectives may be mutually incompatible. For example, if an English-speaking Canadian wishes to remain unilingual and at the same time to achieve a high income by selling brushes door to door in Quebec City, he is doomed to disappointment: achieving one or the other of his goals is going to be very difficult. Unilingualism, which could easily be a goal of some English- and French-speaking Canadians (a goal which is itself an aspect of educational policy) may very well prove to be incompatible with certain other objectives.

In the study of achievement in education, it is virtually impossible to avoid making value judgments. The facts that are collected and the questions that are asked usually reflect an underlying set of assumptions or attitudes. The members of group A, for instance, might complain that they are under-represented in management in comparison with group B. It might be quite possible to "prove" this fact by counting heads and comparing the number of A's and B's in top management with the number of A's and B's in the total population. If one made such a count, however, one would in fact be implying that groups A and B have the right to expect proportional representation in management (as they would in Parliament perhaps) without reference to qualifications. To take the position that A's and B's should have equal representation in management regardless of qualifications, or, on the contrary, that membership in A or B should be completely ignored and that only qualifications should be considered, is to make a

value judgment. Obviously in the matter of running a parliament, few are prepared to admit that the educational qualifications of political candidates are the only consideration, although it is of course hoped that constituents will elect candidates with good qualifications. In running a government administration or staffing the courts of justice, quite different emphasis may be placed on educational qualifications. On the other hand, it may be argued that the sole job of business management is to be efficient, and that if membership in A or B is irrelevant to the quality of management, then membership in A and B should be completely ignored in making appointments.

It is possible to envisage conflicts about measurement involving representation versus qualifications, but indeed even if one chooses a goal of equal representation for two or more groups, one can still not completely avoid qualifications since qualifications or attributes are essential to the definition of any group. Should we compare the ratio of French- and English-speaking Canadians in management with the ratio of these two groups in the total population? Or should we define the groups to include only the adult population or the working population, and should this include or exclude people in the church? Should the groups to be compared be so defined as to include those over a certain age and with a certain educational background? One can very quickly see that the problem of making "fair" comparisons must be, to some extent at least, subjective.

Need it be added that the more precise our definition of the group, the less reliable our data? It is one thing to define and to measure income achievement of all French- and English-speaking Canadians, but if one's idea of fairness directs one to compare the achievement of two groups of French-speaking and English-speaking Canadians, each of which has equal facility in a second language, each of which has the same quantity and quality of education, the same personal aspirations, the same set of values as far as business is concerned, and so on, then one is going to have a hard time identifying the groups, let alone measuring their relative achievement.

Both a value judgment and a measurement problem arise with the introduction of time and history into the analysis. The dead hand of the past lies heavily on us all. The workman's son will have a harder time becoming president of the Canadian Pacific Railway than the doctor's son; and undoubtedly if the workman is unilingual French living in Saint-Tite-des-Caps, his son will find the goal more difficult to achieve than if the workman were unilingual English living in Toronto. Class, income, and regional mobility exist in North America, but even so it usually takes strong motivation and a few generations to move from a subsistence farm to the executive suite.

A region, a family or an individual, whether French- or English-speaking, must live with a given stock of education, attitudes, accumulated wealth and goals, and these will not be changed overnight, regardless of how badly society wants change.

Many other problems confuse and complicate this study. It attempts to single out the impact of education on achievement and yet many other explanatory variables are obviously involved. Furthermore the whole area of education and achievement may bring forth an emotional reaction on the part of interviewees which may or may not affect practice and policies. Finally it must be noted (in self-defence) that there is an absence of a research base in this area—especially in Canada. There are, unhappily, very few shoulders on which we can stand to improve our view of the countryside.

It is a matter of national concern that levels of income and productivity are not the same across Canada. This is only one aspect of a much larger problem which leads us to ponder the reasons why there are "have" and "have not" nations and why, in comparison with the United States at least, Canada is a "have less" nation.

For purposes of this particular study, it is the difference between English- and French-speaking Canadians which concerns us, but because of the way data are collected, it is not always possible to distinguish income and productivity levels of French- and English-speaking Canadians, and some of our analysis must therefore deal with differences among provinces. In this chapter we shall attempt to describe very briefly income differences and to put the problem in perspective.

Our analysis focuses on the fact that there is a significant income difference between Quebec and Ontario and that this difference has not diminished over time—at least it has not diminished very much. This fact is surprising because there exist in any free-trading area strong economic forces which should tend to equalize wage rates. With this in mind we shall examine two possible explanations for the failure of Quebec to achieve the same income levels as Ontario. The first is that there may be some kind of ethnic prejudice which holds back the French Canadians, and the second, that the persistent differences in income are explained by equally persistent differences in educational and productivity levels. Table II.1 shows all provinces ranked in order of per capita personal income in 1964. It also shows the income per member of the labour force. From this table it can be seen that the income and productivity achievement of Quebec places it in about the middle of the Canadian provinces, though below the mean. If the view from Quebec looking toward the greener pastures of the West is discouraging, a Quebecer can always draw comfort from a glance over the back fence at his eastern neighbours.

Table II.1

Personal income per person and per member of the labour force by province, 1964

Province	Personal income per person <sup>1</sup>	Personal income per member of the labour force <sup>2</sup>
Ontario	\$ 2,125	\$ 5,476
British Columbia	2,079	5,656
Manitoba	1,796	4,901
Alberta	1,793	
Saskatchewan	1,683	
Quebec	1,608	
Nova Scotia	1,362	4,180
New Brunswick	1,246	
P.E. Island	1,224	
Newfoundland	1,065	

<sup>1</sup>Source: D.B.S. *National Accounts, Income and Expenditure 1964* (Ottawa, 1965), Table 29.

<sup>2</sup>Source: D.B.S. *National Accounts, Income and Expenditure 1964* (Ottawa, 1965), Table 28. D.B.S. *The Labour Force* (Supplement to March 1965 Report).

Of all the comparisons that might be made as a reference point for productivity and income achievement, the one which has been singled out in this section is that of Ontario and Quebec. The two provinces are neighbours; they are both large and centrally located to serve the Canadian market. Both provinces have long-established and highly developed manufacturing industries, similar natural resources and similar resource-based industries. Finally, one province is about as English-speaking as the other is French-speaking.

Another very good reason for making this comparison is that Professor André Raynauld in his book, *Croissance et structure économiques de la province de Québec*<sup>1</sup>, has already set out the relevant facts. Very briefly, Professor Raynauld shows that for about as far back in time as available statistics permit us to go, income in Quebec has been below that of Ontario, and also below the Canadian average. His figures are reproduced in Table II.2 with the addition of figures for the period 1959 to 1964.

This table suggests that there is a slight tendency for Quebec to catch up to Ontario but it is not obvious that the gap between Quebec and the Canadian average is narrowing. It is the similarity of growth rates and the consistency of the gap in productivity and income that catch the eye, rather than the changes in the relative positions of Quebec and Ontario or of Quebec and Canada.

Table II.2  
Relative earnings of Quebec and Ontario, and of Quebec and Canada

	Quebec as percentage of Ontario	Quebec as percentage of Canada
Personal income per person		
1926-31	74.25	89.12
1935-39	71.86	90.15
1953-58	72.25	85.84
1959-64	74.15	86.86
Personal income per worker		
1935-39	77.99	93.32
1953-58	81.35	88.27
1959-64	82.10	89.23
Wages, salaries and other income per worker		
1935-39	79.26	96.33
1953-58	80.80	91.93
1959-64	82.25	93.22
Average hourly earnings in manufacturing		
1938-39	80.8	87.5
1955-57	84.0	90.2

The behaviour of relative wages in Ontario and Quebec is surprising because on theoretical grounds it has long been argued that so long as there is free trade between two regions, the prices paid to the factors of production, that is, to labour and capital, should tend to equalize even if the factors of production are not themselves free to move. In other words so long as Ontario and Quebec can exchange goods freely with each other and can exchange goods with the rest of the world on equal terms, we should expect that in time wage rates in the two provinces would tend to become equal. This tendency would be strongly reinforced of course by the freedom of labour to move to the regions in which there was the highest rate of pay.

Without bothering with the more general and, in a sense, more theoretical, case, we can quite easily see why wage rates in Ontario and Quebec should tend to equality *so long as the average worker in Quebec is as productive as the average worker in Ontario*, and so long as the distribution of skills and abilities is approximately the same in the two provinces.

The importance of the assumption that the labour force in the two provinces is similar cannot be too strongly stressed. Income is absolutely dependent on productivity, which is simply to say that the

goods and services available for distribution to workers, including managers cannot possibly be greater than the goods and services which the workers themselves produce. If workers in Quebec or Newfoundland or any other province are less productive, their wages must inevitably be less. Factor price equalization (here the equality of wage rates) is likely to come about only if the factors—such as the workers being equally productive—are indeed the same.

Let us suppose that throughout our history all Quebec workers were just as productive as workers in Ontario but that, as we know, wage rates were lower in Quebec. Could this condition persist? A moment's reflection would indicate that it could not. Suppose two competing manufacturing plants, one in Ontario and one in Quebec, sold the same product in a national or an international market. The market price of the product from the two plants would have to be the same, and, depending on the location of the market in relation to the plant (that is, depending on the relative transportation charges), the price back at the plant would be nearly so. Since there is a single capital market in Canada, the terms on which money can be obtained would be the same, and there is no reason to imagine that available technology would be any different in the two cases. Nor would raw material prices or power or energy costs be very different. In short, apart from the difference in wages which we have assumed, all other costs should be about the same. If under these circumstances, however, wage rates were 10 per cent lower in Quebec, the Quebec plant would initially be more profitable in absolute terms by an amount equal to 10 per cent of the wage bill. Such an amount of additional profits would of course make the Quebec location much more attractive than the location in Ontario.<sup>2</sup>

Over time, therefore, new plants would tend to be located in Quebec rather than in Ontario, and in response to normal market growth, the established Quebec plants would expand well before those in Ontario. Under the circumstances we have assumed, manufacturing in Quebec should grow considerably faster than in Ontario, and the additional demand for Quebec labour should in time bring Quebec wages up to the Ontario level at which point there would be no incentive to shift manufacturing activity to Quebec.

As Professor Raynauld has already discovered, industrial growth in Quebec has not been significantly higher than that in Ontario, and as we can see from the previous table, wages have not equalized. Professor Raynauld examines five factors which might explain the failure of wages in Quebec to be as high as those in Ontario: population growth, technology, scale of operations, competition in the labour market, and unionism. Without going into these matters as deeply as does Professor Raynauld, one could agree that more rapid population growth in Quebec, inferior technology, smaller scale of operations, less competition for labour, or fewer or weaker unions, might very well have a depressing effect on wages in Quebec, and any one of these factors might explain why, initially at least, wages in Quebec would



be lower than those in Ontario, even when labour productivity in the two regions was the same. However, none of these factors should be able to prevent the economic forces described above from accelerating the economic growth of Quebec and from bringing wage rates in Ontario and Quebec into line. Moreover, since the war at least, the population of Quebec has not grown faster than that of Ontario. The same technological know-how or effective knowledge is available to investors whether they locate in Ontario or Quebec; and even if originally Ontario plants were bigger than those in Quebec and had therefore advantages of larger scale, once entrepreneurs realized that with the same equipment Quebec workers were just as productive as, but less expensive than their colleagues in Ontario, they would be led to build new big plants in Quebec rather than in Ontario, and they would have the incentive to enlarge the Quebec rather than the Ontario plant. Finally, even if Quebec unions were weaker or less militant than those in Ontario, one would expect this to be yet another factor encouraging the movement of manufacturing activity to Quebec. Not only would wages be lower, but also with weaker unions managers would find it easier to reduce costs by introducing changes, new technology and so on.

Incidentally even if there were evidence that strong unions in some industries in Quebec had succeeded in narrowing the gap in wages between the two provinces, this evidence would not be inconsistent with our hypothesis that training and education, not unionization, explain overall productivity and wage rates.

If some Quebec unions succeeded in obtaining the Ontario wage scale, the management in these unionized industries should be more successful over time in attracting the relatively scarce supply of better-educated workers in Quebec. These better-educated workers would in turn be more productive and earn the higher wages paid by that industry. Of course the implication of raising the productivity and educational level of the unionized industries is that the average productivity and educational level of other industries would be correspondingly lowered. Unions are not likely to change the total "stock" or accumulation of education in a province. On the other hand if unions raised wages without raising productivity in a few Quebec industries, such industries would simply shift over time to a region where education and productivity were higher but wages the same.

The same sort of reasoning could account for Professor Raynauld's observation that as the size of the plant increases, the difference in productivity between Ontario and Quebec tends to narrow. Large plants probably find it easier to attract better educated people (especially if they pay more money) than do small plants.

It must be allowed that the productivity of the total labour force may reflect the education and productivity of managers rather than of workers. The difference in income levels between Ontario and Quebec therefore might be attributed to differences in managerial competence. This is a hypothesis which requires further study and about which

little can be said at this time. However, it may be observed that national and international companies are relatively free to move their managers from city to city and, in time, one would expect corporations to move competent managers to locations where the gains were greatest. Given low wages and average worker productivity in Quebec, one would expect large companies to make sure that they supplied their Quebec plants with at least average management so that the full profit potential in Quebec could be exploited. Such a common-sense policy would again make Quebec an attractive place to invest (provided managers of average competence could be supplied) and once again growth in Quebec should outpace growth in Ontario.

In brief, it is not at all difficult to accept the fact that there are a number of plausible arguments which might explain why in 1867 or 1926, say, wage rates in Quebec might be below those in Ontario. It is very difficult, however, to see why the powerful economic pull of lower wage costs per unit of output would not attract industrial activity to Quebec at a sufficient rate to produce a rate of growth higher than that of Ontario. Within a human generation (which means several generations of capital) one would expect a rational allocation of investment to produce equality of wage rates between two such similar free-trading neighbours.

The failure of incomes in Ontario and Quebec to become equal may be explained in one of three general ways. In the first place it might be argued that for any one of a number of reasons labour in Quebec is not as productive as labour in Ontario; that is to say, we are not dealing with exactly the same factor of production when we compare the average member of the work force in Ontario with his counterpart in Quebec. We shall return to this point shortly. The second possibility is that the work forces in Ontario and Quebec are equally productive but the managers may perceive imaginary differences and therefore pay less to Quebec workers. In other words the management class in Quebec may hold prejudiced, or at any rate inaccurate, views about the productivity of the Quebec work force. The third possibility is that while managers in Quebec know that Quebec workers are as productive as those in Ontario, they have conspired to pay lower wages in that province.

The last point is perhaps the easiest to deal with. In this regard we must remember that while wages and salaries in Quebec are below those in Ontario, they are higher than those in the Maritimes. To explain lower wages in Quebec by an ethnic conspiracy in which the managing Anglo-Saxons conspired against the French Canadians would invite the conclusion that the white Anglo-Saxon Protestants of the Maritimes and the Prairies are also the victims of a similar conspiracy. Only a fairly excited regionalist would seriously give a second thought to such a theory, but in any event we should point out that even if the will existed to establish such a conspiracy by one group or one province, it simply would not work. If productivity in Quebec were in fact equal to that in Ontario, while wages were lower, it would follow that profits in Quebec would be higher than the

profits of those companies located in Ontario. Therefore new firms or old firms planning to expand, would prefer Quebec locations to those in Ontario. It would also follow that with respect to investment, economic growth and the demand for labour, Quebec would soon outstrip Ontario, and the increased demand for labour in Quebec would produce higher wages in that province. If the conspiracy were to work, therefore, businessmen would have to have some machinery for preventing each other from taking advantage of a favourable Quebec location. Investment in Quebec would have to be rationed among the conspirators, and the right to locate or expand in Quebec would become a valuable asset.

The conspiracy indeed would have to include French Canadian businessmen so that they would not expand at the expense of English Canadian businessmen or foreign businessmen who are either in Quebec or are in a position to invest in that province. This argument, however, has been pursued long enough to demonstrate that a conscious business policy of ethnic exploitation of the workers of any one region or province is exceedingly unlikely.

While we can rule out a conscious and collective conspiracy, we cannot of course rule out the possibility that individuals, perhaps even a large number of individuals, are prejudiced or have erroneous views about the productivity of the Quebec labour force. Let us consider this matter further.

If the work forces in Ontario and Quebec were in fact equally productive, while in the minds of the managers (at least the English-speaking managers) the French Canadian labour force was considered less productive, it is possible to imagine that the managers would try to pay French Canadian workers lower wages. Let us suppose that because of a temporary excess of supply this policy could be pursued and that, as in the previous case, average wage rates in Quebec were below those in Ontario. As before, Quebec would become known as a more profitable place to locate than Ontario, even though initially managers might be at a loss to explain why. In any event Quebec industry would be rewarded, and in time the demand for labour in Quebec would increase and wages would tend to rise towards the Ontario level. But on the basis of this simple analysis it is hard to imagine that such a widespread misconception concerning productivity could exist year after year, especially since people at the management level tend to be quite mobile between provinces, and on the basis of their own experience would correct any such misconception.

The reason we have raised the question of prejudice is not because we think there is no prejudice in Canada. Such an assumption would be absurd. It is thought, however, that prejudice in the form of a widely-held misconception about productivity could not be the main explanation of the persistent tendency for the work force in Quebec to continue to earn less than the work force in Ontario. It is necessary, therefore, to examine the proposition that the labour forces in the two provinces are not in fact equally productive.

It is our hypothesis that Quebec labour is not generally as productive as labour in Ontario and that the main explanation is to be found in the quantitative and perhaps also in the qualitative differences in education in the two provinces. While the main emphasis will be on education, it must of course be recognized that labour productivity may be affected by other factors. One individual may be more effective or more productive than another for a number of reasons. In the first place he may have higher native intelligence. While this factor may be quite important in explaining the relative achievement of any two individuals, it is not likely to explain the difference between two large groups of people with such a similar racial background as those in Ontario and Quebec.

Another possible explanation is that there are cultural differences between French- and English-speaking Canadians which may affect their attitudes to work. These attitudes may, in turn, affect the amount of effort that workers are willing to put into their jobs, and their willingness to cooperate with their fellow workers and their managers.

A study by G. A. Auclair and W. H. Read<sup>3</sup> has established that cultural differences do exist between French- and English-speaking managers. Moreover, since these differences exist at upper, middle, and lower management levels, and since the differences generally seem to increase as one comes down the managerial hierarchy, one might assume by extrapolation that these differences also exist in the labour force. The existence of these cultural differences would tend to be confirmed by the Auclair-Read analysis of French- and English-speaking commerce students. Though not yet in management, the students exhibited statistically significant differences in certain key values and attitudes.

From the Auclair-Read study, then, we can safely presume that there are important differences between the French- and English-speaking Canadian labour forces. We can also surmise that, in general, the cultural differences identified would go some way towards explaining the lower productivity and income of French-speaking Canadians. English-speaking Canadians appear to rank economic goals higher than their French-speaking colleagues do, and French Canadians appear to be burdened with a greater sense of conflict between their roles as members of the labour force<sup>4</sup> and their roles as fathers, citizens, and members of an ethnic group. Finally, the French Canadian is less "theory Y" and more "theory X" oriented than his English Canadian colleague.<sup>5</sup> It is generally agreed that a theory X "authoritarian" climate is less efficient and less productive than is the more modern theory Y "permissive" orientation towards human motivations and capabilities. In the future, behavioural and social scientists will undoubtedly cooperate in undertaking broader research projects which will embrace more of the explanatory variables within a single research design. Then we will know more about the relative importance of cultural, educational, economic, and other considerations in explaining the economic growth of countries and people.

For the moment it should be noted that the cultural differences established by the Auclair-Read study are statistically significant, but we do not, as yet, know the impact of these differences on productivity. The range of differences within each cultural group is very much wider than is the spread between the means of the two groups. In other words, any given individual is almost, but not quite, as likely to find himself in disagreement with a member of his own ethnic group as with a member of the other ethnic group.

Indeed, it would be surprising if it were otherwise. After all, Canada has survived for 100 years and the two major ethnic groups share a cultural heritage which, from the point of view of history, literature, politics, religion, and language, overlaps more than it diverges. Political ideology might be seen as a source of cultural divergence in some countries. However, French- and English-speaking students, citizens, and workers share about equally in the western heritage of Marx, Mill, and Voltaire, and have shared (or suffered) similar political institutions and politicians.

Religion is of course an important source of values and attitudes and much has been written about the possible connection between religion and economic progress. Since Max Weber's *The Protestant Ethic and the Spirit of Capitalism*, written just after the turn of the century, many historians and anthropologists have examined the relationships between religion on the one hand and growth, motivation and productivity on the other. There are some *a priori* and empirical grounds for believing that at least a weak connection between productivity and religion exists, or at least that it used to exist. In western countries, however, one must almost assume that the rules of growth and/or religion have been rewritten or reconciled. In any event we know that at the present time Catholic Italy is growing faster than Protestant England, and that the rate of economic growth in Buddhist Japan exceeds the sum of the growth rates in Italy and the United Kingdom put together. It would be surprising, therefore, if the religious differences that exist between Quebec and Ontario accounted for a significant part of the difference in productivity in these two regions.

There are many other cultural and social factors that have been cited at various times to explain the problems of underdeveloped countries. For example, we know that willingness to take risks (itself related to productivity) is positively related to income. We also know that extended family systems, that is, financial responsibility for all one's relatives, can have a negative effect on incentive. Why work harder for more income if the reward is to have more hungry in-laws move in? However, while such considerations may be important in making comparisons between the United States and India, it is unlikely that they occupy a central role in explaining regional differences within North America.

In the interviews for this study it was suggested that the minority position of the French Canadians makes them defensive, conservative

and inward-looking. The relationship of these attributes to motivation is not clear but in any event there is some evidence that the non-French, non-Anglo-Saxon Canadians, who are an even weaker minority, numerically, have achieved relatively high incomes and are well represented in management. There is also evidence that French Canadians outside Quebec have done relatively well.

The full evaluation of the relationship between these cultural factors and productivity must be left to others. Here we intend to show that education and productivity are very strongly linked. Indeed, proving that such a link exists is not the main problem. The main problem comes in establishing the direction of the causal relationship: does more education cause higher productivity or vice versa? No one could possibly deny that people with more education are more productive and have higher incomes than those with less, but by itself the correlation which describes such a relationship would neither establish the direction of the cause nor prove that there is a direct causal relationship at all, since both conditions might be a function of some third factor. Clearly, men who buy long belts tend to be fat but this does not prove that the purchase of long belts causes the stomach muscles to sag. Parents who have girl babies also tend to have boy babies but this does not prove that girl babies cause boy babies or vice versa.

The problem has of course been considered by those statisticians, educationalists and economists who have undertaken research on the relationship between education and productivity. All recognize that ideally what is needed is a multivariable analysis that fully considers family, ability, personality, and so on. So far we do not have the definitive empirical relationship, but there now exist quite a number of studies which do take into account one or more of the other non-educational factors.

One such study, by Dael Wolfle and Joseph G. Smith,<sup>6</sup> compared the earnings of college graduates and non-college graduates who, at the time of graduation from high school, appeared to have comparable academic records, intelligence (as measured by tests), and family backgrounds. While of course income varied positively with both family position and intelligence, the strongest relationship was between income and post-high school education. It was found that on average the student who went to university earned \$1,400 a year more than the one who did not. The difference was greater between highly intelligent pairs than between those pairs who were less gifted.

A similar study attempted to correct for environment, "connections" and heredity by examining pairs of brothers. Once again brothers with more education earned significantly more than those with less. After considering these and several other studies, Gary S. Becker in *Human Capital*<sup>7</sup> concluded:

Five independent adjustments for differential ability—adjustments that cover such diverse influences as rank in class, I.Q., father's education and occupation, personality, ability to

communicate, motivation, and family upbringing—all suggest that college education itself explains most of the unadjusted earnings differential between college and high school graduates. Although any one study is subject to many qualifications, the evidence provided by all taken together has to be given considerable weight. Consequently, it may be concluded that even after adjustment for differential ability, the private rate of return to a typical white, college male graduate would be considerable, say, certainly more than 10 per cent.

In placing the emphasis where we do on education, we can draw support from the work of a group of economists who have been attempting to explain increases in output per person. These economists, who include Solow,<sup>8</sup> Massell,<sup>9</sup> and Domar,<sup>10</sup> have been instrumental in shifting our emphasis from the more conventional lines of thought concerning growth and productivity.

In classical economics, the existence of technological change was recognized, but it was generally treated as an exogenous factor which, from time to time, shifted the production function. Basically, the output of a region grew by the application of more capital and more labour. The quality of the capital and the quality of the labour were often—for good analytical reasons—held constant.

Now we have been led to believe that this approach is basically wrong. The major explanation of the increase in output per worker in the United States cannot be attributed to the increase in capital. It must instead be attributed to the developments in a broad area of human activity embracing scale, and technological and administrative change. These changes turn out to be little more than the learning and teaching of ideas which are new to the individual, the group, and sometimes to all mankind. This learning and teaching is, of course, the very heart of education.

These studies then give strong support to the thesis that research (which is only a special case of learning and teaching) and education (of the more prosaic kind) deserve first place in explaining the relative growth in productivity of regions of approximately equal cultural backgrounds.

Another group of studies which are relevant to our inquiry have been made by such writers as Schultz,<sup>11</sup> Becker,<sup>12</sup> and Hansen.<sup>13</sup> These researchers have recognized the income-creating value of education, and since any expenditure that creates a stream of benefits in the future is by definition an investment, they have brought to bear on the subject the usual tools of analysis appropriate to investment decisions. In brief, they have undertaken studies designed to work out the productivity of education as a rate of return on the expenditure on education itself. As a result of these studies it has been found that expenditure on education earns a substantial revenue and from the point of view of either the individual or society is a very sound investment. Professor W. L. Hansen, for example, finds



that the rate of return on education works out to something like 12 per cent for society and 17 per cent for the individual.\*

All of these studies support our thesis that education, broadly conceived, is the most important variable in explaining differences in productivity among groups of individuals similar in cultural and racial background. For one reason or another, however, the studies so far cited have not reported their findings in such a way that they can be immediately applied to the problem at hand. An American study which is somewhat more useful for our purposes is that of H. P. Miller<sup>14</sup> which related census data on incomes and educational levels. From this study it can be shown that in the United States each additional year of education, in the range from eight to 16 years of schooling, is associated with an increase in income of approximately 12 per cent per annum. It may be noted that the correspondence of education and income is not uniform over the years. It makes some difference whether an additional year of schooling is added at the high school or university level and whether it involves the completion of a programme. (The statistics indicate that the increment of income associated with the final year of a high school or a university programme is considerably higher than the preceding or non-graduate years. That is to say, a high school drop-out does not receive the same benefit per year from the years he does devote to high school as does the high school graduate.) While the estimate derived from Miller's data is subject to many qualifications, it does give us at least the basis for an educated guess at what might happen to productivity in a similar country or region if the average level of education could be raised by one year.

Two important qualifications must be stressed concerning the foregoing analysis. The first concerns the quality of education. It is apparent, though perhaps difficult to prove statistically (and dangerous to prove politically), that the quality of education is not uniform across Canada. We shall have something to say on this matter later on. The second qualification brings us back to the subject of goals. In making the correlation we did between schooling and income, we came close to assuming that the purpose of education was to increase material well-being. We believe that this is, in fact, at least one of the principal goals of any educational system in Canada, though no self-respecting teacher would like to be called a servant of capitalism and affluence. Nor would he like to be blamed for the increasing misery of the proletariat. There are obviously other highly worthy educational goals which are not closely associated with earning an income and there are many other goals which, worthy or not, we have inherited from the past.

Some education is pure consumption. It is taken or given for the pleasure it affords the student or teacher (whose enjoyment may by no

\*The higher rate of return to the individual follows from the fact that neither he nor his family is called upon to pay the full cost of his schooling.



means be equal nor even of the same kind). Some part of education may be intended as a social, cultural or religious investment, and finally some part of any education in Canada, it appears, is an economic investment and is really intended to increase the student's economic competence. Since neither time nor education is a free good, either to the individual or to society, it follows that the more educational time and money are devoted to one set of goals, the less will be available for any other, and if, to overcome such a conflict, more resources are devoted to education fewer will be available for other purposes.

One is prompted to raise this issue because it is felt that in the past at least—if not in the present or in the future—there was a significant difference in goals between the educational systems of Ontario and Quebec.

Thoughts along these lines were prompted by a sentence from Willson Woodside's *The University Question*.<sup>15</sup> The last chapter, entitled "Quebec Is Different," begins: "Higher education in French-speaking Canada is very different from that in English-speaking Canada, but more because it is Roman Catholic education than because it is given in the French language. It has remained until very recent years gripped in the pattern of classical education developed in Catholic Europe just after the reformation. In the three centuries between the establishment of the first Jesuit college in Quebec in the early seventeenth century, until the end of the first World War, it changed hardly at all."

In order to present a more balanced view, perhaps it should also be pointed out that the pattern of classical education adopted in English monasteries and perpetuated at Oxford and Cambridge has had a long, lingering influence on McGill University and the University of Toronto, and through them, on the rest of Canada. The nationalizing and denationalizing of the monasteries and the passage of the B.N.A. Act accomplished surprisingly little by way of curriculum reform. One has but to compare the history of business education in English Canada with that in the United States to see how much English Canada has remained "gripped in the pattern of classical education." It must be added by way of further qualification that the first and for a very long time, the most businesslike, business school in Canada was l'École des hautes études commerciales of Montreal.

As a final qualification it would seem that if a new edition of Woodside's book were being prepared today, the chapter might more properly be headed "Quebec Was Different." In any event, however, the change which is obviously taking place in Quebec in current education will take many years before it alters significantly the stock of education, that is, the total accumulation of knowledge and training of the people.

The relative position of Quebec is further complicated by the fact that other regions in North America are not standing still in the matter of education either. It may indeed take a long time before

the stock of education, as judged by the needs of a modern, changing society, is comparable to that of, say, California, where at the present time approximately 40 per cent of the relevant age group is enrolled in university, and one in six of this university population is enrolled in a programme specifically designed to prepare the student for a position in business management.

One must agree with Willson Woodside, however, that institutions cannot be classified on the basis of whether they use French or English. In the area of business education, the non-clerical *École des hautes études commerciales* has its counterpart in the University of Western Ontario. The University of Laval programme, on the other hand, has more closely resembled the programme at St. Dunstan's or St. Francis Xavier, both English-speaking universities, and there is certainly a greater difference between St. Dunstan's and Western Ontario than there is between *l'École des hautes études commerciales* and Western Ontario.

A comparison of personal experiences by participants in this study, leads to the supposition that the same kind of differences and similarities would be found if we were to compare the primary and high school programmes in Quebec with Protestant (or non-sectarian) and Catholic programmes elsewhere. The differences that do exist seem to be based more on religious than ethnic grounds, or, more to the point, the differences are mainly a function of the extent to which education has remained in the grip of the classical ideology.

It is obviously difficult to prove or disprove Mr. Woodside's opinion by empirical research. Additional insight might be gained, however, from a curriculum survey (not yet published) which was conducted recently for the Association of Canadian Schools of Business by the author of this study. This survey seems to support Mr. Woodside's hypothesis. In one instance it was calculated that for a specific non-Quebec but Catholic commerce programme, almost 25 per cent of the lectures are devoted to what could be called religious instruction, or to courses closely attuned to church dogma. In a four-year programme this amounts to the equivalent of one full year of study.<sup>16</sup>

A second piece of empirical evidence can be found in a report dealing with the entrance examinations written for entry to post-graduate business programmes. The report to which reference is being made is unfortunately confidential and cannot be quoted directly; it has been examined carefully, however, and it clearly indicates that students coming from church-controlled universities,\* or universities which graduate students after only 15 years of schooling (programmes

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\*"Church" rather than "Catholic" schools because the above generalization seems to apply to all church institutions. It so happens that most of the universities controlled by religious bodies are in fact Catholic.

that require either 11 years of primary education and four of university, or 12 primary and three university) have below-average scores. From the below-average performance of graduates, one might easily conclude that religious education absorbs about one year of a student's time; or, to put the matter differently, with the kind of programme typical of a church-controlled university, a student may require a year longer than a student of a non-church university, to make an equivalent investment in knowledge that increases productivity. What this means is that a commerce major from a church-controlled university may have to complete all or part of a Master's degree to be in the same economic position as a Baccalaureate holder from a non-church school.

The evidence suggests that this-world and next-world instruction is competitive rather than complementary at least as far as material progress in this world is concerned. Champions of classical education may object to this conclusion, yet it is difficult to provide any other hypothesis that will fit the facts. Indeed, this conclusion seems to be reinforced by experience with classical and religious instruction and instructors.

There are many strands of thought in religious and classical education which tend to minimize the importance of and sometimes even to deplore material progress. Much, though by no means all, of this instruction is based on dogma, faith, memory, and authority rather than on problem-solving and research. Physical, natural and social sciences, on the other hand, are more likely to condition the student to accept and welcome change. Educational programmes which stress antiquity, faith, "eternal values" and the acceptance of authority may be what a particular society or an ethnic group wants, but it will not lead naturally and inevitably to the kind of knowledge or to the mental attitude which produces high economic motivation, innovators, or entrepreneurs.

Of course, even if we had proven that instruction with a classical or religious orientation reduced one's material advancement in this world, this would most certainly not prove that such instruction was undesirable. It does, however, suggest that a choice may have to be made. Latin scholars, historians, and philosophers should not expect to be as rich as engineers, pharmacists, and M.B.A.'s. (This does not mean, of course, that the former will need to feel, or that they will feel, at all inferior to the latter.) We would hardly expect an individual who had taken the vow of poverty to be as rich as an individual who had not. It is a short step from this logic to the proposition that if an ethnic group collectively decided to condition its children to place a high value on non-material things and a low value on goods and services we would not expect that group to be as rich as another group with a different orientation.

The problem is, one suspects, that the people who are conditioned to prefer a classical education are not told that they are, in effect, taking the vow of relative poverty. However, once a connection

between a classical education and a low income is established or suspected, consumers may react if alternative choices are available. How else would one explain the decline of the classical arts degree? Or how else can one explain the rapidity with which the classical colleges are being phased out in Quebec? To be wise after the fact one even suspects that the "leaders" who for so long feared to change the educational system were followers rather than leaders of public opinion.

In this chapter, we have been concerned with productivity and income in Quebec, especially as they compare with the bench-mark of Ontario. While we have not so far been concerned explicitly with either corporate practices and policies or ethnicity, these two factors are, of course, basic to our analysis. Wages and salaries are determined in an industrial and commercial marketplace dominated by corporate firms. It is important, therefore, to know whether there is any reason to suspect that firms operating in Quebec obey a different set of rules than they do elsewhere, especially in determining wage and salary policy.

As viewed on a "macro" or province-wide basis, it would not seem that widespread ethnic discrimination with regard to wage and salary administration would work. That is to say, it seems on *a priori* grounds that any conscious or unconscious tendency to pay any class of workers less than they produce (relative to other, competing classes of workers) would simply increase the profitability of expanding the employment of such workers or of establishing plants in locations where such workers could be hired. As we have seen, this has not happened and we must conclude that ethnicity could not be a major factor in determining corporate practices and policies concerning wages. More precisely, if a wage policy existed which involved significant ethnic discrimination (as defined above) it would be "corrected" by investment and plant location policies which would drive up the price of those labourers whose wages were below their productivity.

On the contrary, we shall see that there is good evidence to indicate that the observed differences in income in Ontario and Quebec can best be explained by differences in productivity, which, in turn, reflects more than any other single factor the quantity and quality, or, at least, the quantity and kind, of training and education in the two provinces.

#### *A. Introduction*

The previous chapter was concerned with productivity of the total work force in Ontario and Quebec. The analysis suggested, though it did not prove, that the difference in the educational levels of the work forces in the two provinces was probably the main reason for the persistently higher level of income in Ontario.

Because of lack of better data, all of the investigators whose studies were referred to in the previous chapter had to match income against years of education. The investigators knew full well that some years of education would increase productivity significantly while others might have a negative effect. There is no doubt that, for the purpose of establishing a link between average education and average income, the analyses cited were statistically adequate. For our purpose, however, where it is suspected that two "competing" educational systems may themselves provide part of the explanation for observed income differences, a more refined analysis is demanded.

In trying to come to grips with this problem, it was argued that it might be possible to make more precise measurements and therefore draw more valid conclusions if, instead of working with the total labour force, we could single out groups which are educationally more similar. The groups, it seemed, which were apt to be most alike would be those in professions taught at the university level. In some cases, minimum standards are imposed by professional bodies, and in all cases there is a good deal of feedback to the university departments from conferences, professional journals, and students who go on to postgraduate work.

If our hypothesis that the amount, kind, and quality of education is the major explanation of why English-speaking Canadians earn more than French-speaking Canadians, it would seem likely that if we could compare the income of a French-speaking group with the income of an English-speaking group which had had the same education, we would

find most of the income gap closed. The remaining gap, if any, could then be attributed to other explanatory factors, such as unilingualism, the cultural differences referred to in the previous chapter, prejudice, lower mobility, and so on. It was not possible to find data on such groups, or even to imagine that such groups existed in a statistically identifiable form. However, it was thought that, as between different ethnic groups, the professionals, such as engineers, would be most similar from the educational point of view and least "gripped in the pattern of classical education." True, the typical French-speaking engineer and English-speaking engineer would have come through quite different educational systems in public and high school, but, at least from university entrance on, their educational experience should be quite similar. In this chapter, therefore, we attempt to deal with the relationship between income and the two linguistic groups in the professions of engineering, architecture, and science.

The reason for choosing these particular vocations is simply that data were available. The empirical base for this chapter is a survey conducted by the federal Department of Labour in the years 1962, 1963, and 1964, which was sent out each year to about one-third of the engineers, architects and scientists in the province of Quebec. The survey also covered other provinces and other years. For the most part our analysis is confined to the 1962-4 survey results for Quebec but where the statistics were applicable the Ontario survey was also examined to see the relative positions of the graduates of French-language and other universities who were working in that province.

This questionnaire covered functions performed, including management (and thereby provided much of the basic data for the next chapter), educational level, university in which the undergraduate degree was obtained, and salary. The survey was not designed specifically with either ethnicity or corporate practices and policies in mind; if it had been, it could have been even more relevant to the problem at hand. Yet the information is useful, and we are indeed very fortunate to have it. Most of the respondents were employed in industry or by industry—in the case of consultants—and their income achievement in aggregate must be a reflection of corporate practices and policies.

The main shortcoming of the survey from our particular point of view is that it did not ask the respondent to indicate either language or ethnic origin. However, it did ask for the university in which the respondent studied for his first degree. Thus it seemed reasonable to assume that if we considered the graduates of the four French-language universities, the University of Montreal, Laval, Sherbrooke and l'École des beaux arts, we would have a group which would be very close to being 100 per cent French-speaking. Graduates of all other universities in Canada and elsewhere in the world were lumped together in a category modestly designated as "other." It is realized of course that there are many French-speaking Canadians in bilingual universities such as Ottawa, and in English-speaking

universities such as McGill. It appeared, however, that the proportion of Canadians of French language and culture in these other universities would be small enough that their effect on the total analysis could not be too great.

In addition to its failure to identify ethnicity or language there are other ways in which the questionnaire falls short of providing us with two really comparable groups. It would be desirable to select groups with about the same business-related values and about the same motivation to succeed in business. It would be desirable to compare two otherwise similar groups of unilingual English-speaking and unilingual French-speaking Canadians. It would also be most interesting to compare otherwise similar French and English bilingual groups with each other and with unilingual groups.

It seems fairly certain that, in being forced to take the graduates of the French-language universities as the representatives of French-speaking Canadians, the comparison has been biased by excluding all the fluently bilingual professionals who graduated from bilingual or English-language universities. It is highly probable that our French-language group includes a larger percentage of unilingual professionals than would exist in the total population.

The seriousness of this bias depends of course on the disadvantage of unilingualism. Certainly it must be postulated that, other things being equal, knowledge of a second language is economically useful. Indeed, other things being equal, a knowledge of computer language or behavioural science or marketing or any other relevant skill or knowledge is useful. Common sense tells us that knowledge of English is particularly useful in North America and if this needs to be stressed it may be noted that Professor R. N. Morrison in his study, *Corporate Adaptability to Bilingualism and Biculturalism*,<sup>1</sup> found that in French Canadian owned and operated firms a knowledge of English is demanded for a higher percentage of executives than is the case for American or English Canadian owned firms.

Even though the comparisons made possible by the Department of Labour survey are far from ideal, they were still the best available at the time this research was undertaken.

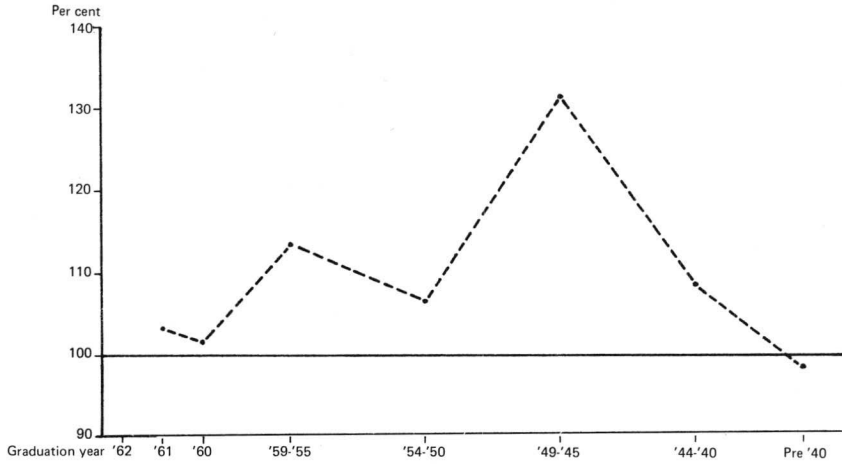
### *B. Architects*

The first professional group in our analysis is that of architects. The sample is made up of 208 individuals of whom 101 are graduates of the two French-language universities that grant degrees in architecture—the University of Montreal and Laval—and 107 are graduates from all other universities. Figure III.1 shows the salaries or earnings of architects by years of graduation for the French-language group and all others, and the average salary of French-speaking graduates expressed as a percentage of the average salary of all graduates.

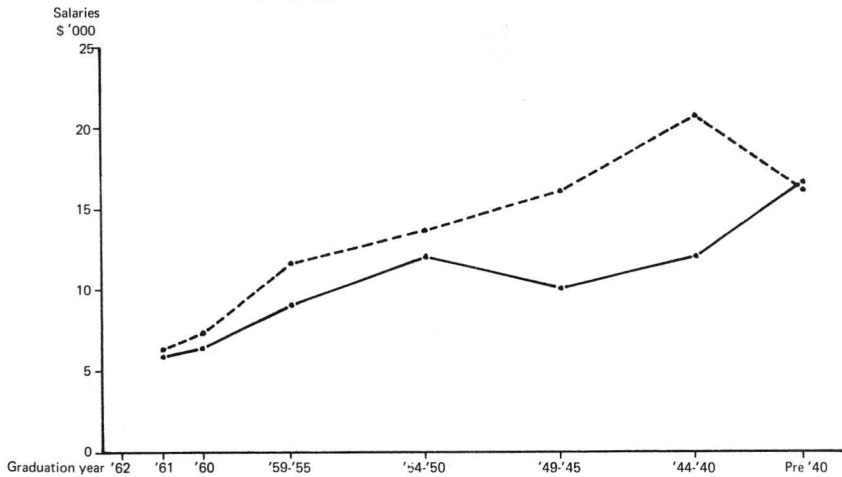
Figure III.1

Professional achievement of university graduates in Quebec, Bachelor level: Architecture

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



Number:								
French	-	6	5	28	17	7	9	29
Other	-	4	1	29	30	13	2	28
Salary (\$):								
French	-	6,500	7,300	11,732	13,441	16,000	20,777	16,034
Other	-	6,000	6,500	8,948	12,100	10,115	12,000	16,571
Salary as % of average:								
French	-	103.2	101.9	113.7	106.8	131.4	108.3	98.4
Other	-	95.2	90.7	86.8	96.2	83.1	62.6	101.7



In this as in all subsequent figures in this chapter, dealing with professional achievement, the data refer to professionals who are neither teachers nor managers.

In interpreting this and other similar charts which will present the data for scientists and engineers, one must consider the number of graduates indicated for each class or each span of years. The data presented constitute a sample of about 20 per cent of the engineers, architects and scientists in Quebec, but care must be taken not to put too much weight on the statistics for any particular graduation class if the number in it is small.

We can see that the French Canadian architects in this sample compare very favourably with all others practising in the province of Quebec. Indeed, save for those who graduated before 1940, who lagged by only 2.6 per cent, the French Canadians have incomes averaging a little better than \$2,000 *more* than graduates of other universities. For this profession at least one must conclude that the education and productivity of the average French-speaking architect are superior to that of the graduate of other universities, or that there is some discrimination at work which operates in favour of French Canadians. Certainly it would be very hard to maintain that in this profession the French-speaking Canadian is at any disadvantage. This suggests that if there is any tendency for some large national or foreign firms to seek out non-French-speaking architects as employees or consultants, this tendency is more than offset by firms with just the opposite bias.

In our sample there were only eight architects with higher degrees (all Master's) of whom only one was a French Canadian. No conclusion therefore is warranted concerning the performance of those beyond the Bachelor level.

A somewhat different explanation is suggested by a study of John Porter and P. C. Pineo in which it is reported that in the evaluation of occupations the "widest discrepancy in rank among the professional occupations was 'architect,' which the French ranked almost ten points higher than did the English."<sup>2</sup>

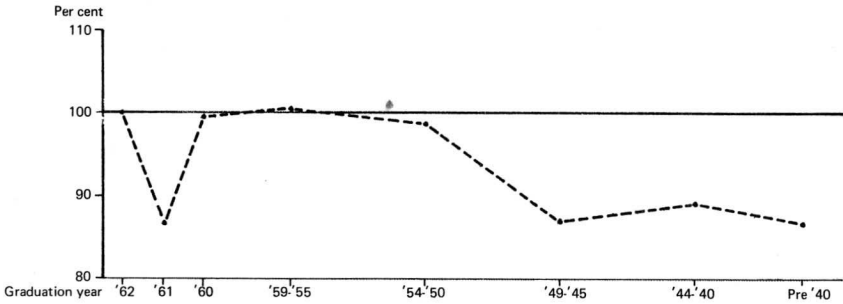
One could reason that in time the greater prestige of the architect among French-speaking Canadians would attract somewhat better young people into the profession and that their greater ability would be reflected in greater productivity and income. On the other hand, one would wonder why architecture should have acquired such prestige and one might expect that high income might be at least part of the explanation. In other words, high prestige and high incomes may have a joint and reinforcing effect on recruitment. Still it is hard to imagine that prestige and selection can be the only explanation for the higher incomes of French-speaking architects.

English-speaking architects with whom these research findings were discussed, were quick to state that the two French-language schools of architecture in Quebec are, in fact, excellent. The director at

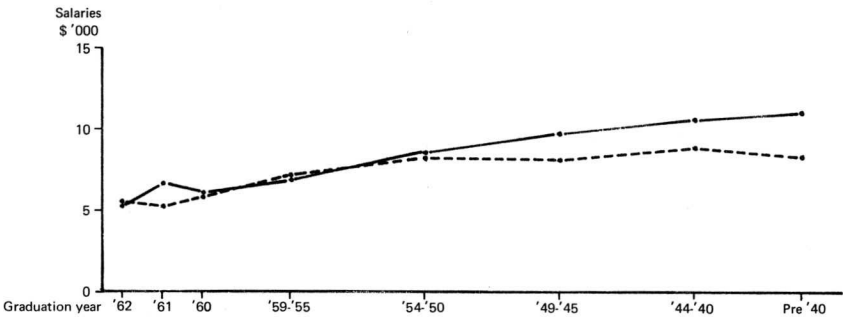
Figure III.2

Professional achievement of university graduates in Quebec, Bachelor level: All science

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



Number:									
French	11	18	25	154	114	84	63	130	
Other	1	30	49	219	230	153	70	104	
Salary (\$):									
French	5,590	5,277	5,940	7,103	8,254	7,928	8,674	8,319	
Other	5,500	6,600	5,989	7,061	8,447	9,767	10,664	11,221	
Salary as % of average:									
French	100.1	86.5	99.5	100.3	98.5	87.0	89.2	86.6	
Other	98.5	108.1	100.3	99.8	100.8	107.1	109.7	116.8	

one English-language university stated that the two French-language schools were, in his opinion, much above average, and he was not surprised to learn that the incomes of their graduates were also above average. In other words, here is one area where the quality of "a year of education" is admittedly high for French-speaking Canadians, perhaps higher than it is for all "others."

It is only candid to report also that some of the interviewers expressed the opinion that provincial and municipal bodies have considerable direct and indirect influence on the choice of architects for projects owned or controlled by the government. This influence, it is reported, is used to protect the interests of French-speaking Canadians.

### *C. Science Graduates*

The survey of scientists in Quebec, which provides the basis for this analysis, gives us information on 1,455 people considered to be at the Bachelor level of education. Of these, 599 came from the French-language universities and 856 from all others. Figure III.2 shows the incomes of all the science graduates in our sample.

At first glance, it appears that the experience of the French-speaking scientist contrasts sharply with that of the architect. Whereas the architects from the French-language universities generally have a significant advantage over all others, the science graduates of the same institutions have a decided income disadvantage. Those who left their universities before 1950 are at a salary disadvantage ranging from 11 to almost 15 per cent. The more recent graduates on the other hand have done very much better. Indeed, apart from the anomaly of 1961 (when both the French and other graduates seemed to be out of line not only with each other, but also with their fellow graduates in the classes on either side), the French-language and other science graduates seemed to be on about a par.

The very different experience of the architects and the scientists permits two quite different interpretations. On the one hand it may be argued that the French-language architectural schools have been, and continue to be, of considerably better quality than the average of all others and that by the same token the science facilities in the same universities are, or rather were, of about 10 per cent lower quality. According to this interpretation of the data, the difference in the experience of the graduates of these two professions might be attributed to the quality of the professional courses themselves.

A second hypothesis is that the French-speaking scientist is more likely to work directly for an English-language firm and therefore, especially as he gets older, he becomes more vulnerable to discrimination. Furthermore, if he has a language disability, it will likely become a more serious disadvantage in a large English company as he

grows older. While the French Canadian architect must also do a considerable amount of work for English-language firms, the provincial and local governments are more often the employer, and through their control of building permits, zoning laws and the like, they are able to protect (and perhaps overprotect) the interests of the French-Canadian professional.

It need hardly be added that these two theories, each of which might be supported by the two charts so far presented, have rather different policy implications, and it is important therefore to search for further evidence.

This search led to an inquiry behind the aggregate figures for scientists. Unlike architecture, which is a recognized, long-established profession with something approaching uniformity of qualifications imposed by the professional associations, building codes, and so on, science covers a multitude of areas in which, at the terminal Bachelor level at least, there is not the same machinery for insuring even an approximate uniformity of quality or content. It is quite possible therefore that the science graduates of the French-language universities do not have the same mix of skills and training as their colleagues coming from other institutions.

How different the two groups of science graduates in our study are can be seen from the analysis in the following table which shows the number and average salary of French and other pre-1940 graduates in each of the science categories for which we have information.

Table III.1

Number and average salary of French and other science majors graduating prior to 1940

Branch of science	French		Other	
	Number	Average salary	Number	Average salary
1. Biology			2	\$10,500
2. Mathematics			2	9,500
3. Geology			4	10,000
4. General science			16	11,300
5. Other science	1	\$40,000	3	9,200
6. Chemistry	13	13,300	42	11,300
7. Other courses	116	7,500	35	11,500
Total science	130		104	

It is readily apparent that the full explanation of why the pre-1940 graduates of French-language universities have not prospered must lie in the nature of the "other courses" and the suitability of these courses to today's needs. The 13 chemists and the one "other"

scientist in this age group have done very well; in fact their incomes happen to be above average.

Although the time and resources were lacking to go into this problem of educational quality in any depth, it was concluded that so far as the French-language universities are concerned, the "other courses," especially in the early years, were likely to have included the *cours scientifique* which until fairly recently was parallel to the *cours classique* and was not generally considered either in France or in other North American universities to be the equivalent of a full undergraduate university degree. The number of French Canadians in the group above does not permit us to be too dogmatic, but the evidence of Table III.1 suggests that it is the nature of the course rather than language group that determines professional achievement.

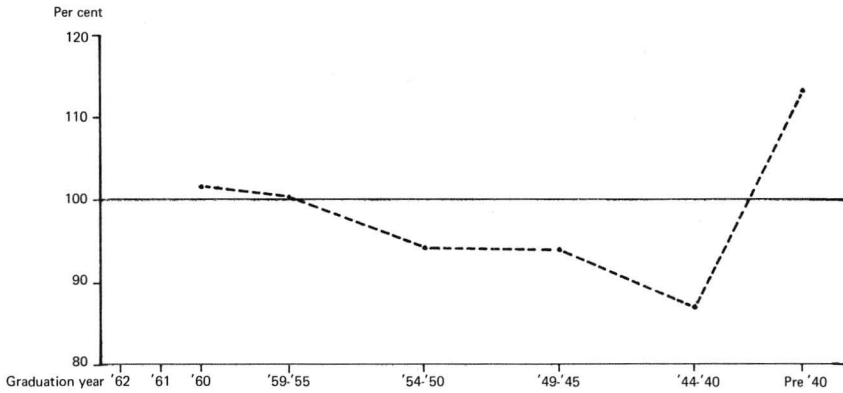
In searching for further evidence it was found that unfortunately the only science course reasonably similar in French-language and other universities with a sufficient sample to make a comparison meaningful, over time, is chemistry. Figure III.3 shows absolute and relative income performance of the French-speaking and other graduates. While the graduate in chemistry from a French-language university is at a disadvantage, the income handicap is slight—on average, 2 per cent.

Although "general science" would hardly constitute a homogeneous discipline, it is, apart from chemistry, the only other scientific designation in which we have a reasonable number of cases. Even so there are only 22 graduates from French-language universities in this category. The experience of the general science graduates from French-language and other universities is shown in Figure III.4. The pattern of relative incomes, it will be observed, is rather similar to that for chemistry graduates. The weighted income disadvantage, for what it is worth, is just over 4 per cent. But again it is more than likely that comparing general science in the French-language and other universities 10 or more years ago is rather like comparing apples and oranges.

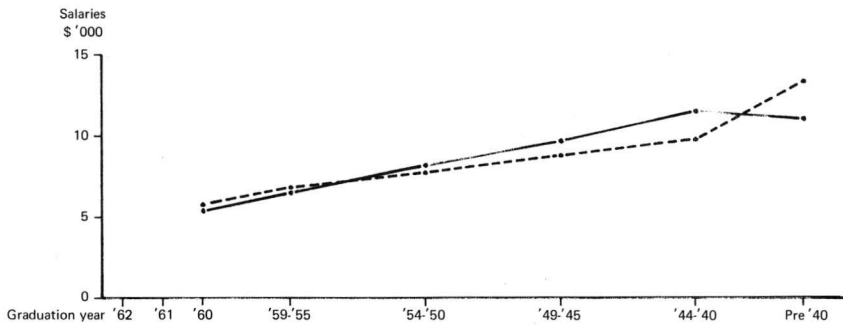
Table III.1, which shows the distribution by discipline of the pre-1940 science graduates of the French-language and other universities, made it apparent that comparable information is scanty for graduates from degree courses in science. In the sample, in addition to the 110 French Canadian graduates in chemistry and general science (shown in Figures III.3 and III.4) there were only 31 degree holders in mathematics and physics, biology, mathematics, geology and other science in graduation-year classes in which there were also graduates from other universities. It was possible to compare the overall income performance of only these 141 individuals with that of graduates of other universities in the same graduating class and science discipline. Individually of course comparisons between categories of discipline and graduating class are not statistically significant. For example, to be told that the two mathematics and physics graduates from a French-language university who graduated between 1955 and 1959

Figure III.3  
Professional achievement of university graduates in Quebec, Bachelor level: Chemistry

Salary of graduates of French-language universities as a percentage of average



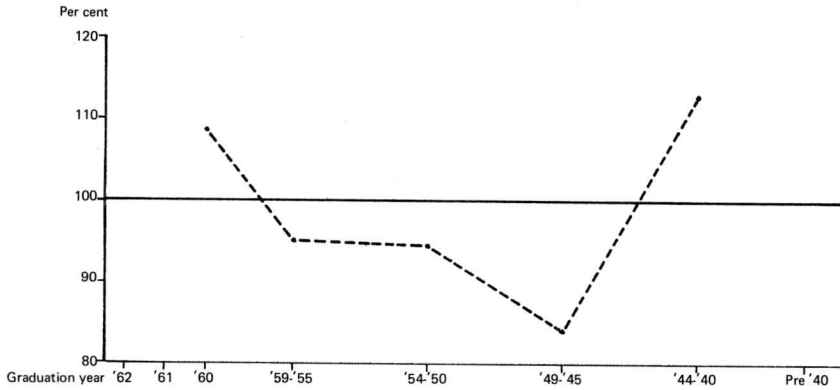
Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



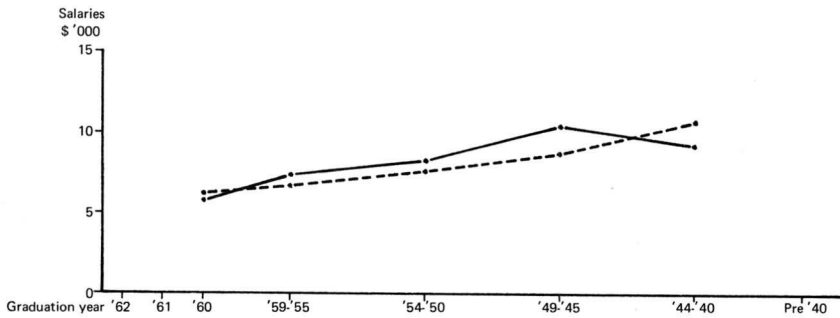
Number:								
French	1	-	6	24	15	19	10	13
Other	-	1	3	32	55	35	28	42
Salary (\$):								
French	5,500	-	5,833	6,958	7,833	8,815	9,800	13,346
Other	-	6,500	5,500	6,906	8,472	9,714	11,821	11,309
Salary as % of average:								
French	-	-	101.9	100.4	94.0	93.8	86.8	113.2
Other	-	-	96.1	99.7	101.6	103.4	104.7	95.9

Figure III.4  
Professional achievement of university graduates in Quebec, Bachelor level: General science

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities ———



Number:								
French	—	—	1	6	8	4	3	0
Other	—	28	37	112	83	47	9	16
Salary (\$):								
French	—	—	6,500	6,666	7,625	8,750	10,833	—
Other	—	6,571	5,986	7,035	8,150	10,553	9,166	11,343
Salary as % of average:								
French	—	—	108.3	95.0	94.1	84.1	113.0	—
Other	—	—	99.8	100.3	100.6	101.4	95.7	—

had the same average income as the four mathematics and physics majors who graduated from other universities in the same period does not prove very much. Collectively, however, the total experience of the French Canadian graduates is worth noting. It was found that the 141 French-speaking graduates for whom such comparisons were possible in the above categories (which include chemistry and general science shown in Figures III.3 and III.4) had incomes 1.67 per cent below those of graduates of other universities. In other words, a crude attempt to compare like with like reduces the apparent disadvantage of the French Canadian graduate from 5.5 per cent (which is the weighted average disadvantage apparent in Figure III.2) to 1.67 per cent. This would seem to indicate that the income disadvantage of the French Canadian scientist with a Bachelor's degree is not great in industry and that the apparent disadvantage shown in Figure III.2 is more a function of the nature and mix of university programmes than of ethnic origin.

It also confirms that the incidence of almost all of the income disadvantage of French Canadian science graduates is focused on those who are classified under "other courses." The 301 pre-1951 graduates who elected "other courses" are at an income disadvantage of well over 10 per cent vis-à-vis science graduates in the same age group who elected to take other programmes. For example, their experience is very different from that of their colleagues from the same French-language universities who elected chemistry or even general science.

The next test performed was an examination of the Ontario survey of the Department of Labour to determine the income experience of the graduates of the French-language universities who were working in that province. As it happens there were only 18 individuals doing professional, non-management, non-educational work in Ontario during the period of the survey. Their graduating class, professional category and average salary are shown in Table III.2, along with similar data for the other science graduates with whom direct comparisons could be made. Also shown is the average salary of French Canadian graduates as a percentage of the average salary of all those in our sample in that particular category of science and graduating class. The number of individuals in this table is much too small to allow us to be at all dogmatic, but it is interesting and perhaps somewhat surprising that the average French Canadian graduate working in Ontario has just a tiny (and far from statistically significant) income advantage.

One might reason that if discrimination or prejudice were an important factor in corporation practices and policies, it would be most likely to occur outside Quebec where firms would have little to fear from either overt action on the part of the Quebec government or from social or customer pressure.

It is also of some interest to note the fact that not one individual with an "other course" academic background appeared in the Ontario sample; yet such individuals made up the vast majority (446



Table III.2

Graduates of French-language universities working in Ontario compared with graduates of other universities in the same discipline and graduation year

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Chemistry	55 - 59	3	\$ 7,500	47	\$ 7,202	103.9
	50 - 54	3	8,500	117	8,286	102.5
	40 - 44	1	7,500	42	10,285	73.4
	Pre-40	2	11,500	93	10,139	113.1
General science	55 - 59	1	6,500	63	6,547	99.3
	50 - 54	2	6,500	50	7,930	82.5
Geology	55 - 59	1	6,500	27	7,018	92.9
	50 - 54	1	10,500	23	7,760	133.3
Math & physics	50 - 54	4	8,750	16	8,937	98.3
Total		18		478		

out of 599) of the French-speaking scientists in the Quebec survey. As can be seen, all 18 individuals had what might be called more science-oriented science programmes. If the "other course" scientists, many of whom are probably from the classical colleges, had been as mobile as their fellow science students from the same universities, we should expect to find over 50 of them in the Ontario sample. This bit of evidence lends some support to the proposition that with more and better education comes greater mobility.

In order to explore further the relationship between education and achievement, the incomes of those graduates of French-language and other universities who had acquired Master's or Doctoral degrees, were examined. In the combined 1962-4 survey for Quebec, there were 70 French Canadians who held Master's or *licence* degrees and 59 who held Ph.D.'s, all of whom, as before, were performing non-managerial, non-educational functions.

The results of this analysis are presented in Tables III.3 and III.4. The discipline and graduation-class columns in both tables refer to the Bachelor programme. It has been assumed that the Master's and Ph.D. degrees were taken in the same field, but of course there may be exceptions. The numbers shown under "French" and "others" refer to the number of undergraduates in each discipline and in each graduation class who went on to a Master's degree in the case of Table III.3 and to the Ph.D. degree in Table III.4. The right-hand column shows the incomes of those holders of Master's or Doctoral degrees who took their undergraduate training at a French-language university as a percentage of comparable professionals who took their undergraduate training at some other university.

Table III.3

Graduates with Master's or *licence* degrees working in Quebec who obtained undergraduate degrees at French-language universities compared with Master's graduates from other universities in the same discipline and graduation year (of first degree)

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Chemistry	55 - 59	5	\$6,300	1	\$ 7,500	96.9
	50 - 54	1	7,500	2	6,000	115.4
	45 - 49	2	9,500	3	10,833	92.2
	40 - 44	3	6,833	12	12,250	61.2
	pre-40	4	8,000	17	12,117	70.6
General science	55 - 59	1	6,500	1	9,500	81.3
	40 - 44	1	8,500	1	14,500	73.9
	pre-40	2	9,000	4	10,000	93.1
Geology	55 - 59	1	7,500	3	6,500	111.1
	50 - 54	1	9,500	2	9,000	103.6
Mathematics	nil					
Other science	55 - 59	4	6,250	1	9,500	90.6
	45 - 49	1	5,500	1	14,500	55.0
Math & physics	55 - 59	2	6,500	3	7,500	91.6
	50 - 54	2	8,500	1	9,500	96.2
	40 - 44	1	7,500	1	10,500	83.3
Other courses	55 - 59	5	6,300	5	6,700	96.9
	50 - 54	9	6,611	11	9,045	83.2
	45 - 49	6	7,833	5	8,500	96.3
	40 - 44	8	7,650	5	9,100	93.7
	pre-40	11	7,772	15	12,366	74.6
Total		70		94		

Even a casual comparison of the relative income achievement of the French Canadian and other professionals at this educational level presents quite a remarkable anomaly. At the Master's level the weighted average income disadvantage of the graduate of the French-language university is 13.4 per cent. For the Ph.D. graduate the corresponding disadvantage of the French Canadian is only 1.1 per cent, and if those doctoral graduates with "other courses" in their undergraduate backgrounds are eliminated from the sample, the French-speaking Ph.D. is at a slight income advantage.

Table III.4

Graduates with Ph.D. degrees working in Quebec who obtained undergraduate degrees at French-language universities compared with doctoral graduates from other universities in the same discipline and graduation year (of first degree)

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Biology	45 - 49	1	\$10,500	2	\$10,000	103.3
	40 - 44	1	8,500	1	14,500	73.9
	Pre-40	1	11,500	1	3,500	153.3
Chemistry	55 - 59	6	8,500	4	9,000	97.7
	50 - 54	8	9,375	19	9,710	97.5
	45 - 49	5	11,900	10	11,700	101.1
	Pre-40	6	13,166	26	13,865	95.9
General science	45 - 49	1	12,500	2	11,500	105.6
	Pre-40	1	11,500	5	10,900	104.6
Geology	50 - 54	2	9,500	3	9,800	97.9
Mathematics	Nil					
Math & physics	55 - 59	1	9,500	1	6,500	118.8
	50 - 54	3	11,166	1	11,500	99.3
Other courses	55 - 59	4	7,750	7	8,357	95.3
	50 - 54	8	9,000	9	9,111	99.4
	45 - 49	2	8,000	3	10,833	82.5
	40 - 44	4	7,500	1	10,500	92.6
	Pre-40	5	11,100	2	9,500	104.3
Total		59		97		

The explanation for this rather remarkable phenomenon is to be found, it would seem, in the confusion over the standard and indeed even in the translation of the term *licence*. If the *cours classique* or the *cours scientifique* is considered as a "Bachelor's" degree, then the *licence*, which generally involves only one year more of study, might be translated into a "Master's" degree. Certainly many holders of a *licence* report their academic level to be equivalent to that of a Master's degree, and undoubtedly many of the graduates in our sample reported their educational level in this way.

Any suggestion that the French Canadian holders of Master's or *licence* degrees are held back by ethnicity is difficult to reconcile with the relative income achievement of the French Canadian holders of Bachelor's degrees (apart from those with an "other course") on

the one hand, and with those who have gone on to a Ph.D. on the other.

As a further check on the possible role of prejudice on corporate practices and policies, the Ontario survey was examined to determine the relative achievement of graduates of the French-language universities who held Master's or Ph.D. degrees and who were working in the English-language environment of Ontario. There are only nine such individuals holding a Master's or (*licence*) degree and 15 holding Ph.D.'s. Their distribution by undergraduate discipline and year of graduation (at the first-degree level) is given in Tables III.5 and III.6. The overall income disadvantage of the French Canadian in the sample with a Master's degree is 3.5 per cent, and the disadvantage of the holder of a Ph.D. is 1.3 per cent (compared with an overall disadvantage of Master's and Ph.D. degrees in Quebec of 13.4 and 1.1 respectively).

With regard to the rather different income experience of Master's degree holders in Ontario and Quebec, the most probable explanation seems to lie again in the *licence*. We noted earlier that French Canadians with a *cours scientifique* appear to be much less mobile than those with regular Bachelor's degrees in science. The same may also be true of those with a *licence*. It is probably true that the nine French Canadian professionals in Ontario have for the most part regular Master's degrees. This suspicion is strengthened by the fact that if we take out from our sample of Master's graduates the one individual with an undergraduate "other course" who is the individual most likely to hold a *licence* on top of a *cours scientifique*, the remaining eight French Canadians are about on a par with all others as far as income is concerned.

It is consistent with previous observations that the two individual scientists with Ph.D.'s who started out their university careers with an "other course" are now at the greatest income disadvantage. To put the matter a little differently, if we take out these two individuals from our Ontario sample, the 1.3 per cent income disadvantage of the French Canadian Ph.D. working in Ontario becomes an overall advantage of 2 per cent.

If we can infer anything about corporate practices and policies from the income achievement of French Canadian and other scientists at the Bachelor, Master and Ph.D. levels, it appears that, for professional work at least, companies do not distinguish between employees on the basis of language and culture and that a person with about the same training gets about the same income. It must be pointed out to those who may hold that this analysis clashes with "conventional wisdom" or "common observation" on these matters that our data have gone at least to some extent beyond the crude category of scientist in attempting to make comparisons of professionals with about the same educational background, the same specialization, and of the same age group—a subtlety which could hardly be introduced into the everyday observations of friends, relatives and acquaintances. It is

Table III.5

Graduates with Master's or *licence* degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with Master's graduates from other universities in the same discipline and graduation year (of first degree)

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Biology	50 - 54	1	\$5,500	8	\$ 7,250	78.0
Chemistry	55 - 59	1	9,500	4	7,750	117.3
General science	50 - 54	1	9,500	1	7,500	116.3
Math & physics	55 - 59	2	7,000	6	6,666	103.7
	50 - 54	2	8,500	11	8,863	96.5
	45 - 49	1	7,500	4	9,500	82.4
Other courses	Pre-40	1	7,500	38	10,236	73.8
Total		9		72		

Table III.6

Graduates with Ph.D. degrees working in Ontario who obtained undergraduate degrees at French-language universities compared with doctoral graduates from other universities in the same discipline and graduation year (of first degree)

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Biology	40 - 44	1	\$ 9,500	10	\$10,500	91.3
Chemistry	50 - 54	3	9,833	40	9,300	105.3
	45 - 49	3	10,500	44	10,295	101.9
	Pre-40	2	11,500	56	12,589	91.6
General science	50 - 54	1	10,500	10	9,000	114.9
Geology	50 - 54	1	8,500	10	9,500	90.3
	45 - 49	1	14,500	24	10,541	135.5
Math & physics	50 - 54	1	8,500	14	9,714	88.2
Other courses	50 - 54	1	7,500	54	8,796	85.5
	45 - 49	1	7,500	48	10,697	70.5
Total		15		310		

certainly apparent from our data that, especially for the older age groups, the "mix" of science training of French and other Canadians is very different, and moreover that the kind of training that other Canadians have received appears to give them an advantage in the marketplace.

The corollary to this is that to the extent that the French Canadian scientist is at an income disadvantage, most of his lost income must be attributed to the university programme which he chose or which, because of lack of alternatives, he was forced to take, rather than to his ethnicity or to the language handicap which he may have.

One other interesting observation which may be made concerning our analysis of French Canadian scientists in Ontario and Quebec concerns the effect of education on mobility. Of the professional scientists in the sample who graduated with a Bachelor's degree from French-language universities, fewer than 3 per cent are to be found in Ontario, and, as we have already observed, the mobility of those with an "other course" is approximately zero. At the Master's or *licence* level, the French Canadians appear to be over three times as mobile. Just over 10 per cent of the French Canadian professionals at the Master's level (non-management and non-educational) in our combined Ontario and Quebec sample work in Ontario. And again the relative income achievement of those in Ontario compared with those in Quebec suggests that the mobility of the holders of the regular Master's degree is higher than the mobility of those who hold only a *licence*. Finally, of the professionals in our sample who hold Ph.D.'s, we find that over 20 per cent of the people in Ontario and Quebec who started out in French-language universities in Quebec are working in Ontario. It can hardly be doubted that higher education makes individuals more mobile, and this fact has important implications for the long-term development of North America and the world.

#### *D. Engineers*

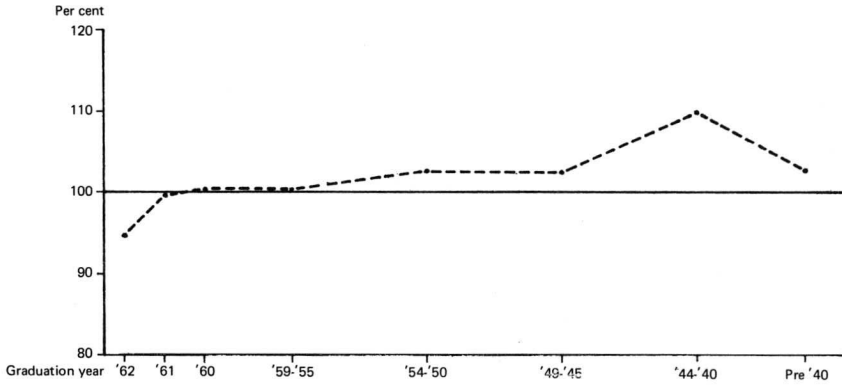
The following analysis of the incomes of engineers is based on data collected on nearly 8,000 graduates in Quebec of whom well over 2,000 are graduates of the four French-language universities. For certain purposes reference will be made to a survey of a somewhat larger number of engineers living and working in Ontario.

Figure III.5 relates to 4,170 graduates at the Bachelor's level who are in neither management nor education. It shows the average earnings reported for the years 1961, 1962 and 1963 for graduates of French-speaking universities and for all others. Shown separately are the salaries of French Canadians as a percentage of the average. It is quite clear from the chart that the graduates of the French-language universities have a significant income advantage over other graduates.

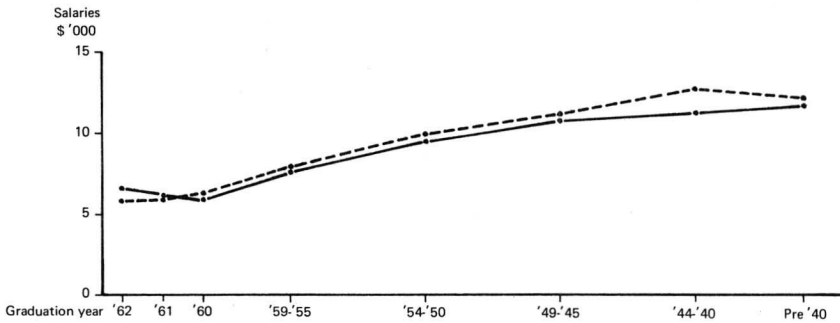
Figure III.5

Professional achievement of university graduates in Quebec, Bachelor level: Engineering (all branches)

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



Number:								
French	36	127	151	515	268	139	76	94
Other	40	132	176	836	284	528	279	489
Salary (\$):								
French	6,166	6,232	6,347	7,700	9,942	11,366	12,815	12,212
Other	6,862	6,287	6,289	7,665	9,646	11,074	11,387	11,865
Salary as % of average:								
French	94.4	99.6	100.5	100.3	102.4	102.1	109.6	102.4
Other	105.1	100.4	99.6	99.8	99.3	99.5	97.4	99.5

Engineers, of course, are not much more alike than scientists, and a comparison of French Canadian and other engineers, especially in the early years, is a comparison of groups of individuals with quite a different mix of training.

To illustrate this fact, Table III.7 gives the professional mix of the 583 engineers in our sample (both French and other) who graduated before 1940. It also shows the professional mix of the French Canadian engineers. It is easy to see, even without a slide rule, that the output of the French-language universities was very different 25 years ago from that of other universities.

Table III.7

The professional "mix" of engineers who graduated before 1940

Engineering branch	Total no. of graduates	No. of graduates of French-language universities
Chemical	68	3
Civil	163	69
Electrical	146	2
Mechanical & industrial	122	1
Mining & geological	43	0
Metallurgical	11	0
Other	30	19
Total	583	94

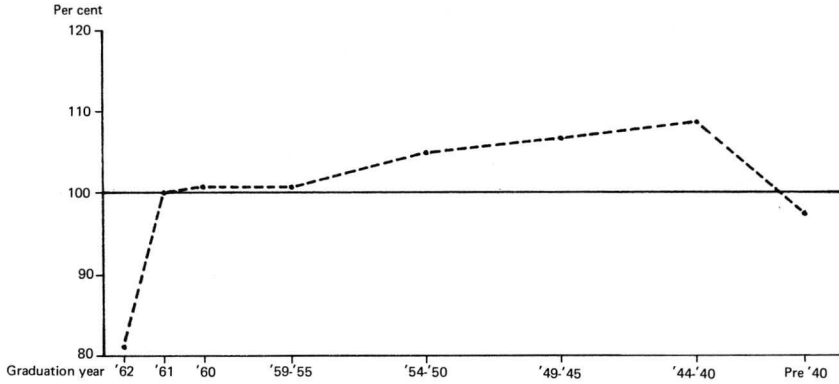
In order to make a more precise comparison of the fortunes of French Canadian and other engineers in each of the different branches of engineering, separate charts are shown for civil, chemical, electrical, mechanical and industrial, mining and geological, and metallurgical engineering (Figures III.6 to III.11). Similar information is available for engineering physics and miscellaneous, but these are not shown, in the first case because the data are thin and in the other because the category is undefined.

In interpreting these charts one must note that the number of French Canadians in particular branches of engineering and particular graduating classes in the sample and in the relevant universities, especially during the early years, is sometimes quite small, with the result that there is much random and meaningless variation from class to class. The few cases in the early years coincide with the commencement of the different professional programmes in the French-language universities. Where the relative performance of the French Canadians seems to rise in a consistent way from before 1940 to the present, as it does in chemical, electrical and metallurgical engineering, we can postulate that we are observing the development of both the quantity and quality of a new programme. The other branches

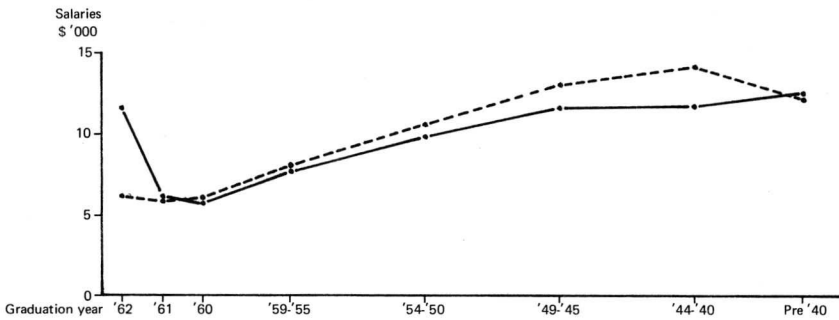


Figure III.6  
Professional achievement of university graduates in Quebec, Bachelor level: Civil engineering

Salary of graduates of French-language universities as a percentage of average



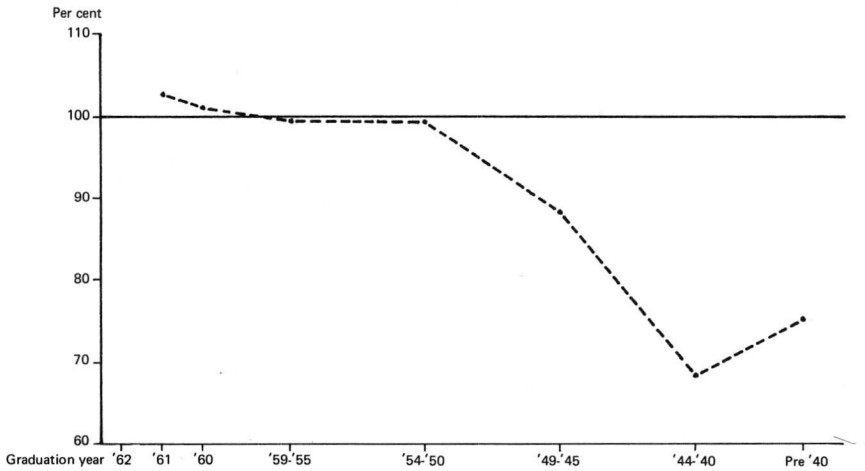
Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



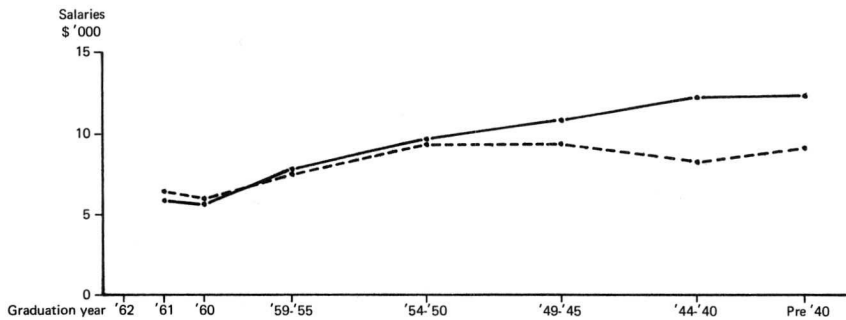
Number:								
French	13	49	60	217	109	46	42	69
Other	6	28	37	159	175	107	41	94
Salary (\$):								
French	6,730	6,561	6,650	8,142	10,738	13,054	14,190	12,014
Other	11,750	6,571	6,500	7,965	9,922	11,845	11,902	12,574
Salary as % of average:								
French	80.9	100.0	100.9	100.9	104.9	106.9	108.7	97.4
Other	141.3	100.1	98.6	98.7	96.9	97.0	91.1	101.9

Figure III.7  
Professional achievement of university graduates in Quebec, Bachelor level: Chemical engineering

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities ———

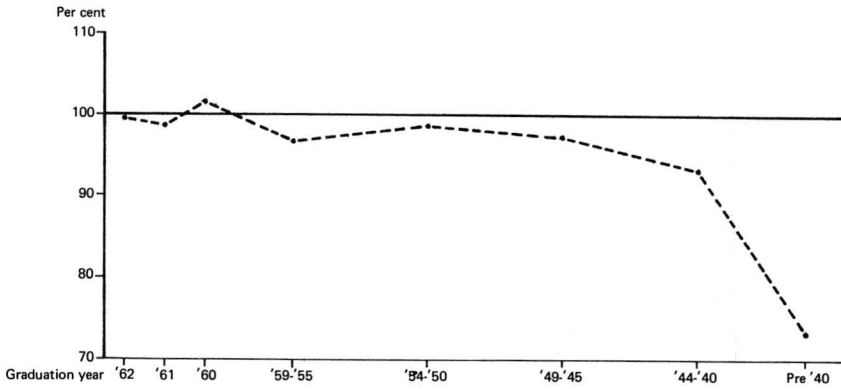


Number:								
French	—	4	15	36	21	17	4	3
Other	2	12	19	119	133	85	59	65
Salary (\$):								
French	—	6,500	6,100	7,555	9,404	9,441	8,250	9,166
Other	6,000	6,250	5,973	7,584	9,462	10,947	12,262	12,300
Salary as % of average:								
French	—	103.0	101.2	99.7	99.5	88.3	68.7	75.4
Other	—	99.0	99.1	100.1	100.1	102.4	102.1	101.1

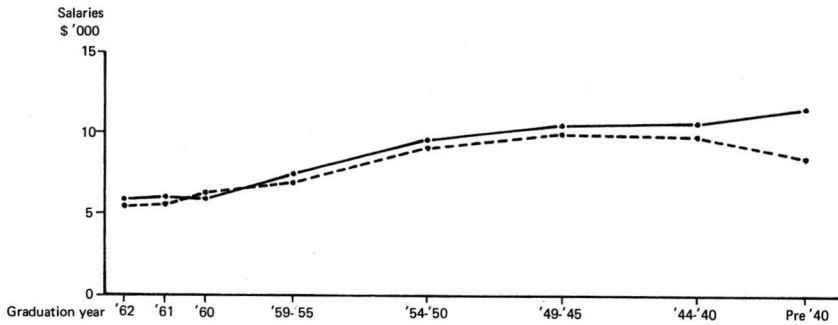
Figure III.8

Professional achievement of university graduates in Quebec, Bachelor level: Electrical engineering

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_

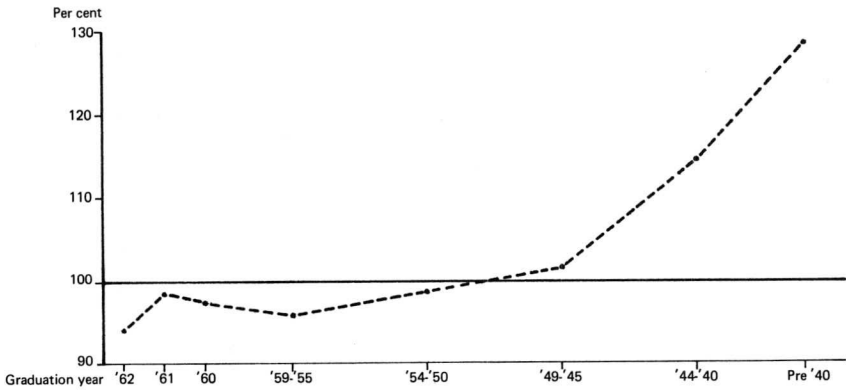


Number:								
French	12	40	25	53	45	28	6	2
Other	11	45	51	218	203	123	53	144
Salary (\$):								
French	5,916	5,950	6,140	7,160	9,600	10,089	9,833	8,500
Other	5,954	6,077	6,009	7,449	9,736	10,434	10,575	11,597
Salary as % of average:								
French	99.7	98.9	101.5	96.9	98.9	97.3	93.7	73.6
Other	100.3	101.0	99.3	100.8	100.3	100.6	100.7	100.4

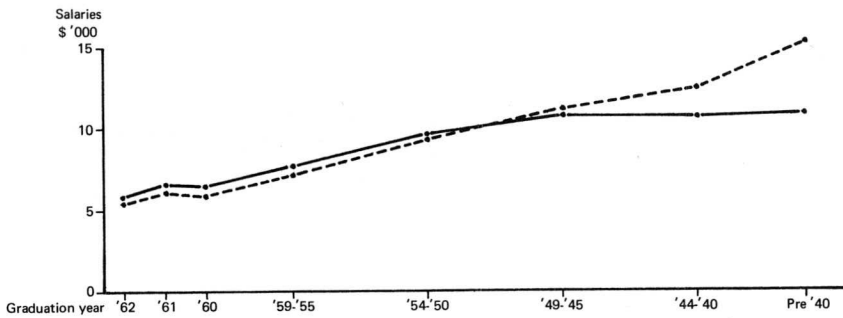
Figure III.9

Professional achievement of university graduates in Quebec, Bachelor level: Mechanical and industrial

Salary of graduates of French-language universities as a percentage of average



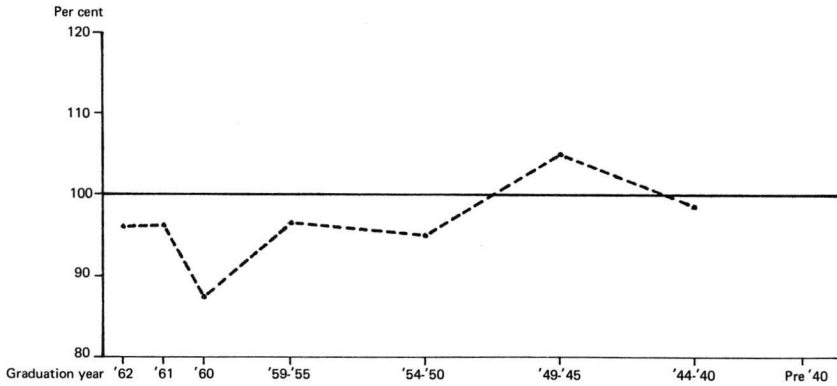
Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



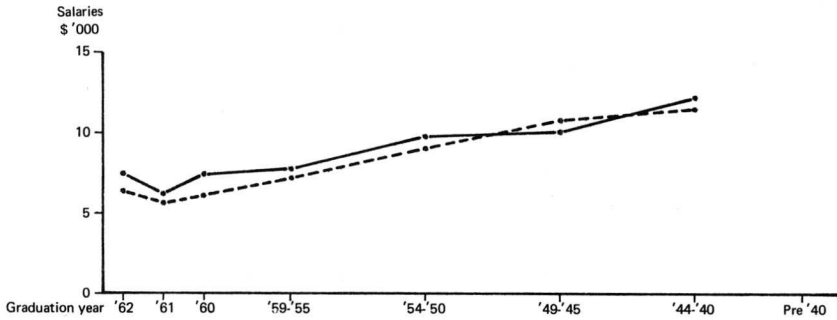
Number:								
French	6	17	29	52	14	4	1	1
Other	19	30	49	259	289	156	80	121
Salary (\$):								
French	5,500	6,264	6,086	7,288	9,357	11,375	12,500	14,500
Other	5,973	6,400	6,357	7,652	9,467	11,128	10,925	11,285
Salary as % of average:								
French	93.9	98.6	97.3	96.0	98.9	102.2	114.2	128.2
Other	101.9	100.8	101.6	100.8	100.1	99.9	99.8	99.8

Figure III.10  
 Professional achievement of university graduates in Quebec, Bachelor level: Mining and geological

Salary of graduates of French-language universities as a percentage of average



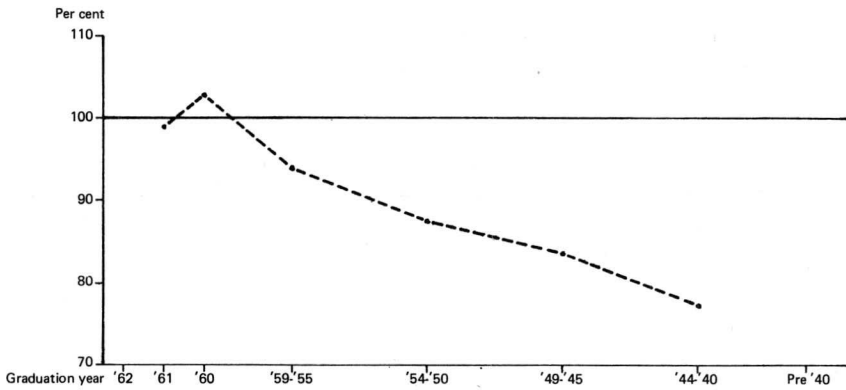
Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



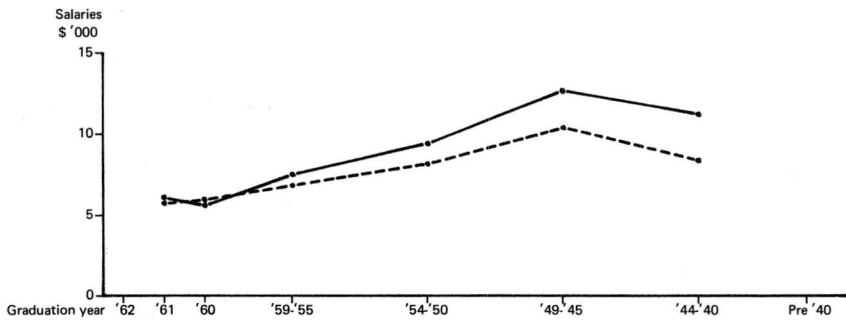
Number:								
French	3	6	4	31	26	6	8	0
Other	1	7	10	41	44	22	24	43
Salary (\$):								
French	6,500	5,833	6,250	7,370	9,000	10,916	11,750	-
Other	7,500	6,214	7,500	7,768	9,704	10,250	11,958	11,988
Salary as % of average:								
French	96.3	96.6	87.5	97.0	95.3	105.0	98.7	-
Other	111.1	102.9	105.0	102.3	102.8	98.6	100.4	-

Figure III.11  
Professional achievement of university graduates in Quebec, Bachelor level: Metallurgical

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



Number:								
French	-	6	7	15	5	2	2	0
Other	1	2	6	21	26	19	16	11
Salary (\$):								
French	-	5,833	6,214	6,966	8,100	10,500	8,500	-
Other	5,500	6,000	5,833	7,738	9,461	12,763	11,312	13,227
Salary as % of average:								
French	-	99.3	102.9	93.9	87.7	83.7	77.3	-
Other	-	102.1	96.6	104.3	102.4	101.7	102.8	-

of engineering in the French-language universities seem to have been strong from the very first.

The largest branch of engineering and the one which accounts for over 45 per cent of the French Canadian graduates is civil. This is perhaps the most important group to analyse, partly because French Canadian civil engineers are by far the most numerous in the sample, but more important because the graduates of French-language and other schools are probably the most homogeneous from the point of view of professional qualifications. Figure III.6 shows that the students of the French-language universities who have graduated since the beginning of the Second World War have a clear and significant advantage over graduates of all other universities. Those who graduated in the 1920s and 1930s, on the other hand, are at a 2.6 per cent disadvantage.

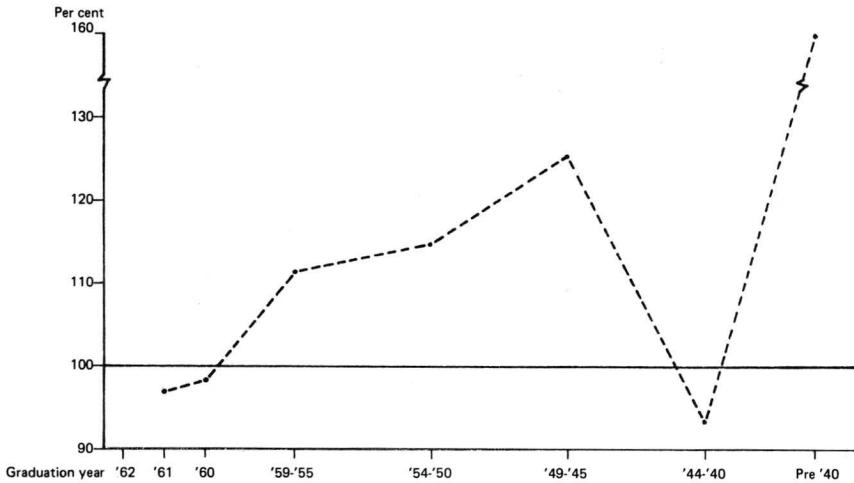
Two additional tests were made of the relative achievement of French Canadian engineers. The first concerned those who went on to higher degrees, and the second those who went to work in Ontario. Figure III.12 compares the salaries of the 54 professional engineers at the Master's level who have taken their undergraduate training at French-language universities with 289 engineers at the same level who attended other universities. Again, the advantage clearly lies with the French Canadians, but in a more pronounced way than was the case at the Bachelor's level.

It may be assumed that most of the Master's degrees, especially those taken in the 1940s or earlier, were obtained at English-language universities and that almost all of the 54 French Canadians represented in our chart would therefore have a sufficient command of English to be able to earn a university degree in it. It is probably for this reason that their premium exceeds that of the French Canadians with only Bachelor's degrees, many of whom may not be so bilingual.

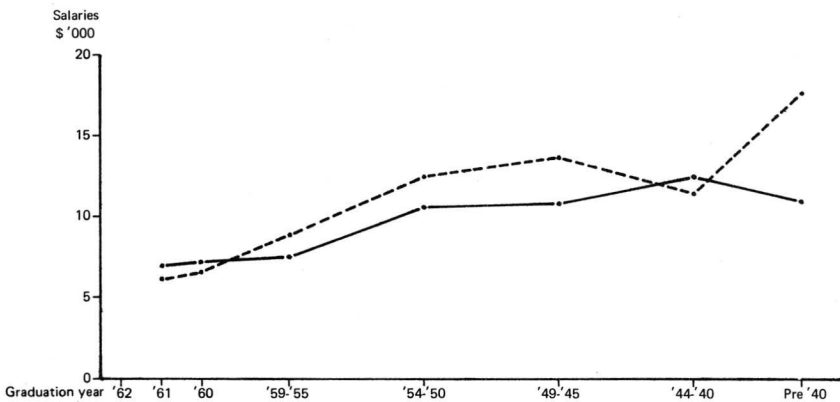
Further evidence of the importance of language can be found in the experience of the French Canadians with Bachelor of Engineering degrees who are working in Ontario. This evidence is presented in Table III.8, which shows branch of engineering, year of graduation, salary, and the number of graduates from French-language and other universities. Also shown is the income of the French Canadians as a percentage of the average. Again, the number of French Canadians in each individual discipline-graduation-class category is too small to be conclusive. But one is impressed by the fact that all recent graduates from the French-language universities working in Ontario were at an income disadvantage while, on balance, all those who graduated before 1960 were almost exactly on a par with graduates from other universities. A possible explanation of this phenomenon is that the recent graduates from Laval, Sherbrooke, and l'École polytechnique may have a language handicap. In fact a feeling of deficiency in their command of English may be the very reason why some of them have moved to Ontario. We can probably assume on the other hand

Figure III.12  
Professional achievement of university graduates in Quebec, Bachelor level: All engineering

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



Number:								
French	—	3	6	22	12	3	4	4
Other	—	4	3	31	44	60	34	113
Salary (\$):								
French	—	6,166	6,500	8,909	12,541	13,500	11,625	17,875
Other	—	6,500	6,833	7,370	10,522	10,641	12,544	10,933
Salary as % of average:								
French	—	97.0	98.3	111.2	114.5	125.3	93.4	160.0
Other	—	102.3	103.4	92.0	96.1	98.7	100.8	97.9



Table III.8

Engineering graduates at the Bachelor level of French-language universities working in Ontario compared with graduates of other universities in the same discipline and graduation year

Discipline	Graduation year	French		Other		French as per cent of average
		No.	Average salary	No.	Average salary	
Civil	62	3	\$ 5,833	30	\$ 6,200	94.6
	61	3	5,833	72	6,138	95.2
	55 - 59	2	8,500	397	7,484	113.5
	50 - 54	3	7,833	472	9,694	80.9
	40 - 44	1	12,500	57	11,394	109.5
	Pre-40	5	13,100	222	11,522	113.4
Chemical	62	1	5,500	25	5,740	96.0
	61	1	5,500	44	6,250	88.2
	55 - 59	2	7,500	294	7,350	102.0
Metallurgical	60	1	5,500	14	6,785	82.1
	55 - 59	1	6,500	32	7,375	88.5
	50 - 54	3	9,833	69	9,326	105.2
	45 - 49	2	11,000	49	10,204	107.5
Mining & geological	55 - 59	3	6,166	59	7,211	86.1
	50 - 54	3	9,166	84	9,196	99.7
Engineering physics	55 - 59	1	6,500	58	7,396	88.1
Mechanical & industrial	62	4	5,500	36	6,083	91.3
	61	1	5,500	69	6,195	88.9
	55 - 59	1	8,500	540	7,588	112.0
	50 - 54	1	10,500	688	9,252	113.5
Electrical	55 - 59	5	7,500	336	7,446	100.7
	50 - 54	3	8,500	546	9,091	93.5
	45 - 49	4	9,000	401	10,068	89.5
Total		54		4,594		

that those of the older age groups who are in Ontario, are able to operate effectively in English, and such individuals, so far as income is concerned, seem to have achieved professional parity.

There are not enough engineers in professional work with Ph.D. or Master's degrees in Ontario or with Ph.D.'s in Quebec to warrant separate tables. In Ontario and Quebec combined there are only 17 individual engineers from French-language universities in professional (non-management, non-educational) work who have gone on to

acquire Ph.D.'s. Of these, five were in Ontario at the time of the survey.

Having suggested that there is a close relationship between the level of education and mobility among scientists, we should point out that the same generalization seems to hold for engineers. Of engineering graduates with Bachelor's degrees from the French-language universities in our sample, 3.7 per cent were working in Ontario. The corresponding percentages for Master's and Ph.D.'s were 7 and 34 per cent respectively.

### *E. Ethnicity and Professional Achievement*

The conclusion one reaches from the foregoing analysis is that when one begins with overall income achievement, one finds that the average French Canadian (or more properly the average resident of Quebec) does not have an income as high as the average resident of Ontario. The main explanation, it is suggested, is the different levels of education in the two provinces. If this is true, we should find that when we can identify groups of French and other Canadians who have comparable education, their incomes should be very similar. This has been demonstrated by the foregoing analysis of professional architects, scientists and engineers. Generally speaking, the closer we approached the ideal of comparing exactly similar groups, the smaller was the income spread between the two groups. Indeed, the advantage seems to lie with the French-speaking Canadian.

It would, of course, be absurd to pretend that education is the only variable explaining income differences, and having underlined the overriding importance of education, we may go on to suggest that ethnicity and perhaps language may also be factors in determining achievement of ethnic or language groups.

English-speaking managers might very understandably prefer to promote English-speaking, English-thinking candidates with whom they find communication easier. On the other hand a promotion must also take into account the social equilibrium and the motivation and productivity of the total work force. While the head design engineer, for example, might like to have a like-thinking assistant, if his work force is made up of people from other ethnic groups, he might find it desirable to give the job to the best available candidate with an ethnic background different from his own. Recognition of the facts of ethnicity or tribalism is not necessarily therefore in opposition to a mechanistic profit-maximizing view of business. The loss of productivity incurred by the promotion of a man whose command of English is less than might be desired may be made up by an increase in productivity elsewhere. From this it is clear that social pressure and feelings of tribalism or ethnicity could influence promotions and salaries, and it would follow that the more intense the feelings of nationalism or tribalism, the more this factor would have to be taken into account in determining promotion.

While there is, so far as the author knows, no documentation to support this view, it was my impression, as one of the authors of a study of corporate practices and policies of American subsidiaries in Canada a few years back, that the "tribal" noises which some Canadians were making caused some American firms to seek Canadian replacements for American managers.<sup>3</sup> In some cases, it was felt by the American companies that they had to promote the second-best people available who suddenly, for social and political reasons, became the best people to fill the jobs. Regretfully making these second-best appointments could not be looked on as moves to improve the productivity of the Canadian firm, but were rather holding actions to solve a social problem which might conceivably cause Canadian productivity to decrease.

The problem faced by the American firm in Canada is very similar to that of the English Canadian firm in Quebec. The proportion of the Canadian population with higher degrees—especially in business subjects—is very much smaller than that of Americans. The ratio of current output of M.B.A.'s, for example, is about one to seven per thousand of population. The American firm that feels it must replace an American with a Canadian is almost certainly going to have to settle for an individual with less education and certainly less business education. A similar situation holds of course for the firm controlled by English Canadians who feel they must replace an English Canadian with a French Canadian. If it is right that at least some shift occurred from American to Canadian personnel in the higher paid jobs, would it not be logical to expect some such shift in favour of French Canadians in Quebec?

Because data were collected over a period of three rather sensitive years in which relationships between French and English Canadians were being publicly examined, it was possible to determine statistically whether any shift in the position of French Canadians did in fact occur. In undertaking to analyse the shift in the income of French Canadians relative to all others over a fairly short period of time, a new problem arose concerning the size of sample. Previously in this chapter the emphasis has been on the relative incomes of French and other Canadians at given periods in time rather than with change over a period of time. In order to be able to make fair comparisons of professional achievement, we wanted to isolate groups of professionals who were as nearly similar as possible, and this led to breaking the data into categories or cells by discipline, year of graduation and function performed. However, the more detailed the breakdown, the fewer the number of individuals in each cell, so that in order to keep the number of cases or individuals in each cell up to a statistically respectable number, the 1962, 1963 and 1964 surveys were combined.

Given the desire in the present case to separate and compare 1962 and 1964 data, it seemed desirable to combine the data in some other way. The solution was to sacrifice the functional breakdown and to combine the professional, managerial and educational categories on

the assumption that over the space of two years the relative importance of these groups would not change significantly.

Of course if the distribution of French-speaking and other engineers among the professional, managerial and educational categories is different (which it is), then the combined French and other groups are less similar and a comparison of their absolute wages less significant. However, here we are not concerned with comparing like with like but only with measuring the sensitivity of corporate policies to the pressure of social and public opinion.

Figure III.13 shows absolute and relative income positions of French-speaking engineers doing professional, educational and managerial work at the time of the 1962, and again at the time of the 1964, surveys. Naturally the salaries in 1964 are higher than those reported in 1962 but it also appears that the French Canadian engineer has increased his salary slightly more than other engineers in the province.

Although there is some random variation in the survey results, the charts do indicate a slight improvement in the relative position of French Canadians during the period studied. The weighted average disadvantage of all engineering graduates from French-language universities reporting in the 1962 survey was 2.36 per cent while the 1964 survey indicated that the gap had narrowed to 1.36 per cent. Within a two-year period French Canadian graduates had improved their salary position by 1 per cent in relation to the average.

The improvement, however, was not uniform in all age groups. The French Canadian graduates of the 1940s and 1950s received almost all the benefits; the older graduates seem to have benefited not at all.

A much more dramatic (though statistically a much less significant) improvement is to be found in Figure III.14, which shows the change in the relative positions of the graduates of French-language universities from the 1962 to the 1964 survey who went on to earn a Master's degree. The 60 engineers with Master's degrees in the 1964 survey have an income advantage of over 9 per cent, while the 39 graduates included in the survey two years earlier reported an income disadvantage of over 5 per cent.

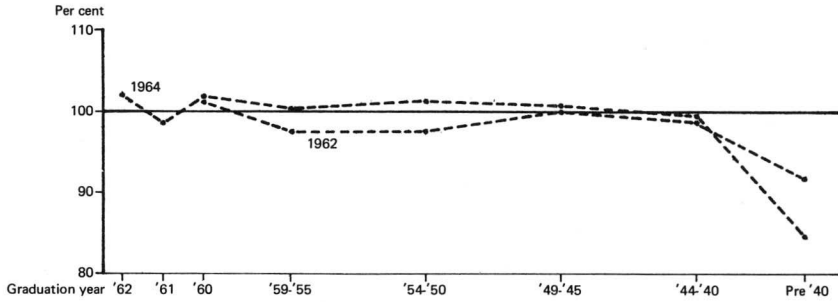
A reasonable hypothesis may be suggested to account for these observations. Business is primarily concerned with making a profit, and the businessman will probably think very little about ethnicity, religious differences and so on since normally these matters have little to do with the efficient operation of his business. In general, then, if education explains productivity, people who have similar educational backgrounds and similar abilities and therefore similar productivity potential will normally be treated in about the same way—and this is demonstrated by the data.

It must be recognized that this conclusion flies in the face of our conventional wisdom on the nature and extent of prejudice. The

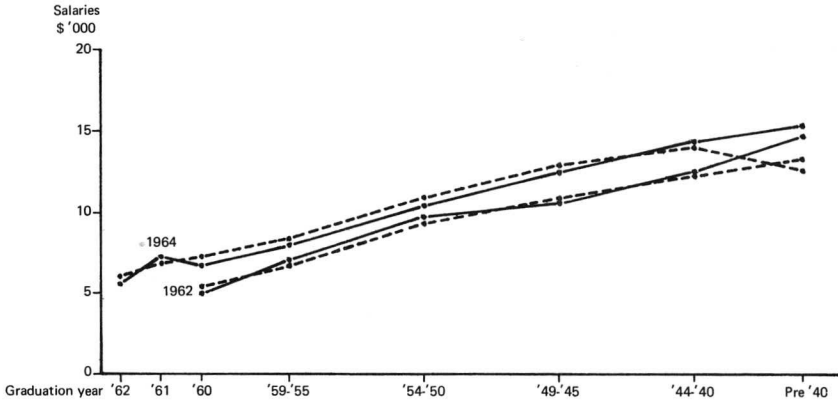
Figure III.13

Professional achievement of university graduates in Quebec, Bachelor level, 1962 and 1964 surveys: Engineering (all branches)

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities ----, and other universities \_\_\_\_\_



1964 Survey

Number:

French	80	75	57	201	125	86	49	75
Other	82	55	53	267	384	286	156	323

Salary (\$):

French	6,137	6,620	7,008	8,490	11,060	12,918	13,612	12,640
Other	5,915	6,809	6,745	8,468	10,863	12,842	13,673	15,503

Salary as %

of average:

French	101.9	98.8	101.9	100.2	101.4	100.5	99.7	84.5
Other	98.2	101.6	98.0	99.9	99.6	99.9	100.1	103.6

1962 Survey

Number:

French	-	-	44	189	132	80	49	85
Other	-	-	74	306	419	296	165	393

Salary (\$):

French	-	-	5,613	6,785	9,143	11,050	12,377	13,311
Other	-	-	5,486	7,044	9,406	11,035	12,506	14,736

Salary as %

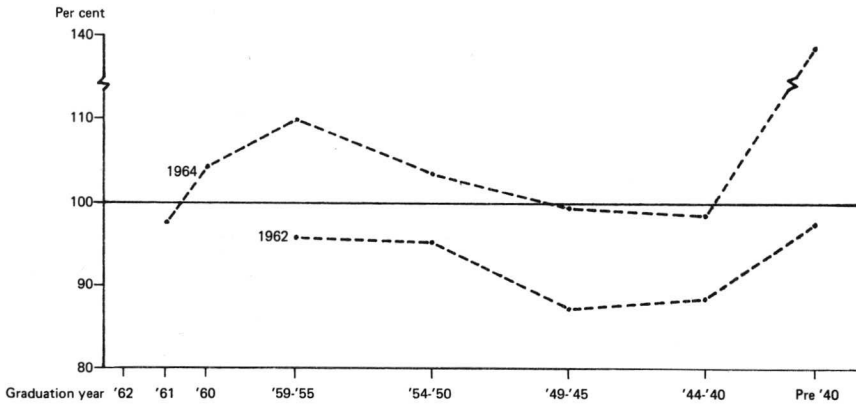
of average:

French	-	-	101.5	97.7	97.9	100.1	99.2	91.9
Other	-	-	99.2	101.4	100.7	100.0	100.2	101.8

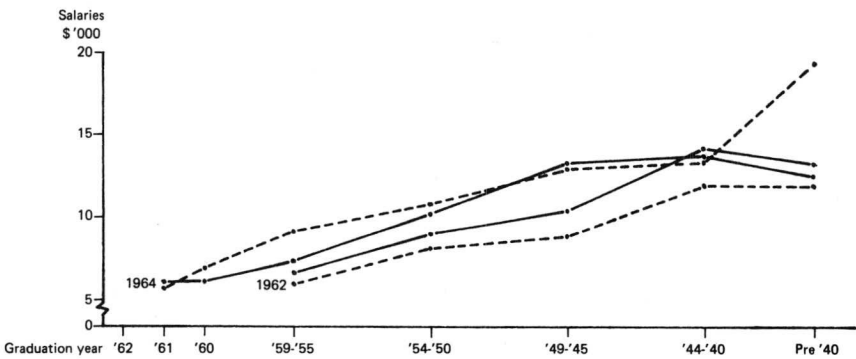
Figure III.14

Professional achievement of university graduates in Quebec, Master's level, 1962 and 1964 surveys: Engineering (all branches)

Salary of graduates of French-language universities as a percentage of average



Average salaries of graduates of French-language universities -----, and other universities \_\_\_\_\_



1964 Survey

Number:								
French	1	5	6	15	16	2	6	9
Other	-	4	4	14	22	24	21	59
Salary (\$):								
French	7,500	5,700	7,000	9,233	11,031	13,000	13,416	19,388
Other	-	6,000	6,250	7,428	10,409	13,083	13,666	13,152
Salary as % of average:								
French	-	97.7	104.5	110.4	103.4	99.4	98.6	138.7
Other	-	102.9	93.3	88.8	97.5	100.1	100.4	94.1

1962 Survey

Number:								
French	-	-	1	14	13	3	3	5
Other	-	-	-	14	28	52	18	63
Salary (\$):								
French	-	-	4,500	6,571	8,423	9,166	12,000	12,100
Other	-	-	-	7,142	9,035	10,557	13,777	12,507
Salary as % of average:								
French	-	-	-	95.8	95.3	87.5	88.7	97.0
Other	-	-	-	104.2	102.2	100.7	101.9	100.2

WASP's\* of St. James Street and Bay Street, like their American colleagues of Wall Street, are supposed to operate a closed club where there is no room for Hungarians, Jews, French Canadians, Russians, or anyone else whose name is not Jones, or preferably Jones-Jones.

The data do not support this belief, and, moreover, it may be that corporate policies and practices are in force which are specifically designed to refute the view that businesses operate as closed ethnic clubs. Indeed, recognition of ethnicity may become economically important in the operation and even in the survival of a business. If productivity, motivation, sales and costs are likely to be influenced by the perceived ethnic policies and practices of a firm, the rational businessman will give ethnicity the same careful consideration he would normally give to any other factor likely to influence his costs. Businessmen seem to have enough leeway, at least in the short run, to accommodate to ethnicity and to hire and promote individuals using ethnicity as one of the relevant factors. The awareness of the importance of ethnic origin, however, will not alter the fortunes of all French Canadians in the same way—at least, it does not seem to have done so thus far; and it is suggested that the key to understanding which individuals benefit and which do not is probably not ethnicity but language and education.

Our survey results make it perfectly clear that as one rises in the hierarchy of a Quebec company, the relative importance of French and English shifts in favour of English—and this is every bit as true for a company owned and operated by French Canadians as one owned by, say, Americans.<sup>4</sup>

It is apparently not difficult for a unilingual French Canadian engineer to enter most firms in Quebec and to work and progress for many years in the company without being called upon to work effectively in the English language. In fact in his first jobs where many of his subordinates and colleagues will be unilingual French, an effective command of French will be vital, whereas an understanding of English may be much less important. However, as he rises to the point where business contacts outside the company, the province, and the French Canadian milieu become more frequent, the importance of English will increase. Sometimes this may happen abruptly as he moves from one professional or managerial level to the next, and he may have little time for adjustment. It is easy to imagine that this language filter works to the disadvantage of the older French Canadian who took his university education in French and perhaps continued to use French almost exclusively at his work and in his home. After a normal career up to, say, the age of 50 in which he may have been as successful as his English-speaking colleague, he may find himself suddenly confronted with the need to communicate effectively with customers or suppliers outside the province. Any disadvantage

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\*White Anglo-Saxon Protestants.

which he has in this regard will seriously affect his productivity and his further progress in the company.

Faced with the desirability of hiring and promoting more French Canadians, the rational firm looking for engineers will be interested in hiring more young French Canadians. These young professionals can be employed in the French-language environment where they will be fully effective; more important, they are young enough to learn English and perhaps work for a time in company locations outside Quebec as part of their training careers. It is therefore easy to understand why the demand for young, well-trained French Canadians should rise to the point where they command a premium on the market. On the other hand the older French Canadian engineers with Bachelor's degrees have not experienced any increased demand for their services; indeed, if anything, their relative position has declined. The position of the average French Canadian engineer who graduated before 1940 with a Bachelor's degree contrasts sharply with the position of the engineer of the same age who went on to a Master's degree. Undoubtedly, French Canadian engineers with Master's degrees received an education comparable to the engineers of other ethnic groups since they went to the same universities, but what may be of greater importance is that their instruction was mostly in English. French Canadians who made the adjustment to English some time ago, by taking a higher university degree, did not lose their ability to use French; instead they gave proof of being able to work, argue, persuade and command (as well as learn) in English.

Such people would be at no disadvantage in an English-language environment and, indeed, so long as they remained in Quebec, their earlier French training and language skill would be a factor working strongly in their favour. If they did meet prejudice, as undoubtedly they would from time to time, it would not outweigh the commercial advantage to their employers of their knowledge of French. The result of the increased demand for the limited number of older French Canadian engineers with Master's degrees who presumably know English is that these people apparently command a premium on the market, presumably for the same reason as the young French Canadian engineers just coming out of college do now.

In summary we see that the French Canadian engineer acting as a professional (that is, in a capacity outside management or education) has something of an income advantage. His relative advantage is not so marked as that of the architect, but it is appreciably greater than that of the scientist.

It has been suggested that this "pecking order" fits with the temporal and qualitative development of the different areas in the French-language universities, that is to say that architecture ranked with law and medicine as an honoured profession in French Canada and was one of the first developed in the French-language universities. Engineering was probably the next profession to develop quantitatively and qualitatively, especially in l'École polytechnique which had a



fair measure of autonomy and was therefore in a position to escape from the pattern of classical education.

Science, on the other hand, had to fight its way out of the pattern of classical education (as it did elsewhere in the world). At first science options crept into the *cours classique* until finally a sequence of courses became identified as a *cours scientifique*. Until fairly recently, however, such science courses were relatively few and served to identify a variant of a programme which was still basically general, and was classically oriented. Certainly the attitudes and the historical developments described above seem to fit neatly into the statistical findings concerning the relative achievement of architects, engineers and scientists from French-language universities.

#### *F. A Tentative Conclusion*

The analysis of this chapter suggests an important conclusion—one which will probably come as a surprise to most Canadians and even to most social scientists. As noted earlier, the difference in income between French- and English-speaking Canadians is large enough to be perceived and to become accepted as a fact—which it is. This difference in income appears to be a major source of grievance to French-speaking Canadians and a source of embarrassment to some English-speaking Canadians.

The sense of grievance and disquiet comes, it seems, from the suspicion that English-speaking Canadians have been, in some sense, unfair or prejudiced. While no survey is available to prove this point, it appears, nevertheless, that a majority of Canadians believe that even if a French Canadian member of the labour force had the same education as an English-speaking Canadian he would not earn as much money; and it appears further, that while they might be reluctant to admit it, most Canadians would attribute at least some fraction of the income difference to prejudice which works to the disadvantage of French-speaking Canadians.

In our analysis of the labour force in the previous chapter it was argued on *a priori* grounds that a tendency to pay any large group of workers less than what was being paid to equally productive workers elsewhere simply could not persist.

In this chapter we have concentrated on the professionals—who might be called the aristocracy of the non-management labour force. As closely as possible, we have tried to compare like with like. This comparison, which is more precise than any other known to have been carried out so far, shows that not only has the "perceived income difference" completely disappeared, but also that the French-speaking professional has perhaps just a slight income advantage over his English-speaking colleague with the same professional training. It must be clear at this point that, so far, we have done nothing

more than challenge a myth. Certainly, our analysis shows that ethnicity plays a much smaller role in determining income than would seem to be assumed by most opinion leaders who have addressed themselves to this subject.

It is acknowledged, however, that other hypotheses and other data must be explored. For example, it has been suggested that since good English-speaking professionals would tend to be promoted into management positions while French-speaking Canadians would not, the average quality of the remaining French-speaking professionals would be higher than that of the remaining English-speaking professionals. If this were the case, wage parity would imply that the better French-speaking professionals were still being exploited, since they should be paid more than their below-average, unpromoted, English-speaking colleagues. This is a reasonable hypothesis, but like-for-like, it seems that the French-speaking professional actually is paid a bit more. Furthermore, as we shall see in the next chapter, a rather higher percentage of French-speaking professionals is promoted to management positions and, by the above reasoning, we would expect them to be paid a bit less than their English-speaking colleagues.

It is doubtful, however, that the data can be used to support or contradict such subtle arguments. They do, however, suggest that, at least as far as the labour force is concerned, one ethnic group has about as good a chance of improving its economic position as any other. The analysis further indicates that education is a key factor in determining income.

The previous chapter examined the economic achievement of certain groups of professionals. It was found that income was closely associated with education and age and that professional people of the same age and with the same education tended to earn about the same salary. It is much more important in Canada to be a university graduate than it is to be an English Canadian. The French Canadian professional engineer earns a great deal more than the English Canadian high school graduate; indeed he earns about the same as the English Canadian engineer with similar training. Moreover, there appears to have been a slight tendency for French Canadians to improve their economic position in comparison with other Canadians over the period from 1962 to 1964. Where there are persistent differences in income (for example, the failure of the pre-1940 French Canadian graduate at the Bachelor's level to improve his relative position), the explanation seems to be associated with language skills or the quality of education rather than with ethnicity *per se*. The pre-1940 engineer with a Master's degree (who is almost certainly bilingual) has improved his position considerably. The economic disadvantage of the French Canadian scientist seems to be a function of the kind of science course he has taken. The French Canadian architect seems to have a clear advantage over others practising the profession in Quebec.

From this it may be concluded that if ethnicity or a lack of fluency in English was at one time something of a disadvantage to the French Canadian, now, ethnicity itself may be working to his advantage—at least to the advantage of the French Canadian who is young or who has a good knowledge of English. This seems to confirm an observation made by the staff of the Graduate School of Business at McGill University that, other things being equal, a bilingual French Canadian is paid a premium for his ethnic origin on today's market. It may be argued, therefore, that since income levels for French, and other, Canadians with equivalent education are approximately the same

and seem, moreover, to be moving in a direction which favours French Canadians, dissatisfaction with the economic status of the French Canadian should disappear.

#### *A. Social Significance of Managerial Achievement*

To assume simply that equal incomes would mean equal levels of satisfaction, however, would be to take a very old-fashioned view of human nature. Man is not simply an economic being. He has a hierarchy of wants and needs. A hungry man may struggle single-mindedly for food, but once he has satisfied his hunger, he does not stop struggling. After a man has obtained his basic economic wants, he continues to strive, but for "higher" social goals such as status, recognition, and self-development. Many of these higher wants or needs are associated with managerial positions, and this makes entry into the management stream especially desirable. Any person who feels himself to be unfairly excluded from becoming a manager or from climbing the managerial ladder to the top is likely to be a frustrated and unhappy person.

Since in fact there is not always room at the top, there are inevitably many people who learn to live with some of their social wants unfulfilled. This may pose personal problems for these individuals, but such problems do not add up to a political problem unless those excluded from management positions can in some way be differentiated from those who are not, and unless this difference can be used as the basis for organizing a political protest movement.

To put the matter a little differently, there are positions in any society which may make their occupants more or less unpopular; money-lending, land-owning, and management are examples which come to mind. In particular, it is not too difficult to see why managers should be somewhat unpopular: they are more affluent than the managed, and the exercise of their power reduces the power and freedom of those being managed. Thus it is easy to see why the managers are vulnerable to criticism, jealousy and protest. However, provided the managed and the managers are relatively similar—provided they are recognized as belonging to the same tribe—it may be difficult to organize an effective political protest against the managers. This is partly because they are, after all, tribe members and partly because most of the malcontents who are likely to be effective in leading a political protest are also candidates for entry into the ranks of the managerial class.

But let the managed and the managers be of two different tribes or colours or nations or language groups, and further, let these tribal differences be perceived, rightly or wrongly, as an insurmountable barrier, then the personal frustrations of those who do not enter the managerial class may quickly add up to a political problem. Many of the most unpleasant aspects of the ideologies of colonialism, racism,

anti-colonialism, and nationalism can be fostered by actual or supposed lack of common interests between the managers and the managed.

Of course the managers in any society are not found only in business. There are managers in government, church, school, cultural and social groups; in cities, courts, and families. In a North American context at least, these managers seem to be drawn more or less pro rata from the different ethnic groups. To our knowledge, no one has yet suggested that French-speaking Canadians in Quebec are under-represented in the management of churches, clubs, schools, families, or political institutions. Indeed, if one looks at the management of, say, the city of Montreal, French-speaking Canadians are over-rather than under-represented.

The focus of this study, however, must be on business and on business managers. We should recognize that North American business managers are not quite the same as the managers in some other aspects of our social life: not only are they themselves managed or regulated by the courts, the shareholders, the laws and the civil servants, but they are also closely regulated by each other and by their customers. Indeed, it could be argued that of all the various types of managers that exist in society, business managers are the least important and the least powerful from the social and political points of view.

This argument is quite contrary to the more usual view of the businessman as a puppeteer who has but to pull strings to make civil servants and politicians jump. Perhaps, at one time, such a view was essentially correct; but in my personal experience as a business and government consultant who has been closely involved with a number of important economic-political decisions, I have never found that this view of the power of business managers accorded with the facts. A cabinet minister or a provincial premier wields social power that is quite unmatched by that of the president of the largest corporation. Of course, one man's experience does not prove very much, but, on a broader scale, how does one reconcile the drift of current government legislation towards more transfer payments, medicare, freer trade, and more regulation of business with the view that big business is "running the country"?

At the same time, no one is going to deny that business managers have power, and whether this power is great or small, if French Canadians feel that English Canadians have an unfair advantage in obtaining managerial positions in business they are very likely to experience frustration, and quite properly so. Any English Canadian who has any trouble understanding this feeling might reflect on the speeches which are made from time to time about American companies which, it is alleged, are not hiring Canadians for the top jobs.

### B. Managerial Achievement Ratios

Our problem then is to determine what kind of representation French Canadians have in management, to understand and explain the facts, and to consider what role, if any, education and language may play in determining who is to manage, and who is to be managed.

There are several ways of defining "manager." In the census returns the Dominion Bureau of Statistics has a vocational classification called "managerial," and the people in this category are those who have selected that particular term over all others as best describing their function. It can also be argued that almost anyone who has an income of \$10,000 or more performs at least some management functions. Many of the professionals who were the subject of the last chapter undoubtedly had some managerial responsibilities.

Table IV.1 gives the percentage of the working population in Quebec by ethnic origin and the proportion that each ethnic group contributes to the class called managers. Management is defined in two senses: the first is the Dominion Bureau of Statistics' managerial category, and the second includes all those in the professional class, except craftsmen and salesmen, who earn \$10,000 or more per year.

Table IV.1

Managerial achievement ratios in Quebec for those earning \$10,000 and over per year

	Working population by origin	Managers (D.B.S. classification)		Professionals except craftsmen & salesmen	
	%	%	Achievement ratio	%	Achievement ratio
French	75.4	44.3	.59	48.7	.65
British Isles	12.8	33.0	2.58	32.1	2.51
Other	11.8	22.7	1.92	19.2	1.63

In each case an "achievement ratio" has been calculated, which is simply the proportion of each ethnic group in a particular managerial category (for example, the proportion of French Canadians in the managerial group earning \$10,000 per year and over) divided by the proportion of that ethnic group in the total population. The achievement ratio is therefore a measure of under- or over-representation in management of an ethnic group and provides us, in a sense, with a measure of the relative chance that an average member of an ethnic group has of achieving management status. All things being equal, the normal achievement ratio would be one.

Table IV.1 seems to indicate that the odds for obtaining positions in management are weighted heavily against the French Canadians.

There are fewer than two-thirds of the number of French Canadians in management that one would expect if the selection were made from a random sample of the total population. In Chapter II we examined on an *a priori* basis the possibility of the existence of widespread ethnic prejudice which might explain the below-average economic achievement of the French Canadians. We considered that such an hypothesis would not stand up under scrutiny when applied to the labour force.

In Chapter III we took advantage of a survey of professionals in the labour force to see empirically if ethnic prejudice was an important factor. The survey results indicated that French- and English-speaking, non-management professionals with the same education tended to earn about the same income.

One should not dismiss, on *a priori* grounds, the possibility that ethnic prejudice might play an important part in the selection of managers. A company president might be quite broad-minded about letting anyone use the facilities in his plant, and yet might be quite narrow-minded about issuing keys to the executive washroom to persons who did not wear the old school tie. The census data would seem to indicate, at first glance at least, that workers and managers may be selected according to different rules.

In order to test this hypothesis further, one might reason that if prejudice is an important factor in selecting managers it would likely be felt most keenly by those French Canadians living outside the French Canadian environment of their own province. For French Canadians outside Quebec, therefore, one would expect achievement ratios to be lower. In spite of the fact that the level of education of French Canadians outside Quebec is just a bit lower than of those inside the province, it was decided that the test was worth making, and so the calculations of the previous table were repeated except that this time the analysis was applied to all of Canada *except* Quebec. The results are shown in Table IV.2.

Table IV.2  
Managerial achievement ratios in Canada, excluding Quebec, for those earning \$10,000 per year and over

	Working population by origin	Managers (D.B.S. classification)	Achievement ratio	Professionals except craftsmen & salesmen	Achievement ratio
	%	%		%	
French	5.1	3.8	.74	3.9	.76
British Isles	69.6	68.8	.99	66.9	.96
Other	25.3	27.4	1.08	29.2	1.15

It is frankly surprising to find that instead of having lower management achievement ratios, the French Canadians outside Quebec score higher despite having slightly less formal education. It should be remembered that the French Canadians analysed in this table identify themselves as French Canadian. We have to assume, of course, that a very high proportion of them speak English, but in their own view at least they are not anglicized. The improvement in the achievement ratio of French Canadians outside Quebec (who presumably speak English) gives at least a hint of the importance of the English language in the management of business.

Incidentally, while Table IV.2 suggests the importance of knowing English, it also makes it quite clear that the advantage of actually being English is grossly overrated. If there is any choice in the matter, the French Canadians wanting to get ahead would significantly improve their chances of achieving positions in management outside Quebec if they became "other-ized" rather than anglicized. The English in fact seem to have rather a hard time holding their own against competition from "other" groups and perhaps some of us would best serve the interests of our children by changing our designations to names like Smithousky or Armstrongovitch.

The problem with the achievement ratios calculated in the previous tables is that they imply that managers should be selected at random from the population regardless of age or education. Yet managers are not selected in this way. It is perfectly obvious that, Horatio Alger stories notwithstanding, the college graduate has a very much better chance of becoming a company president than has the high school drop-out. There are a number of studies in the United States showing educational and other characteristics of the managerial elite. The publications of Joslyn and Taussig<sup>1</sup> and Mabel Newcomer<sup>2</sup> are examples. From these pieces of research we know that the average educational level of executives is very high compared with the rest of the population, and it is, moreover, increasing steadily over time. Indeed, in the largest firms there are more executives with two degrees than there are with none, and the average number of university degrees per senior executive in the United States exceeds one.

In Canada we have put much less effort into education in general than the United States has, and only a fraction as much into business education. As a result, firms have simply not had the number and variety of better-educated people to choose from that similar firms in the United States have had. Still, the average level of education of managers in Canada is very much higher than that of the total population.

Information on the education of executives was obtained from a supplementary questionnaire sent to all the large companies of the main sample used in the study by Professor R. N. Morrison referred to previously,\* and in which the author of this study participated.

\*See page 23.



Table IV.3  
Educational distribution of executives occupying top positions, by highest level of education attained and by size of firm, in Canada

Highest level of education attained	Size of firm by number of employees						Total (over 50) weighted* No. %
	50 - 500 No. %	500 - 1,000 No. %	Over 1,000 No. %	Over 1,000 No. %	Over 1,000 No. %	Over 1,000 No. %	
Less than primary	19 1.5	0 0	0 0	0 0	19 0.9		
Primary	23 1.8	0 0	0 0	0 0	23 1.1		
Less than high school graduation	76 6.1	3 2.6	4 1.2	4 1.2	83 4.2		
High school graduation	485 38.6	36 31.6	45 14.0	45 14.0	566 31.2		
Less than Bachelor	179 14.3	16 14.0	55 17.1	55 17.1	250 14.9		
Bachelor	404 32.2	50 43.9	140 43.5	140 43.5	594 36.9		
Post-Bachelor	70 5.6	9 7.9	78 24.2	78 24.2	157 10.8		
(Total university)	(653) (52.0)	(75) (65.8)	(273) (84.8)	(273) (84.8)	(1,001) (62.6)		
Total all levels	1,256 100.0	114 100.0	322 100.0	322 100.0	1,692 100.0		

\*Weighted according to the total number of employees employed in manufacturing in different sizes of establishments, grouped according to number of employees.

In addition, a mailed questionnaire was sent to smaller firms in Ontario and Quebec. The replies provided information on the education of nearly 1,700 executives. Of these, almost 1,400 were the top three executives in companies employing from 50 to 1,000 employees. The remaining 300 were the top executives of the large companies. The latter were asked for information on the top 10 people in the company, but the replies did not always relate to exactly that number. Table IV.3 shows the distribution of 1,692 executives by size of firm and by highest level of education attained. All these firms operate in Quebec, but some have head offices located elsewhere in Canada.

The table must be considered in relation to the educational achievement of the labour force in the age group from 45 to 65. In Quebec the percentage distribution of education in this age group at the time of the 1961 census was as follows:

Primary and less than primary	62
Less than high school	27
Completed high school	6
University: less than Bachelor	2
University: Bachelor's degree or higher	3

By comparing the education of the top executives in Table IV.3 with the education of the total population of Quebec, one can readily see that the small majority of the population going to university must supply a very large proportion of the executive talent. To be more specific: in the largest companies *none* of the top 322 executives had only primary, or less than primary, education. Yet if executives were chosen by a random sample from the population, we would expect to find 62 per cent of them in this category. When we combine this educational category with high school drop-outs, we can see that 89 per cent of the population supplies only 1.2 per cent of the top executives in the large companies. Or, to put the matter the other way around, from the ranks of the 5 per cent of the Quebec population between 45 and 65 with some university education come 85 per cent of the executives in the big companies.

The very apparent and close relationship between executive achievement and education will obviously be reflected in the ethnic origin of the managerial group unless all ethnic groups have the same quantity, quality, and mix of education. We know, of course, that the average number of years of schooling is different for French- and English-speaking Canadians, and it was decided to measure what impact this fact alone was likely to have on the ethnicity of managers.

In order to do this it was necessary to compute the number of French-speaking and English-speaking managers that would be found in Quebec if managers were chosen at random from the Quebec population, both French and English, but still chosen in such a way among educational levels as to produce the existing distribution of years of education of today's managers. In short, the predictive process had to give full weight to years of schooling but ignore ethnicity. By comparing the actual number of French- and English-speaking managers

Table IV.4  
Expected distribution of managers in Quebec by ethnicity based on random selection assuming the same educational distribution as shown for the executives of firms employing more than 50 employees

Educational level	Ethnic group	Number in 45-65 age group ('61 census)	Sub-weight	Weight of educational level	Expected number of executives in ethnic group per 100 executives			
					Fr.	Eng.	Other	
Primary and less than primary	French	434,638	83.0		1.6			
	English	40,763	7.8			0.2		
	Other	48,086	9.2				0.2	
	Total	523,487	100.0	2.0			2.0	
Less than high school	French	155,174	70.4		3.0			
	English	50,400	22.8			1.0		
	Other	14,999	6.8				0.3	
	Total	220,573	100.0	4.2			4.2	
Completed high school	French	34,062	69.2		21.6			
	English	11,899	24.2			7.6		
	Other	3,292	6.7				2.1	
	Total	49,253	100.0	31.2			31.2	
University: less than Bachelor's degree	French	10,733	51.8		7.7			
	English	6,613	31.9			4.7		
	Other	3,412	16.4				2.4	
	Total	20,758	100.0	14.9			14.9	
University: Bachelor's degree or higher	French	14,587	54.4		25.9			
	English	7,472	27.9			13.3		
	Other	4,741	17.7				8.4	
	Total	26,800	100.0	47.7			47.7	
Expected ethnic distribution of managers				100.0	59.8	26.8	13.4	100.0

with the predicted number, we would have "corrected" for years of education; consequently the failure of an ethnic group to achieve the "right" or expected number of managers would then have to be attributed to the *kind* of education received (which we shall come to shortly) or to non-educational factors such as language, culture, prejudice, and so on.

In order to undertake this analysis, it was assumed that the distribution of the educational levels of the 1,692 executives in the sample could be applied to all executives. However, because the sample was subdivided by size of establishment, and because the educational characteristics of managers vary with the size of firm, it was necessary to estimate the relative importance of each of the size categories in the total population. To solve this problem, it was assumed that executives were divided among different-sized firms in the same ratio as the total labour force. The Dominion Bureau of Statistics' estimate of the manufacturing labour force in firms employing 50 to 500, 500 to 1,000, and over 1,000, therefore, provided the weights which were applied to Table IV.4 to estimate the educational distribution of 100 managers drawn at random from the population of Quebec.

There are, of course, a number of shortcomings in this approach. For one thing, there are probably more executives per thousand of the labour force in large than in small firms and since the educational requirement for executives in large firms is considerably higher than for those in small firms, the education of the average executive has probably been understated. However, because of time limitations, this estimate was the best that could be made. The next step was to apply this distribution of the educational characteristics of managers to the 1961 census estimate of the labour force broken down by education and ethnicity.

The calculations in Table IV.4 give the number of executives in Quebec that might be expected from the three main groups, if the executives were chosen at random from each ethnic and educational category of the census. We see, for example, that on the basis of the data presented, French Canadians should make up about 59.8 per cent of the managerial work force of the province. This table, then, permits us to compare the *expected* percentage with the *actual* percentage that each group did, in fact, contribute to the managerial class. By dividing the actual percentage figure by that expected, we are able to determine new and rather more refined achievement ratios. These ratios are set out in Table IV.5.

If we compare the achievement ratios in Table IV.5 with the cruder achievement ratios given in Table IV.1, we can see how much of the apparent advantage of the English Canadians and the apparent disadvantage of the French Canadians disappears when allowance is made for years of formal education. The English Canadians in managerial positions of \$10,000 and over, as defined by the Dominion Bureau of Statistics, who seem to have an achievement ratio 158 per cent greater

Table IV.5  
Refined managerial achievement ratios in Quebec for those earning \$10,000 and over per year

Ethnicity	Expected contribution of ethnic group to management	Managers (D.B.S. classification)		Professionals except craftsmen & salesmen	
		Actual %	Achievement ratio	Actual %	Achievement ratio
French	59.8	44.3	.74	48.7	.81
English	26.8	33.0	1.23	32.1	1.20
Other	13.4	22.7	1.69	19.2	1.43

than that expected on the basis of a random selection from the total population, have this advantage cut to 23 per cent for this particular category. The French Canadians, instead of a 41 per cent disadvantage (Table IV.1) have, on the basis of Table IV.5, a 26 per cent disadvantage.

The most serious problem, however, is that this analysis ignores the kind of education or the educational mix, that is, it assumes that graduates of all university courses have an equal chance of obtaining an executive position. It is, of course, perfectly obvious that all university graduates do not have an equal chance of becoming company executives, if for no other reason than that some programmes of education are followed only after a student has decided not to work in business. Hence, one expects that the student studying theology, medicine or agriculture would not normally seek a job in industry after his graduation.

Moreover, on both *a priori* and empirical grounds, it is apparent that some kinds of education are more likely than others to lead to promotion in the business world. It can hardly be denied that the management of machines and people poses a broad array of physical, engineering, behavioural and organizational problems. These problems are complex but can be studied, and useful generalizations, theories and models can be formulated and tested. A body of knowledge can thus be developed and transmitted to others not having this knowledge. It would indeed be astonishing if people who received education in these areas did not have a head start on those who did not.

Of course, there are self-taught managers—and good ones—just as there are self-taught economists and historians, and just as there would be self-taught doctors and lawyers, if the law allowed it. In the past, management, like medicine before it, was mostly art with a small leavening of science. In time, however, the scientific method

has become more and more important and the amount of management theory that is clearly teachable has increased with the years. In this regard, management is following no different a course than most of the other professional and social sciences.

While American career studies and common sense would both indicate the importance of preparing students to meet the physical, human and organizational aspects of management, we in Canada have been very slow to accept this fact. Indeed, one of the critics of this study's first draft wrote, "The value of a business degree, especially at the undergraduate level, as compared with other degrees in preparing someone for management, is still to be proven." This is not an atypical reaction on the part of many academics and, indeed, of some businessmen. This feeling is strongly enough entrenched in Canada that the provision of business education facilities in many Canadian universities is a fairly recent event.

In order to test the relative importance of various kinds of education to managerial achievement it was decided to go back to the large companies in our study for further information on the educational backgrounds of their top ten executives. Usable data were thus obtained on 262 executives whose first language was other than French, and on the 44 who were French-speaking.

Table IV.6 gives the distribution of these executives among the different levels and kinds of education. It is striking that almost nine out of every ten English-speaking executives have at least some university education. Furthermore, the number with more than one degree exceeds the number with less than one degree. The percentage of French-speaking executives in our sample who have been to university is not so great and yet it still approaches two out of three.

It should be noted in passing, that the educational level of the French Canadian executive is significantly below that of his English-speaking colleague. If prejudice were an important factor in selecting managers one might expect the reverse. That is to say, if a French Canadian experienced difficulty in obtaining a top management position one might expect that he would have to be better educated than his English-speaking competitor in order to win a promotion. If this were so we should expect that the French-speaking managers who made it to the top would have better educational credentials than all others taken as a group. Such does not appear to be the case.

The second striking feature of the analysis is that two disciplines dominate all others as a source of top management. Among the 262 English-speaking managers 71 had engineering training and 79 had business training at the post-high school level—a total of 150 or 57 per cent of the top managers. Science follows a poor third, high school education only comes fourth, with law and arts splitting the remainder. If one considers engineering and business in relation only to executives who have some university training, it is seen that business and engineering faculties produce over 65 per cent of

Table IV.6  
Distribution of 306 executives by language, level, and kind of education

Education	English-speaking executives		French-speaking executives	
	No.	%	No.	%
Less than high school	2	.8	4	9.1
High school	31	11.8	11	25.0
Less than Bachelor				
Business	30		7	
Other	8		0	
Total	38	14.5	7	15.9
Bachelor				
Engineering	55		1	
Business	19		3	
Science	21		0	
Arts, social science	3		0	
Arts, humanities	2		0	
Arts, unspecified	8		3	
Total	108	41.2	7	15.9
Post-Bachelor				
<i>Single discipline</i>				
Engineering	16		0	
Business	19		2	
Science	11		0	
Law	15		6	
Arts	2		3	
Unspecified and other	3		1	
<i>Dual discipline</i>				
Business and other	11		2	
Other combinations	6		1	
Total	83	31.7	15	34.1
Grand total	262	100.0	44	100.0

the top managers. If science is included, close to 80 per cent of the top English-speaking university-trained managers are accounted for.

From this it appears that it is not the size of the university-trained population that matters. What is really important is the percentage of the population that has university training in engineering, management, and science.

Today, improved communications and better data are intensifying the social and economic pressures which are tending to produce a certain degree of homogeneity in our universities. It is therefore easy to forget just how different these institutions were in the years when today's senior executives were receiving their education.

Back in 1929 the University of Montreal and Laval University, the two major French-language universities in Quebec, awarded 17 Bachelor and *licence* degrees in commerce, while awarding 327 arts degrees (which presumably did not include the arts degrees granted by affiliated colleges).<sup>3</sup> This represents just over one commerce for every 20 arts degrees. The ratio at McGill was one to four (25 to 104), and at Alberta the score stood at 9 to 23.

As far as engineering and science were concerned, these two fields accounted for only 46 out of 896 degrees awarded by the two French-speaking universities. At McGill, on the other hand, out of only 391 degrees awarded 118 were in engineering and science.

To summarize: in 1929 at McGill one out of every three graduates emerged from the fields from which most managers are drawn: engineering, business, and science. From the two major French-language universities, on the other hand, only one student out of every 13 graduated in the three top manager-producing faculties. To put the matter a little differently, McGill, which was considerably smaller than either of its two sister French-language universities, produced about two and one-half times as many graduates with a high managerial potential as did the other two universities combined. Had this situation persisted over the years and had it applied equally to all French-language and other universities from which the present managers in Quebec have been drawn, we would expect something like 30 per cent of today's university-trained managers to be French-speaking (or at least to be from French-language universities) and 70 per cent of the managers to be English-speaking or "other." The actual percentages according to D.B.S. for managers earning over \$10,000 in 1961 (Table IV.1) were 44 and 56 per cent respectively.

Of course, conditions in the universities did change and graduates moved in and out of the province. It would have been helpful to draw up a complete description of the present Quebec population by level and kind of education, broken down by ethnicity. Our analysis has shown the contribution which each educational group has made to the existing management. By assuming a random selection (in so far as ethnicity is concerned) of this number of managers from within each group we could calculate or "predict" the number of managers that there would be in Quebec from each ethnic group.

For example, suppose that the educational group, made up for all those who have postgraduate business education either as a continuation of an undergraduate business degree or as a second degree on top of a technical or scientific degree, contributed 12 out of every 100 managers in Quebec. If our educational inventory told us that there were 600 people in this educational group, 200 of whom were



French-speaking and 400 were English-speaking, then we would expect that with a random selection the 12 representatives of the group would be made up of four French-speaking and eight English-speaking Canadians. By undertaking this analysis for each educational group we would know just how many French-speaking Canadians there should be per 100 managers. By comparing the expected or predicted number of French-speaking Canadians in management with the actual number we would have an indication of the importance of non-educational factors in the selection of managers.

Suppose that the random process of selecting managers just described predicted that 49 out of every 100 managers earning over \$10,000 should be French Canadian, while in fact only 44 belonged to this group, we would then know that for every 100 managers in Quebec there were five French Canadians who had failed to achieve managerial status for non-educational reasons. These five would have to blame language disadvantage or cultural difference or ethnic prejudice or something else for their failure to become managers.

Had it been possible to perform the analysis described above, we would have been able to see how many French- and English-speaking engineers became managers, and the percentage of each ethnic group which did and the relative incomes they earned would provide exactly the comparison necessary to assess the total importance of all non-educational factors in the selection of managers.

### *C. Managerial Achievement of Architects, Scientists, and Engineers*

As before, it has been assumed that the graduates of the University of Montreal (l'École polytechnique), Sherbrooke, Laval, and l'École des beaux arts are so overwhelmingly French Canadian that the graduates of these universities are representative of the French-speaking sector of Quebec. For purposes of this analysis, then, these graduates again comprise the French Canadian sample. Graduates of all other universities are lumped together to represent the non-French population.

Each respondent was asked, among other things, to designate the function he performed, and one of the categories he could select was management. The replies, therefore, enabled us to determine for French Canadians and others the number and percentage of each discipline and each graduating class (for example, electrical engineers graduating from 1950 to 1954) who were in management. We were also able to determine the average salary of each management group.

#### *1. Architects*

Figure IV.1 shows the percentage in management and the salaries of French Canadian and other architects. There are only 29 French Canadian, and 48 other architects in our sample who consider themselves to be performing management functions. The graphs, therefore, show

considerable variation which is probably not too meaningful. The 15 postwar graduates are at an income advantage, while the 14 wartime and prewar graduates are at a disadvantage. As for the percentage in management, the French Canadians are at a disadvantage, though this may be a function of the average size of the architectural firms owned by French Canadians and others. On balance the very considerable income advantage which the professional French Canadian architect has does not show up among those architects who have called themselves managers, except in the younger group.

The head of a firm of architects who was asked to comment on this section stated that the most likely explanation of why the older French Canadian architects were doing less well than either their English-speaking contemporaries or their younger French Canadian colleagues was owing to changes in the Quebec government. He reasoned that many older French Canadian architects in senior positions would be closely associated with a former government and that when a new government came to power these senior people would have lost their preferred positions.

## 2. *Scientists*

In the analysis of professional achievement we found that the average French Canadian scientist in Quebec who was in neither management nor education was at a marked disadvantage, though most of the explanation was apparently to be found in the nature of the "other courses" taken at university.\* In Figures IV.2 and IV.3 we can see that the disadvantage also applies to scientists in management. In the first chart we see that French Canadians in management who graduated after 1950 are about on a par with other scientists. Those who graduated before 1950 have, as before, a considerable income disadvantage. The graph of managers with an "other science" background (Figure IV.3) shows again that most of the disadvantage is felt by French Canadians with "other courses."

In our sample there are only 15 French Canadian scientists with Master's degrees and a like number with Ph.D.'s who are in management. Both of these groups are at an income disadvantage. Here the experience of Master's graduates in management is similar to what we found for those doing professional work and once again the explanation may lie with the level, and perhaps the translation, of the term *licence*. But whereas those French Canadian professional scientists who went on to a Ph.D. closed, or nearly closed, the income gap between themselves and other Canadians with Ph.D.'s (Table III.4), the same is not true of those who are in management.

## 3. *Engineers*

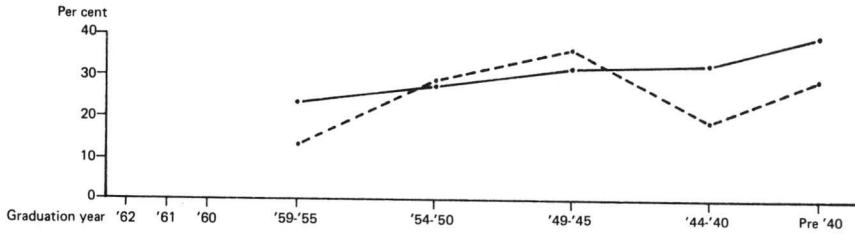
The professionals who are of particular interest to us are the engineers since they represent a group much more homogeneous in the kind and quality of education than any other for whom we have information. The several provincial associations or corporations of

\*See section on "Science Graduates," Chapter III, 27-33.

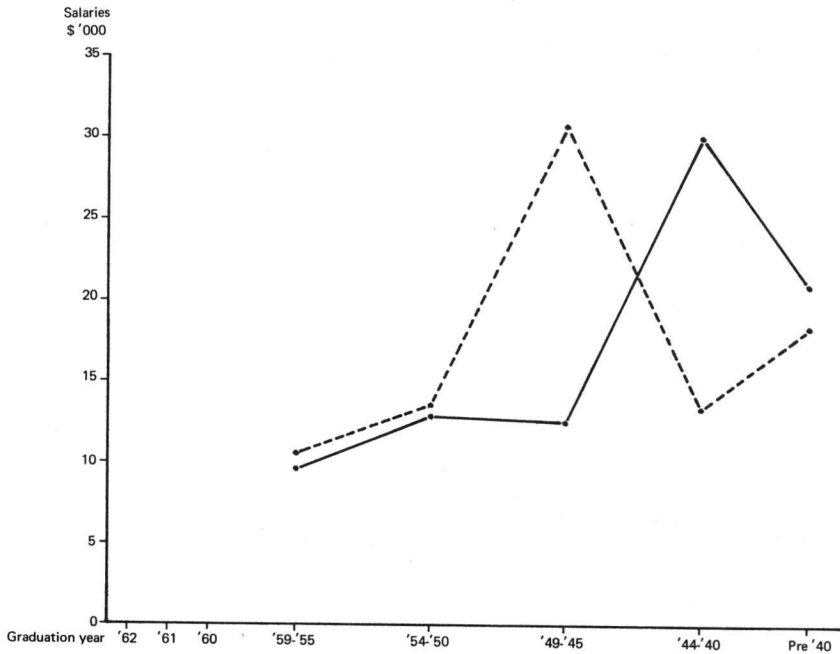
Figure IV.1

Management achievement of university graduates in Quebec, Bachelor level: Architecture

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

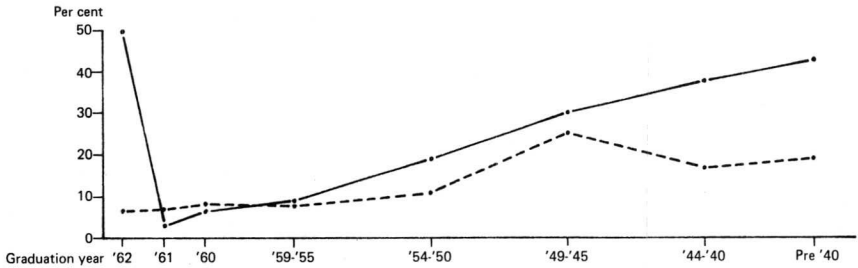


Number in management:								
French	0	0	0	4	7	4	2	12
Other	0	0	1	9	12	6	1	12
Per cent in management:								
French	0	0	0	13	29	36	18	29
Other	0	0	50	24	28	32	33	40
Salary (\$):								
French	0	0	0	10,500	13,714	30,625	13,500	18,541
Other	0	0	8,500	9,611	13,208	12,833	30,000	21,263

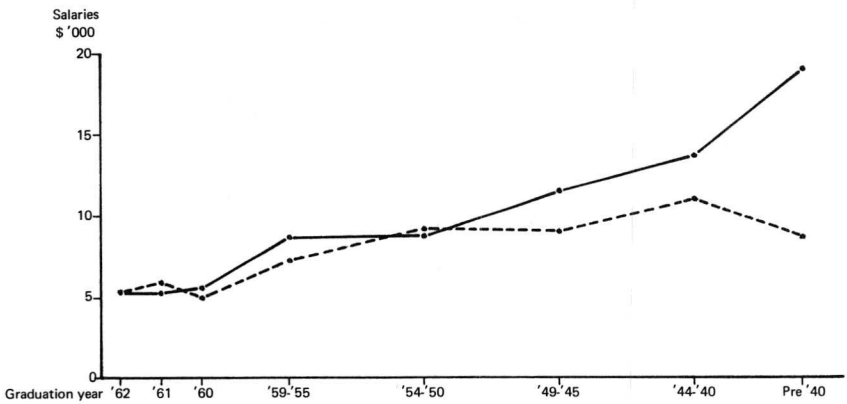
Figure IV.2

Management achievement of university graduates in Quebec, Bachelor level: All science

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

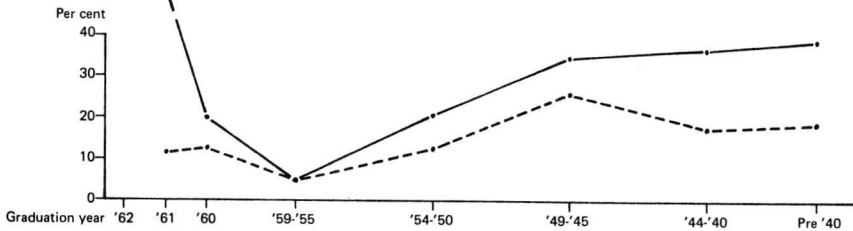


Number in management:								
French	1	2	3	16	17	33	17	53
Other	1	1	5	24	61	72	45	86
Per cent in management:								
French	7	8	9	8	11	25	17	19
Other	50	3	7	9	19	30	38	43
Salary (\$):								
French	5,500	6,000	5,166	7,250	9,235	9,045	11,205	8,867
Other	5,500	5,500	5,700	8,750	9,040	11,701	13,844	19,058

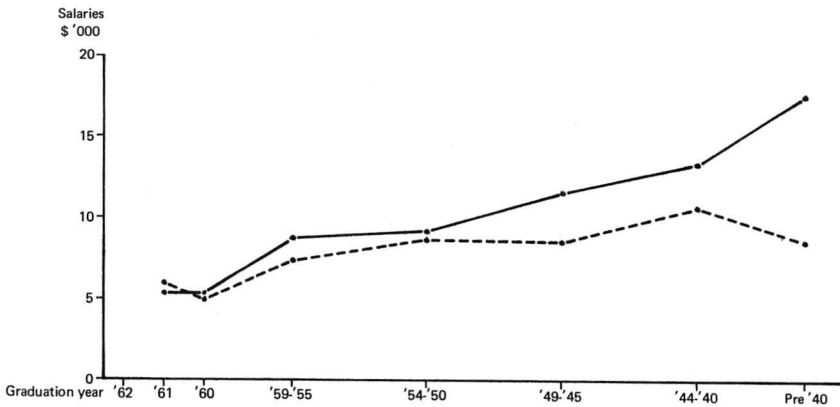
Figure IV.3

Management achievement of university graduates in Quebec, Bachelor level: "Other courses" in science

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_



Number in management:								
French	0	2	3	7	14	23	15	47
Other	0	1	2	3	25	34	16	26
Per cent in management:								
French	0	12	13	5	13	26	18	19
Other	0	100	20	5	21	35	37	39
Salary (\$):								
French	0	6,000	5,166	7,357	8,571	8,456	10,766	8,553
Other	0	5,500	5,500	8,833	8,960	11,852	13,531	17,673

engineers throughout Canada (and indeed throughout the United States as well) impose roughly the same standards of admission on all applicants, with the result that a comparison of the management achievement of the French and other ethnic groups should be much more meaningful than a comparison of, say, scientists, and as we know engineers are one of the two major sources of executive talent.

Figures IV.4 to IV.7 show in turn the percentage in management and the average salaries of all engineers and of three main categories ("main" at least from the point of view of the number in our sample): civil, chemical and electrical engineers. These charts reveal the striking fact that the French Canadians are at a significant advantage in obtaining management positions, but those who are in management do not receive as much money as other engineers who reach managerial positions.

The most important chart from the point of view of educational homogeneity and numbers in our sample is Figure IV.5, which shows the managerial achievement of civil engineers. It appears that the French Canadian civil engineer has about five more chances per 100 of obtaining a position in management than any other Canadian, but that the greater number who "win" managerial jobs receive a salary which, on the one hand, is higher than the engineers (French Canadian or other) who are not promoted into the ranks of management but which, on the other hand, is lower than that received by other engineer managers. The income disadvantage of the French Canadian manager ranges from zero to 10 per cent, depending on his age.

As it happens, the total number of management dollars paid to 100 French Canadian civil engineers chosen at random from all French Canadian civil engineers in the province is about the same as the management dollars paid to 100 other civil engineers; the distribution, however, is somewhat different. With the French Canadian group, the management dollars are spread over a larger number of individuals.

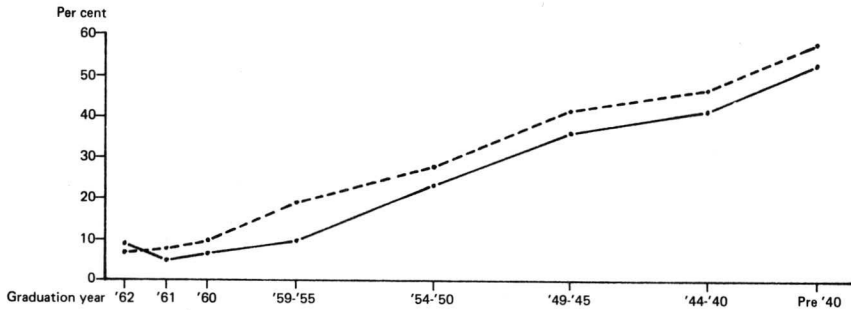
The most obvious explanation of this rather peculiar pattern of managerial achievement of engineers is that they are at once beneficiaries and victims of a "bilingual belt"—the zone in the hierarchy of a company which unites unilingual French and unilingual English workers, managers, customers, suppliers and the like.

It is quite logical to assume that the average French Canadian who graduates from university is able at least to get along in English. Moreover, such a graduate is particularly valuable to an English-language company in Quebec in the bilingual belt where work may be performed and commands given in French, but information passed up and commands received in English. In such a situation it is likely that a command of French is much more important than a command of English.

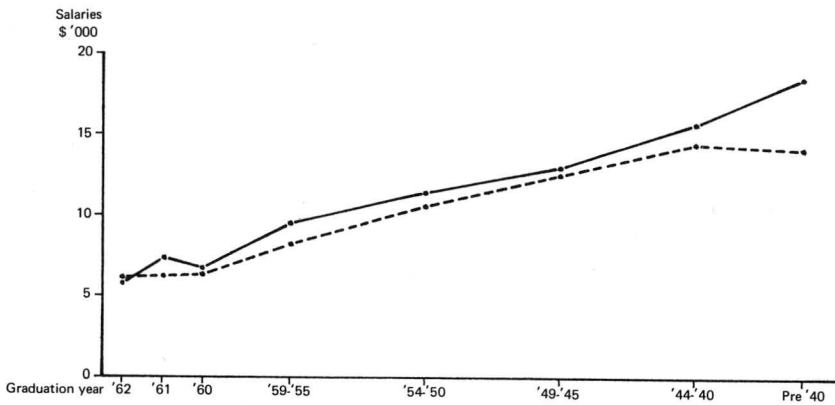
It would seem surprising *a priori* if the relative command of French and English did not become an important factor in deciding who should be promoted out of this bilingual belt into a higher level of management where English is almost exclusively the working language. One

Figure IV.4  
 Management achievement of university graduates in Quebec, Bachelor level: Engineering (all branches)

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

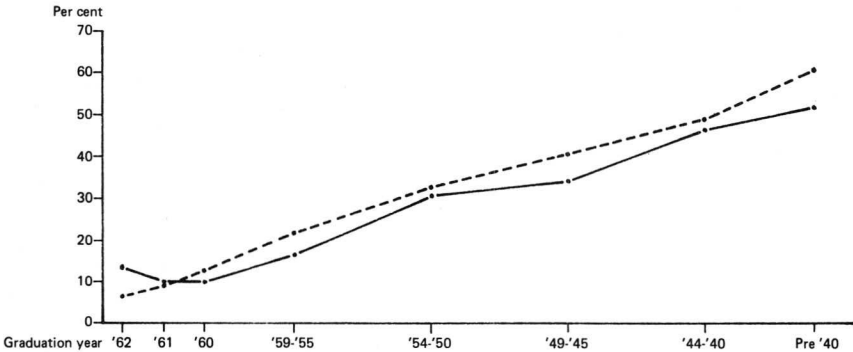


Number in management:								
French	3	11	17	124	110	103	68	138
Other	4	7	14	97	284	314	207	557
Per cent in management:								
French	7	8	10	19	28	42	47	58
Other	9	5	7	10	24	37	42	53
Salary (\$):								
French	6,166	6,227	6,323	8,274	10,650	12,645	14,470	14,173
Other	6,000	7,357	6,571	9,592	11,463	13,028	15,809	18,588

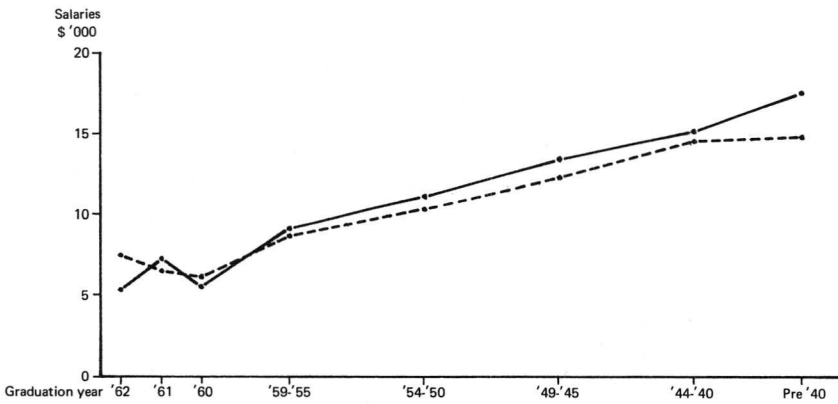
Figure IV.5

Management achievement of university graduates in Quebec, Bachelor level: Civil engineering

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_



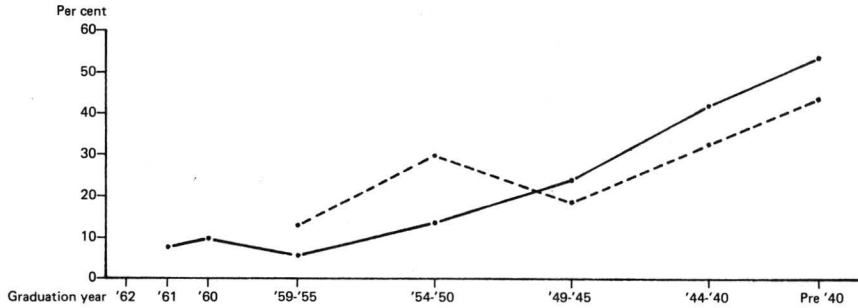
Number in management:								
French	1	5	9	60	53	33	41	110
Other	1	3	4	33	79	57	37	105
Per cent in management:								
French	7	9	13	22	33	41	49	61
Other	14	10	10	17	31	34	47	52
Salary (\$):								
French	7,500	6,500	6,388	8,650	10,301	12,318	14,670	14,700
Other	5,500	7,166	5,750	8,833	11,056	13,438	15,216	17,795



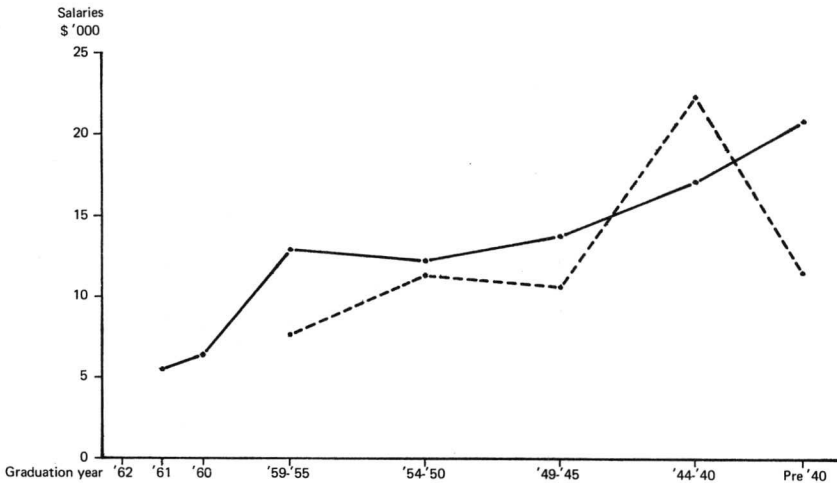
Figure IV.6

Management achievement of university graduates in Quebec, Bachelor level: Chemical engineering

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

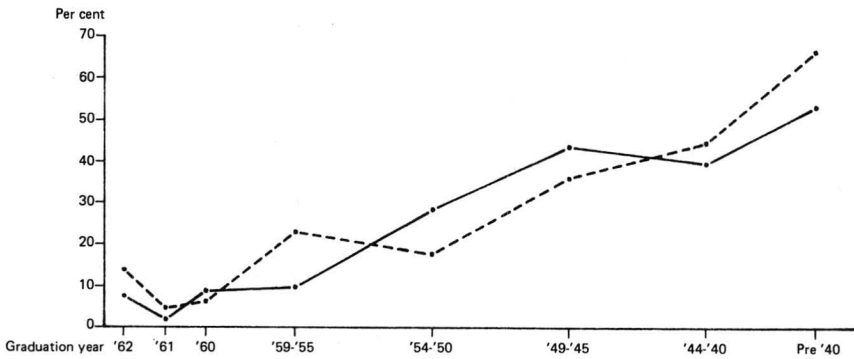


Number in management:								
French	0	0	0	6	9	4	2	4
Other	0	1	2	7	21	28	43	78
Per cent in management:								
French	0	0	0	13	30	19	33	44
Other	0	8	10	6	14	24	42	54
Salary (\$):								
French	0	0	0	7,666	11,444	10,750	24,750	11,750
Other	0	5,500	6,500	12,857	12,166	13,803	17,104	20,884

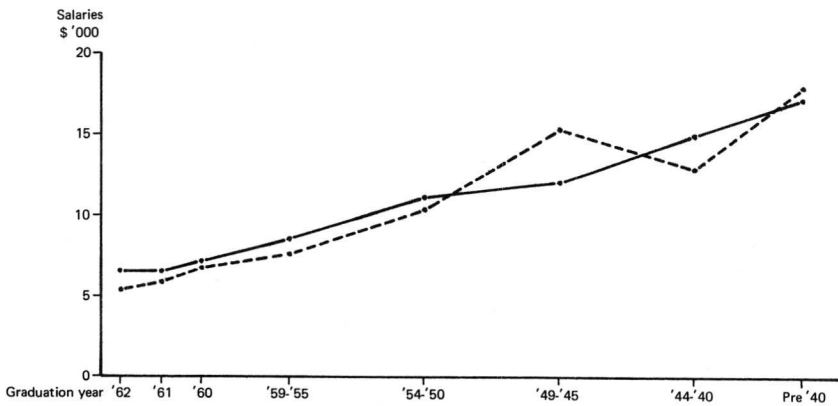
Figure IV.7

Management achievement of university graduates in Quebec, Bachelor level: Electrical engineering

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_



Number in management:								
French	2	2	2	17	10	16	5	4
Other	1	1	5	24	84	95	36	169
Per cent in management:								
French	14	5	7	23	18	36	45	67
Other	8	2	9	10	29	44	40	54
Salary (\$):								
French	5,500	6,000	7,000	7,676	10,400	15,343	12,900	17,875
Other	6,500	6,500	7,300	8,625	11,285	12,168	14,916	17,402

can easily imagine a French Canadian and an English Canadian candidate being considered for promotion, each of whom could "get along" in the other's language and who in all other respects were equal. The only difference we have assumed is that one can work effectively in French and can get along in English while the other can work efficiently in English and less so in French. If French is the most important language for working and explaining in the bilingual belt, the French Canadian would, we assume, enjoy a special advantage at that particular level and the English Canadian, a disadvantage; but at the next level of management in the company, these advantages would easily be reversed. In such a situation the senior executive who must decide on the promotion might very well feel that the French Canadian is making his greatest contribution to the company where he is, and that the English Canadian would be more efficient at the higher level.

Our data seem to support, though not prove, the hypothesis that something like this does tend to happen. But compared with the overall importance of education, the effect of the bilingual belt is slight. As a professional the French Canadian under 50 does not seem to be at a net disadvantage, and as a manager, comparing like with like, the disadvantage, if *all* the income differences could be attributed to this one factor, appears to be zero to the age of about 35 and perhaps 3 to 4 per cent from 35 to 50. Even this disadvantage is in part offset by the greater number of French Canadians who are able to obtain managerial jobs.

Above the age of 50 (or for graduates before 1940) the bilingual belt problem—plus all the other factors like quality of education, and so on, which work to the disadvantage of French Canadians—seems to put the French Canadian at an income disadvantage of about 10 per cent, though he still retains an advantage in obtaining a managerial job.

The second hypothesis that might explain both the slightly higher proportion of French Canadians in management and their somewhat lower salaries relates to the fact that the average French Canadian works in a somewhat smaller firm. We know that the French Canadian firms in Quebec are smaller than firms owned by non-French Canadians.\* Since they employ French Canadians almost exclusively, it follows, therefore, that the average French Canadian engineer works in a smaller firm than does the engineer from other ethnic groups. Because the small firm tends to be less highly specialized than its larger competitor, there is greater scope for any one member of the firm to participate in at least some management functions. This is simply to say that in a two-man drafting section, one man is likely to be the chief draftsman and the other the assistant chief draftsman. Larger drafting departments are likely to have more "Indians" but

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\*In exactly the same way, incidentally, that Alberta firms owned by Albertans are smaller than the firms owned nationally or internationally.

after adding a chief assistant to the assistant chief the possibility of adding still more chiefs diminishes. The result is that the smaller the department the higher the proportion of chiefs to Indians.

If a premium is placed on being a chief, or being in a particular environment (for example, one in which French is the working language), it is possible that French Canadians gravitate to positions in small firms where the reward consists, in part, in enjoying some management prerogatives and, in part, in not having to adjust to what might be considered a "foreign" environment or a different language.

Another interesting hypothesis that is consistent with the observed facts is that in almost all jobs performed by professionals there are elements of managerial functions. Indeed it is now a well-accepted proposition based on sound empirical research that the difference between a line and a staff job is at best a matter of degree. So-called staff people do make operating decisions and direct and coordinate the work of others, while line people often find themselves doing little more than tendering advice.

What this means, of course, is that it will not always be clear, even to oneself, whether one is in fact performing a managerial or a professional function. If one ethnic cultural group attaches somewhat greater value to being a manager, it would not be surprising if respondents of that ethnic group decided marginal cases in favour of the managerial, rather than the professional, label. Since managers are paid considerably more than professionals, all that would be necessary is to redefine some of the doubtful cases from managerial to professional in order to produce a lower percentage of French Canadians in management, and a higher average income of those remaining in the management category.

In the study made by Professors Auclair and Read<sup>4</sup> it was in fact established that status is significantly more important to a French-speaking than to an English-speaking Canadian. There is therefore a sound empirical basis for assuming that we can attribute all or part of the higher percentage of French Canadian engineers in management and their lower salaries to a slight and undoubtedly unconscious bias on the part of French Canadians to use the "managerial" rather than "professional" label in doubtful cases.

The final hypothesis that might explain the lower managerial incomes of French Canadians, especially in the older age groups, is simply that English becomes more important in both English- and French-owned firms as one mounts the managerial ladder. As has been pointed out earlier, the increasing importance of English as one moves up in the managerial hierarchy has been well documented by Professor R. N. Morrison, even for firms which are owned and operated by French Canadians.<sup>5</sup>

In Chapter III we observed that wherever one could identify a professional group that was likely to be more bilingual than average, the income improved. In order to see if this proposition would also

apply to managers we considered the experience of engineers at the Master's level in Quebec and of French-speaking engineer- and scientist-managers in Ontario. Figure IV.8 shows the managerial achievement of 26 French-speaking engineers compared with a larger number of English-speaking individuals who obtained management positions after having obtained a Master's degree in engineering. This group, which is probably more bilingual than engineers with Bachelor degrees, has done very well in obtaining management jobs, though its relative salary position is not so favourable as that of the French Canadians at the Bachelor's level. The interesting exception is eight (out of 16) pre-1940 graduates having management jobs at about the same rate of pay as their English-speaking colleagues. The anomaly we noted for engineers with Bachelor's degrees (a somewhat higher percentage in management with a correspondingly lower average salary) also holds for those with Master's degrees. The better knowledge of English which we have assumed this group has, appears to have paid off in more management jobs but not in relatively better pay.

Figure IV.9 describes the experience of 19 French Canadian engineers at the Bachelor's level who are performing managerial functions in Ontario. Figure IV.10 adds seven science graduates to the 19 engineers and shows the combined experience of both groups in Ontario. While the data are too thin to prove very much, this group, which is undoubtedly fluently bilingual, has been able to match the achievement of other Canadians in obtaining, and in being paid for, managerial jobs.

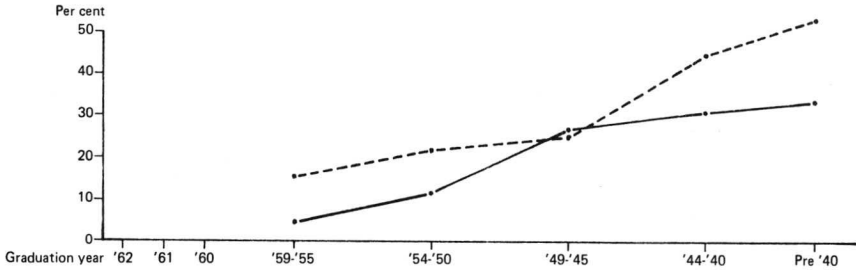
The last group of French Canadians we could assume to be almost completely bilingual were M.B.A.'s, since this degree was not offered in Quebec until very recently. Unfortunately, there are not enough cases on the French-speaking side to prove very much, but for what it is worth Figure IV.11 shows the incomes of the English- and French-speaking engineer-M.B.A.'s. The rather dramatic pay-off received by the six French Canadian individuals in our sample who elected this programme is worth noting.

This chart also enables us to offer fresh evidence concerning the appropriateness of different disciplines as a training for managers. Earlier in this chapter it was observed that engineering and business were far and away the major sources of executive talent. One might reason that if this is so the engineer-M.B.A.'s who have combined both fields should do very well indeed. In order to provide a basis of comparison we have included in Figure IV.11 the income experience of English-speaking (that is, "other") engineer-Ph.D.'s. Despite the fact that the Ph.D.'s have more years of formal education, the income achieved by the M.B.A.'s is strikingly greater.

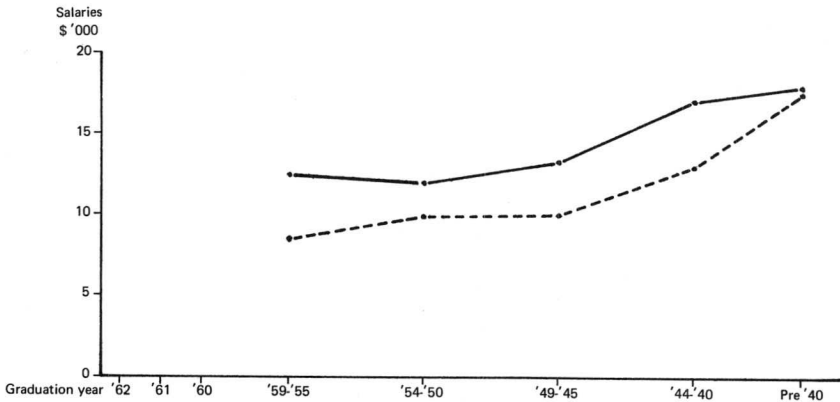
Figure IV.8

Management achievement of university graduates in Quebec, Master's level: All engineering

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

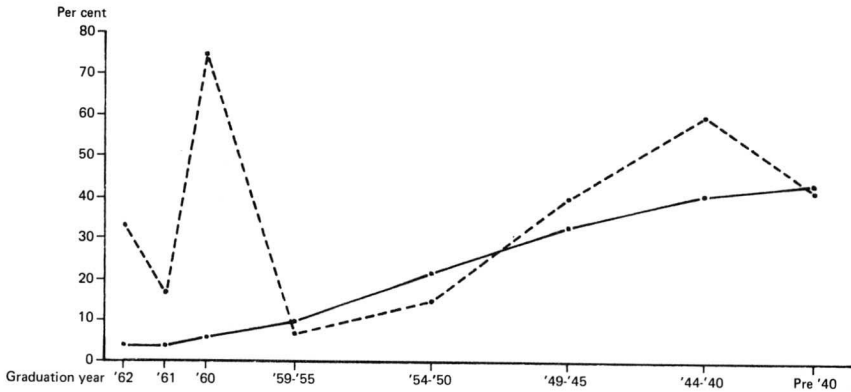


Number in management:								
French	0	0	0	6	5	2	5	8
Other	0	0	0	2	7	24	18	63
Per cent in management:								
French	0	0	0	16	22	25	45	50
Other	0	0	0	5	12	27	31	34
Salary (\$):								
French	0	0	0	8,666	9,900	10,000	13,000	17,562
Other	0	0	0	12,500	12,071	13,312	17,250	17,793

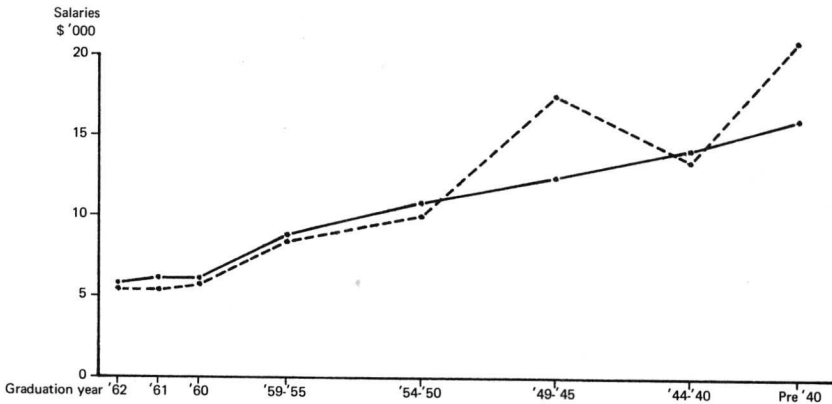
Figure IV.9

Management achievement of French-language university graduates in Ontario, Bachelor level: All engineering

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_

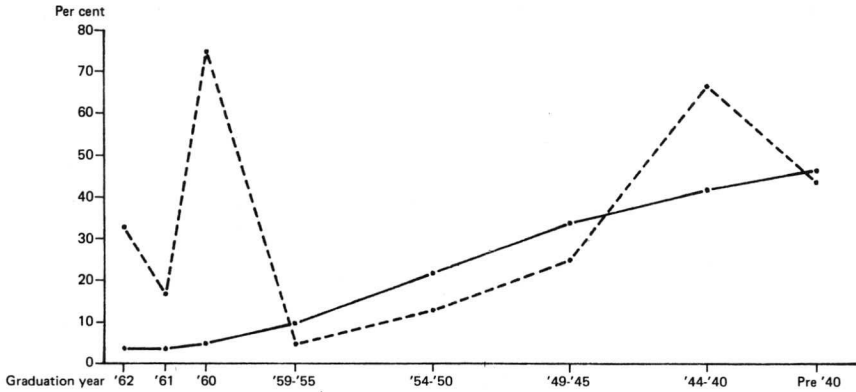


Number in management:								
French	4	1	3	1	2	2	2	4
Other	7	13	22	215	668	807	283	1,074
Per cent in management:								
French	33	17	75	5	13	25	67	44
Other	4	4	5	10	22	34	42	47
Salary (\$):								
French	5,500	5,500	5,833	8,500	10,000	17,500	13,500	20,875
Other	5,928	6,423	6,409	8,702	10,889	12,501	14,295	16,288

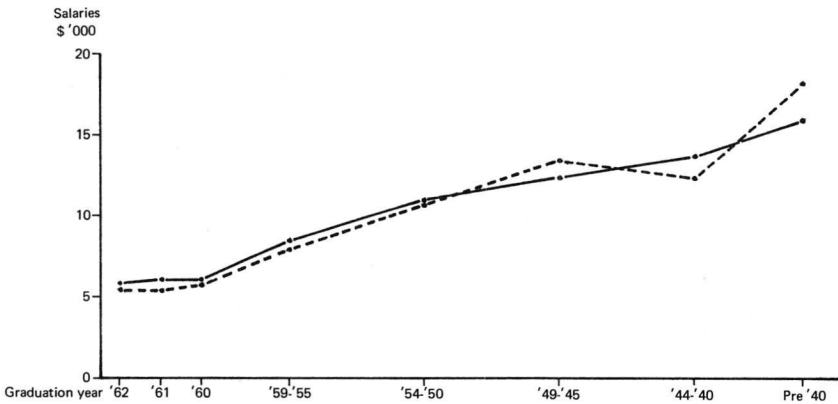
Figure IV.10

Management achievement of French-language university graduates in Ontario, Bachelor level: All engineering and science

Percentage of graduates (excluding those engaged in teaching) in management, from French-language universities -----, and other universities \_\_\_\_\_



Average salaries of graduates (excluding those engaged in teaching) in management from French-language universities -----, and other universities \_\_\_\_\_



Number in management:								
French	4	1	3	2	4	4	3	5
Other	7	16	30	238	732	890	342	1,212
Per cent in management:								
French	33	17	75	7	15	40	60	42
Other	4	4	6	10	22	33	41	44
Salary (\$):								
French	5,500	5,500	5,833	8,000	10,750	13,500	12,166	18,200
Other	5,928	6,250	6,233	8,636	10,779	12,406	13,808	16,126





The income of the average French-speaking Canadian is not as high as the income of his English-speaking counterpart. The difference is large enough to be perceived and it has been suggested that this provides an important source of friction between the two major ethnic groups. Of perhaps greater importance is the fact that French-speaking Canadians appear to be under-represented in the management of corporations. This fact also leads to an understandable dissatisfaction on the part of French-speaking Canadians with their role in our society.

Given the below-average income and managerial achievement of French-speaking Canadians, it is not difficult to understand the political appeal of such slogans as "100 years of injustice," *maîtres chez nous*, "hewers of wood and drawers of water," "English economic imperialism," "exploitation," "second-class citizens," and so on.

It was the main purpose of this study to determine what substance there might be to the proposition that French-speaking Canadians were operating under some kind of economic handicap, and, if there is such a handicap, to understand and explain it so that it might be put right.

It was quickly discovered that measuring the economic achievement of two ethnic groups is not as easy as it might seem. A gross comparison of per capita income, for example, conceals more than it reveals. For example, a "correction" for age distribution is called for. Sixteen-year-olds can hardly claim that they are being exploited by sixty-year-olds just because the latter earn more money. Obviously a fair comparison requires us to take the age distribution of the different ethnic groups into account.

A fair comparison should also take into account cultural values. To cite an extreme case, a man who has taken a vow of poverty (or an ethnic group in which a higher proportion of its members has taken such a vow) should not expect the same income as a person who is

quite highly motivated to achieve economic ends. Or to introduce a different and more important variable, we know that income is very strongly related to education. Furthermore, we know that, rightly or wrongly, the operation of the competitive market places a higher monetary value on the services of an engineer than it does on the services of an arts graduate. It may, of course, be argued that the economic world is not as it should be and that the arts graduates are unfairly dealt with. It may even be argued that an ethnic group that chooses to place a higher percentage of its university students in arts programmes is being exploited—though what meaning "exploitation" could have if used in this way is not clear. Nor is it clear that any society would accept the logical solution to such an exploitation problem which would clearly involve a tax on engineers and a subsidy to the arts graduates of both ethnic groups.

Ideally a comparison of the economic and managerial achievements of two ethnic groups should make allowance for age, values, amount and kind of education, ability, and, of course, language. In this study we did not manage to achieve the ideal but the comparisons have probably come closer to comparing like with like, than any undertaken before the appointment of the Royal Commission on Bilingualism and Biculturalism. We have also been able to show that the nature and extent of the problem is quite different from what is commonly supposed.

In brief, it is suggested that this study challenges the belief that the French-speaking Canadian is, other things being equal, at a serious disadvantage compared to other Canadians. While the gross statistical evidence would seem to support the myth, our analysis has shown that the more carefully one refines the comparison and the closer one comes to comparing like with like, the better the French Canadian does *vis-à-vis* other ethnic groups.

The largest and most homogeneous group of French and other Canadians which was found was made up of engineers. Based primarily on the experience of this particular group, we may draw the following conclusions:

1. Taken together, the French Canadian managers and professional engineers under the age of 50 have an income advantage over all other groups.
2. When the managers in this group are considered separately, the French Canadians are at an advantage in obtaining management positions, but are at a disadvantage with regard to income ranging from zero for people who graduated in the last 10 years to 3.5 per cent for people who graduated 10 to 25 years ago.
3. French-speaking civil engineers over the age of 50, that is, those graduating before 1940, are at a 6 per cent income disadvantage taking managers and professional people together, whereas the managers in this group are at an income disadvantage of about 10 per cent. However, if we look at those who have gone on to do graduate work (most of which would be done in

English), the income disadvantage of this older group disappears both in the management and in the management plus professional groups taken together.

4. Considering all age groups together, 100 French Canadian civil engineers chosen at random would earn the same number of management dollars as 100 non-French Canadian civil engineers.
5. In accounting for achievement, ethnicity is not nearly so important as education. The average university graduate of any ethnic group in Canada will probably earn about the same pay as the average graduate of any other ethnic group with the same training.

In the months that passed between the first and second drafts of this report, the author had the opportunity to test these conclusions on a number of individuals. A minority accepted the evidence without surprise and indeed some (notably a number of successful French Canadians) questioned the assumption that there is a myth to the effect that French-speaking Canadians are at any disadvantage in the world of commerce. It must be said, however, that the majority of those who read the report had a very hard time accepting the evidence of this study. Is it possible, they asked, for the myth to be so far wide of the mark?

We owe it to these readers to explore this matter further. In the first place, it should be pointed out that measurement and science have only recently come to the social, managerial and political disciplines. Without measurement there can be no effective challenge to a myth. It is not obvious to a man who does not have access to the knowledge of the physical sciences that the earth turns on its axis rather than that the sun orbits around the earth. Without science who is to say that thunder is not the voice of a displeased god? The behavioural scientists tell us that much of our sensing of the environment is carried on to confirm our theories, our generalizations or our myths. "You can't generalize about people," "happy people are productive people," "spare the rod and spoil the child" are myths that do not happen to be true, but when challenged the non-behavioural-scientist will be able to quote many cases to "prove" his point.

Myths die hard, especially when some people want to believe in them. It is easier for a professor to believe that he did not get a promotion because the dean is prejudiced against him owing to his religion than because he is not a very effective teacher. As a case in point, the bright young graduate student who was processing the educational records of the top three men in the small-company survey of this study, was most impressed by "the number of cases in which one found that the top man had a grade four education while the second and third men might be a Ph.D. in chemistry and an M.B.A." The processing of a much larger number of individual cases than most of us could possibly be aware of in our lifetime confirmed for this student the Horatio Alger myth. However, the computer had not heard of Horatio

Alger and when it printed out the appropriate table it showed that despite the fact that the top man was a little older and therefore came from an age group with a little less education he had in fact more, not less, education than his two junior colleagues.

While a scientist should owe no obligation to ancient myths, the author's uneasiness in challenging so flatly the myth that the French-speaking Canadian is at an unfair disadvantage in the world of business arises partly from the fact that he, for one, accepted the validity of the myth. Furthermore, fairness or prejudice apart, there seemed on *a priori* grounds a few non-educational reasons why the French-speaking Canadian might not do as well financially as his English-speaking colleague. After allowing for age and the quantity and kind of education, it was expected that a significant spread between the incomes of French- and English-speaking Canadians would be found. This difference, it was thought, would then be apportioned in some way among (a) cultural differences, (b) language differences, including the problem of the "bilingual belt," (c) inherited wealth and income, and finally of course (d) ethnic prejudice.

As far as cultural differences are concerned, the Auclair-Read study indicated that there are statistically significant differences in the culture of the French and English ethnic groups and that, moreover, these differences would probably work to the economic disadvantage of the French Canadian.<sup>1</sup> As pointed out earlier, we do not know how significant these differences really are, measured by economic performance, and, moreover, it may be that by selecting those French- and English-speaking Canadians who have gone into engineering we may have sub-cultures which are quite similar. In other words, the cultural difference between an arts graduate and an engineer in the same ethnic group may be greater than the cultural difference between two average engineers from different ethnic groups. Our sample has probably eliminated or at least minimized cultural differences.

The evidence does suggest that bilingualism is important, especially as one gets older. This is not surprising and indeed, as Professor Morrison's research indicates, the requirement that a senior French Canadian manager be bilingual cannot normally be escaped, even by joining a French Canadian owned firm.<sup>2</sup> Again, it might be assumed that the most recent engineering graduates from French-language universities are sufficiently bilingual for the needs of most junior positions in Quebec and Ontario. Our study, therefore, has not isolated the cost of being and remaining unilingual for a French-speaking Canadian who aspires to a managerial role.

One might have expected *a priori* some difference in income (of perhaps 1 or 2 per cent) to be attributed to the momentum of historical differences in income and wealth. If French-speaking Canadians have had lower incomes and positions in the past one would expect these differences to carry forward—though perhaps in a modified form—to this generation.

The fact that this does not seem to have happened in our sample may be explained by the fact that French-speaking engineers come mostly from families that have already become professionally or managerially oriented in outlook and income. As far as "position" is concerned, managerial posts in the modern, large corporation are not inherited, and in most companies proven ability carries much more weight than a well-placed parent.

An important part of the myth we are examining attributes the disadvantage of the French-speaking Canadian, in part at least, to the existence of an ethnic prejudice. It is the *apparent* denial of the existence of such prejudice to which some readers of this study took the most violent exception. This proposition also requires further consideration.

It is, of course, possible that significant ethnic prejudice does not exist, at least among groups of western European extraction; or if it exists to a statistically significant degree, the prejudice does not produce what might be called significant economic responses. It is quite possible that a person's responses on an attitudinal survey would label him as mildly anti-Semitic, and yet he might continue to patronize a supermarket he knows to be owned by Jews.

There are other possible explanations which would allow for the existence of widespread prejudice and which would still be consistent with the results obtained in this study. In the first place, it may be that prejudice exists but that it is directed towards a stereotype rather than to specific or known individuals. Hence, we may be told in all seriousness by someone that "I can't stand Americans, but of course I like them fine as individuals—why, some of my best friends. . . ." What this seems to say is that the speaker does not like his idea of an American but that his "idea" is not allowed to influence his opinion of individuals.

In the present context it is quite possible that a "waspy" manager might not in principle like French-speaking Canadians, or Catholics, or both, but that once he gets to know Pierre, Pierre is henceforth assessed as an individual rather than as a member of an ethnic or religious group.

Another hypothesis is that prejudice used to exist but that it is disappearing because of better communication and more education. After all, if one goes back 150 years the ethnic prejudice was serious enough that the English and French in North America were shooting at each other. An analysis of the history books rather than the current newspapers might indicate that ethnic prejudice is fading. This hypothesis is supported by the fact that older French-speaking engineers have not done as well as younger engineers. (However, it does not square so well with the fact that the older French-speaking engineers with Master's degrees have out-performed their English-speaking counterparts.)

Another possibility that must be considered is that while prejudice might be important it is held in check within most individuals. The fact that a man does not pursue every pretty girl he meets does not mean he is not prejudiced in their favour. It may be that he would rather censor any outward manifestation of his prejudice than have to explain it to his wife. Racial or ethnic prejudice is not something of which most of us would be proud, and even if it has been acquired in childhood along with a fear of spiders and of the dark, as we mature we try to control it, to compensate for it, and perhaps from time to time even to over-compensate.

Another possibility that should be given some weight is that prejudice exists among both French- and English-speaking Canadians with the result that in part at least it is self-cancelling. That is to say, as measured by economic results the disadvantage that French-speaking Canadians suffer at the hands of other Canadians is counter-balanced by the disadvantage that other Canadians suffer at the hands of French-speaking Canadians.

Perhaps the most interesting hypothesis that has been suggested runs somewhat as follows. Prejudice against the French Canadian did exist in business and as a result there were few jobs open to French-speaking Canadians. The French-language universities simply responded to the manifest needs of the French-language community and the only reason they produced arts graduates rather than commerce graduates and engineers is that arts graduates could be absorbed by the French-language community while engineering, science, and commerce graduates could not. The fact that the engineering graduates of these universities did not suffer simply attests to the fact that the universities were successful in keeping the supply restricted to meet a demand which was, in turn, restricted by prejudice. As someone who has had to fight very hard to have an English-language university respond to the educational needs of the business community, the author finds this picture of a university as being highly sensitive to the needs and wishes of the community, charitable to the point of inaccuracy.

First of all, there has been virtually no measurement of the relative economic achievement of different kinds of graduates and it is most unlikely that the universities (French or other) really knew much about the economic performance of their graduates or, more to the point, that they considered economic performance of their graduates to be very relevant to their mission. Furthermore, one would be interested in knowing why the French-language community needed or wanted a higher proportion of arts graduates than did the English-language community.

On the contrary, Canadian universities have been following at such a respectful distance behind their American counterparts, particularly in the pragmatic sciences, that it is difficult to see that they have spent too much time worrying about community needs. Sales forecasts and forward planning have not been among the managerial tools

of our universities, French or English. It is about as hard to attribute to prejudice the lag of French-language universities in the development of the pragmatic, management-producing disciplines as it is to argue that English-language universities only recently accepted post-graduate business education because up to now American companies have been prejudiced in their hiring of English-speaking Canadians. The element of truth in either proposition is slight.

The conclusion which follows from the foregoing analysis is that in the amount and kind of education lies the main explanation of the achievement of an ethnic group. The policy implication is equally clear. If any ethnic group wishes to improve its total economic achievement it must provide its members with the amount and kind of education appropriate to the needs of a modern, progressing economy.



Chapter II

1. André Raynauld, *Croissance et structure économiques de la province de Québec* (Quebec, 1961).
2. Suppose that in a manufacturing operation the capital to value-added ratio is 2 to 1, that equity represents one-quarter of the invested capital, and that labour accounts for 50 per cent of the value added. Under such circumstances a 10 per cent saving in the labour bill would add 10 percentage points to the rate of profit, which could well amount to a doubling of profits.
3. G. A. Auclair and W. H. Read, "A Cross-cultural Study of Industrial Leadership," a study prepared for the Royal Commission on Bilingualism and Biculturalism.
4. Since the Auclair-Read study is concerned only with managers and students, this statement is again an extrapolation of their findings.
5. A brief description of theories X and Y is given in the Auclair-Read study, Chapter V, "The Management of People."
6. "The Occupational Value of Education for Superior High School Graduates," *Journal of Higher Education*, XXVII (1956), 201-13, reported in S. E. Harris (ed.), *Higher Education in the United States* (Cambridge, 1960).
7. Gary S. Becker, *Human Capital, a Theoretical and Empirical Analysis, with Special Reference to Education* (New York, 1964).
8. R. Solow, "Technical Change and the Aggregate Production Function," *Review of Economic Studies*, XXIV (August, 1957), 312-20.

9. B. F. Massell, "Capital Formation and Technological Change in United States Manufacturing," *Review of Economic Studies*, XXVII (May, 1960), 182-8.
10. Evsey Domar, "On the Measurement of Technological Change," *Economic Journal*, LXXI (December, 1961), 709-29.
11. Theodore W. Schultz, "Capital Formation by Education," *Journal of Political Economy*, LXVIII (December, 1960), 571-83.
12. Becker, *Human Capital*
13. W. L. Hansen, "Total and Private Rates of Return to Investment in Schooling," *Journal of Political Economy*, LXXI (April, 1963), 128-40.
14. H. P. Miller, "Annual and Lifetime Income in relation to Education, 1939-1959," *American Economic Review*, L (December, 1960), 962-86.
15. Willson Woodside, *The University Question; Who Should Go? Who Should Pay?* (Toronto, 1958).
16. This creates an interesting problem in resource allocation: how does a society allocate scarce educational time and money between courses designed to promote economic well-being in the short run and non-economic well-being in the long run when, according to Keynes, "we are all dead"?

### Chapter III

1. Robert N. Morrison, *Corporate Adaptability to Bilingualism and Biculturalism*, Documents of the Royal Commission on Bilingualism and Biculturalism, no. 5 (Ottawa, 1970).
2. John Porter and P. C. Pineo, "French-English Differences in the Evaluation of Occupations, Industries, Ethnicities and Religions in the Montreal Metropolitan Area," a study prepared for the R.C.B.&B.
3. John Lindeman and Donald Armstrong, *Policies and Practices of United States Subsidiaries in Canada* (Montreal, 1961).
4. See Morrison, *Corporate Adaptability*.

## Chapter IV

1. C. S. Joslyn and F. W. Taussig, *American Business Leaders, a Study in Social Origins and Social Stratification* (New York, 1932).
2. Mabel Newcomer, *The Big Business Executive, the Factors that Made Him, 1900-1950* (New York, 1955).
3. Canada, Dominion Bureau of Statistics, *Annual Survey of Education in Canada* (Ottawa, 1929), 108.
4. Auclair and Read, "A Cross-cultural Study."
5. Morrison, *Corporate Adaptability*.

## Chapter V

1. Auclair and Read, "A Cross-cultural Study."
2. Morrison, *Corporate Adaptability*.