Royal Commission on Corporate Concentration

Study No. 14

IBM Canada Ltd.

A Case Study

by

Marcel Côté

of

Sécor, Inc.

Yvan Allaire

Roger-Emile Miller

of

l'Université du Québec à Montréal

December 1976

Available by mail from

Printing and Publishing
Supply and Services Canada
Ottawa, Canada, K1A 0S9

or through your bookseller.

Catalogue No. Z1-1975/1-41-14 Canada: $5.00
ISBN : 0-660-00623-5 Other countries: $6.00

Price subject to change without notice.

Phase I Printing Limited
Mississauga, Ontario

FOREWORD

In April 1975, the Royal Commission on Corporate Concentration was appointed to "inquire into, report upon, and make recommendations concerning:

(a) the nature and role of major concentrations of corporate power in Canada;

(b) the economic and social implications for the public interest of such concentrations; and

(c) whether safeguards exist or may be required to protect the public interest in the presence of such concentrations".

To gather informed opinion, the Commission invited briefs from interested persons and organizations and held hearings across Canada beginning in November 1975. In addition, the Commission organized a number of research projects relevant to its inquiry.

This study on IBM Canada was prepared by Yvan Allaire and Roger-Emile Miller, who are affiliated with l'Université du Québec à Montréal, and Marcel Côté of Sécor, Inc. Sécor is a Montreal-based research firm specializing in the study of complex organizations.

The Commission is publishing this and other background studies in the public interest. We emphasize however that the analyses presented and conclusions reached are those of the authors, and do not necessarily reflect the views of the Commission or of its staff. In particular, Chapters 6 and 7 of this study, on corporate responsibility and corporate power, present an analysis of material which differs substantially from the approach taken by the Commission in its own Report.

Donald N. Thompson
Director of Research

ACKNOWLEDGEMENTS

The official authorship of any large scale study such as this one is determined by rather arbitrary rules set by custom and conventions. However, in practice, much credit is deserved by a larger number of people who shared in the labor that produced this document.

Therefore, we acknowledge with gratitude the assistance provided by Hélène Marchand who managed the logistics and administrative functions of this study (and a good part of the exacting typing chore) with a fine balance of good humor and stimulating flashes of temper. Our gratitude must also be expressed to Pauline Chevrier who came in the midst of the study and with admirable celerity gave legible form and structure to a mass of scribblings.

At the onset of our study, the Department of Industry, Trade and Commerce of the Government of Canada was most helpful in providing us with valuable information and we are most appreciative.

The management of IBM Canada, in particular Mr. Grant Murray, Vice-president and General Counsel, must be thanked for their diligent cooperation with the researchers. The abundant information they provided, the quick responses to our requests for additional information, the flexible scheduling of meetings, all contributed to the successful completion of our study.

We must also thank Dr. Daniel Latouche of McGill University who reviewed part of Chapter 3 and Ms. Moyra Tooke of the Royal Commission for an exacting and competent editing of our text.

TABLE OF CONTENTS

TABLES

EXHIBITS

FIGURES

CHAPTER 1

INTRODUCTION

POWER AS A SOCIAL LEITMOTIF

This is a Tale of Power. For Power is the intricate and subtle leitmotif which underlies society's uneasiness and concern with large entities, whether corporations, unions or government agencies.

Almost forty years ago, Bertrand Russell could write: "The fundamental concept in social science is Power, in the same sense in which Energy is the fundamental concept in Physics" (Russell, 1938) and indeed, power, and its unequal distribution, strikes at the very heart of our concepts of justice and equality. If for John Rawls, "Justice is the first virtue of social institutions, as truth is of systems of thought" (Rawls, 1971, p. 1), power often appears as the first flaw of social institutions.

The dominant preoccupation and theme of social interventions, particularly in the last twenty years, have been to foster equality of opportunity and more equal distribution of income and wealth. Income and wealth are easily observable and measurable concepts; but the real irritant is the unequal distribution of economic and political power that correlates highly with, and is assumed to result from, unequal distribution of income and wealth.

No institution has been a more consistent irritant than the large corporation, and more recently, the large multinational corporation. Large corporations, it seems, recurrently exacerbate the populist suspicion that power is being used to frustrate the "will of the people" and that "big business" is subverting to its advantage the orderly economic and political processes. But beyond these slightly paranoiac reactions, there is a genuine concern that through their concentration of assets and power: power to make economic decisions that affect tens of thousands of citizens, large corporations may create a dangerous disequilibrium between the economic system and the political.

In democratic capitalism,

> no one was supposed to have such power - it was indeed, a radical diffusion of power that was thought to be an essential characteristic of democratic capitalism (Kristol, 1976, p. 128).

It may well be true that

> in a pluralistic society we frequently find ourselves defending specific concentrations of power, about which we might otherwise have the most mixed feelings, on the grounds that they contribute to a general

> diffusion of power, a diffusion which creates the 'space' in which individual liberty can survive and prosper (Kristol, 1976, p. 140).

If a system of countervailing power affords effective protection to individual freedom, one should consider with suspicion attempts by one party (say, the government) to reduce, on whatever noble grounds, the power of another party (say, the corporations or the unions).

Be that as it may,

> the large, publicly-owned corporation of today which strives for immortality, which is committed to no line of business but rather (like an investment banker) seeks the best return on investment, which is governed by an anonymous oligarchy, such an institution would have troubled and puzzled them (the Founding Fathers) just as it troubles and puzzles us. And they would have asked themselves the same questions we have been asking ourselves for almost a century now: Who 'owns' this new leviathan? Who governs it - and by what right, and according to what principles? (Kristol, 1976, p. 125).

This study will attempt to answer at least that last question by examining how one large multinational corporation functions in Canada.

This case study is about IBM Canada Ltd., a large Canadian company, an affiliate of a multinational corporation, with an alleged large market share and alleged market power in a high-technology category: data processing systems. The remainder of this chapter will attempt to define more precisely the focus of our study. We shall consider in some detail the concept and meaning of the multinational corporation, probe the relationships between corporate concentration and multinational corporations (MNC), and examine the issues common to both MNC and concentration. The specific topics included in this study will then be outlined as will the reasons for selecting IBM Canada for the study, and the methodology used to carry it out.

THE CONCEPT OF THE MULTINATIONAL CORPORATION

The discussion about multinational corporations in recent books is strangely reminiscent of the theological debate about angels during the Middle Ages. No one then questioned the existence of angels; the unresolved issues were how to tell the good ones from the bad ones, which gender to ascribe to them, and how many could take their place comfortably on the head of a pin. These issues turned out to be less critical than had been anticipated.

Reading the most recent crop of books about multinational corporations, one could gather the impression that a new and powerful phenomenon has

emerged which "globalizes" everything it touches, spoliates human, financial and natural resources on a global scale, and tramples with a vengeance national interests and identity. More sober assessments quickly impugn both the recency and the strength of the phenomenon.

In a slick review of a set of books about multinational corporations, published in The New York Review of Books, Heilbroner documents his skepticism about the supposedly revolutionary phenomenon of the MNC by quoting a description of the international economic order which could have been taken from any of these books (in particular, from Barnett and Mueller's Global Reach: The Power of the Multinational Corporation, 1974), but was in fact written by Lenin in 1917 (Heilbroner, 1975).

As for the MNC's new propensity to defy and transcend nationalist aspirations, Kristol offers the caustic observation that

> ... The New Yorker, which has become the liberal-chic organ of the 'new class'has discovered the maleficent potential of the multinational corporation at exactly the time when the multinational corporation is in full retreat before the forces of nationalism everywhere. (Kristol, 1976, p. 141)

Of course, it could be argued that while contemporary MNC are different in substance, style and structure from international enterprises of an earlier age, they still pursue their global objectives despite rising nationalism by subtler, more devious means. But that debate only points to the fundamental problem, which is the lack of an appropriate definition and typology for multinational corporations.

Not that definitions are hard to find; but some definitions are of such broad contour that they would turn any corporation which has ever shipped goods outside the country into a MNC. Other definitions set norms of such rigorous exclusivity that, lo and behold, no corporation could claim the title of MNC.* At the core of the most prevalent definitions, however, are the notions of internationalization of production and of income generation through controlled activities in more than one country (Brooke and Remmers, 1970; Dunning, 1971; Paquet, 1972).

Corporations that could be called multinational come under a variety of plumage however. There is a clear need for a typology of organizations which would distinguish between a corporation extracting raw materials in foreign countries to supply its manufacturing facilities and a corporation with a sophisticated and integrated strategy of global market development.

Our examination of the IBM Corporation has led to the identification of a set of characteristics that typify IBM and some other MNC. From here

---

* - Not that this is the only title corporations may vie for. Some authors (e.g. Robinson, 1967) draw jesuitical distinctions between international, transnational, plurinational and supranational corporations.

on, our use of the term "MNC" will refer to the special type of organization which has shown evidence of the following attributes:

1. The Internationalization of Markets. A primary attribute of such an organization is that it considers the world, or a good portion of it, as its potential market. Products may be introduced and phased out according to a different chronology in different parts of the world, or all products may be available simultaneously in all markets; but the overriding principle is to tap the demand for its products effectively and profitably wherever it may be. Maisonrouge of IBM expresses this clearly: "It has been our constant desire to grow and to grow by being present in every feasible market, that has led IBM to where it is today" (Bradley and Bursk, 1972).

2. The Rationalization of Tasks Within a Contentious System. A firm could theoretically pursue a policy of world-wide marketing through exports from the home country. Because of tariffs, import restrictions and/or costs of transportation, deployment abroad of manufacturing facilities may be effectively carried out to optimize profits. That is the rather conventional sequence of events.

What is unique to corporations such as IBM is the process by which new manufacturing or development missions are obtained. The initiative for planning the areas in which it will develop a skill base and will bid for increased workload rests largely with the affiliate. The quality of resources an affiliate has to offer, its foresight in preparing for major development within the corporation, its ability to prepare forceful business cases, are all factors which influence the extensiveness of manufacturing and development activities (the tasks) carried out by that affiliate. Under such a competitive and contentious system for the allocation of missions among affiliates, an affiliate tends to get what it deserves.

3. The Naturalization of Subsidiaries. This type of multinational corporation is integrated in each country by a process similar to the acquisition of citizenship by a foreign-born resident. The board of directors of the affiliate becomes predominantly, if not exclusively, composed of nationals; the top management of the affiliate is made up entirely or almost entirely of citizens of the host country. Occasionally, shares of the affiliate may be sold to investors in that country; but more frequently, shares of the parent company are listed on all major stock exchanges in the host country.

Obviously, not all corporations that are called multinational meet these three criteria. From this point on however, the term multinational corporation will be restricted to organizations of the particular type described above.

CORPORATE CONCENTRATION AND THE MNC:

A RELATED SET OF ISSUES

The more astute observers of the MNC quickly recognized that the problems of foreign ownership and of corporate concentration were closely intertwined. Thus Mel Watkins in his preface of Kari Levitt's Silent Surrender emphasizes this point.

> Professor Hymer put his finger on a fact much neglected by economists prior to 1960, namely that most foreign direct investment was accounted for by a small number of firms operating in industries that the economist calls oligopolistic. The consequences for policy-making of that shift in perspective are substantial, for if what foreign ownership is about is big business, or trusts, then what policy toward foreign ownerships should be about is a combination of keeping business competitive and regulating the trusts. This insight pervades the Watkins Report, to which Professor Hymer contributed as a member of the Task Force, and that report can be read as the sustained application of policies that recognize the reality of the bigness, and the monopoly power, of the multinational corporation (Levitt, 1970, p. XV-XVl).

In the same way, the benefits claimed for the MNC are often benefits actually resulting from the operations of any large and efficient corporation. Thus, Dunning's findings (1958) about the contribution of MNC to economic growth and their concern with advancing technology may also be credited to large, oligopolistic firms. There is however an important distinction to be drawn between these two concepts.

> In a legal sense, the multinational enterprise is an anomaly. The anomalous position of the multinational enterprise is illustrated by comparison to the large domestic corporation. Both have attained considerable economic power, through expansion, integration of operations and centralization of policy - one within a country, and the other across national boundaries. But there the similarity ends. Power requires legitimacy, or else it is despotism. The domestic corporation has some legitimacy from the legal fiction of its having the rights of a person (a citizen). This legitimacy is partly derived from its being responsible legally (even if somewhat mythically) to natural persons (the stockholders). If that responsibility is not fulfilled, people are able, finally, to control the corporation through their government. The multinational enterprise is in a quite different position as to both legitimacy and responsibility. It derives its legitimacy from no single government but from a convention that provides that one government shall give to foreign enterprises the same 'national treatment' it extends to domestic enterprises. But this legitimacy is extended only to the affiliate not to the parent company itself, nor to its decisions (Behrman, 1970, p. 8-9).

Multinational corporations could contest (and usually do) this attack on their legitimacy with three arguments of varying force:

a. The type of MNC we are referring to in this study has usually "naturalized" its subsidiaries to a large extent; that is, the board of directors and the top management of its affiliate are essentially composed of citizens of the host country. These people are just as devoted to the national interests of the host country as is the top management of any domestic corporation.

b. The fact that the affiliate is managed by local citizens would be largely irrelevant if they did not enjoy considerable managerial autonomy. The type of MNC we have described earlier in this chapter could effectively argue that the organizational structure it has set up, with checks and balances and rationalization of tasks within a contentious system gives much latitude to local management in planning the development of the affiliate and in adapting its functioning to local conditions.

c. The MNC earns its right to be treated as a local corporate citizen by its good, indeed exemplary, behavior. Not only does the affiliate of the MNC subscribe to national goals and help to the extent possible in achieving them, but it will not make use of the opportunity presented by its MNC status of evading national laws.

In our study of IBM Canada, a large foreign-owned corporation, these are claims and characteristics that must be examined; the first one is easily verified, but the latter two arguments will receive much attention in this report.

Obviously the extent and quality of the autonomy enjoyed by local management is difficult to establish; it requires considerable familiarity with the organization and with the nuances of power and control in a corporate setting. We shall provide a considerable body of information concerning the organizational set-up of IBM, and its planning, coordinating and control apparatus in order to make a balanced and, it is hoped, factual diagnosis concerning the autonomy of the Canadian affiliate. As for the good corporate citizenship of a MNC, this should be demonstrated by its actions on three broad fronts:

1. In its acceptance of, and cooperation in attaining, national goals such as:

   - stable employment;
   - reduction of regional disparities;
   - adaptation to the cultural and linguistic particularities of the country or region.

2. In not using the opportunity presented by its MNC status of evading Canadian laws or hampering to its profit the implementation of some national policy. By the appropriate planning of its international trade activities, by the deployment of its production facilities, by its policy on transfer prices, dividend and royalty payments, the MNC can have a significant impact upon the economy of a country.

We shall examine specifically the behavior of IBM Canada in these areas:

a. The balance-of-payments impact of IBM Canada and the efforts made to reduce negative effects.

b. The cost of technology to Canada. Our country benefits from the import of technology, the development costs of which were assumed elsewhere. However, IBM Canada is paying royalties to the parent company, and the question arises as to whether we are being charged a fair price for that technology.

3. The voluntary and discretionary financial support and encouragement of artistic, educational, athletic or charitable activities.

These are issues that are particularly relevant to the situation where foreign ownership and corporate concentration are coupled.* In those instances, frequent in Canada, corporate concentration takes on a special resonance and the set of issues defined above are pertinent to the evaluation of the effects of concentration.

But there are other issues endemic to corporate concentration whether the individual corporations are foreign-owned or Canadian-owned. These issues fall under the broad headings of market and political power and are the root causes of the suspicion and hostility with which large corporations are often regarded.

1. The Market Power of a Large Corporation. It is commonplace to assert that market power resulting from a particular industry structure (associated with concentration, high barriers to entry) may cause allocative inefficiency in the economy and a slower rate of technological progress. Therefore, the extent of such market power, the nature and efficacy of the entry barriers, the likely evolution in market conditions, should be assessed

---

* - An additional issue, "extra-territoriality", which is very specific to foreign ownership is not included in our study. This has to do with the possibility that the home country's foreign policy or anti-trust laws might be extended to affiliates and thus be in conflict with policies of the host country.

in a study such as this one. But these issues are complex ones which will have to be carefully defined and demarcated for our purpose.

Our examination of these issues will adopt the useful framework for the study of industrial organizations proposed by Caves (1974), among others. The study then will focus consecutively on market structure (competition, market shares, concentration, entry barriers), on the conduct of IBM Canada with respect to pricing and product strategies, and on performance using criteria like the rate of technological innovation, the diversity of product offerings, the allocative efficiency and the distribution of income and economic power.

That is quite a program, so the reader should be forewarned that some of these topics will be covered in greater detail than others.

2. The Political Power of a Large Corporation. There is much apprehension (and in certain quarters, it is a dogma) that large corporations have the resources to act as privileged citizens in society. They have, it is contended, powerful means of influencing the activity of the state so as to prevent the passage of, or modify substantially, any proposed legislation that is deemed detrimental to their interests. Their influence may be used to prevent the effective implementation of bothersome laws (such as anti-trust laws) or be used to obtain special advantages, fiscal or otherwise.

This alleged power of the large corporation could be derived from a combination of the following three factors:

a. Corporate public relations and advertising efforts to convey to the general public, and in particular to opinion leaders, a favorable image of the corporation, a persuasive argument in favor of its position in any contentious issue or, more generally, to perpetuate the dominant ideology.

b. Through intense lobbying activities and political donations, large corporations exert influence on law-makers unmatched by any other group in society.

c. A more subtle form of influence, which could be termed "the Bohemian Grove" hypothesis, is often proposed by sociologists. Through interlocking directorships on boards of corporations, charitable organizations, universities and particularly memberships in select private clubs (from whence, the Bohemian Grove hypothesis (Domhoff, 1974)), the business and governmental "elite" meet regularly and discuss issues of mutual interest. Business leaders are thus afforded a unique opportunity to make their case in a hushed, cordial, almost fraternal setting. Such easy, frequent and intimate access to high public officials is of course not the lot of every citizen.

This study will examine, in the case of IBM Canada, the evidence concerning such alleged political power. Specific situations and conflicts in

which IBM Canada had high or moderate stakes will be studied to evaluate whether or not IBM acted as a "privileged citizen" and obtained as a result a resolution of the situation favorable to the corporation.

THE STRUCTURE OF THE REPORT

The issues and topics mentioned in the last section were assembled and will be treated in what, we trust, is a coherent scheme of presentation. This section will provide the reader with a road-map for the journey through this report.

Chapter 2 presents a short version of the history and development to date of IBM and IBM Canada and draws a sketch of the organizational set-ups used by these corporations.

Chapter 3 is about the marketing of data processing products and the market power of IBM in that field. The chapter will first introduce some marketing concepts essential to the understanding of market dynamics in data processing equipment. Then data about demand growth, market share and segmentation will be presented. The impact of likely developments in the data processing field will be evaluated and their consequences for IBM Canada's market situation assessed. The situation in the office product market will be covered briefly.

In Chapter 4,the organizational design and management principles at IBM will be presented and the extent and quality of autonomy enjoyed by the Canadian affiliate within that system will be discussed.

Chapter 5 will assess IBM Canada's political power. The issue of the large corporation as a privileged citizen will be documented and specific evidence on that point will be presented.

Chapter 6 will discuss the theme of corporate citizenship and social responsibility. Again the issue and specific evidence, drawn from our study of IBM Canada, will be presented.

Chapter 7 will draw the conclusions pertinent to the assessment of the socio-economic impact of corporate concentration, in the particular case of a foreign-owned corporation.

WHY IBM CANADA?

"One can say, without being overly facile, that United States Steel is the paradigmatic corporation of the first third of the twentieth century, General Motors, of the second third and IBM of the final third. The contrasting attitudes of these corporations toward research and development are a measure of these changes". (Bell, 1973; p. 26).

IBM Canada is a leading firm in a crucial high-technology area. It is a "model" multinational firm in terms of structure and mode of operations. It is considered to be a highly planned and deliberate organization with an articulate rationale to back up decisions and strategic choices.

As a consequence, the pronouncements and gestures of the IBM Corporation are read as portentous signals of significant and generalized developments to come, and are therefore, carefully monitored around the world.* Furthermore, as a result of the litigation in the United States, a large quantity of information has become available about the IBM Corporation and the data processing marketplace.

THE METHODOLOGY OF THE STUDY

The study was organized in four main phases. Phase I consisted of an extensive review of the pertinent literature. Three main fields were covered: Concentration and multinational corporations, IBM Corporation and IBM Canada Limited, and finally the data processing industry in general and in Canada, in particular.

Phase II dealt with information gathering within IBM Canada. At the outset, IBM Canada agreed to cooperate fully with the Royal Commission on Corporate Concentration, provided that it could review the draft of the study to be made public and ask for deletion of any information it considered confidential.

A series of topics were outlined by the research team. Each of these topics was covered in a structured presentation by a senior official of IBM, each of whom also wrote a text on the subject of his presentation. During the presentation, researchers were free to ask any question on the subject matter of the presentation. The subjects covered and the presenters were:

- The History of IBM Canada	Mr. T.E. McNulty Vice-President, GBG Services Staff
- IBM Canada's Organization	Mr. G.G. Murray Vice-President, General Counsel & Secretary
- The Evolution of the Data Processing Market	Mr. B.C. Borden Manager, DP Business Practices
- The Evolution of Data Processing Systems	Dr. G.B. Davidson Manager, Advanced Systems

---

* - IBM has the honor (probably perceived as a mixed blessing by its officers) of being one of the few corporations to intrigue and fascinate the "lay" citizen, so much so, that two books about the corporation became popular best sellers: William Rodgers' Think and Nancy Foy's The Sun Never Sets on IBM.

- Marketing: Data Processing	Mr. B.P. Kuehn Vice-President, DP Marketing IBM World Trade A/FE Corporation
- Marketing: Office Products	Mr. C.D. Baker OPD Sales Manager
- IBM Canada's Data Centre Services	Mr. W.N. Palm Vice-President and DP Sales Manager
- IBM Canada's Relationships with Data Services Bureaus	Mr. W.N. Palm Vice-President and DP Sales Manager
- IBM Canada and Data Communications	Mr. J.E. Tapsell Director, Commercial Relations
- Manufacturing	Mr. L.F. Kilcoyne Director of Manufacturing
- Research and Development	Mr. W.J. McClean Director, IBM Canada Ltd. Laboratory
- The Planning Processes	Mr. G.G. Murray Vice-President, General Counsel and Secretary
- Personnel Policies and Practices	Mr. J.L. Yellowlees Vice-President, Services Staff
- Communications and Corporate Information	Ms. F.M. Campbell Manager, Communications
- IBM Canada's Corporate Responsibility Policies and Practices	Ms. F.M. Campbell Manager, Communications

All presentations were attended by three senior officials of IBM Canada. Mr. Grant Murray, Vice-President, General Counsel and Secretary, was the senior officer in charge of the coordination and the supervision of the activities required by the study. The various issues of contention between IBM Canada and the federal government, in matters of duties and taxation, purchasing policies and regulation of the computer/communications industry were discussed at a special meeting. Documentation presenting the positions on these matters of IBM Canada and the Canadian Business Equipment Manufacturers Association (a trade group to which IBM Canada belongs) were provided.

Finally, one meeting was held to discuss the financial situation of IBM Canada and related matters, such as transfer pricing, price setting, balance of payments, balance of trade, etc. Supporting evidence was submitted by IBM Canada.

Subsequent to each of these meetings, the researchers often submitted written questions to IBM Canada, dealing with particular points, requesting clarification and/or further information. IBM Canada sent back written answers to every question thus submitted. Answers to many of these questions involved the divulging of information which IBM Canada considered confidential. Therefore, answers were provided on the express condition that the Commission would not make them public.

Phase III, which was conducted simultaneously with Phase II, involved meeting key people in various organizations which may be considered in the immediate environment of IBM Canada: Officers of the departments of the Federal Government, competitors of IBM in the data processing-products business and in the service-bureau business, consultants specializing in the data processing area, senior officers of organizations involved in data communications, IBM suppliers and IBM customers.

Phase IV consisted of organizing the information gathered, structuring and writing the report. Interesting material had to be discarded because it was not considered germane to the objectives of the Royal Commission.

SUMMARY

This study is about IBM Canada and its potential socio-economic impact. However, no effort will be made to quantify the advantages to Canada derived from the operation of such a firm. That there are costs and benefits resulting from the presence of large corporation is obvious. No effort at social accounting will ever result in a quantitative evaluation of the costs and benefits of corporate concentration or of multinational corporations.

Since a large-scale dismantling of corporations is not imminent, the pragmatic approach to policy-making concerning such organizations is to attempt to minimize their social costs and increase their benefits to society. But this requires a fine understanding of the reality and causes of the alleged problems and issues so as to intervene effectively. We hope this detailed study of a large corporation will effectively contribute to this understanding.

Power is taken as the chief explanatory variable of the social tensions and frictions that may be brought about by corporate concentration. And, although we have not in this introduction drawn all the subtle distinctions between concepts such as power, influence and authority, our point is fairly clear.

In order to formulate realistic public policies in the area of corporate concentration, it is essential to understand the finely calibrated complex of power relationships in a particular situation:

- the economic, or market power, potentially or effectively used by the firm;

- the political power it could muster and the existence of countervailing influences;

- the special powers of MNC to evade national laws or to hamper the implementation of national policies;

- the power relationships within a large MNC which result in more or less autonomous affiliates.

Policy-makers are faced with a Gordian knot; but, contrary to legend, and imperial inclinations, it is a knot that must be understood and untangled.

CHAPTER 2

IBM CANADA - PAST AND PRESENT

The objective and intent of this chapter is to provide the reader with a speeded-up film of the critical events which have marked the development of the IBM Corporation and IBM Canada, and with a contemporary sketch of IBM Canada's activities and organizational structure.

More so than for any other IBM subsidiary, the history and development of IBM Canada and the IBM Corporation have long been so closely intertwined that an understanding of the former requires some knowledge of the latter. Therefore, we shall first focus on the history of the IBM Corporation, briefly reiterating in the process well-known snippets of computer industry folklore. The particulars of IBM Canada's development will be inserted into that framework. Then the organizational structure of the IBM Corporation and IBM Canada will be described in summary fashion.

THE HISTORY OF
THE INTERNATIONAL BUSINESS MACHINE CORPORATION

The history of the IBM Corporation may be divided in two phases, each phase being associated with a specific family of products. From its foundation to the fifties, the IBM Corporation was principally involved with tabulating and sorting equipment, time recording equipment, and scales. From the early fifties to the present time, the IBM Corporation has become to the layman almost synonymous with computers.

THE SCALE, TIME RECORDING AND TABULATING ERA 1911-1949

The foundation of the IBM Corporation is usually set in 1911, when three U.S. business equipment firms merged to form the Computer-Tabulating-Recording Company:

- The Tabulating Machine Corporation of Washington D.C. which has been founded in 1896 by Herman Hollerith, and was marketing tabulating equipment throughout the world.

- The International Time Recording Company which manufactured time clocks and time recording devices and was based in Endicott, New York.

- The Computing Scale Company of Dayton, Ohio, which manufactured scales and other food retailing equipment.

In 1914, Thomas J. Watson, Sr., then 40 years old, left the National Cash Register Corporation of Dayton, Ohio, to become president of the Computing-Tabulating-Recording Corporation, and its guiding spirit for the next forty years. At the time of Watson's arrival, the Computing-Tabulating-Recording Company was a medium-sized company with sales of about $4 million. Its product line was diversified, but sales were concentrated in the time recording and food retailing markets. One product, as yet undeveloped, looked particularly attractive to Watson; the punch card tabulating machine. He quickly set out to tap the sales potential he had perceived for that product. The growth of IBM up to the 1950s was mostly based on the growth of the tabulating equipment market.

During his forty years at the helm of the IBM Corporation, Thomas J. Watson moulded it into a very efficient sales-oriented office equipment company. Sales jumped from $8 million in 1917 to $183 million in 1949, while the number of employees went from 3,000 to 27,236. One hundred shares purchased in 1914 for $2500 were valued thirty-five years later at over $1 million. There was never a year when the company did not make a profit and only six years when profits did not exceed those of the preceding year.

The evolution of the Computing-Tabulating-Recording Company to the IBM Corporation was gradual however. Under the prodding of Watson, Sr., the product line was transformed to reflect the new emphasis on tabulating and office equipment. The company, from its very inception, had been selling in foreign countries. In 1917 it opened its first plant outside the United States, in Toronto. In 1924, in recognition of these developments, the name of the company was changed to International Business Machines Corporation, thereby adopting the name first used in Canada. In 1932, IBM opened a string of service bureaus offering various tabulating and sorting services for a fee. In 1934, the company sold its scale division and began selling electric typewriters, having purchased two years before, from a small Rochester firm, the right to manufacture an electric typewriter.

In 1939, U.S. sales were $38 million,* tabulating equipment being the major line of business. In the next ten years sales increased to $183 million. The rapid development of the tabulating equipment market during the war years and the post-war international recovery was the main impetus behind this rapid growth, though IBM did not yet rank among the 100 largest manufacturing companies in the United States.**

---

* - International sales could not be computed because sales figures from such countries as Germany, were not available.

** - In 1954, with sales of $461 million, IBM was number 61 on the first Fortune listing of the largest U.S. manufacturing companies. The 100th company had sales of $304 million and the 150th company had sales of $213 million. This leads us to conclude that the IBM Corporation, with sales of $183 million in 1949, was probably not among the 100 largest manufacturing firms at that time.

By 1949, IBM's share of the tabulating equipment market was estimated to be about 90% (Schussel, 1965). In fact, IBM's dominance of the tabulating equipment market did trigger an anti-trust suit by the U.S. Justice Department, in 1952. The suit charged that IBM has monopolized the tabulating equipment industry in the United States through its policy of only renting its equipment, its refusal to licence its patents and other technical information and by other alleged improper practices. The suit was settled in 1956, by a consent decree.

IBM was well positioned and prepared to profit from the tremendous developments of the 1950s. In the first place, IBM was clearly the leader in the tabulating equipment marketplace and its service bureaus further enlarged its customer base. Its most significant competitor, Remington Rand, had less than a 10% share of the market (Schussel, 1965).

Secondly, IBM's sales organization was very efficient. IBM's success in the tabulating equipment market was not the result of random events. Watson brought to the company not only good management and marketing but a corporate philosophy that permeated the whole company, and socialized every employee to a set of powerful rules of conduct in discharging their duties to the customers and the company. These factors made for an organization of motivated high performers dedicated to successful task force selling of equipment to large organizations.

Thirdly, IBM had strong sales organizations in all the major industrialized countries through wholly-owned subsidiaries and independent sales agents in some countries. More than 25% of its sales originated from foreign operations and over 30% of its employees were based outside the United States. Moreover, IBM had early adopted a policy of allowing subsidiaries to be run by citizens of the countries where they were operating. (Manufacturing and R&D were still highly concentrated in the United States however. Manufacturing outside the United States was not extensive until the mid-1950s and development work, until the mid-1960s.)

Fourthly, the IBM Corporation had strengthened its research and development capability during the war. Although a central R&D laboratory had been opened in Endicott, New York in 1933, IBM was not known as a technology-oriented company until World War II. In 1939, it started development work on large-scale numerical calculators from which computers evolved during the forties. Moreover, Thomas J. Watson, Sr's heir apparent, his son Thomas Jr., was a firm believer in electronic data processing.

THE COMPUTER ERA

During World War II several large-scale calculators were built in the United States, mainly by universities and government agencies. IBM had been working since 1939 on an automatic sequence controlled calculator, named Mark 1, which when completed in 1944 was donated to Harvard University.

At that time, the best known large-scale calculator was ENIAC (Electronic Numerical Integrator and Calculator), which was developed at the

Moore School of Electrical Engineering of the University of Pennsylvania, by J. Presper Eckert, Jr. and John W. Mauchly, under contract from the U.S. Army. ENIAC was a fickle monster that weighed 30 tons, ran on 18,000 vacuum tubes, when it did run, and filled a room of 30 by 50 feet. (Calculators twenty times more powerful than ENIAC are now being built in a 1 cm^2 chip.)

Although ENIAC is often called the first computer, it lacked a basic feature of today's computers: a set of dynamically changeable programmed instructions stored in a memory. Calculating instructions were established by connecting wires.

The famous mathematician, John von Neumann was exposed to work on the ENIAC machine by Dr. H.H. Goldstine of Princeton University. The result of his involvement with the ENIAC project was the concept of a stored program, which necessitated the development of a memory. The idea was to store data and machine instructions in a memory in such a fashion that the computer would no longer require that the step-wise instructions be fed externally to its processing unit in discrete steps. With a memory, results could be stored and reaccessed when needed, the next set of instructions obtained without interruption and operated on as though they were data. At this early stage of development, devices such as vacuum tubes were too expensive for memory and were used only in the circuitry of the central processing unit (CPU). The memory used in the machine that von Neumann and others later developed, called EDVAC (Electronic Discrete Variable Computer), was small and consisted of 128 mercury relay lines in which each line contained 384 bits of information.

A number of other large scale calculators were built during the 1940s at various research centres: ORDVA and ILLIAC at the University of Illinois, JOHNIAC at the Rand Corporation, MANIAC in Los Alamos. In Canada, a team assembled in 1948 by C.C. Gotlieb, H. Gellman and J. Kates of the University of Toronto, designed the UTEC (University of Toronto Electronic Computer).

IBM had continued its development work on large-scale calculators. After the Mark 1, it completed work in 1948 on a new machine, the "Selective Sequence Electronic Calculator", a more advanced calculator but one which did not yet incorporate stored program instructions, although it could modify its instruction sequence through rewiring.

At this early stage, Thomas J. Watson, Sr. did not see much commercial potential in the computer, and he was interested in it more as a scientific curiosity than as a possible commercial product. The low priority given then to computer research and development by Thomas J. Watson, Sr. did not favor the development of computer technology in IBM. But events were moving fast in the nascent computer industry.

Professors Eckert and Mauchly had left the University of Pennsylvania to form their own computer company, the Eckert-Mauchly Computer Corporation, and they won a contract from the Census Bureau to build a computer to analyze the data from the 1950 census in the United States. This computer, UNIVAC 1,

was delivered in 1951. Meanwhile, in 1950 the Eckert-Mauchly Computer Corporation had run out of funds and merged with Remington Rand, one of IBM's main competitors in tabulating and sorting equipment, to form the UNIVAC division.

The contract at the Census Bureau, on which IBM bid and lost, and the sudden interest of Remington Rand in electronic data processing were seen at IBM as threats to its leading position in the tabulating equipment market and reinforced the argument of those IBM executives, led by Thomas J. Watson, Jr., who were asking for a larger commitment of resources to the development of computers (Watson, 1962). Thomas J. Watson, Sr. finally agreed to such a program: IBM was seriously in the computer field.

The first UNIVAC 1 was delivered in the spring of 1951. Two years later, IBM delivered its first computer, the 701. It was a large scientific-scale computer, using the latest vacuum tube technology, and in direct competition with UNIVAC 1. However, UNIVAC 1 was geared to both scientific applications and was more successful than IBM's 701. IBM announced the same year the introduction of the model 650, a medium-size, general purpose business computer aimed at the same customers who were using IBM punched-card equipment. The first shipments of the 650 were made in 1954. The 650 turned out to be an outstanding commercial success, a surprise to IBM as much as to its competitors. Four hundred units were sold in less than two years and they were highly profitable (Brock, 1975).

The 650 made IBM the dominant corporation in the computer field in less than two years. When it was introduced in 1954, IBM had a minimal share of the market. In 1956, IBM manufactured 85% of the computers sold in the United States in that year and the majority of these were 650's (Schussel, 1965). For the time, the 650 was a good machine, incorporating the latest technology, notably a rotating drum memory. But the main reason for its success was the fact that it was fulfilling a need, underestimated or unrecognized by all computer manufacturers, for better and more efficient ways of coping with the increasing volume and complexity of data that had to be processed by commercial and industrial firms. Remington Rand's UNIVAC 1 was geared to the large-scale users. The first four UNIVAC's were delivered to government agencies and although the 650 arrived two years after UNIVAC 1, it was the first computer aimed specifically at the commercial user, which would turn out to be the largest potential marketplace for computer services and equipment.

The profits generated by the 650 financed the development of a full line of IBM computers. Within two years after the introduction of the 650, IBM had expanded its line to four computers (650, 704, 705 and 709).

Thus, by capitalizing on its marketing skills and its large base of customers for tabulating equipment, who were all potential computer users, IBM was able to capture within three years, 80% of the market.* IBM was also

---

* - This estimate is based on the number of units shipped in 1956 (Brock, 1975).

highly profitable. Remington Rand, which had entered the market in 1951 saw its market share dwindle to less than 10% of the industry's shipments in 1956 (Schussel, 1965). Moreover, it was operating at a loss and did not make any profits until 1963. The combination of high growth rate and large profits quickly attracted many competitors. Burroughs and National Cash Register entered the market, hoping to capitalize on their established customer base in business machines and accounting equipment. RCA, General Electric, Honeywell and Philco had a technological base in electronics and also entered the market in the 1950s. In the same period numerous small companies, often founded by scientists, also entered the competition. Two of the most notable who remain in 1976 are Control Data Corporation and Digital Equipment Corporation, although many others were involved in mergers and acquisitions and have survived as parts of other companies.

Table 1 shows the market shares of some of the major computer manufacturers in the United States, for selected years during the 1950s and in 1965.

Table 1

United States, Computer Market Shares

(Measured by the value of the installed base)

Manufacturers	1953	1955	1956	1959	1965
IBM	-	56	75	75	65
Sperry Rand	100	39	19	18	12
Burroughs	-	*	4	4	4
RCA	-	*	2	1	3
Honeywell	-	*	*	1	4
NCR	-	-	*	1	3
GE	-	-	-	*	3
Control Data	-	-	-	-	5

- Not yet on the market

* Minimal market share

Source: Brock, G.W., The U.S. Computer Industry: A Study of Market Power Ballinger Publishing Co., Cambridge, Mass., 1975. Chap. 2.

A second generation of computers arrived in 1958-59 and lasted until 1964-65. The most important difference between the first and second generations was the use of transistors instead of vacuum tubes in the CPU's. There were other fundamental innovations: magnetic core memory and disc storage were developed, programming language replaced machine language and operating systems

were introduced. Philco was the first company to offer a second generation computer, the Philco 2000/210, in 1958. IBM redesigned one of its first generation large computers, the 709, which had been introduced in 1958, incorporated transistor technology, renamed it the 7090, announced it in 1959 and delivered the first of the new machines in June, 1960.

In 1959 IBM announced the 1401, to replace the 650. The 1401 became the most successful computer of the pre-360 era. It enabled IBM to keep its dominant position throughout the second generation period, the period during which the data processing market grew at a phenomenal rate. In the United States, the installed retail value of computers went from $1 billion in 1960 to $6 billion in 1965 (Fortune, 1966).

Revenues of IBM were $1.8 billion in 1960, a tenfold increase since 1949. Sales outside the United States constituted 20% of the total revenues of the company. IBM had 104,241 employees and about 30% were in foreign subsidiaries. All the subsidiaries had been brought together in 1949 in the World Trade Corporation, which was headed by Thomas J. Watson, Sr.'s younger son, Arthur K. Watson.

During the 1950s, the company had substantially increased its manufacturing capacity outside the United States. Additional plants were built in Canada and Europe. Manufacturing in Japan was to start in the early '60s, IBM Corporation having negotiated a licence agreement with Japan's Ministry of International Trade and Industry which allowed it to maintain a wholly-owned manufacturing subsidiary.

However, IBM at that time could not yet be called a true multinational, at least according to the definition of the term given in the introduction (Chapter 1) to this study. IBM World Trade Corporation was considered by Arthur K. Watson as his personal fiefdom. Coordination was still minimal between the U.S. operations and IBM World Trade, despite Thomas J. Watson, Jr.'s efforts to decentralize the decision-making process and increase cooperation between the operational units.

The development of the 360 series, the third generation family of computers, created the conditions favorable to a world-wide integration of all IBM Corporation's activities. Viewed in retrospect, the development of the 360 series, which spanned the years 1961 to 1965, was a huge project, even for a company the size of the IBM Corporation in the early sixties. Over a period of five years, the project called for research, development and capital expenditures totalling up to $6 billion, which was around 40% of the total revenues generated by IBM during this five-year period.

Such an undertaking created strong internal pressure at IBM and led to major changes in the operations of the company. Two of these changes stand out as critical. First, the complexity of the development of the 360 computers stimulated the rise of technically oriented executives, as opposed to the traditionally sales-oriented executives typical at IBM during the fifties. Then, for the first time, the development of a product involved the cooperation of various development units from the IBM World Trade Corporation. IBM World Trade Corporation's Zurich labs, which had been

created in 1956, participated fully in the development of the 360, along with the new European labs created in the sixties in Germany and the United Kingdom. Arthur K. Watson was promoted to Vice-Chairman in the Corporation and a U.S. sales executive was named President of IBM World Trade Corporation.

Thus, when the 360 series was announced on April 7, 1964, IBM was a high-technology company which had begun the world-wide rationalization of its manufacturing and development activities. Within a few years, IBM implemented a dual structure of centralized management for development and manufacturing, and of area management for marketing and sales. Moreover, area management kept their functional authority over manufacturing plants and development laboratories in their territories. Within that arrangement, area management was rather successful in getting new plants and laboratories outside the United States.

Spurred by the success of the 1401 in the first part of the 1960s and of the 360 in the latter part, IBM was able to sustain a 15% average annual growth rate for its revenues throughout the '60s. Revenues jumped from $1.8 billion in 1960 to $7.5 billion in 1970. Revenues from the World Trade Corporation went from 20% of total revenues in 1960 to 40% in 1970.

During the same period it strengthened its office product line with the introduction in 1961 of the Selectric typewriter, which was a major innovation and was not effectively copied until the mid-1970s. The Selectric typewriter gave IBM a leading position in the electric typewriter market, being consistently above 60% for the past ten years, according to industry sources. In 1964 a memory feature was added to the Selectric, and since then more and more complex options have been added to that product. Finally, in 1976, these innovations culminated in the announcement of the Word Processor/32 which couples the most advanced magnetic card Selectric typewriter with the System/32 computer. It is an important IBM product, bridging the traditional office equipment lines of products and the data processing products.

In 1970, IBM introduced in its Office Product Division a line of copiers. IBM is now considered by some to be number two in the plain paper copier market, with more than 10% of the market (Forbes, 1976).

In 1970 also, IBM introduced the 370 series as the successor to the 360 series. Through modifications of this system and the addition of new models at both ends of the product line, it is likely that the 370 series will last until the end of the decade. At the IBM-Telex trial* in 1973, it was learned that IBM was working on a new series called the Future System, to be announced in 1976 or 1977. However, in 1975, IBM announced that it was discontinuing development of the Future System but would continue with development of products for future announcement.

---

* - Telex, a Texas based manufacturer of peripheral equipment, filed suit against IBM in January 1972, on anti-trust matters. IBM filed a counter suit in January 1973. Both parties were found guilty of respective charge in September 1973. However, IBM appealed and won in 1975.

In 1970, IBM also introduced the System 3, a computer for small users. In four years, from 1970 to 1974, more units of that model were installed than any other computer system in IBM's history. The System 3 family, which originally started with one model, has expanded until today it consists of five models and enhancements ranging in size from the model 6 to the model 15. In 1973, IBM introduced the 370 model 115, which is larger than the top-end of the System 3 line. In addition, in 1975, IBM brought out computers for smaller users - the System 32 for small commercial users and a desk-top portable 5100 computer for problem solvers. The 5100 computer is the lowest priced IBM computer, selling at between $10,000 and $30,000, the average being $20,000. It is one of the few IBM computers which is not available on a leased basis.

In 1975, IBM joined with COMSAT and Aetna Life and Casualty Inc. to form a consortium to build a point to point satellite network for high-speed data transmission. The proposal of the consortium calls for a completely independent system, using roof top antennas, that would bypass existing public networks. If the FCC agrees to the proposal, which is possible, the network would be in operation in 1979, under the name of Satellite Business Systems, Inc. The new corporation would be run totally independently of the IBM Corporation, and because of the regulated nature of the communications industry it is doubtful that IBM will be able to expand its activities in the communications market outside the United States.

In 1975, revenues of the IBM Corporation were $14.4 billion. Slightly more than half of the sales and profits originated outside the United States. IBM had nearly 290,000 employees world-wide, with 53% outside the United States. It operated development laboratories in 10 countries, although 88% of its R&D personnel were still in the United States. The annual R&D budget in recent years has been running at 6% of revenues. In 1975, that expenditure was $946 million. About $74 million was spent on basic research while the balance, $872 million, was spent on product development and enhancement. This was more than six times the amount which was spent by Honeywell or by the Univac Division of Sperry Rand. In fact, IBM's R&D expenditures were about equivalent to the total R&D expenditures of the 31 largest U.S. office equipment and computer manufacturers other than IBM.*

IBM operates a network of 41 highly specialized plants in 16 different countries. Exhibits 1 and 2 (pages 25 and 26) show the complex network of inter-plant dependencies resulting from the world-wide rationalization of manufacturing activities.**

---

* - Business Week, June 28, 1976.

** - Inter-plant dependency arises when one plant supplies components to another plant.

IBM is structured in three large areas: United States, the European-Middle-East-Africa area and the America-Far-East area. As can be seen in Exhibit 2, interplant dependencies are higher within each area than between areas. (In Exhibit 2 the U.S. plants are to the right, the European-Middle-East-Africa plants to the left and the America-Far-East at the bottom.)

IBM's profit margin, 12% to 15% of sales on a consistent basis, is about double the industry median, and the growth rate in revenues is among the highest for large corporations, averaging about 15% from 1950 to 1970. Since 1970 the growth rate in revenues has averaged 12%. *

As of December 31, 1975, IBM held over $4.7 billion in cash and marketable securities. Its annual investment program (plants, rental machines, equipment, offices, etc.) varied between $1.7 and $2.9 billion annually between 1971 and 1975. It is ranked by Fortune as the seventh United States manufacturing company, in terms of revenues; in terms of profits, it is third in the United States, after American Telephone and Telegraph and Exxon, but before General Motors. In terms of stock market value, it has been number one throughout the world for many years except for a short period in 1975.

THE HISTORY OF IBM CANADA

The development of IBM Canada closely parallels that of IBM in the United States. The three original companies were active in Canada before their merger in 1911. A plant was opened in Toronto in 1917, the first new plant for the Computing-Tabulating-Recording Company. In 1917, the Canadian operation, which by then was employing more than 200 people, adopted the name of International Business Machines Company Limited, seven years before the parent company adopted this name in the United States. Its sales that year totalled $700,000.

During the 1920s and the '30s, IBM Canada gradually acquired a leadership position in tabulating equipment in Canada, much in the same way as its counterpart in the United States. IBM Canada was then mainly a sales organization and the manufacturing operations remained small throughout the whole period. Operations were closely integrated with the U.S. operations, more so than for any other subsidiary. However, from the very beginning the management was composed largely of Canadian citizens.

In 1949, IBM Canada was incorporated into the IBM World Trade Organization. By then, it employed 723 persons and had revenues of $8 million. In 1950, the decision was made to undertake the construction of the first major Canadian plant (125,000 sq. ft.), in Toronto; the project was completed in 1952. The plant first produced typewriters, and accounting and calculating

---

* - Business Week and Forbes keep track of the annual financial performance of large United States companies. They also calculate industry medians for various indicators.

Exhibit I

Interplant Dependencies of the Toronto Plant

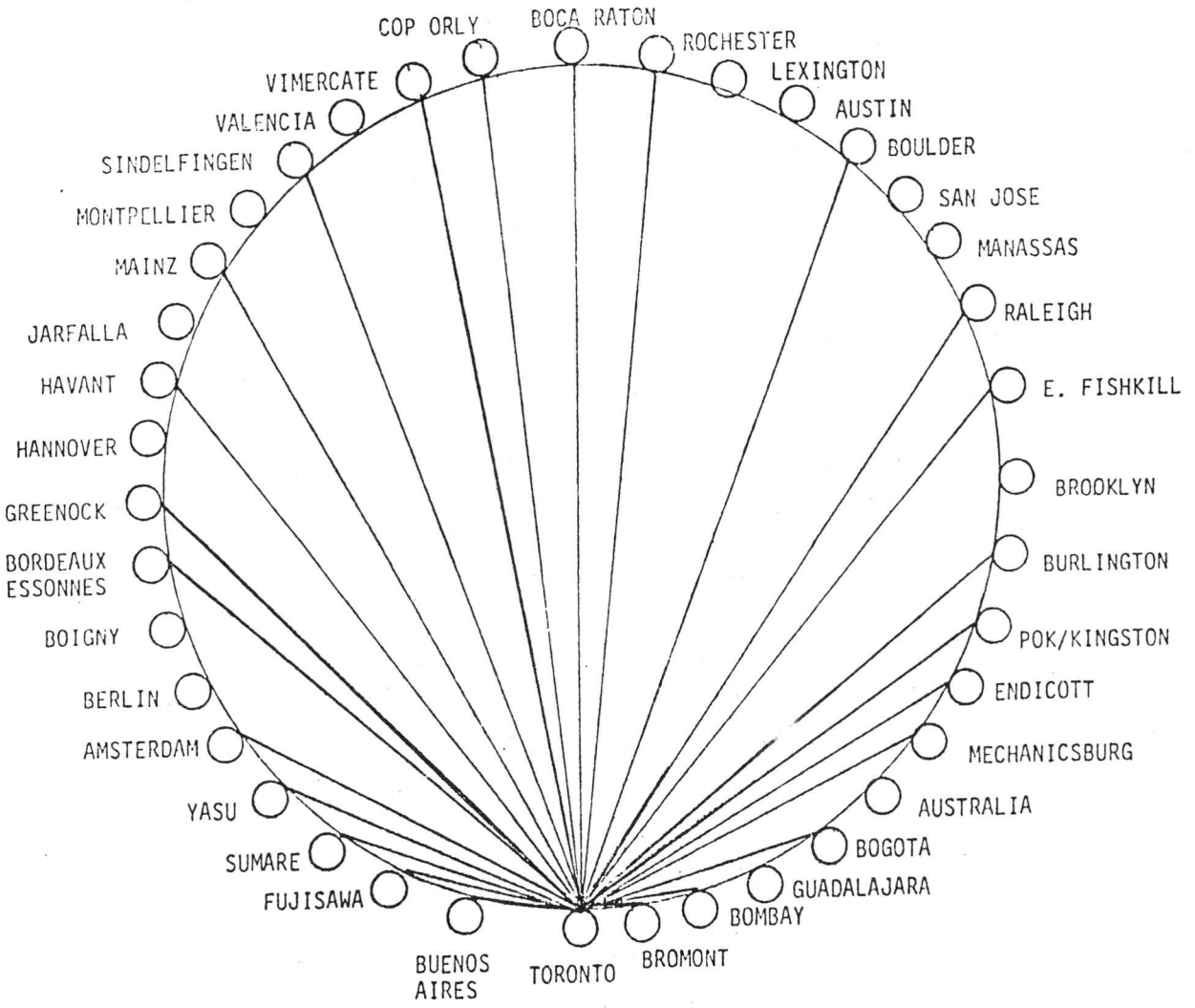
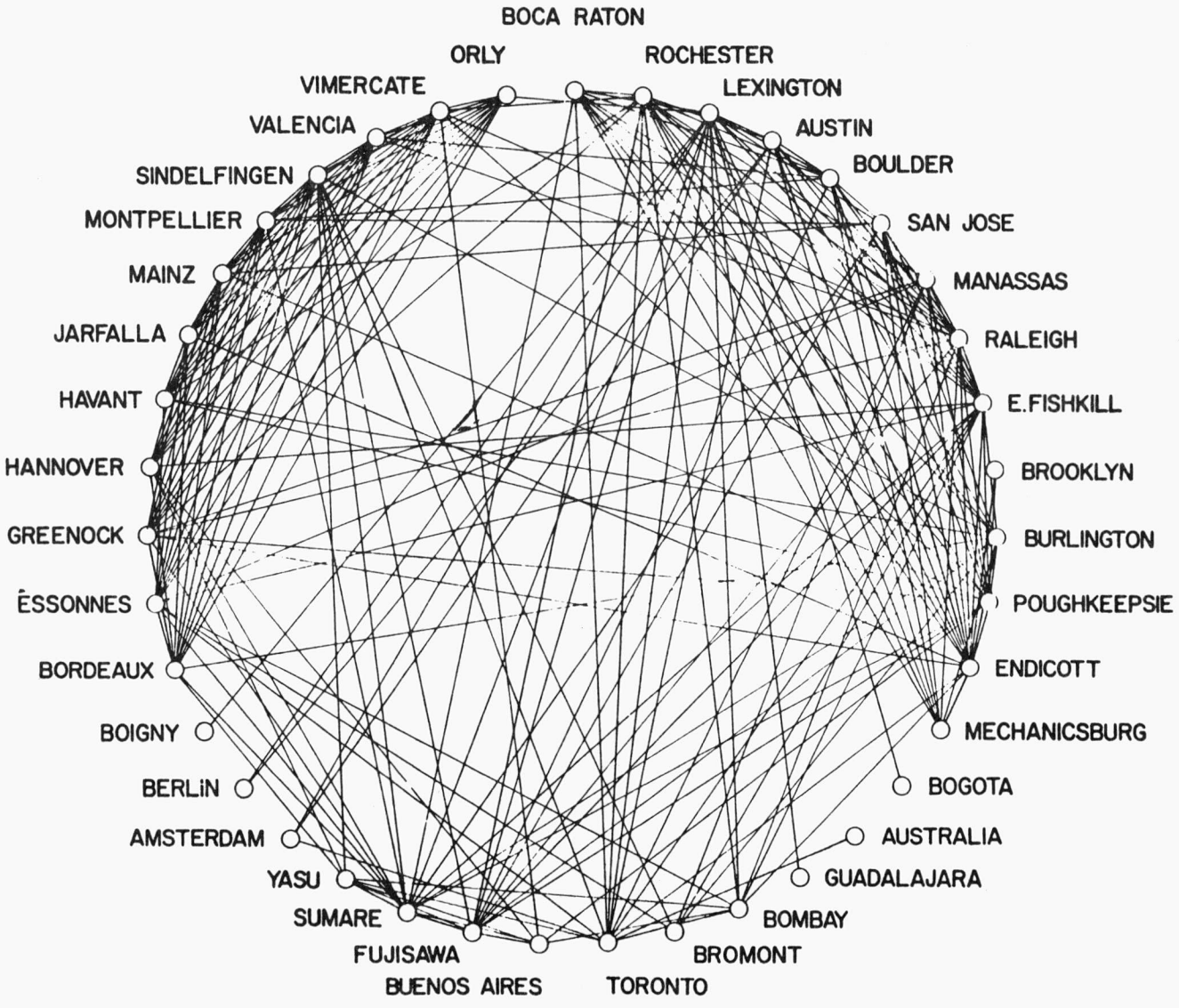


Exhibit 2

Interplant Dependencies within IBM



machines for the Canadian market. The first Canadian-made IBM computer, a model 650, was manufactured in 1956.

In 1950, IBM Canada elected the first outside director on its Board of Directors, Hugh Scully, former Consul General for Canada in New York City. Since the mid '60s a majority of the directors of IBM Canada have been outsiders.

By 1960, the revenues of IBM Canada reached $57 million (3% of the IBM Corporation's total revenues) and its work force totalled over 3200 employees. The Toronto plant was manufacturing a variety of products, from office equipment to computers.

During the 1960s, Canadian sales grew at a slightly faster rate than in the United States, but at a slower pace than in Europe. Domestic sales in 1970 reached $271 million. That decade was marked by major changes in the operations of the IBM Corporation which affected greatly IBM Canada's manufacturing activities.

World-wide rationalization of the IBM Corporation's manufacturing operations was achieved from 1965 to 1970. Each country was assigned missions. Thus, in 1968, IBM Canada acquired the North American manufacturing mission for the 029/059 punch card machine. In 1969 additional office product manufacturing missions were obtained.

Previously, most plants in countries other than the United States were not specialized; after rationalization took place however, most plants were specialized. Canadian manufacturing operations expanded rapidly after rationalization. There were plant expansions in 1969 and in 1970 in Toronto. A new plant was built in Bromont in 1972 and was expanded in 1975. Ten years after the rationalization policy was initiated IBM Canada had multiplied its manufacturing space by five (to 1,600,000 sq. ft.).

The specific manufacturing missions assigned to Canada are the following:

Data entry equipment	Toronto
Electric typewriters	Bromont & Toronto
Magnetic card products	Bromont
Computer components (substrates)	Bromont
Low speed line printers	Toronto

In 1975, IBM Canada's manufacturing output was evaluated at over $200 million, approximately two-thirds of which was exported.

In 1967, IBM Canada acquired a development mission and opened a development laboratory in Toronto. In its first year of operation (1968), the IBM Canada laboratory employed 90 workers. Presently, over 300 people work in the laboratory which has had a budget of over $10 million since 1975.

Product development (as with manufacturing) is rationalized on a world-wide basis and each laboratory has specific missions. Most of the laboratory expenditures are funded by development divisions within the IBM Corporation. (These divisions are within the Data Processing Product Group and the General Business Group and these units will be described in the next section of this chapter.) Each laboratory must continually negotiate projects within these divisions and within its assigned missions to meet budgetary needs.

In 1968, IBM Canada had domestic revenues of $232 million and export revenues of $41 million. In 1975, domestic revenues reached $555 million and export revenues, $164 million.* From 1968 to 1975, IBM Canada invested $621 million in rental machine equipment and $111 million in plant, equipment and other properties. During the same period, it paid $142 million in dividends and $223 million in royalties (after payments of Canadian withholding taxes) to IBM Corporation. It also received from the IBM Corporation, during the same period, $40 million in capital stock investment and $31 million for funded development expenditures.

Table 2 presents some data pertaining to the fiscal year 1975. Over the years, IBM Canada's domestic revenues generally amounted to between 3% and 4% of the total revenues of the IBM Corporation. IBM Canada has consistently ranked fourth or fifth among the IBM subsidiaries outside the United States, behind Germany, France, Japan and occasionally behind either the United Kingdom or Italy.

THE ORGANIZATIONAL STRUCTURE OF THE IBM CORPORATION

This section and the next one will outline the present organization set-up of the IBM Corporation and of IBM Canada, in order to provide the reader with a panoramic view of their functioning. Chapter 4 will delve more thoroughly into the particulars of strategy formulation, planning processes and organizational principles at IBM.

The organizational structure of IBM is very dynamic. Marginal changes and adaptation are made regularly and major reorganizations have occurred once or twice during the last decade. Therefore, we are presenting here a snapshot of the situation as of the Spring of 1976.

---

* - IBM Corporation has a policy of not divulging publicly its revenues per line of business (office product, computer, etc.) and is presently fighting in court a Federal Trade Commission ruling which would force it to do so. The same policy is followed at IBM Canada. Under the guidelines of the Royal Commission, figures considered confidential by IBM Canada have been deleted from the public version of the report.

Table 2

IBM CANADA 1975

(All financial data are in millions)

Gross income, sales, services, rentals.

Domestic	$ 555
Exports*	$ 164
Total	$ 719

Net earnings after taxes	$ 70
Dividends paid to IBM Corporation**	$ 34
Royalties paid to IBM Corporation**	$ 47
IBM Canada Laboratory expenditures	$ 11
IBM Corporation's contribution to laboratory expenditures	$ 9
Taxes and duties	$ 128
Payroll and benefits	$ 208
Purchases of Canadian goods and services	$ 123

Personnel	Number of Employees
Manufacturing	2823
Administrative and Sales	7457
Laboratory	310
Total	10590

* - This includes export sales by Canadian Manufacturers to IBM affiliates where IBM Canada acts as a broker and receives a commission. It does not include purchases made by IBM Corporation (U.S.) directly from Canadian suppliers. It also includes sales of services by IBM Canada Limited laboratory to other IBM affiliates. Transfer prices are manufacturing costs plus a standard uplift. Manufacturing costs of equipment are estimated to represent on the average, about 20% of the selling price (Forbes,1977). (It should be noted that manufacturing cost is but a component of total cost; the latter includes of course, installation, software, engineering support, education, distribution, development, etc.)

** - Net after payment of Canadian withholding taxes.

The basic organizational chart (Exhibit 3) shows IBM Corporation's organizational set-up of the past few years. Changes have been made, but they consisted mainly of the amalgamation of certain activities. For instance, the three operating groups which comprise the United States based operating divisions were set up in 1975. There was also some reallocation of responsibilities among operating divisions in 1974.

The IBM Corporation is divided into four major line operating groups and six staff services functions. These organizational units report to the Corporate Office, which provides the overall direction for IBM. The Corporate Office, through its chairman, reports to the Board.

The Corporate Office is made up of Frank T. Cary, Chairman of the Board,* John R. Opel, President and Gilbert E. Jones, Vice-Chairman. The Chairman of the Board is responsible to the Board of Directors.

A senior management committee, known as the Corporate Management Committee, serves as the central guidance and policy-making body. It is composed of the members of the Corporate Office and two staff Vice-Presidents (Operations and Services).

Because the tasks of coordination, integration and planning are crucial at IBM, staff services play a major role. The following six staff functions report to the Corporate Office:

The General Counsel provides legal advice and counsel to the Corporate Office; he is the only staff Vice-President to sit on the Board of Directors.

The Chief Scientist provides technical advice to the Corporate Office.

Finance and Planning design and implement IBM's planning system and assist the Corporate Office in the assessment and consolidation of the yearly plans of operating units. This service function is also responsible for the development and the management of the information systems.

Operations, a powerful staff group, interfaces both with the operating units and the Corporate Office in the areas of engineering, programming, manufacturing, marketing and services.

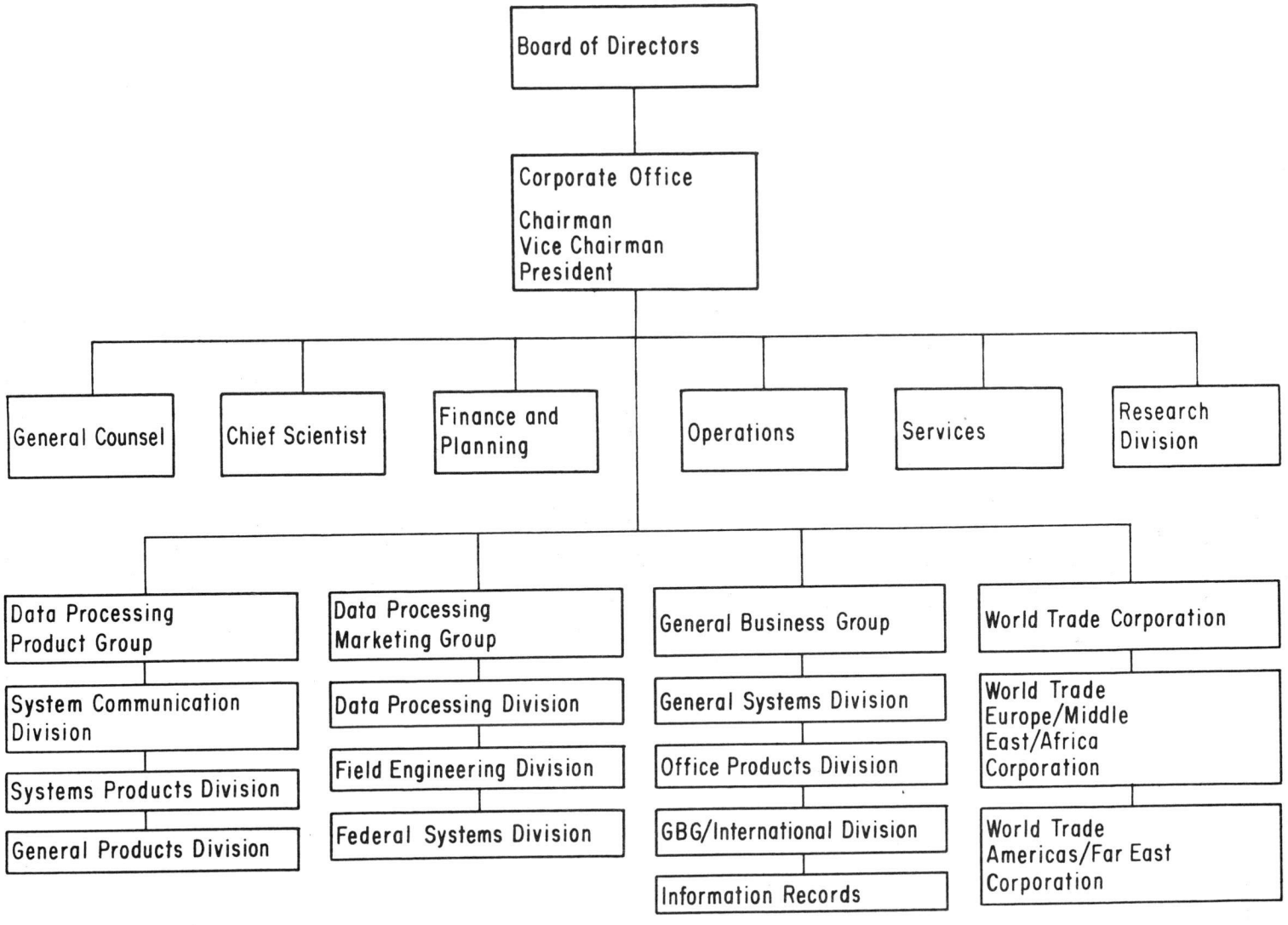
Services provide staff advice to the Corporate Office and the operating units in the areas of commercial and industrial relations, communications and personnel. The Real Estate Division and a subsidiary in the educational publishing field also report to the senior Vice-President in charge of Services staff.

---

* - Thomas J. Watson, Jr., who retired as Chairman of the Board in 1975 is still a member of the board, chairman of its powerful executive committee and a member of the finance committee.

Exhibit 3

IBM Corporation Organizational Chart



Research Division operates the three research laboratories of IBM, in Yorktown Heights, New York, San Jose, California and Zurich, Switzerland.

The four operating groups are:

A. The Data Processing Group

B. The Data Processing Marketing Group

C. The General Processing Group

D. IBM World Trade Group

A. The Data Processing Product Group (DPPG)

The Data Processing Product Group (DPPG) has responsibility for the development (world-wide) and the manufacturing (for the United States) of data processing products. It has product line management for all data processing systems and their related communications, data storage and terminal products. (Data processing products and systems do not include small computers: systems 32, 3, 5100, etc.) The Data Processing Product Group is made up of three divisions:

1. The System Communications Division is responsible for communications subsystems (terminals, multiplexors, display devices). Its headquarters is at Harrison, N.Y. and the main development laboratories are in Raleigh, N.C. Other development units are in Endicott, Kingston, Poughkeepsie and Yorktown Heights, N.Y., Gaitherburg, Md., Los Gatos, Calif., Manassas, Vir., Fujisawa, Japan, Hursley, England, La Gaude, France, and Uithoorn, Netherlands.

2. The System Product Division is responsible for the central processing function and related areas (C.P.U., memory, internal control functions, consoles, power supplies, etc.). Also headquartered in Harrison, N.Y., it operates development units in Burlington, Vt., East Fishkill, Poughkeepsie, Sterling Forest and Endicott, N.Y., Boeblingen, West Germany, Essonnes, France and Vienna, Austria.

3. The General Product Division has responsibility for peripheral equipment in the areas of storage subsystems and output devices, (tape unit, disc file, mass storage memory, printers). Its headquarters is in San Jose, California. Development activities are carried out in Palo Alto and San Jose, Calif., Boulder, Col., Endicott, N.Y., Hursley, U.K. and Boeblingen, West Germany.

The Data Processing Product Group also comprises staff services which play a critical role in the planning of new products and in the management of existing products.

B. The Data Processing Marketing Group (DPMG)

The counterpart to the DPPG for sales and service in the United States market, this group is also very involved in the decision-making process for

new products and product development. The group's staff has world-wide responsibility for the assessment of market requirements, which is consistent with their involvement in new product planning. There are three operating divisions:

1. The Data Processing Division is responsible for sales, systems engineering services, custom contract services and for DP Education.

2. The Field Engineering Division is responsible for the maintenance of data processing equipment in the United States and provides support for programming systems marketed in the United States.

3. The Federal Systems Division sells primarily to the U.S. Federal Government.

C. The General Business Group (GBG)

The General Business Group is responsible on a world-wide basis for developing and manufacturing smaller data processing systems and office products. In addition, the group is responsible for the sales and service of these products in the United States and for providing functional direction. Four divisions are included in the group.

1. The General System Division handles smaller data processing systems (systems 3, 7, 32, 5100) and has the world-wide responsibility for their product management and development and is responsible for the manufacturing, marketing and service of these products in the United States.

2. The Office Products Division has world-wide responsibility for the product management and development of office products and the manufacturing, marketing and service responsibility for the United States. Office products include electric typewriters, magnetic card typewriters, input processing equipment, direct-impression composing products, copying equipment and related supplies.

3. The Information Records Division is responsible for the manufacturing and marketing in the United States of supplies which support, or are related to, information-handling machines: magnetic tapes, diskettes and data modules, disk packs, data processing cards, business forms, ribbons, and other consumable products used in information-handling systems.

4. General Business Group/International was created to provide functional direction and support in 17 countries (including Canada), in the areas of manufacturing, sales and service of General Systems and Office Products.

D. IBM World Trade Group

The fourth group reporting to the Corporate Office is the IBM World Trade Group, consisting of the IBM World Trade Americas/Far East Corporation (A/FE) and the IBM World Trade Europe/Middle East/Africa Corporation (EMEA). These two management companies (A/FE, EMEA) are wholly-owned subsidiaries of the IBM World Trade Corporation, which in turn is a wholly-owned subsidiary of the IBM Corporation. The headquarters of A/FE are in Mount Pleasant, New York and those of EMEA are in Paris, France. The IBM World Trade Corporation has no direct management responsibility, but performs specialized staff services on a world-wide basis. The World Trade Group's point of contact in the Corporate Office is the Vice-Chairman of the Board.

• • •

The organizational structure of the headquarters provides a good illustration of how IBM has given operational meaning to the principle of "check and balance" within its own organization. For instance, the DPPG and the DPMG are both involved in the planning and the development of new products. The plans of each group are extensively reviewed by the corporate staffs from the point of view of their financial soundness, their practicality in terms of engineering, manufacturing and servicing and their implication in terms of personnel, communications and legal ramifications.

Foreign subsidiaries interface directly with the DPPG and the GBG in the allocation of development work and manufacturing responsibilities. Through EMEA and A/FE, they interface with the corporate staffs and with the other operating groups.

The decision-making process is diffused throughout the organization. The organizational design favors resolution of conflicts at the lowest possible level. However, contentious issues float up in the organization until they are resolved. No operating unit is wholly self-sufficient and the interdependencies at every level throughout the system stimulate cooperation and negotiation, and the effective resolution of conflicts.

THE ORGANIZATIONAL STRUCTURE OF IBM CANADA

IBM Canada reports to the IBM A/FE Corporation, which is headquartered in New York. As one of the major IBM subsidiaries (with IBM Japan) in the A/FE group, IBM Canada is influential within that group; two members of IBM Canada's Board, the president of IBM Canada and one outside director, sit on the A/FE Board. A number of Canadian citizens have high-ranking positions within A/FE.

THE BOARD OF DIRECTORS

The Board of Directors of IBM Canada is presently made up of ten directors. Traditionally, the number of directors has been greater than ten but in the past several months three directors accepted public appointments which required them to give up their membership on the Board. Notwithstanding the resignation of three outside directors, there are still five outside directors and the company is actively seeking to increase this number in the near future.

All the directors but one are Canadian citizens; the non-Canadian is a representative of the parent company. Prior to 1974, Gil Jones, now Vice-Chairman of the IBM Corporation, served on the Canadian Board in his capacity as Chairman of the IBM World Trade Corporation. In 1974, he was succeeded by Ralph Pfeiffer, Jr., who had become Chairman of the IBM Americas/Far East Corporation.

It is a policy of IBM Canada to have outside directors of high calibre. As well, the company attempts to achieve good national representation in selecting candidates for its Board. For example, the three directors who resigned recently were Pauline McGibbon, appointed Lieutenant Governor of the Province of Ontario, Louis-Philippe de Grandpré, appointed a Justice of the Supreme Court of Canada and Robert Bonner, former Attorney General of the Province of British Columbia, appointed Chairman of the British Columbia Hydro Authority.

Potential nominees to the Board are selected by Canadian management and reviewed with the Board before formal invitations are extended. The involvement of A/FE in the process of selecting outside directors is minimal. The Chief Executive of IBM Canada informs A/FE management of prospective candidates and once A/FE is satisfied there is no conflict of interest problem, its approval is usually rapid. As might be expected, A/FE is more directly involved in the process of selecting the inside directors through its involvement in all top-level appointments in the Canadian company. The Chief Executive of IBM Canada is always a member of the IBM Canada Board and normally there are at least two Vice-Presidents from the Canadian company who serve on the Board.

THE TOP MANAGEMENT

As chief executive officer of IBM Canada, the president is responsible for the achievement of objectives in the areas of sales, income, profits and productivity. He is also responsible for the management of the sales and services operations and of all IBM facilities in Canada. In addition, IBM Canada's C.E.O. must ensure that operations are conducted in keeping with Canadian legal requirements, Canada's national interest and in accordance with IBM's policies and practices.

Five senior vice-presidents report to the president and are members, with the president, of the Operation Review Committee (ORC). The ORC meets

at least once a week to review and make decisions on strategic issues, to set objectives, develop plans and to review the company's performance. Its role is very similar to that of the Corporate Management Committee.

The Director of Organization and Planning is IBM Canada's chief economist and he provides advice on organizational and economic matters.

THE OPERATING UNITS

Two basic product operating units function at IBM Canada: the Data Processing Division and the General Business Group. These are the Canadian counterparts of the basic operating groups at IBM Corporation (See Exhibit 4).

1. The Data Processing Division (DPD)

This group handles the marketing, sales and service of large computer systems and related intelligent and non-intelligent terminals in Canada (all 370 computers and related peripherals). In addition, the Data Processing Division comprises the development laboratory and product line management. Thus, it handles functions which are divided between the Data Processing Product Group and the Data Processing Marketing Group at IBM Corporation.

Within the Data Processing Division there are five line functions, and three staff functions reporting to the vice-president for Data Processing.

The line functions are:

a. DPD Sales, headed by a vice-president, is responsible for the sale of DP products and services (this includes computer services from IBM Data Centres). Three regional marketing vice-presidents report to him. These vice-presidents are in charge of the three regional sales organizations and are headquartered in Vancouver, Toronto and Montreal. The DP Marketing operations staff develops programs for support of marketing operations in the field.

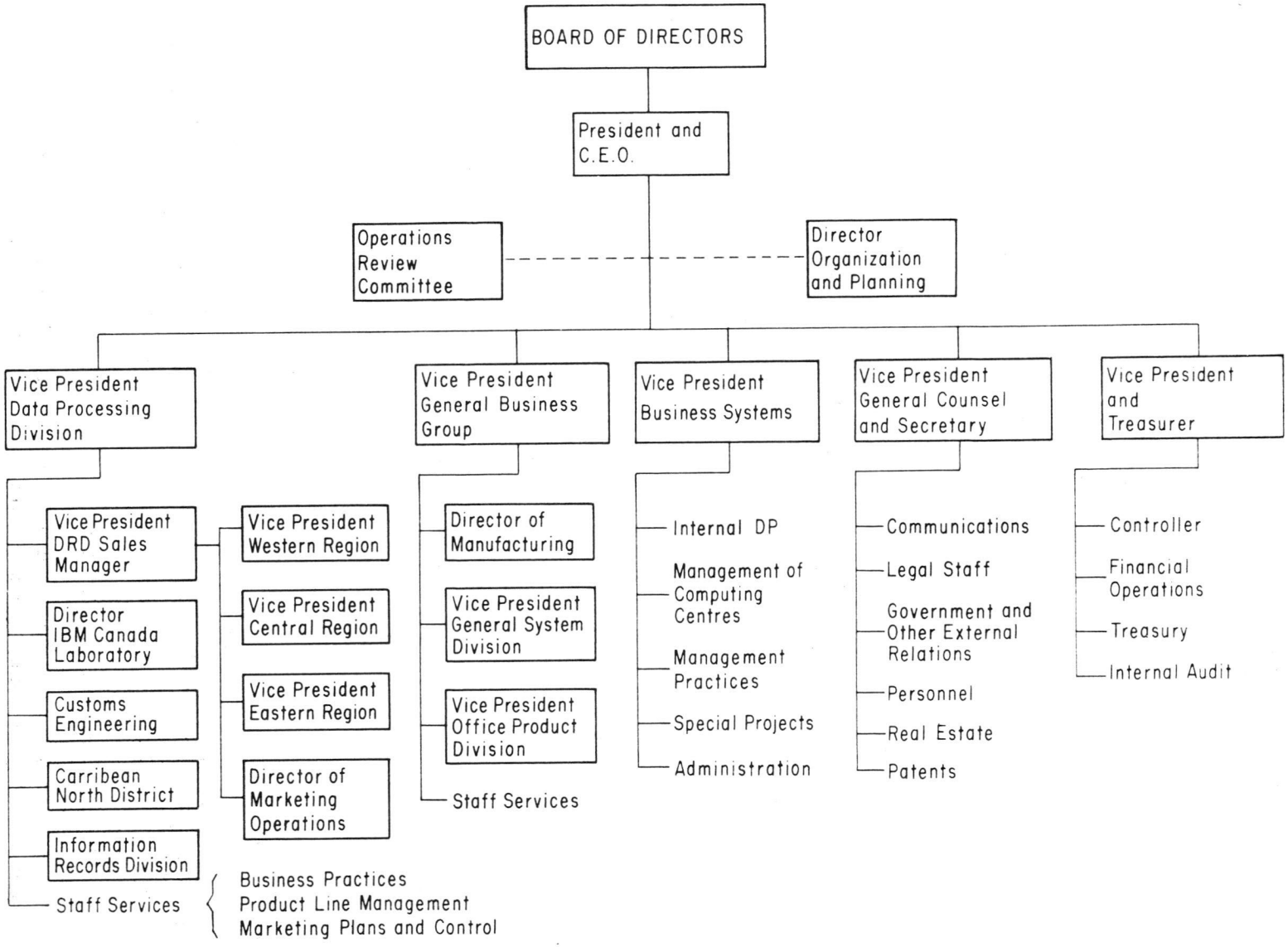
b. The IBM Canada Ltd. laboratory undertakes development projects for IBM Corporation's development divisions. These projects account for more than four-fifths of the lab budget. The lab also provides development support to the Canadian manufacturing operations and to selected Canadian projects.

c. Data Processing Division - Customer Engineering. This division handles repairs and service of computer installations.

d. Caribbean North District which is responsible for sales and services in the English speaking Caribbean (Bahamas, Bermuda, Jamaica, Trinidad, Barbados, Guiana and the Cayman Islands).

Exhibit 4

IBM Canada Organizational Chart



e. Information Records Division which manufactures and sells Data Processing supplies.

The three staff functions are:

1. Data Processing Marketing Plans & Controls, which develops business volume objectives for Canada as a whole and for the regions, determines the personnel and other resources required by Data Processing Marketing to achieve these objectives and monitor sales.

2. Product Line Management, which identifies Canadian user requirements and develops IBM Canada's position on product plans. They also develop marketing strategies based on their knowledge of future products and serve as liaison officers with the Data Processing Product Group and the Data Processing Marketing Group in the United States.

3. Data Processing Business Practices, which is responsible for providing advice to the field on contracts and other marketing practices, and for ensuring that IBM Canada complies with the established business policies of IBM.

2. The General Business Group (GBG)

This group handles the marketing and sales of office products and small computer systems, such as the systems 3, 7, 32 and 5100, as well as related peripherals and intelligent terminals. The General Business Group also handles all manufacturing operations in Canada, relating to office products and small system missions. Within the General Business Group in Canada, are included the General Systems Division (small computers), the Office Products Division and the manufacturing operations. The two divisions each have their own sales organization in Canada, each functioning more or less autonomously: the former handling small computers and the latter having the sales responsibility for typewriters, copiers and dictating equipment.

The General Business Group has its own staff in finance, personnel, communications and information systems.

STAFF SERVICE FUNCTIONS

In addition to these two line operating units, three staff services functions headed by senior vice-presidents, report to the president: the Business Systems Function, the Financial Function, and a grouping of other staff functions reporting to the General Counsel and Secretary.

1. Business Systems Function

Business Systems was formed in January, 1976 and incorporates all the internal computer and administrative services of IBM Canada. Its

functions include:

a. Information Systems which is responsible for developing internal data handling systems for finance, administration and other areas of IBM Canada's internal organization.

b. Administration, which is responsible for processing orders, scheduling deliveries of equipment and managing inventory of rental equipment, as well as providing administrative support at headquarters and in the field.

c. The Computing Centre Organization, which plans the use of internal data processing equipment and operates the Toronto Computing Centre which provides computer services to Data centre services, Information Systems and market support functions.

This new unit has been established to adapt new systems and technology to the management of IBM Canada itself, particularly in the areas of order processing, scheduling, installing, and billing. By combining the user (Administration), the developer (Information Systems) and the operator (Computing Centres) of Data Processing Systems under one management, significant progress is expected in the effective use of IBM Canada's equipment.

2. Financial Function

The office of the financial vice-president provides four services:

Financial operations (accounting, payroll, etc.);

Treasury services (taxes, balance sheet planning, insurance, pension funds);

Controller (financial planning, budgets, controls and pricing);

Internal audit.

3. General Counsel and Secretary Functions

Reporting to the General Counsel and Secretary of the company are the following staff services:

Communications and Corporate Information which includes advertising, press relations, internal communications and external affairs.

Commercial Relations which includes relations with governments, carriers and trade associations. Among other things it involves standards and data communications relations.

Personnel, Real Estate, Legal and Patents also report to the General Counsel and Secretary.

Officers, Plants, and Personnel

IBM Canada has offices in all provinces. There are Data Centres which offer computer services throughout Canada from locations in twelve major Canadian cities. Three Customer Education Centres are located in Vancouver, Toronto and Montreal. Moreover, the IBM A/FE Communication Competence Centre is a communication training unit in the computer/communications field for IBM employees and customers in the A/FE territories.

There are two manufacturing plants located in Toronto and one in Bromont. Moreover, there are two card plants, located in Montreal and Toronto.

65% of the employees are located in Ontario, 19% in Quebec, 12% in the Prairies and 3% in the Maritimes. The average age of IBM Canada's employees is 33 and average length of service is eight years. On the whole, IBM Canada employees are younger and have been with IBM Canada for a shorter time than IBM Corporation employees in the United States.

SUMMARY

The development of IBM Canada parallels closely that of IBM Corporation's U.S. operations. A sales oriented organization, IBM grew on the strength of the tabulating equipment market from its foundation in the 1910s to the '50s. During that period, IBM Canada acquired some of the basic traits that still characterize it today: an aggressive organization, staffed by Canadians, setting the tone in a growing market.

In the decade of the 1950s, IBM succeeded in changing completely its product lines from the obsolete tabulating equipment to the fast-growing computers. Gradually, it became a technology-oriented company, without shedding its image as an aggressive marketer.

In the late fifties and in the early sixties, the world-wide IBM organization took the shape that it still has today: national subsidiaries each with a primary mission in sales and which could acquire manufacturing and development missions. Gradually, the importance of the U.S. plants in total IBM manufacturing output decreased. The same process can be observed, although with some lags, in the development funding. Whether IBM Canada received its share of manufacturing and development missions will be discussed in the following chapters.

CHAPTER 3

IBM CANADA'S MARKET POWER

"Power is the conscious capacity
to exercise a net influence"
J. L'homme 1966, p. 10

INTRODUCTION

The extent of IBM Canada's market power should be assessed with prudence. The issue, in general, is a complex and ill-defined one which is the theme of many conflicting theses and the subject of a large number of empirical studies*, the conclusions of which support, with equal force, irreconcilable positions. In the specific case of IBM, this issue has received minute judicial attention in the United States, with claims and counter-claims supported by a large volume of information and detailed arguments.

Market power has been defined as the capacity (on the part of some firms in an industry) to realize, in a deliberate and persistent fashion, performances different from those which would result from a competitive market (Jacquemin, 1967; Kaysen and Turner, 1959). That IBM has some market power is undeniable. In common with most Canadian industries, the data-processing industry does not meet all the proverbial canons of perfect competition. But the issue here is the extent and "reasonableness" of such market power.

Although we shall not conduct a full exegesis of the literature on market power, it is essential that we establish clearly the terms and conditions of our foray in a field so fastidiously prospected (and mined) by lawyers and economists.

Our examination of this issue will be influenced by three considerations:

FIRST, we shall make use of the conceptual framework which has become conventional in studies of industrial organizations (see in particular Bain, 1963 and Caves, 1974) and which calls for the evaluation of market power through a three-pronged investigation of market structure, conduct and performance. The underlying rationale (some authors call this a "paradigm")

---

* - For an excellent review of the issue and the research results, the reader should consult Jacquemin and de Jong's Markets, Corporate Behaviour and the State (1976) and H.J. Goldschmid, H.M. Mann, J.F. Weston (eds) Industrial Concentration: The New Learning (1974).

is that market structure (which refers to the competitive situation and conditions in the industry, the distribution of market shares among competitors and the barriers to entry in the industry) influences (and interacts with) the behavior or conduct of individual firms in the areas of pricing, advertising and product strategies and that such conduct in turn influences long-run market structures. The combination of a particular industry structure with the particular adaptation or conduct of individual firms determine the industry performance on criteria such as allocative efficiency, rate of technical progress and impact on the distribution of income and power in society.

This conceptual framework is a major shift from the traditional concept of market power regulation. The traditional approach to such regulation consisted in defining the types of competitive conduct (collusion, combines, predatory pricing) which would be considered illegal and for which therefore, prosecution would be initiated. The economic order was to be protected by the vigilant enforcement of anti-trust laws so as to eradicate and discourage illicit and reprehensible conduct on the part of business firms.

The obvious difficulties inherent in this "cops-and-robbers" approach, and an improved understanding of the economics of corporate concentration, have resulted in a different (though not unanimously shared) conception of how the judicial system should be fostering competition. This "modern" approach may be summarized as follows:

The laws governing competition should aim at preserving an institutional order, rather than preventing and prosecuting individual acts.* The focus shifts from the individual conduct of firms and their underlying motives to the objective evaluation of the characteristics of the market and of the firms operating in that market. Then, the critical elements become performance and structure.

If market power is diagnosed as unreasonably threatening the institutional order the State must intervene, whether the conduct and intention of the firms were legitimate or not. Under this approach, the legal remedy usually takes the form of a "structural" reorganization of the market.**

Indicators based on structure and performance then provide the critical measures of the extent of market power. Kaysen and Turner proposed that a firm with a market share in excess of 50% over a five-year period be presumed to have market power. However that presumption should be checked against

---

* - Which does not mean that such actions are not still forbidden and condemned.

** - If it cannot be shown that such power is "reasonable". However, the meaning of the term is ambiguous and the policy implications unclear, as we shall see later on in this chapter.

performance; that is, does the firm show an average rate of return that is consistently high for that industry. But the assessment of performance on the basis of profits and return figures is precarious. Obviously, the "slack" available to the organization as a result of its market power may be invested or spent to improve the amenities of managers and personnel and/or for tactical and strategic expenditures which would reduce its balance-sheet profits but consolidate the firm's position. Therefore, it is argued that the determination of market power should include an assessment of the "strategic" conduct regarding the availability and disposition of surplus. What is proposed is not a return to the former emphasis on "illegal" conduct but a consideration of strategic conduct with respect to "power expenditures", in addition to the available quantitative performance criteria.

By "power expenditures", we mean actions by the firm to increase its power or maintain its position. These actions may take various forms:

Out-of-market actions

- political donations and lobbying expenditures (this subject will be covered in Chapter 5)
- social responsibility expenditures which may constitute strong evidence of slack (IBM Canada's actions in this area will be examined in Chapter 6)

In-market actions

- price strategy
- product strategy
- acquisitions and diversification
- loss-leadership activities

In the case of IBM Canada, the only in-market action which is relevant and discussed at length in this chapter is the setting of prices for the Canadian market.

While the measurement of market power by an examination of market structure, performance and strategic conduct may be the best approach that we have, it brings forth a number of problems, to which we shall return in the course of this chapter:

- What is the appropriate definition of market?
- What are the major trends in the market and what would happen without intervention?
- When is market power "reasonable"?

SECOND, the U.S. data processing industry has recently been studied at length and along the line of the conceptual framework just presented (Gerald W. Brock, The United States Computer Industry: A Study of Market Power, 1975). Brock relied heavily on information which had become public as a result of litigation between IBM and other manufacturers of data processing equipment. Therefore, his analysis of the industry is relevant and informative

for our purpose and will be quoted extensively. However, we disagree sharply with him on many substantive issues, as will become clear during the course of this report.

THIRD, we hope to convey forcefully the need to look at the data processing industry within a dynamic framework. The examination of the market structure must be sensitive to the evolution which has occurred and is likely to occur in market conditions. "In fact, structure may best be understood as in passage, rather than in being. A second reason to analyse structural changes is that most policy choices have to deal with it. How fast a high market share would diminish naturally is a key variable for anti-trust and regulatory policies, among others" (Shepherd, 1976; p. 179).

Conclusions about the competitive status of an industry are often drawn on the basis of snapshot examinations of that industry. For example, the snowmobile industry was dominated in 1965 by one firm which held around 90% of the market. Five years later, there were 110 manufacturers of snowmobiles in North America and the market was characterized by a competitive exuberance that would have pleased the most demanding advocate of "no-holds-barred" competition. In 1976, the industry was made up of seven manufacturers fighting fiercely and effectively to maintain and improve their market share, with the largest manufacturer holding a 28% share of the market. Clearly a spot evaluation of the industry conducted at five-year intervals would have led to different conclusions regarding market power and performance.

We are belaboring an obvious point here, but it seems that the particular growth characteristics and technological characteristics of the data processing industry have effectively hidden some fundamental dynamics which are easily perceived in other industries. Therefore, our study of the market structure will include a discussion of the major trends likely to have an impact upon the future market structure in this area.

This chapter will:

(a) establish some basic premises about the definition and dynamics of markets and outline the approach taken in our assessment of the data processing market;

(b) describe at length the market situation and evolution and IBM Canada's position in it, both for data processing equipment and (very briefly) for office products;

(c) examine the performance and conduct of IBM Canada, and

(d) state our conclusions regarding the existence, persistance and reasonableness of IBM Canada's market power.

PRELIMINARY CONSIDERATIONS

ABOUT THE DATA PROCESSING MARKET

There is a considerable body of empirical and theoretical evidence that supports the crucial and determining role of market share in any assessment of market power. The relationship between high market share and high profitability is strong and consistent. Shepherd (1976) estimated that for each added 10 points of market share there is on the average an increase of 2.5% in after-tax return on equity. Another study, based on a different time frame and methodology, arrives at an amazingly similar result. Buzzell, Gale and Sultan (1975) conclude that on the average a difference of 10 percentage points in market share is accompanied by a difference of about 5 points in pretax return on investment. Furthermore, Shepherd (1976) has shown that the level of concentration in the industry and the size of the firm showed a weaker relationship with profits than did market share.

The strong interest for market share figures is therefore understandable. It is prima facie evidence of market power (whether reasonable or not) and of potential for high profits. Furthermore, it is, or seems to be, an objective and quantitative indicator much less susceptible to tampering by accounting wizardry than are profits and return on investments.

However, in concrete circumstances, the notion and calculus of market share poses difficult problems of definition and dynamics. What is the boundary of the market for which relevant shares will be computed? To what extent is a punctual and static evaluation of market share a fair representation of the market situation and dynamics? We shall look briefly at these issues then describe our approach to the assessment of the data processing market.

DEFINITION OF MARKETS

A product is a bundle of benefits, and a market, therefore, could be defined as the sum of products (and services) sold whose bundles have in common one or more benefits sought by buyers. This fancy definition of a market may be epistemologically satisfying but it is rarely the meaning attached to the term market in arriving at "market" share figures. Then, the market is conceived as the sum of very similar products sold by identifiable manufacturers.

The difference between the two concepts is often striking and easy to illustrate. The market share of U.S. automobile manufacturers is determined by the ratio of company sales to total sales within a particular year. The market, however, as defined by the transportation benefit sought by buyers, is made up of U.S. manufactured automobiles, imported cars, leased cars, used cars, keeping one's old automobile, using public transportation; it is also made up to a lesser extent of motorcycles, bicycles, trucks and jeeps.

Another definition of a market at the opposite end of the spectrum would hold that a market is made up of products and services whose bundles have in

common all (or most) of the benefits sought by buyers. Then, the automobile market is much too broad a concept. The relevant market would be made up of those products which satisfy a similar set of benefits (e.g. transportation, luxury, styling, prestige). That "market" is made up of far fewer buyers and competing products than the U.S. automobile market. The term market segment has been coined to deal with this reality, but for all practical purposes, if little substitution occurs between segments, they constitute the relevant "markets" within which market power should be assessed.

The market share figures on which assessment of market power is based fall squarely between these two definitions and are thus either too narrow or too broad to constitute a relevant measure of market power.

The data processing industry has been particularly ill-served by this calculus of market share. There has been a frequent confusion of market share between the installed base of central processing units (that is all C.P.U.'s whenever and however acquired) and the share of new yearly installations purchased or leased from a given manufacturer. Moreover, the full set of options available to users have rarely been considered:

- buying new equipment from manufacturers
- buying used equipment
- leasing equipment - from manufacturer
  - from third party
- buying the services of a service bureau

For obvious reasons, the IBM Corporation has frequently argued for such a broader definition of the relevant market.

A second source of difficulty comes from the fact that this market is also a segmented one and global market shares (however imprecise) may hide the reality of market power within some segments. In effect Control Data's original suit against IBM implicitly assumed the divisibility of the computer market into segments. Recognizing the assumption, IBM filed an abortive but instructive anti-trust counterclaim against Control Data stating that "if the court should determine that the computer market was divisible, then Control Data had attempted to monopolize the large scale segment of the market" (Brock, 1975, p. 171).

This difficulty of appropriate market definition is inevitable, as may be illustrated by the rather simple example of printers. There will soon be available ultra-fast printers with a capacity of up to 20,000 lines a minute. Does this category of printers constitute a market for which a determination of market power may and should be made? Or is the appropriate market all fast printers, a much larger entity, with multiple "products" and substitutes available to the user?

A third difficulty comes from the dynamic and changing nature of such markets (however defined), an issue which will be tackled in the next section. A most evident aspect of this dynamic is that the market share

distribution for a product will fluctuate predictably through the life cycle of that product. The innovative firm will have a 100% share during the introductory phase. The rate at which this share decreases will then depend upon the barriers to entry and the managerial efficiency of that firm. But there is little doubt that it will decrease.

MARKET DYNAMICS

It is our belief than an appropriate definition and analysis of the present and future data processing market must be based upon a judicious evaluation of relevant trends. Our close examination of this market reveals three sets of factors which have had and should continue to have a large impact upon competition and any firm's power in that market.

1. Evolution in the sophistication of buyers. One of the classic barriers to entry and therefore a source of market power is product differentiation. The buyers have express but divergent preferences among very similar substitute products; therefore, each brand of product has a specific demand curve reflecting the degree of nonsubstitutability introduced by brand advertising and promotion (so it is generally claimed).

The claim is often made that in the computer market there is much product differentiation because of the relative difficulty of comparative shopping and brand switching and that IBM reaps major benefits and much market power from this situation. Brock develops this thesis at some length, citing studies (conducted in the 1960s) which tend to show that buyers exhibited high brand loyalty and found it difficult to select the appropriate computer equipment (Brock, 1975, chapter 4).

Undoubtedly, particularly during the 60's, an important characteristic of this market was that the buyers of data processing equipment (an industrial product) found themselves in the same behavioral situation as buyers of consumer durable goods. They clearly perceived that the decision they had to make involved high performance risks while their confidence in their ability to make the necessary evaluation of competing products was quite low. The buyer's behavior in such purchase situations has been studied at length and was found to be determined by a set of risk-reducing variables: the general reputation of manufacturer for reliability and servicing, size and experience of manufacturer, warranties, brand loyalty.

IBM's marketing and service policies during the 1960s were well adapted to such behavioral characteristics. The very name "IBM" became the supreme risk reducer for insecure buyers during that period and constituted a formidable barrier to entry by new competitors at the time.

It is our contention that there has been a marked change in this aspect of the data processing market as a result of the following factors:

(a) The general level of sophistication of buyers has increased as more and better qualified data processing personnel became available to corporations. These people are more apt to go

through the detailed and complex process of comparative equipment evaluation and to be less impressed by the supplier's size and general reputation.

(b) The service bureau's place in this market is expanding rapidly (a fact to which we shall return below). These users are highly sophisticated, cost conscious buyers of equipment who will evaluate products on strict cost/performance criteria.

(c) An increasing share of the sales of data processing equipment comes from incremental changes in existing systems rather than from an overall change of systems (a trend which we shall treat in more detail later). Therefore, any particular purchase being less critical and less risky for the overall system performance, buyers will more readily shop around and experiment with products manufactured by smaller but technically proficient corporations.

(d) In due course, all manufacturers who have survived and prospered in the industry will also become to some extent "risk reducers" for the uncertain buyer. Their continued presence on the market and their pool of satisfied customers would tend to insure that this is so.

The general effect of this evolution in the buyer's behavioral characteristics has been to place data processing equipment back within the fold of industrial products and to greatly reduce the marketing advantages of the product, or in this case the company differentiation enjoyed by IBM.

2. A shift from a market for systems to a market for products. As most of the potential users of medium and large-scale data processing systems are equipped with such systems, competitive action is shifting to the incremental changes in the "boxes" or products making up that system.

"Main framers" who manufacture and sell complete medium and large size data processing systems are few and entry into that industry is difficult. But for virtually every product sold by "systems" manufacturers (including C.P.U.'s), there is intense competition from specialized firms.

As a result "pure" or integral systems, that is systems made up of equipment and software from one single manufacturer, are very rare.

3. Trends in the composition of data processing systems.

(a) The trend towards distributed intelligence networks has resulted in major developments in the area of intelligent terminals, mini and micro computers. In a sense, manufacturers of mini-computers and intelligent terminals compete with large and medium size C.P.U. manufacturers.

(b) Systems must increasingly be accessible to end users who have little familiarity with computers (banks tellers, managers, etc.). Much emphasis has therefore been placed on the development of the necessary terminal and programming technology required to meet this trend.

(c) More and more, corporations are resorting to service bureaus for their data processing needs. As the cost of data communications falls, a result of fast technological innovation on the part of common carriers, and as economies of scale may be achieved by the intensive use of large scale data processing systems, service bureaus have been able to make attractive proposals to medium size and even large users.

The combination of these market trends has resulted in important shifts in product structure. The medium size C.P.U. market is growing much less rapidly than the large size C.P.U. and the mini-computer markets. The number of terminals in use is expected to increase ten-fold over its level in 1970 during the 1970s.

AN APPROACH TO THE EVALUATION OF THE DATA PROCESSING MARKET

One rough measure of the size of the data processing market could be obtained by calculating the dollar value of all processing done on computers in a given territory on a yearly basis. That definition would include all processing, whether done by in-house facilities or contracted out to service bureaus. This method is tantamount to measuring the size of the automobile market by the cost of transportation by automobiles during a given period of time in a specific territory, rather than, as it is usual, by cost of the gross additions to the rolling stock of automobiles. The rationale for such a definition of the data processing market lies in the rather unique aspect of this industry: the fact that a large proportion of the "processing" equipment is leased. However, such a definition would grossly overstate the market for data processing equipment, since equipment represents only a fraction of the total cost of processing.

Nevertheless, such a market definition is useful for gross estimates of market shares. International Data Corporation, the leading U.S. market research firm in the data processing field, provides estimates of these expenditures on an annual basis. Table 3 shows their estimates for the U.S. market for the years 1973 and 1976. The Canadian market is structurally similar, but represents slightly less than 10% of the U.S. market.

These statistics allow us to put the market share of IBM into a general perspective. We estimate that IBM world-wide will derive more than $12 billion in 1976 from the sale of data processing products and services. Its revenues from data processing in the United States should be somewhere between $6 and $7 billion. Thus, it may be stated that IBM will be at the receiving end for about one third of the expenditures on data processing, other than salaries, in the United States in 1976.

Table 3

EXPENDITURES FOR DATA PROCESSING, U.S.

	1973	1976
Total Market ($billion)	19.1	30.0
System Rental and Lease	23.7%	21.3%
System purchase and maintenance	9.9%	8.5%
Data Entry mini-computer	5.8%	9.8%
Software and service	12.9%	14.5%
Supplies	4.3%	4.1%
Data Communications	6.4%	8.5%
Salaries	37.0%	33.3%
	100.0%	100.0%

Source: International Data Corporation

A court-ordered survey in the Telex case indicated IBM's share of the computer systems industry to be 35.1% and its share of computer hardware to be 36.7% (United States Court of Appeal, 1975). We estimate that the same general situation prevails in Canada.

Such a global assessment is not very informative about the complex market structure of the industry. Our discussion of market definition and trends has indicated the need for the consideration of a broadly defined market with product-centered segments within a dynamic framework. Therefore, we shall examine it from three perspectives: as a market for data processing systems, as a market for data processing products and as a market for data processing services. Each analysis, though pertaining to the same market, will emphasize different aspects and characteristics of the market.

MARKET SITUATION AND COMPETITION: THREE PERSPECTIVES

From the perspective of a market for systems, market actions consist in installing, replacing, modifying and extending users' data processing systems. The installed base of systems operated by users is, therefore, seen as a critical element of the structure. From the perspective of a market for products, the attention is focused on the specific products which are associated with data processing. Market actions then consist in buying, selling or leasing specific products. From the perspective of a market for

data processing services, the critical element is the trade-off between in-house facilities and services purchased outside the organization.

Within each of these three cuts of the market, the trends most likely to affect the development of the market will be assessed.

This section will end with a brief description of the office products market.

DATA PROCESSING SYSTEMS:

THE STRUCTURE OF THE MARKET

The Canadian Information Processing Society conducts an annual survey of data processing systems in Canada. In this survey, each system is identified by the manufacturer of its central processing unit. The size of a system is measured by its monthly rental value. Minimum rental value to be included in the census is $1,000 a month. The reliability of the census is thought to be very high for installations valued at more than $2,000 a month (which is equivalent to a sale price of about $80,000). Table 4 presents the 1975 census per industry group. Only in-house facilities are counted. The census excluded organizations which depend on service bureaus for their data processing.

The number of systems renting at less than $1,000 a month or selling for less than $40,000, was estimated at 6,688 installations in 1975 by R.W. Evans, the leading Canadian market research firm in the data processing field. Thus, altogether, there should have been around 11,600 computerized data processing installations in Canada in 1975.*

Medium and Large Users

In 1975, there were 1,566 organizations which had installations valued at more than $5,000 on a monthly rental basis in Canada. These organizations can be called "medium" and "large" established users. It is usually assumed that a computer installation costs about 40 times its monthly rental costs. Thus such systems would cost over $200,000. The IBM System 3 rents at between $2,000 and $10,000 a month depending upon the choice of options. The minimum monthly rental charge for System 370, model 115, the smallest computer in the family, is about $5,000.

It can be assumed that all large organizations which could use medium or large-size data processing systems, actually do so, either through in-house facilities or through service bureaus. In 1976, the market segment for medium-size or large-size systems can be characterized as saturated. In a saturated market, entry of new users is not significant and market activities

---

* - The number of organizations actually using computers is considerably larger as many organizations rely on service bureaus for their data processing operations.

Table 4

DISTRIBUTION OF CANADIAN COMPUTER INSTALLATIONS

BY USER GROUPS, 1975

INDUSTRY	Monthly Rental $1,000 to $1,999	$2,000 to $4,999	$5,000 to $9,999	$10,000 to $19,999	$20,000 to $49,999	$50,000 and over	Total
Primary Resources (includes agriculture, forestry, fisheries and mining)	40	81	32	22	12	3	190
Construction	43	27	6	2	1	-	79
Manufacturing	407	463	160	87	45	13	1,175
Transportation	72	55	24	8	11	13	183
Utility	89	88	41	16	29	19	282
Communication (Includes radio, T.V., newspaper advertising, printing, publishing)	83	54	12	22	7	-	178
Distribution (Wholesale - retail)	180	183	90	34	17	5	508
Financial (Banks, trust companies, investment dealers, stock exchanges, mutual funds, insurance)	54	66	59	64	52	32	327
Other Services (Education, lawyers, hospitals, associations, trade unions, accountants, consulting engineers, restaurants, hotels)	212	189	55	47	34	27	664
Service Bureaus	118	144	66	47	42	45	462
Governments (Federal, Provincial, Municipal, but excluding utilities and school boards)	203	202	49	42	45	51	592
Petroleum	53	42	11	22	13	7	148
Other	56	70	13	6	4	3	152
Total	1,710	1,664	618	419	312	217	4,940

Source: 1975 Canadian Computer Census, Canadian Information Processing Society

consist in upgrading systems, replacing components and extending systems by adding new functions.

The data processing system has become a key administrative system for most medium or large users. Two characteristics which stem from this situation are critical to the evolution of the market structure.

First, these organizations will not tolerate any major interruptions in the services offered by their data processing system, which has become an integral part of their administrative structure. In the event of a major breakdown they would face severe administrative problems. The assurance that the existing system will always function properly thus becomes a key criterion in any decision to modify it.

Second, a data processing system is usually structured around a complex web of specific tasks, many of which are interrelated. The achievement of most of these tasks calls for the interaction of many elements of the data processing system: hardware equipment, software programs, information collection subsystems, specifically trained personnel, etc. Thus when an organization decides to change an element of its data processing system, and in particular a hardware component, it will analyse the impact of the planned change and will try to minimize the costs of integrating the new element. These costs will vary according to the nature of the change. They will be minimal when the planned change involves the setting up of quasi-independent subsystems. (Such would be the case of a supermarket chain setting up a computerized check-out system.)

In this context, the "installed base" is a critical factor in shaping up the structure and dynamics of competition within the data processing industry. Other things being equal, the equipment of any manufacturer has a higher probability of being compatible with a system which already utilizes some of its equipment. This is especially so with the Central Processing Unit which is the key element of any data processing system, since from it stems the fundamental characteristics of the software programs used in the system. Because of past actions, IBM has a large share of the "installed base" among what we defined as medium and large established users. The often quoted market share of IBM in North America, between 55% and 65%, refers to all installed systems (whenever they were installed) with "medium" and "large" established users.*

It should be stressed, however, that such large systems today are seldom made up of the products of only one company. In fact, the systems of most "medium" and "large" established users often incorporate products from numerous different suppliers. Practically all large systems and an increasing number of medium size systems involve components from more than one

---

* - Obviously if IBM's share of new systems installed is between 30% and 40%, its share of the "installed systems" will erode more rapidly.

manufacturer. The system components of one of the largest Canadian corporations are presented in Table 5. The corporation is a resource-based company headquartered in Canada. There is a centralized data processing department and the production division's main system would be described as an IBM system, despite the high proportion of non-IBM peripheral equipment of which it is made up and the fact that the main component (the 360/65) is not leased from IBM.

Table 6 presents the share of medium and large installed systems in Canada by manufacturers. The data was obtained from the 1975 C.I.P.S. census. A system was allocated to a particular manufacturer on the basis of who manufactured the main Central Processing Unit.

From a competitive point of view, a large installed base gives an important edge to a manufacturer. Its salesmen have a working relationship with the users and contribute to the planning of the evolution of the system. Its new products are usually compatible with the system and can be integrated at lower cost than products from competitors which are not yet designed to meet the specifications of the system.

However, a large installed base is a pressing invitation for competitors to develop compatible products. In the 1960s, R.C.A., then in the computer business, developed a full family of computers compatible with IBM's 360. The 470 V/6 from the recently created Amdahl Computer Company, is designed to run on IBM software and is a direct substitute for IBM's largest computer, the 370 model 168.

Itel Corporation has also announced two new computers the AS/4 and the AS/5, as substitutes to IBM's 370/148 and 370/158. These computers will be manufactured by National Semiconductors, the second largest producer of integrated circuits in the world. Itel Corporation is a major computer leasing company and it will do the marketing of the new computers. The Amdahl and the Itel computers run on IBM software, but are differentiated on the basis of price and performance. It is evident that from now on C.P.U.'s, the core of the system, are open to competition.

Other hardware elements of a system have always been more open to competition than the C.P.U., as the system imposes fewer constraints on their specifications. In the last bastion of system integrity - main memories - IBM has been fighting competition since 1970 and so far has been relatively successful. But the entry of Amdahl and of Itel into C.P.U.'s could stimulate more aggressive competition in main memories compatible with systems designed around IBM specifications.

The growing constraints imposed by the users' existing investment and his dependence on the system make it less probable that major new families of computers will be introduced in the future, at least for the medium-size or large-size segment. In the early seventies, it was widely assumed that IBM would introduce such a new family in the mid-seventies, in the path of the 360's (1965) and the 370's (1970). However in 1975 IBM dropped its plan for a new family of computers (which was called Future System or FS) in its

Table 5

TYPICAL DATA PROCESSING SYSTEM IN LARGE CANADIAN CORPORATIONS:
ORIGIN OF PRODUCTS

Main Data Processing Installation (production division)

Computers:	IBM 360/65, leased from Citicorp Digital Equipment PDP11/10
Software:	Database: Cincom Library: Panasonic Sorts and Compilers: IBM
Memories:	Tape: Telex Disc: Ampex, Memorex
Communications Controller:	Memorex
Input-Output Equipment:	Printers: IBM Display: IBM, Bell, Olivetti Data Entry Stations: Data 100, Comterm

Plant Locations

Process Control Computers:	2 Digital Equipment, 4 IBM 1800 small computers
Research Laboratories:	2 Digital Equipment Computers
Office:	1 IBM 370 model 135 (leased from Citicorp)

Sales District Locations

2 Univac Computers

1 Digital Equipment Computer

3 MAI Small Computers

Service Bureaus under contract with the company

- Systems Dimensions Ltd. (SDL)
- Data Line

Table 6

DISTRIBUTION OF EXISTING SYSTEMS*

By Manufacturers of Mainframes, Canada 1975

and by Classes of Monthly Rentals

Manufacturer	$5,000 to $9,999	$10,000 to $19,999	$20,000 to $49,999	$50,000 and over	Total
IBM	47%	54%	61%	72%	55%
Univac	12%	11%	7%	14%	11%
Honeywell	12%	9%	12%	5%	10%
Control Data	2%	3%	4%	5%	3%
Burroughs	4%	5%	6%	1%	4%
NCR	7%	3%	1%	-	4%
Digital Equipment	3%	3%	3%	-	3%
Other	13%	12%	6%	2%	10%
Total	618	419	312	217	1,556

* - Systems are characterized by origin of C.P.U. Only in-house facilities are included.

Source: C.I.P.S. 1975

long-term strategic planning. It seems that it decided rather to upgrade the 370 family by gradually improving its present series of computers. This evolution is already underway, as can be observed in Table 7.

Systems designed around any 370 computer usually share a common "architecture". Thus, a user can "grow" within the family, by upgrading its central processing capacity or by improving its peripheral network. It is basically at the level of the architecture that two systems can be incompatible. Thus each mainframe manufacturer tends to differentiate its line of product through the use of a particular system architecture.

Trends in the Medium and
Large-User Segment of the Market

IBM "systems" dominate the medium and large-user segment. About 55% of in-house medium and large data processing facilities in Canada can be characterized as IBM systems (although not necessarily supplied by IBM). An IBM system is a system where the main C.P.U. is an IBM computer or a

Table 7

EVOLUTION OF IBM 370 FAMILY OF COMPUTERS

Year of Announcement (1)	Models					
	Smaller Models →					Larger Models
1970				145	155	165
1971			135			
1972		125			158	168
1973	115				158MP	168MP
1974						
1975					158-3	168-3
1976			138	148		168 APS

Note: (1) The date of announcement can be from three months to nine months or more before first shipment.

substitute such as an Amdahl computer. This amounts to between 850 and 900 installations. Most of these systems include non-IBM products, mostly peripheral equipment, and most of the elements of these systems are now open to competition.

To serve this prime segment of the market, IBM Canada had a total of about 625 marketing representatives and systems engineers at the end of 1975. Marketing representatives are responsible for the accounts; system engineers support marketing representatives with technical know-how. Moreover, this sales force also served the large market consisting of medium and large-size users with systems designed around competitive equipment. However, the potential for IBM in the non-IBM segment is largely limited to custom applications and to additions of new functions where IBM has a specific expertise.

As we have pointed out, the market for established users is saturated and growing more slowly than the market for small users. The direction of the evolution is toward on-line systems, where end-users, sitting at a terminal, can have access directly to the system. Most "large" organizations' basic information files, such as accounting files, personnel files, sales and inventory information are now "computerized" in "data base". On-line processing permits the regulated access to these files for upgrading purposes or for information retrieval.

This relatively new "access and updating" role of a data processing system is becoming more and more important, relative to the original "computing" role (such as preparing payroll) of a data processing system. Thus, the major trend in systems development evolves around end-user functions. Most new applications of large-scale computer systems have been in that general area. For example, on-line banking is gradually being implemented. A national-payments system, where the underlying processes are basically the routing of data and the updating of files, will likely be implemented in Canada in the early 1980s. The "computerization" of the check-out counter is slowly catching on. The desk-top terminal for managers is becoming more and more popular.

Four areas in a data processing system are mostly affected by this trend. One is the terminal area. The terminal is probably the element of a system which is the least affected by the constraints imposed by the characteristics of the Central Processing Unit. Thus it is fairly open to competition by manufacturers specializing in terminals.

The second area is the communications subsystem, essential to any on-line data processing system. Common carriers and manufacturers specializing in communications equipment are deeply involved in this area. In fact, the IBM Corporation seems to be the only major computer manufacturer which has decided to include the whole communications subsystem area in its product mission. It has developed communications equipment such as modems (which transform digital signals into analog signals) and controllers (which package the data for transmission and route it), and a unique "software structure" called a protocol which is known as SDLC, to facilitate the transmission of data. Moreover, in the United States, IBM has invested in a new company which intends to set up a domestic satellite-based digital network.*

The third area mainly affected by this trend or development is the data base subsystem. This subsystem involves processing units and large-scale memory units on the hardware side, and complex operating systems integrated in a system network architecture, on the software side. Large computer manufacturers ("mainframers")lead in the development of this general area and IBM, as the leading mainframer, is playing an important role in shaping the evolution of data base. Yet, numerous software specialists have entered the data base market and are competing head-on with mainframers.

---

* - IBM Corporation's participation in this corporation, Satellite Business Systems Inc., can be considered, at this stage, as an investment and not yet as a realignment of IBM missions. The fact that the IBM Corporation has a minority investment and that SBS will be regulated, make it improbable that it would ever be integrated into the IBM Corporation.

The fourth area is the small computer and the mini-computer. As distributed processing spreads, there is a growing demand for smaller C.P.U.'s distributed throughout existing systems. The small and mini-computer market segments have always attracted numerous manufacturers, and as these segments of the market expand, additional entries are expected.

Our conclusion with respect to the market for medium and large-scale systems is that it is saturated with new medium and large-scale systems being set up less and less frequently. Much of the action in this segment of the D.P. market is centered around upgrading systems and adding new functions. The additions are most often incremental. Systems evolve and are seldom modified radically. The general trend of this evolution is end-user oriented. More and more, non-technical end-users (sales clerks, bank tellers, middle managers, etc.) interact directly with the system. Future growth of medium and large systems will be mostly in this general area.

Small Users

The market segment of small system users is very different. The market is far from being saturated and new installations of small systems still account for more revenues than additions to existing small systems. The structure of the system is also different. Whereas the "computer", that is the Central Processing Unit, represents 40% of the hardware cost in a medium-size or large system, in a small system, this percentage is much larger. Finally, the market structure is different.

The medium and large-scale system segment is "dominated" by relatively few mainframers who have designed most parts of the system around their Central Processing Units. The small system segment encompasses a very large number of competitors who may be classed as system designers.

Table 8 shows the distribution of small computer installations by their manufacturing origin, in Canada, in 1975. Four mini-computer specialists, Digital Equipment, Data General, Phillips Electronics and Hewlett-Packard,held about 40% of this segment of the market. Burroughs and NCR, which came into the computer field from the accounting machine and cash register marketplace, held close to 20% of the market. Traditional mainframers, such as IBM, Honeywell and Univac have only 12% of the market.

The marketplace for small computers is still in a rapid growth stage. Its potential is enormous but difficult to assess for three reasons. First, small computers and mini-computers compete with accounting machines at the low end of the market. It is rather difficult to draw the boundaries between these two market segments. Second, service bureaus could make large inroads in the small users' market. If intelligent terminals become widely used, the potential of service bureaus could be greatly enhanced. Third, the boundary between a computer or a mini-computer and a micro-computer assisted product is difficult to establish. Micro-processors are being incorporated in many traditional businesses and in industrial equipment, from the electric typewriter to the industrial press. These

Table 8

DISTRIBUTION OF SMALL COMPUTER

INSTALLATION BY MANUFACTURERS OF ORIGIN, CANADA 1975

	Monthly Rental			
	less than $1,000	$1,000 to $2,000	$2,000 to $5,000	Total
Digital Equipment	24%	24%	13%	22%
Burroughs	31%	5%	1%	21%
NCR	20%	6%	6%	15%
Phillips	11%	8%	1%	9%
IBM	-	10%	33%	7%
Data General	8%	5%	2%	6%
Honeywell	-	8%	11%	3%
Hewlett-Packard	2%	6%	4%	3%
Univac	-	6%	8%	2%
Others	4%	20%	21%	12%
Total	6,668	1,710	1,664	

Source: "The EDP Guide", R.W. Evans Associates, Toronto, 1976.

products could be said to be computer-assisted or to incorporate some micro-processing features. The potential for such market expansion is unmeasurable.*

At the end of 1975, there were about 85,000 establishments in Canada with more than 10 employees or sales of $750,000 or more. Most of these could make use of a computer and about 2,000 of them can be said to be medium and large established users. In 1975, there were 10,000 small system users. That leaves substantial room for growth.

The small-system end of the data processing market is very competitive. Small users are much less dependent on their systems and can change more

* - Micro-computers have also penetrated the potentially large hobby market. Already specialized hobby shops have been set up to cater to computer hobbyists.

readily. Entry is easier because technology is very diffuse, and capital requirements are lower. Small systems are usually sold, not leased; this reduces substantially the capital requirement for entry.

IBM's share of the installed base in small computers is rather low. It has some very successful computers, such as the model 3 and the model 32, which explain the 33% share in the $2,000 to $5,000 categories. Yet the competitive environment is vastly different from that in the medium and large-system end of the market: more competitors, smaller and less sophisticated users, a less expensive product.

IBM has taken steps to adapt to this situation by creating a special division, the General System Division. Sales representatives are assigned geographical territories rather than industry specialization as would be the case for large and medium-size systems. Whereas its traditional data processing product advertising emphasized the general theme that "IBM is the solution to the tough problems of data processing", a recent system 32 advertisement emphasized that IBM has small systems renting for as low as $1,000 per month. Similarly, the 5100 desk top small computer is offered only on a purchase plan.

IBM is encountering strong competition from mini-computer manufacturers, who have been in the field since the 1960s, and from the traditional small business suppliers like Burroughs and NCR. Moreover, as the market expands, new firms will enter. Thus, Texas Instruments, a leader in micro-computers is expected to expand easily into mini-computers. Manufacturers of terminals are adding processing capacity to their products, making them directly competitive with small computers and mini-computers.

IBM Canada had a total of about 210 sales representatives and systems engineers specializing in small systems at the end of 1975. As might be expected the ratio of system engineers to sales representatives is lower in the General Systems Division than in the Data Processing Division. Given the potential of this market and the number of competitors, one can assume that IBM Canada will concentrate its marketing strength at the high end of the small-system segment, with products like system 32 and system 3. In that segment, competition is strong and IBM does not dominate, nor does any other firm.

Conclusions About the Market for D.P. Systems

The definition of a data processing market as a market for systems is helpful in assessing the evolution of the competitive strength of traditional mainframers and that of IBM, as the leading mainframer in the data processing marketplace. Their strength is derived primarily from their installed base. Yet, the market for systems is evolving in such a way that the installed base is becoming a less important asset in the marketplace. The arrival of distributed intelligence and data base and the explosion of the demand for small computer and mini-computer based systems is rapidly changing the competitive structure of the market.

Terminals, communications devices and smaller C.P.U.s are becoming much more important in a system. These products are less constrained by the specifications of the systems and are much more open to competition. This will weaken the influence in the marketplace that IBM derived from its large installed base.

Then, as intelligence gets distributed throughout the system and as the update and retrieval functions become more important relative to computational functions, the demand for medium-sized computers, where IBM is clearly the leader, will flatten.

In-house facilities for medium-size users are also expected to grow at a much slower rate than in-house facilities for small or large users. Table 9 shows the annual growth in installed systems, by the value of the systems, from 1971 to 1975. Medium-size systems grew at a much more sedate rate than large systems, for three reasons. First market penetration had been relatively rapid in the medium-size segment, which became saturated before other segments of the market. Second, medium-size manufacturing firms, which are heavily represented in that segment, were affected by the sluggish Canadian economy during the 1971-1975 period and may have deferred the expansion of their systems. Third, the medium-size segment is vulnerable to competition from service bureaus and this could have slowed the growth of medium-size in-house facilities.

Among all the mainframers, IBM is probably the most affected by the slower growth of the medium-sized segment. So far, this was offset by growth in the other segments of the market. However, it should be noted that International Data Corporation projects the 1976-1980 average annual growth of revenue of mainframers at 12% annually, while the average growth of revenues for mini-computer manufacturers for the same period is projected at 21% annual rate.

Table 9

ANNUAL GROWTH IN INSTALLED SYSTEMS,*

CANADA 1971-1975

	Monthly Rental	Growth Rate (compounded 4 years)
small system	$1,000 - $5,000	27.6%
medium system	$5,000 - $50,000	4.8%
large system	$50,000 and more	25.3%

* - Source: C.I.P.S., Annual Census

Finally, it should be said that as organizations become more and more dependent on their data processing systems, they will tend to resist radically innovative changes; systems will evolve incrementally and, as a result, IBM's installed base will evolve more slowly, giving the competitors the time and opportunity to design new products which will fit in with existing IBM systems. This is the situation which Amdahl and Itel seem to be exploiting successfully.

DATA PROCESSING PRODUCTS: THE STRUCTURE OF THE MARKET

A second way of looking at the data processing market is to divide it into an array of specific products, each one of which is subjected to specific market dynamics and competition. However this approach to the data processing market has its limitations.

The demand for data processing products is a derived demand, originating in a demand for data processing services, which is satisfied by a data processing system. Furthermore, there are many alternative ways of having access to a data processing system:

- through service bureaus;
- by leasing a data processing system from the manufacturer or from other parties;
- by purchasing a data processing system;
- through any combination of these three.

Table 10 shows how computers were acquired in the United States. It indicates that third-party leases are more frequent with large systems.

Table 10

HOW USERS ACQUIRE THEIR COMPUTERS: UNITED STATES

	By number	By value
Rent or lease from the original manufacturer	64%	42%
Third party lease	11%	22%
Purchase	25%	36%

Source: International Data Corporation Estimates, Fortune, June 1976.

It is also difficult to determine the market share of a manufacturer on specific products, as the products acquired by a user may be:

- a new product purchased or leased from the original manufacturer;
- a new product leased from a third party;
- a used product purchased or leased from the original manufacturer;
- a used product leased from a third party;
- a used product purchased from the previous user.

Data processing equipment is a capital good for which there is an extensive used-equipment market. Thus, the market for any specific product also includes the "used" market. But, in the analysis of market power, the inclusion of the used equipment market would blur the description of the competitive situation among original equipment manufacturers.

Finally, manufacturers of data processing equipment derive their annual revenues from past leases, from new leases, from outright sales, and from various services and royalties. Without a breakdown of these various components, gross revenue is a very crude indication of their performance as a manufacturer. This breakdown of revenues by sources is not available for most manufacturers.

Subject to these reservations, we will now look at the market structure for the various data processing products. On the hardware side, we will distinguish between computers (Central Processing Units and main memories), storage devices (mass memory, disc drive and tapes), communications equipment and terminals. We will also look briefly at software and specialized services.

Central Processing Units

Central Processing Units are usually identified by manufacturers and represent the core of the system. Thus, the distribution of installed C.P.U.'s gives a rough idea of the distribution of systems by manufacturers. Exhibit 10 which pertains to the installed base, reflects with sufficient accuracy shipments of large and medium-size computers in recent years.

In the past decade, there have been some spectacular withdrawals from the medium and large-scale computer field. Three of the largest U.S. corporations, General Electric, RCA, and Xerox, have thrown in the towel. Their withdrawal was brought about by their difficulties in making profit out of manufacturing and selling medium and large-scale data processing systems; this encompasses much more than selling C.P.U.s or computers and is a much tougher market.

Although difficult, entry into the manufacturing of computers or Central Processing Units is feasible. Amdahl Corporation, in the large-scale computer market, and Itel Corporation, in the medium-size market, are recent entries which are likely to be successful. The Amdahl

Corporation's only computer, the 470 V/6 is competing directly and successfully with IBM's 370 model 168, in the category of computers renting for $100,000 to $200,000 a month. It should be pointed out that Amdahl is not selling a system, but only a computer which is compatible with large-scale IBM systems. There has also been a new entry into large-scale scientific computers, a field where Control Data is the alleged leader: Cray Research, founded by a former Control Data executive, has already shipped one large-scale computer.

Itel's entry in the medium-size market is expected to be successful, if the stock market's reaction to the announcement is taken as an indicator of probable success. Japanese entries are also expected soon.

The medium-scale C.P.U. market is divided among IBM and four mainframers, Honeywell Information Systems, the Univac Division of Sperry Rand, Burroughs and at the lower end, NCR. These mainframers derive their competitive strength from their ability to sell systems. The medium-size segment used to be the main segment of the C.P.U. market. From data collected in the annual census of the Canadian Information Processing Society, we estimated that in 1971 medium-scale installations represented twice the value of large-scale installations ($50,000 and more in monthly rental value). Four years later, the large-scale installations represented about the same value as medium-scale installations. The four-year growth rate shown in Table 10 reflects this trend.

The medium-scale C.P.U. market can be said to be in its saturation stage and growing very slowly. The crowding out of the least successful producers was to be expected, as with most markets at that state. One can also expect a rough stability of market shares over time among the remaining competitors. Thus, IBM could be expected to maintain its large share of systems and by consequence of C.P.U.s in the medium-size computer segment. The relative lack of growth in the medium-size computer segment makes less likely the entry of many specialized mainframers in this market, despite the fact that IBM's large installed base of medium-scale systems constitutes an attractive base for a specialist to manufacture a medium-scale computer compatible with IBM's system.

IBM, according to knowledgeable observers, is vulnerable to such specialized attacks. Gene Amdahl of the Amdahl Computer Corporation, asserts that there are basic weaknesses in the IBM product line structure that can be successfully exploited. In essence, within IBM's lines of products, "all sizes of computers are based on similar technology and have fixed price and performance relationships to each other. IBM cannot easily combat a competitive challenge to parts of its line without upsetting these relationships or without losing some economic advantage from the mass production of components that can be used throughout the line. Moreover, IBM is inhibited from too rapid technological change because it doesn't want to make its own equipment obsolete too fast" (Wall Street Journal, July 14, 1976).

We have already discussed the competitive structure of the small-system market place. Since the Central Processing Unit is the main element of small systems, small computers and small systems are basically the same thing.

Table 11 presents our estimate of the market strength of various categories of suppliers of small computers and mini-computers. This segment is divided among three types of suppliers: the medium-size and large-size oriented computer manufacturers, the small and medium-size oriented manufacturers and the mini-computer specialists. This last category includes a very large number of manufacturers and Table 11 lists only the better known ones.

Table 11

ESTIMATED MARKET SHARES

SMALL AND MINI-COMPUTERS

Types of manufacturers	Mini-computers (costing $20,000 or less)	Small computers (systems costing between $20,000 and $100,000)
Medium and large scale oriented mainframers (IBM, Honeywell, Univac Control Data)	15% - 25%	35% - 45%
Small and medium scale oriented mainframers (Digital Equipment, Burroughs, NCR)	40% - 45%	35% - 45%
Mini-computer manufacturers (Hewlett Packard, Phillips, Data General, etc. ...)	30% - 40%	10% - 20%

Peripheral Equipment

The market segment for peripheral equipment is highly diversified and for the purpose of this discussion, it is divided into storage peripherals, input/output devices and communications related equipment. The market segment for auxiliary equipment, such as punch card equipment, verifiers, etc., has not been considered because of its marginal importance.

The storage elements encountered in a computer system are main memories, disc drives, mass storage memory units, tape drives and, in small systems, cassettes and floppy disc systems. Storage peripheral equipment can represent a substantial portion of the cost of the hardware in a system, up to 40% in medium and large systems. Moreover, the cost of developing an interface to make a peripheral compatible with a central processing unit is not substantial relative to the cost of the equipment. Mainframers are faced with strong competition in "storage" peripherals. In response, they

have developed various products and pricing strategies. Thus, since 1970, main "memories" are usually incorporated under the mainframe making substitution more difficult.* Nevertheless, a market has developed for additions to main memories. Disc drives, tape drives, mass storage systems and other auxiliary units are manufactured by numerous independent manufacturers, in competition with mainframers.

The market segment for input/output devices is considered to be at the moment the most dynamic part of the overall data processing market, along with that for mini-computers. It is estimated that between 1975 and 1980, the U.S. market for terminals will double from 260,000 terminals shipped in 1975 to 574,000 terminals in 1980 (Datamation, November 1975). According to the Department of Communications, development of the Canadian market will roughly parallel that of the U.S. market. Terminals represented, in 1975, 19% of the hardware costs of a system; in 1980, this is expected to grow to 24% (Datamation, November 1975).

Mainframers are understandably actively trying to protect their share of this growing market. IBM has introduced System Network Architecture (S.N.A.) which can be seen as the basic structural software for IBM's systems. According to observers, S.N.A. makes it more difficult to tie non-IBM terminals to an IBM system without using IBM's controller as interface. Other mainframers are also moving in the same direction.

Yet, competition in the terminal market is well established. Specialists like Mohawk Data and Raytheon have been successfully selling specialized terminals for quite a number of years. Teletype Corporation, a subsidiary of A.T.&T., has a leading position in the "light" terminal field. R.W. Evans estimates that there are over 70 companies vying for a share of the terminal market in Canada.

A more threatening development to mainframers is the trend toward "intelligent" terminals and distributed processing A.T.&T. has received the right to market intelligent terminals under its tariff structure. The redistribution of process capacity toward the terminal slowly erodes the market power that mainframers derived from their hold on the market for Central Processing Units.

Communication-oriented manufacturers, like Western Electric and Northern Telecom are well entrenched in the specialized communications equipment market for data processing networks. Micro-processors and micro-computer technology is widely available. On a technical basis, the communications equipment manufacturer can compete on equal terms with mainframers in the communications equipment market. The Canadian government's acknowledged policy of favoring the routing of data communications by the common carrier's network is also expected to weaken the hold of mainframers on their installed

---

* - According to mainframers, there are also some valid technical advantages in locating the main memory very close to the C.P.U.

base. The development of common carriers' switched networks (where routing is controlled by the common carrier) as opposed to users' switched networks will enhance the role of "outsiders" in data processing systems.*

Specific products and pricing strategies are to be expected from mainframers to try to protect the "integrity" of their installed systems. The very existence of these strategies is an indicator of the competitiveness in the marketplace for terminals. Yet, as distributed processing catches on, it is very unlikely that mainframers, and IBM in particular, will be able to maintain their installed system to their historical level of "integrity".**

Table 12 presents the number of companies who were selling various data processing products and services in 1971 and 1975, as recorded in the annual repertory of Canadian Data Systems, the leading trade publication in Canada. It demonstrates clearly that the data processing marketplace is still highly open to entry by new firms.

SERVICE BUREAUS vs IN-HOUSE FACILITIES

A third way of looking at the structure of the data processing market is to consider it as a demand which can be satisfied either by in-house facilities or by service bureaus. Service bureaus became a substantial competitive factor in the late 1960s. They have now become one of the most dynamic in the data processing market. As communication facilities improve and their relative costs decrease, service bureaus are expected to play an increasingly important role in the data processing market.

R.W. Evans estimates the revenues of Canadian service bureaus in 1975 at $388 million, 31% higher than in 1974. This figure represents 33% of the total "computer" industry revenues, estimated at $1172 million. International Data Corporation estimated the total revenues of the United States service bureau industry in 1975 to be $3.1 billion and forecast an annual growth rate in their revenues of 20%, until 1980, at which time they should reach $7.7 billion. Thus, service bureaus have captured a large share of the data processing market. We estimate that between 15% and 25% of all data processing in Canada was done by service bureaus in 1975. If present trends persist their share of the data processing market could reach 30% or more in the 1980s.

---

* - This issue, which is one of contention between IBM Canada and the federal government, will be discussed in Chapter 5.

** - Mainframers are constantly fighting to protect the "integrity" of their installed systems. During the Telex - IBM anti-trust trial, the various strategies of IBM to maintain its hold on storage peripherals attached to its C.P.U.s were fully documented. As buyers become more sophisticated it will become increasingly difficult for mainframers to maintain their installed system's "integrity".

Table 12

NUMBER OF COMPANIES OFFERING VARIOUS

DATA PROCESSING PRODUCTS - CANADA 1971-1975

PRODUCTS	1971	1975
COMMUNICATIONS CONTROLLERS	52	85
COMPUTERS	101	145
COMPUTING & DATA PROCESSING SERVICES	158	168
CONSULTING SERVICES	208	275
CONTROLLERS	30	109
CONVERTERS	75	105
DATA COLLECTION & RECORDING SYSTEMS	112	139
DATA COMMUNICATION EQUIPMENT	94	144
DATA COMMUNICATION SERVICES	12	26
DATA DISPLAY TERMINALS CRT	79	140
DATA RECEIVING TERMINALS	98	159
DATA TRANSMITTING TERMINALS	96	139
DATA TRANSCEIVING TERMINALS	85	116
DISC DRIVES	55	86
DISC PACKS MAGNETIC	31	37
REFERENCE SERVICES	2	10
EDUCATIONAL COURSES	34	43
ELECTRONIC ACCOUNTING COMPUTERS	24	24
KEY TO TAPE RECORDER	41	51
MAGNETIC TAPE	32	38
MAGNETIC TAPE TRANSPORTS	26	87
MASS MEMORY SYSTEMS	13	30
MEMORY SYSTEMS	41	
MICROFILM EQUIPMENT	39	50
PAPER TAPE UNITS	55	73
PRINTERS COMPUTER OUTPUT	63	115
PUNCHED CARD MACHINES	45	52
PUNCHED CARDS	17	17
SOFTWARE SUPPLIERS	56	36
SOFTWARE COMMERCIAL APPLICATIONS	70	154
SOFTWARE OPERATION SYSTEM MODULES	45	146
SOFTWARE SCIENTIFIC ENGINEERING	44	97
SOFTWARE SYSTEMS	33	92
TEACHING DEVICES	23	27
USED DATA PROCESSING EQUIPMENT	21	27
VOICE RESPONSE SYSTEMS	14	19

Source: December 1971 and 1975 Edition of Canadian Data Systems

There are some specific market segments in which service bureaus have already been very successful. According to International Data Corporation, service bureaus in the United States are doing business with over 70% of the users in the banking and education sectors and 54% of users in the health-care and financial sectors (other than banking and insurance). Moreover 53% of the manufacturing companies and 50% of users in the transportation sector resort to service bureaus. Penetration rates for utilities and construction companies, local governments, and related sectors are estimated to be between 45% and 50% (I.D.C., 1976). It should be stressed that a large percentage of users under contract with service bureaus also have in-house facilities.

The recent growth of service bureaus is associated with the development of remote access systems oriented toward the end users. More and more, the computer "presence" for a user is limited to a terminal which is hooked to a distant computer, and although service bureaus still predominantly sell batch services, it is expected that within a few years the main service that they will offer will be remote access services, and in particular, auto-transaction services.

Service bureau users are not limited to small companies which cannot afford a system, and medium-size companies which cannot benefit from the economy of scale offered by large computers. Some very large users have opted for service bureaus. For instance, Stelco, Gulf Oil Canada Limited and the T. Eaton Company have pooled their computer facilities in a newly formed service bureau which is now the second largest service bureau in Canada.

Service bureaus are a critical component in the competitive structure of the data processing industry. As large users, they are sophisticated and cost-conscious buyers. Four of the first twelve Amdahl 470 V/6 computers were shipped to service bureaus. As competitors, service bureaus are a major threat to mainframers as they are unabashedly "in the business of replacing in-house computers" (R.W. Evans, 1975). For instance, Data Crown, one of the large Canadian service bureaus, has replaced over 40 in-house systems between 1972 and 1975, according to R.W. Evans.*

The Canadian service bureau industry is already in a state of consolidation. Although there are an estimated 345 service bureau companies in Canada, the top 30 companies, which all had revenues of over $1 million in

---

* - The segment for medium-size systems is most vulnerable to competition from service bureaus as it is the segment where economies of scale are most visible. The small user segment can be well served by small in-house facilities which are not too expensive and are easy to operate. Service bureaus tap mostly the specialised small users: small local financial institutions, such as the Caisses Populaires, stock brokers, car dealers, insurance agents, etc. But, by and large, the small-system users, because of the diversity of their needs, opt mostly for in-house facilities.

1975, received between 55% and 60% of the revenues and are growing fast. According to R.W. Evans, the top 28 companies showed a revenue growth of 48% in 1975, against an industry average of 3.1%.

IBM is the largest Canadian service bureau, with about 9% of total industry revenues.* IBM was the first company to offer data processing services in Canada, having gradually converted its tabulating and sorting service bureaus into data processing service bureaus. It was also the first, and until recently the only, service bureau offering its services throughout Canada. It has four large processing centres located in Vancouver, Calgary, Toronto and Montreal and eight satellite service centres. If present trends continue, it is expected that IBM Canada's Service Bureau will lose its leadership position within a few years to a Canadian competitor. In the mid-sixties, IBM clearly dominated the service bureau market in Canada, but as new competitors entered the market, starting in the late sixties, IBM Canada's share of the service bureau revenues shrank rapidly. Based on statistics supplied by R.W. Evans, we have estimated the growth of IBM's service bureau to be less than 10% annually for the past five years. This is substantially less than its main competitors who are rapidly closing in. These main competitors are mostly Canadian owned: Systems Dimensions Limited, Canada System Group and Multiple Access (with sales in the order of $20 million in 1975), Computel Systems, Data Crown, I.P. Sharp, Computer Science Canada Limited and Camshare (with sales around $10 million in 1975). The only major non-Canadian service bureau is General Electric, with sales in the $15 to $20 million range in 1975.

At first sight, the inability of IBM Canada to maintain its leadership position in the service bureau industry is surprising, considering IBM Canada's record as an aggressive competitor and the economy of scale that it can achieve by using the same equipment for its service bureau that it uses for its internal needs. But, in addition to the relatively easy entry of competitors in this field and their willingness to offer services of low profitability but large volume, IBM Canada is in a conflictual situation when it tries to sell, through the same sales organization, computer equipment and computer services.

Computer equipment and computer services are seen as direct competitors by most service bureaus, who define their main market as the installed base of mainframers in business organizations. IBM Canada sees its "data centre" as complementary to its principal line of business: selling in-house data processing systems. Thus, the focus of its efforts is mainly on selling its data centre services to specialized users. Table 13 shows that about half

---

* - This estimate is from the E.D.P. Guide (Evans, 1976). However, comparisons of services bureaus on the basis of their revenues should be made prudently, as the services offered can differ substantially from one bureau to another, and often include revenues derived from offerings other than computer processing services.

Table 13

IBM CANADA'S SERVICE BUREAU REVENUE

BY PRODUCT TYPE

1975

	CANADA TOTAL	TREND
OVER-THE-COUNTER	23%	decreasing
DATA PROCESSING SERVICE PACKAGES	49%	stable
REMOTE - ACCESS	28%	increasing
TOTAL SERVICE	100%	

of IBM's data centre revenues derive from specialized data processing service packages to specific industries made up of small users, such as the brokerage industry and automobile dealers. Indications are that IBM Canada counts on remote access transaction-oriented systems for the future growth of its service bureau. It has developed an on-line banking system which is used by four Canadian banks and five trust companies. IBM is thought to be the leader in consumer transaction facility service. It is expected that this last service will bring a substantial volume of business to its data centre in the years to come.

IBM Canada's direct involvement in the service bureau industry has been criticized by some of its competitors. It is alleged that IBM Canada's advantages as a large supplier to the service bureau industry, its use of its data centre for its own internal purpose and its privileged access to technology and used equipment provide an undue competitive advantage to IBM's service bureau. These critics have suggested that IBM spin-off its data centre into an arm's length subsidiary.*

* - Systems Dimensions Limited has presented a brief to the Royal Commission on Corporate Concentration voicing some of these criticisms.

Our examination of the dynamics in the service bureau industry indicates that the spinning-off of the IBM data centre into a subsidiary might actually improve its competitiveness. It would be freed from the restrictions imposed by IBM Canada's global marketing strategy in data processing, which severely limits the data centre's opportunities. An arm's length subsidiary could, in theory, aggressively pursue the segment represented by the mainframers' installed base, which it does not do now. Moreover, an arm's length subsidiary would have a wider choice and increased flexibility in the selection of its equipment as it could buy non-IBM products.

Our investigation fails to indicate any major benefits which would result from spinning off the data centre. Pricing would not be significantly altered. Data centre pricing is already based on standard customer rates for the equipment and there is no evidence of predatory pricing. IBM Canada would remain both a major customer and a major supplier of the subsidiary. The data centre would still have access to IBM Canada's development laboratory on a cost plus basis, which is the case at the moment. Selling costs could be higher, but these costs could be recouped by more effective and less constrained sales efforts.

The alleged privileged position of IBM Canada as both a supplier to and a competitor in the service bureau industry does not seem to be a critical competitive element. IBM has set up a special marketing group to sell to the service bureau industry. It has taken sufficient measures to insulate that group and to satisfy its customers in the service bureau industry. It is widely assumed that IBM Canada is the leading supplier to the Canadian service bureau industry.

As a result of a consent decree in 1956, IBM Corporation spun off its U.S. service bureau into an arm's length subsidiary. This point is sometimes raised in favor of the "spinning-off" argument. It should be recalled that the formation of a subsidiary was one of many elements of the 1956 consent decree and not the most critical. Moreover, the tabulating service bureau market in the United States, in the early 1950s, was already dominated by the IBM Corporation. This is not the case for the data processing service market in Canada. The sale of IBM's U.S. Service Bureau Corporation to Control Data in 1973 is probably more instructive. Since Control Data specialized in the high end of the computer market, manufacturing large scale general purpose and scientific computers, its product line is compatible with that of an aggressive service bureau. That IBM agreed to part with its service bureau suggests that it probably reached the same conclusion: the service bureau market is much more valuable to a specialized firm that to a "mainframer" covering the entire spectrum of data processing equipment.

OFFICE PRODUCTS: THE STRUCTURE OF THE MARKET

IBM markets three basic lines of office products: electric business typewriters and composers, office copiers and dictation equipment. In terms of size, these markets cannot be equated with the data processing

market. Yet, the Office Products Division of IBM Canada generates a significant amount of IBM Canada domestic revenues. (Industry analysts' estimates vary between 15% and 25% of domestic revenues.)

IBM's main OP Line is its family of business typewriters. In the early 1960s IBM Corporation brought to the market a thoroughly innovative product, the single element or golf ball electric typewriter. This was the base for a rapid penetration of the market, in a pattern similar to that of the computer market in the 1950s.

Competitors did not get around the design and production problems of the single ball technology until the 1970s. For nearly 10 years, IBM was the only producer of single element electric typewriters.

IBM has continuously upgraded its typewriter product line. A magnetic memory feature was introduced in one product, the Mag Card typewriter. In 1976, it announced the Word Processor/32 which combined a mag card typewriter and a small System/32 computer.

The Canadian market for business typewriters is relatively small (between $110 and $140 million in 1976, including word processing equipment*). Yet, with its relatively high share of the market (estimated at well above 50%), IBM Canada derives substantial revenues from it. The potential of the market hinges very much on the acceptance of new products like the Word Processor/32. If it turns out to be less than a success, we can expect IBM's market share to keep on falling. At any rate, IBM will face stronger competition in the future, particularly from Xerox, which has entered the market recently, and which offers the same security blanket as IBM with its well-established name.

The office copier market is slightly larger than the business typewriter market. The 1976 shipments were estimated at about $100 million in value.* Xerox is the acknowledged leader with a market share well above 50%. IBM is coming out as a strong second with a share estimated at around 10% after only four years in the market. Just as Xerox will erode IBM's market share in the typewriter market, one can expect IBM to do likewise to Xerox in the office copier market.

The dictating equipment market is a much smaller market, estimated at between $15 and $25 million in 1976. According to industry sources, IBM should be in third place in this market, behind Phillips and Dictaphone. IBM is also marketing equipment for typesetting through its Office Products Division.

---

* - Estimates of the various market sizes in OP were obtained from ACP Marketing, a Montreal based market research firm. Various industry and trade sources in Canada and the United States were used, along with official governmental statistics.

The selling of office products is very different from that of data processing products. Not only are the prices of the products very different, but they are sold to different persons in a much larger number of organizations. The selling task is therefore much more extensive. At the end of 1975, IBM Canada employed approximately 400 marketing representatives in its Office Products Division, which is more than in its two data processing divisions.

IBM is competing with Xerox in its two major office product markets. Basically, each is after a market dominated by the other. Both have well-established trade names. Yet, it is evident that there will be room for other manufacturers in both markets and some of these are already well established.

PERFORMANCE AND CONDUCT

The other two components in an assessment of market power are the performance of the industry and of the firm under examination as well as strategic conduct by the firm which would indicate the existence of surplus or discretionary profits or latitude in setting prices for its products.

THE PERFORMANCE OF THE CANADIAN DATA PROCESSING INDUSTRY AND IBM CANADA

It is conventional to enquire, rather rhetorically, whether a more rapid rate of technical innovation and a better allocation of resources would not have resulted from a different arrangement of market structure and industrial organization. It is almost impossible to state whether technical progress could have been faster or more indigenous with a different market structure. There are, however, two ways to approach the problem.

One may examine the historical performance of the industry and judge it awesome or lackadaisical. We are presenting in Figures 1 to 4 and Table 14 some indicators of technical progress in the industry. We would be hard pressed to demonstrate that steeper exponential curves would have been observed, had any other structural arrangement been prevalent in the industry.

A second approach consists in defining the necessary and sufficient conditions for fast technological progress and to determine whether these conditions are met. A consensus seems to be forming that the optimal conditions for fast innovation include 1) some structural concentration with large firms in the costly development stages of research and 2) relatively easy entry by small inventive firms which offer highly specialized and technologically advanced products (Scherer, 1970).

Our examination of the market situation in the preceeding pages underlies our belief that these conditions are now closely approximated in the data processing industry. The number of competitors of all sizes, striving to

Figure I

Storage Capacity of Disc.

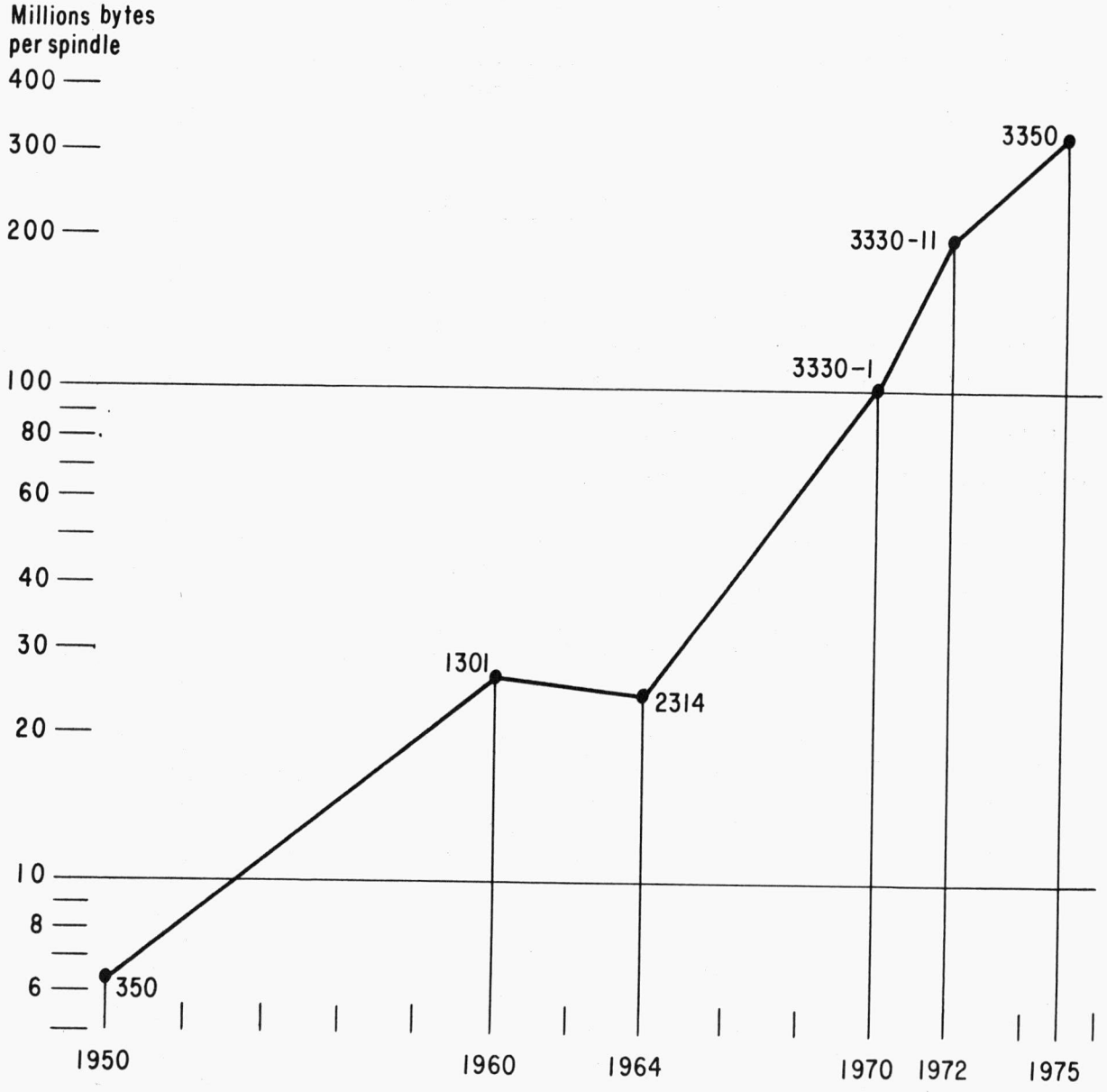


Figure 2

Magnetic Tape Performance

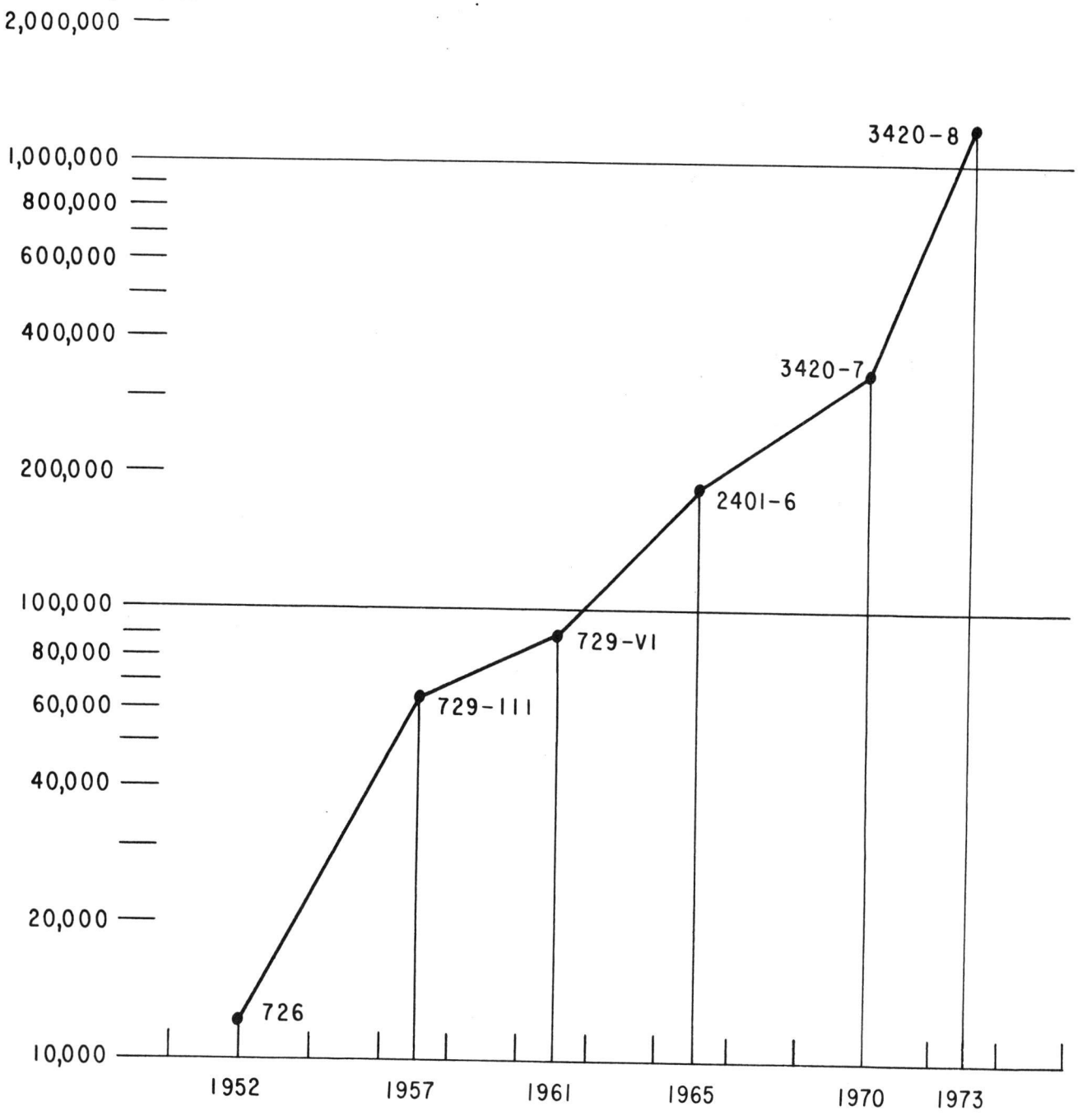


Figure 3

Per Unit Cost for 100,000 Multiplications

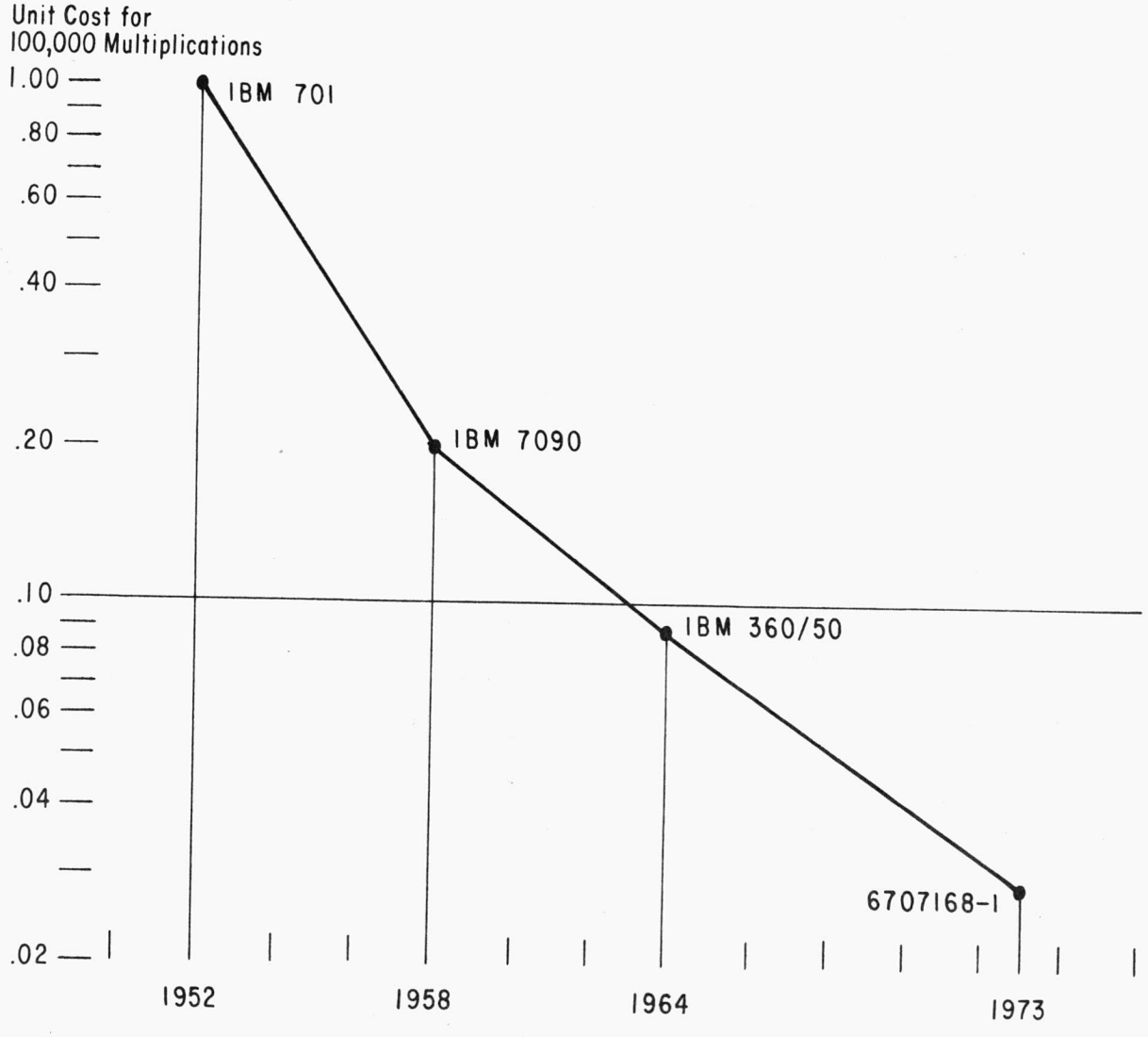


Figure 4

Processor Memory Capacity

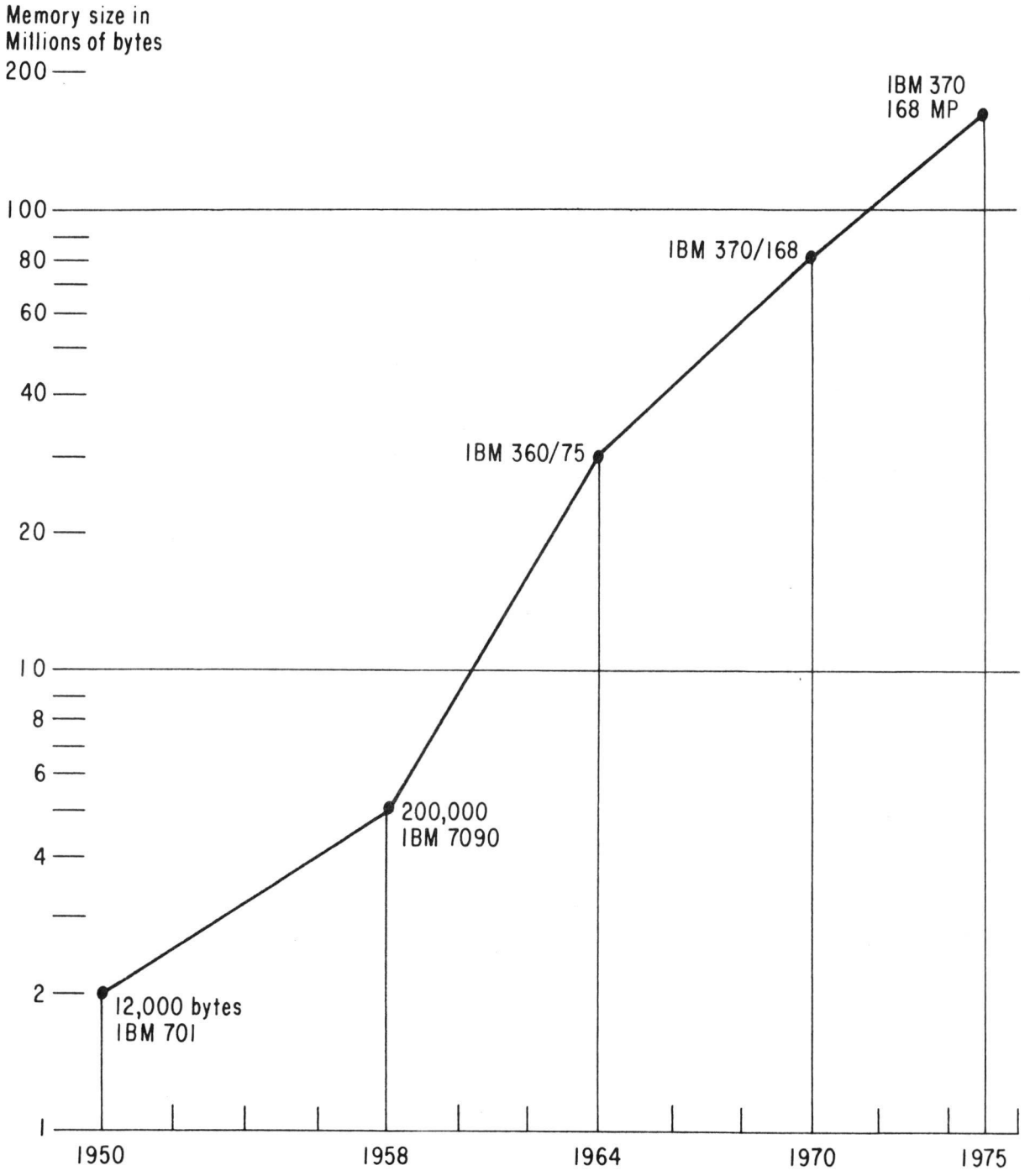


Table 14

PROGRESS IN C.P.U. TECHNOLOGY

	COST (2)	POWER (3)	VOLUME (3)	SPEED (3)	RELIABILITY (4)
Relay (1951) (1)	$2.00	1-5 WTS	3 IN^3	1-100 msec.	10^{-2}
Tube (1951)	$5.00	1 WT	5 IN^3	.1-10 sec.	10^{-2}
Discrete Transistor (1958)	$1.00	.15 WT	1 IN^3	.02-1 sec.	10^{-3}
Hybrid Technology (1964)	$0.40	.05-.1 WT	.1 IN^3	5-50 nsec	10^{-4}
Integrated Circuit (1967)	$0.20	.005-.1 WT	.04 IN^3	1-20 nsec.	10^{-5}
Large Scale Integrated Circuit (1970)	$0.20	.005-.1 WT	.005 IN^3	.5-10 nsec.	10^{-6}

(1) approximate date of introduction

(2) cost per function in 1970 dollars

(3) per functional unit

(4) failures/thousand hours/function

msec.: milli second (one thousandth of a second)

nsec.: nano second (one billionth of a second)

meet market demands for any specific data processing product, is large and new entries are continuously recorded, even for such a complex and costly piece of equipment as the largest C.P.U.

The development of small firms competing effectively in specific market segments with giant electronic firms is largely a U.S. phenomenon, however. The reasons and circumstances explaining the relative absence of Canadian firms in the industry are outside the scope of this inquiry. However, we fail to see how IBM Canada could have been an impediment to such a development.

Allocative efficiency

One of the potential costs of market power is the relatively inefficient allocation of resources resulting from higher prices and lower output than would be the case under a more competitive structural arrangement. The net reduction in consumer surplus is easily grasped by examining the diagram in Exhibit 5. The shaded area represents the net loss to society resulting from a non competitive allocation of resources. The shaded area may be estimated roughly by the following expression:

$$A = \frac{1}{2} e \bar{P}^2 P_c Q_c$$

where e = elasticity of demand

$$\bar{P} = (P_m - P_c) / P_c$$

P_m = price under monopolistic conditions

P_c = price under competitive conditions

$P_c Q_c$ = revenues of the producer

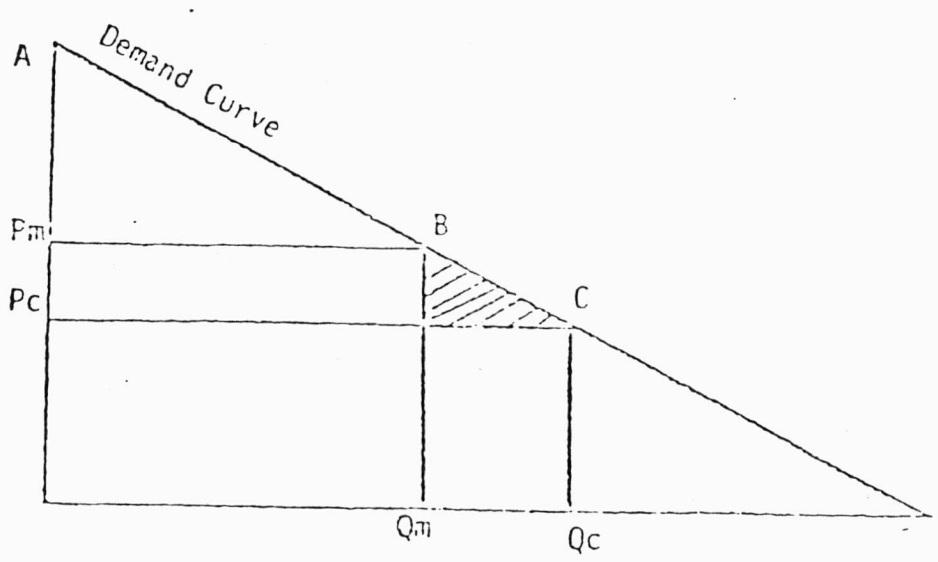
A = amount of the allocative inefficiency

Brock estimated the social cost of the allocative inefficiency resulting from the IBM Corporation's market power throughout the world to be $87 million in 1973 (Brock, 1975, Chapter 12). Such an estimate rests on rather dubious assumptions.

He used as an estimate of the price elasticity of the demand for computers, a value of 1.44 estimated by G.C. Chow. The use of this estimate is questionable on various grounds. First, the estimate is based on data of the 1950s and early '60s prior to the introduction of the 360 family. Second, it pertains only to the United States, whereas Brock applies it to IBM world-wide revenues. Third, the data processing market is highly complex and differentiated thus it is dubious whether a single price elasticity figure has much significance. Fourth, IBM annual revenues originate from outright sales and revenues from leases, the majority of leases

Exhibit 5

NET REDUCTION IN CONSUMER SURPLUS FROM MONOPOLY PRICES



being for equipment shipped in previous years.

Brock estimated the price differential ($\bar{P}$) between actual price and the price which would prevail under a competitive structure by a combination of tenuous assumptions. First, he assumed that the difference between IBM's average rate of return (17.5%) and the average return of manufacturing corporations (10.7%) is not accountable to any extent by differences in technical and production efficiencies. He acknowledged that the differences in average rates of return might be accountable by the higher level of risk in the data processing industry: yet, he rejects this explanation because in his view, the low variance exhibited in IBM's rates of return indicates there is no "excessive risk". This seems to confuse ex post and ex ante evaluations. The fact that there is stability ex post facto is not a demonstration that looking ahead in time (ex ante), the data processing industry is not riskier than the average manufacturing industry and thus that higher returns on investment would be expected from investments in that industry.

That there was considerable risk in the data processing industry is evident. Three examples will suffice to indicate high levels of uncertainty. First, in the early 1960s, RCA, General Electric and Xerox, three potentially very strong competitors, had entered the data processing market. Second, in the late '60s, many leasing companies managed to raise millions of dollars in equipment, fundamentally on the basis of estimates as to the useful life of the 360's computers which were different from those of IBM. Finally, the commitment by a large corporation of over 40% of its gross revenues over a period of a few years toward the development and the introduction of a new family of products could be deemed indicative of an ex ante risky situation by most investors. The success of the 360's should not hide the fact that the gamble taken by IBM was substantial, by any standard of evaluation.

Despite the fundamental weaknesses of Brock's method, we have used it to estimate the cost in allocative inefficiency resulting from IBM Canada's market power in 1975. Chow's estimate of the price elasticity was used. To estimate the price differential that in our opinion Brock erroneously attributed totally to market power, we used the 1975 percentage of profit on sales for IBM Canada (18.0%) and for the Canadian manufacturing industry as a whole (7.8%).

Therefore, using the same dubious assumptions as Brock, but with a more direct estimate of $\bar{P}$ (profits on sales instead of return of investment) we evaluate the amount of allocative inefficiency (and risk premium) to be of the order of $3.2 million on sales of approximately $500 million in 1975. In relative terms, this is a puny sum by any standards but particularly so when it is realized that it is arrived at by making many assumptions all of them tending to overstate the amount of allocative inefficiency.

CONDUCT

The process of acquiring market power usually involves an investment in specific market actions. There is a variety of ways to increase market power, from investing in the distribution network to brand differentiation and product strategy. Yet, increasing market power has its main impact on pricing. As the market power of a firm increases, it can enjoy the benefits of its situation and increase its prices.

Pricing by IBM Canada will be discussed in two steps. First, the determination of world base prices will be analysed. Then, the determination of the Canadian "uplift", that is IBM Canada's mark-up of the base prices, will be discussed.

Other in-market actions associated with strategic actions aimed at increasing or maintaining market power will not be discussed at length. Brock has documented the conduct of IBM with regard to these practices, using information which was made available as a result of IBM litigation in anti-trust matters. The fact that IBM has yet to be found guilty in matters of competitive conduct suggests that either it is not guilty of illegal practices, or that is rather difficult to prove that specific IBM marketing practices were illegal under U.S. anti-trust laws. Since IBM Canada largely follows the same business practices as the IBM Corporation in the United States, this statement also holds for Canada.

1. World Pricing

The base prices of all IBM products are expressed in U.S. dollars. The U.S. base price is also the price in the United States.

The development process for IBM data processing products is the responsibility of the development divisions in the Data Processing Group. All IBM products go through what is called the phase review process - a six stage procedure. The phase review process is activated as soon as the DPPG accepts a product concept presented by the Data Processing Marketing Group.

The base pricing determination actually begins prior to the formal phase review process. The DP Marketing Group and the major affiliates, which includes IBM Canada, carry out a market requirements study and prepare preliminary forecasts at various assumed price levels based on fairly broad product assumptions. As a product enters the first phase of the review process, i.e. the feasibility study phase, preliminary world-wide cost estimates are also prepared and a preliminary financial analysis is carried out at different price levels.

As the product proceeds through the next two phases (Product Design and Product Development) the process is basically repeated but with further refinements. In these phases forecasts and costs are based on more informed assumptions, as well as on a firmer description of the product. The price ranges and the product specifications are again reviewed by the marketing units for their impact on the forecasts. Moreover, in Phase III, the different prices ranges which have been under consideration are narrowed considerably.

In theory, the optimal price from IBM's point of view is the one which will maximize world-wide profits. However, one of the many complications is that there is usually not one optimal price for all areas of the world since demand elasticity varies from one area to the other. Also, there are other factors which are weighed in arriving at the optimal price, e.g. the prices of existing IBM and competitive products and the anticipated technological advances and other factors which will have an effect on the life of the product. At the end of Phase III the final base pricing is agreed upon to best reflect the requirements and compromises of the marketing and development units. Thus, the base price is the one that should yield the maximum profit to the IBM Corporation once all the country organizations uplift this price to recover those incremental costs which are unique to their particular country and which, therefore, were not accounted for in the world-wide cost estimates used for base pricing purposes.

Moreover, if demand conditions change after a product is introduced, its price could be adjusted. IBM is known to react strongly to major competitive threats. This is documented fully in Brock's analysis of IBM reaction to competition by manufacturers of auxiliary memories in 1970 and 1971. It has also reacted to Amdahl's successful entry in 1976.

IBM's basic price determination is complex because of two characteristics of its product line. First, it is a full product line. In economic jargon, IBM tries to minimize any consumer surplus, that is, the excess over a basic price that some consumers would be ready to pay to get a product, if there would be only one product sold at one basic price. By offering a full line of products, each with a different performance level, and by trying to price each of them according to their perception of the demand function, IBM hopes to maximize its profits. By the same token, the full product line makes the pricing strategy rather complex, for IBM has to maintain appropriate price differentials between the various products in its line. Competitors are aware of this structural rigidity of IBM prices across a product line, and set their prices accordingly. Thus, when forecasting the demand, the marketing units and the product development group

have to take into consideration possible strategic reactions from competitors as well as impact on other IBM products.

The second characteristic of IBM's product line which makes optimal price determination difficult, is the fact that a large proportion of its revenues comes from leased products. This makes any price cut very costly, as it has to be extended to the whole leased base. Thus, the usual pattern of reaction to competition on a specific product is through a price-cum-product strategy, such as announcing a new option at a better price/performance ratio than the existing product, but not sufficiently better to risk cannibalizing the existing base of leases. No evidence was ever found of predatory pricing on the part of IBM, even though its pricing decisions are carefully monitored by public agencies and competitors. Moreover, product prices are uniform throughout a sales area, and no discounts are given to any customers, except educational institutions. (The discount varies according to the product, for instance, it is 10% on C.P.U.'s.) IBM also has special sales terms and conditions for governments.

Therefore, the "functional" pricing strategy of IBM seeks to find base pricing which will meet optimally a three dimensional set of objectives:

- compatible pricing of its product line
- consistent pricing over the expected leased life of the product
- base pricing which, when adjusted by each country's uplift, will generate the optimum world-wide profits.

2. The Canadian Price

Each affiliate "uplifts" the basic price to account for those incremental costs particular to their country. In Canada, the uplift varies by classes of products. As of summer of 1976, the uplift on leased DP products was 19.6% and 18% on DP products which are sold. On office products, the uplift varied from 14% on the magnetic card typewriter to more than 20% on dictating machines and copiers.

The determination of the uplift level takes into consideration all the special costs associated with doing business in Canada such as exchange, federal sales tax and duty, freight and other costs.

Whereas some allowance for additional costs can be calculated accurately, others are more difficult to estimate or to justify. For instance, the exchange rate is forecast over a period of a few years. (This forecast has been consistently on the cautious side; that is, it underestimated the average value of the Canadian dollar and thus justified higher Canadian prices.) The additional costs attributable to federal sales taxes and duties can be calculated on a family of products, taking into consideration the fact that some of them are either manufactured or assembled in Canada.

IBM Canada has also conducted various internal studies to analyse its cost of doing business by comparison to those of its U.S. counterpart. As one can expect, it found that it had higher administrative costs resulting from its higher ratio of indirect to direct manpower. This is explained by, among other things, the presence of three regional headquarters and a national one. It also found that its selling costs were higher. There are only two major markets in Canada, Toronto and Montreal. IBM Canada has a higher proportion of its sales in smaller markets. Finally, it found out that its field manpower had lower productivity, which was explained in part by its lower average age and experience.

There can be numerous other sources of additional costs associated with doing business in Canada. Yet, the particular operating structure of the IBM system suggests that over the years, an affiliate will go over the same cost and demand analysis that is used in the determination of the basic price, in order to establish the optimal level of uplift on specific classes of products. This can be done explicitly, or as seemed to be the case for IBM Canada, it can be done implicitly. Whatever rationale is used, actual prices in Canada will tend to maximize profits.

Every year, each affiliate negotiates with the IBM Corporation (or more precisely with IBM A/FE or IBM EMEA) a set of performance targets, one of which is a profit target. If the return on equity or on sales of an affiliate is consistently under the IBM Corporation average, there will be pressures to lift it to that level. IBM Canada, which has returns slightly lower than average, is thus challenged annually to improve its performance as the targets are set. The operating plan review process (which will be described at length in Chapter 4) is the main driving mechanism of the IBM system. An affiliate under pressure has good reasons to review its uplift schedule carefully. Within a few years, it should have found the optimal uplift maximizing the returns. As a rule, an IBM price should be set at the level that maximizes profits: if the Canadian uplift schedule does not maximize the profits of IBM Canada, it is logical to expect it will be changed accordingly.

Three hypotheses may explain why IBM Canada, under this optimal price strategy, can charge higher prices than its U.S. counterpart.

1. Costs of doing business are higher in Canada. This is basically the position of IBM Canada.

2. The elasticity of demand for IBM products is lower in Canada than in the United States. This could be caused by less competition in Canada, or by the fact that Canadian users as a whole are less sophisticated and less inclined to comparative shopping than U.S. users. Another explanation is that IBM is better positioned in the Canadian market than in the U.S. market.

3. The elasticity of demand for data processing products is lower in Canada than in the United States. Elasticity of demand tends to rise with time. It is recognized that usage of computers in Canada lags by some years behind usage in the United States; therefore, demand elasticity is lower.

Our analysis suggests that a displacement in the supply curve, which is the first hypothesis, explains most of the price difference. Lower elasticities of demand both for IBM products and for data processing products probably also play a minor role. On the other hand, indirect evidence suggests that lesser competition is not a cause of significant importance. It is known that high-price computers, such as IBM's 370/158 and 370/168 are sold to sophisticated buyers in very competitive situations. It is probable that, in this segment of the market, the competition is as strong in Canada as in the United States. The fact that IBM Canada's uplift applies across the line to the high price products as much as to the low price products suggests that the market is as competitive in Canada as in the United States across the full line of products.

It is sometimes stated that IBM Canada sets its uplift at such a level that its Canadian prices are only slightly below the costs to a Canadian user of purchasing an IBM computer in the United States (presumably from a third party, since IBM Corporation will not sell a computer to a Canadian user). The Canadian user would have to pay duties on the U.S. selling price whereas duties assessed on computers imported by IBM Canada are based roughly on 50% of the U.S. selling price.

That such a hypothesis holds is doubtful for three reasons. First, the hypothesis supposes that the demand for IBM products by Canadian users is highly specific and is somewhat shielded from the competition of other manufacturers. Thus, third party U.S. vendors have a larger influence on IBM Canada's prices than the other mainframer Canadian subsidiary. We did not find any evidence to support this. Second, it could be that IBM Canada is not only the price leader in Canada, but it sets the price level and in doing so, sets it at a price slightly below that of U.S.-based third party vendors. Other Canadian-based vendors would then adapt their price structure to that of IBM Canada and refrain from competing on price. There is no evidence of the generalized price collusion that such a hypothesis suggests. Finally, third party vendors are more active in large scale systems than in small systems. If U.S.-based third party vendors were a determinant competitive element in the Canadian market, the uplift would not be uniform, but would be higher on small system equipment.

Such a hypothesis suggests a passive role for IBM Canada which is difficult to reconcile with their responsibilities to meet sales and profits targets. It implies that Canadian prices are set mechanically on the basis of the U.S. price. Relative pricing between models is based on technical factors and is determined on a world-wide basis. Determination of absolute price level is left to each country's subsidiaries.

3. Other In-market Actions

Various other in-market actions can be taken by firms to acquire or benefit from market power. For the purpose of this study, only those in-market actions which are of concern to Canadian users are analysed briefly. These are areas where a manufacturer could adopt specific policies to injure competition. The evidence does not indicate that IBM Canada is resorting to such actions.

Price and terms of sales: As mentioned earlier, IBM maintains a policy of uniform prices throughout Canada. Moreover, products and services are unbundled and priced separately. Thus, software and education (other than basic training in the operation of a new product) are charged to users. Products can be leased or purchased, except for some small products available on a purchase-only basis. Terms are the same for all customers, except governments, which have special terms, and educational institutions, which receive a discount.

Deliveries: Small items are often available off the shelves. Deliveries of large products are centrally controlled in two locations, New York and England. Deliveries are sequential and are based on customer orders. Canadian users are treated on the same basis as U.S. users. Except in special circumstances not under the control of IBM, products will be advertised and available in Canada and in the United States simultaneously.

Business conduct guidelines: All IBM salesmen throughout the world have to abide by a uniform code of practices, set up in the "IBM Business Conduct Guidelines". The Guidelines are reviewed annually by all members of the marketing staff.

CONCLUSION

The fundamental question that this chapter addresses is the extent of IBM Canada's market power and the reasons for such power.

IBM Canada still has considerable power in the market for medium-size systems, a market which is growing much less rapidly than large-scale, small, and mini-computers. Clear and powerful trends in the data processing industry (in particular, the growing sophistication of users, the shift from a market for systems to a market for products, the rapid growth of service bureaus and of distributed intelligence networks) all point to a waning of IBM's former grip on the market and to limited market power for any firm within any particular market segment.

This is not to say that IBM Canada will be knocked out of its markets: but our survey of the industry, in our judgment, points to increased competition for IBM in all aspects of its operations as the most effective barriers to market penetration are gradually being torn down by recent market developments.

First, when the market was essentially one of data processing systems, a new entrant to the market required extensive financial resources and was faced with the difficulty of persuading users to adopt a new and untried system as opposed to the security blanket offered by IBM. The shift to a market for products versus systems has brought competition from new entrants for virtually all components of data processing systems. The growing sophistication of buyers coupled with the relatively less risky decision involved

in selecting system components (as opposed to selecting a system) have led to a greater willingness to substitute and experiment on the part of users.

The barriers to penetration of specific data processing product markets are relatively low and numerous manufacturers, with the proper strategy, step over them. It is evident that, if an organization decides to enter the market with a new medium-size data processing system, the probabilities that it will fail are fairly high. RCA, Xerox and General Electric learned this fact by experience. Other strategies have a higher probability of succeeding. Cray Research, Amdahl and Itel have entered the C.P.U. "market" with a relatively low capital investment. Numerous new small manufacturers and larger companies at the periphery of data processing have entered the market of the mini and small computers. Peripheral equipment has been a traditional port of entry.

From a strong base in a segment of the market, an organization can slowly expand its product line. Itel is now spreading from its base as a leasing company. Hewlett-Packard and Digital Equipment are moving slowly towards larger systems from their base in mini-computers. The Japanese are slowly entering, throughout the world, the medium-scale system segment, on the basis of their experience on the Japanese market.

IBM's market power will thus be eroded in the future. IBM's two main assets are the established bank of systems structured around IBM technology and its large cash reserves (within the IBM Corporation).

The value represented by the number of established users is now depreciating fast. There are hundreds of manufacturers turning out products which can run on IBM systems. Amdahl Computer Corp. and Itel Corp. have successfully assaulted the next to last bastion behind the integrity of a system, the C.P.U. A user can now have an IBM-designed system running totally on non-IBM equipment. Moreover, the market probably cannot absorb a new family of medium-size general purpose systems, such as the 360's and the 370's. Existing systems are too complex and too programmed for specific tasks for any manufacturer, be it IBM or any other, to hope to outdate them with a new family of systems. The investment of medium and large users in their existing systems is too high for them to consider changing their equipment radically.

Cash reserves, IBM's other asset, are of limited use. For all practical purposes, IBM is barred from making any acquisition in any field related to data processing. It might want to invest in a capital intensive industry, such as telecommunications. Or it might decide to leave the cash where it is now, in government bonds. From a Canadian point of view, the question is immaterial, as the nest egg belongs to the IBM Corporation and not to IBM Canada.*

---

* - The IBM Corporation's balance sheet has attracted much interest in the past few years. Inasmuch as the IBM Corporation revenue from its Canadian subsidiary is rightfully earned, the utilization which the IBM Corporation may make of its billions in cash reserves, although an interesting subject, is beyond the scope of this report.

The precise quantification of market power is a frustrating and elusive operation. So much so, that there is an emerging sentiment in some quarters that huge corporate size and/or large market share (however defined) should constitute a sufficient demonstration of excessive power. Such evidence, it would be argued, justifies, indeed requires, a government-induced restructuring of the market.

The "no-fault" monopolization bill (S.3429) introduced in the U.S. Senate by Senator Hart is a good illustration of this new trend in policy-making in the area of corporate concentration.

In the case of IBM Canada, our prudent assessment of the data processing industry indicates increasing competition and a market structure within which IBM's share of any particular market segment will be smaller.

Our evaluation of performance and business conduct has not revealed much evidence of in-market power expenditures.* The pricing policy for the Canadian market was examined at length and the possibility remains that some portion of the mark-up might reflect a less elastic demand curve for IBM Canada's products, indicating that perhaps IBM Canada has slightly more market power than IBM (U.S.). However, this is only one of several plausible explanations for the level of price mark-up on the Canadian market.

We therefore are of the opinion:

- that IBM Canada's overall market power is fairly limited and eroding;

- that whatever market power it enjoys results largely from its "skill, industry and foresight" (Judge Craig, 1972) and not from any illicit thwarting of competition;

- that these qualities will not suffice to maintain IBM Canada's share of any market segment at its previous high level.

---

* - Out-of-market power expenditures, assessed in Chapters 5 and 6, were also found to be minimal.

CHAPTER 4

THE AUTONOMY OF CANADIAN OPERATIONS

In previous chapters we have looked at the growth of IBM Canada, its history as the local subsidiary of a major multinational corporation, its position in the Canadian marketplace for data processing and office equipment, its market power, conduct and performance. In this chapter we attempt to assess the degree of autonomy of IBM Canada within the global IBM system.

In the first section of this chapter we define the concept of autonomy from the perspective both of an open system and of a multinational corporation. Autonomy, we suggest, depends on the capacity of a subsidiary to adapt to its relevant environment and to plan its own development.

In the second section of the chapter we will describe the major elements of the IBM world system first by presenting the organizational premises on which it is based - some of which are specific to the IBM tradition and others imposed by the data processing and office product environment - then by examining the actual design of the system, especially with regard to its international dimension. We will be particularly concerned with the ways in which the peculiarities of the IBM way of doing business have helped shape the configuration of IBM's international operations. As we will show, the international operations of IBM are not simply extensions of the United States operations, the result of a successful corporation which, having made good at home, was "naturally" pushed to expand abroad. Lastly, we will look in more detail at the ways in which the IBM world system is managed, in particular, at how it manages to maintain its dynamism without subverting the overall unity of the system.

Having considered these three aspects of the IBM system, its organizational premises, its actual design and its management, we will then turn to the place occupied by IBM Canada within this system. What is the institutional framework which defines, at least on a formal basis, the place of the Canadian subsidiary? What is the role of the Canadian board? What have been the major steps in the development of IBM Canada, its present missions in terms of manufacturing and product development? Our major concern is to assess not only the degree of autonomy of IBM Canada but the extent and the ways in which this autonomy has been pursued.

Finally, in the last section of this chapter we ask whether it would make any difference if the IBM Corporation were a Canadian corporation?

THE CONCEPT OF AUTONOMY

No enterprise is entirely autonomous. It depends on others for goods and services. Thus, almost by definition, autonomy should not be seen as

an "all-or-nothing" quality. If this is true for the single-product, single-technology and single-market enterprise, it is even more true in the case of the multiple-product, multiple-technology and multiple-market enterprise.

Definitions of autonomy which start with the hypothesis that all or most activities must be performed and controlled within national borders do not fit well with the context in which multinational enterprises function. In a situation where activities in the areas of manufacturing, research, and marketing are viewed on a global basis, the ultimate test of autonomy can hardly be that a subsidiary "stands on its own". In such a context, the assessment of autonomy requires a nuanced evaluation of complex organizational relationships.

PRELIMINARY CONSIDERATIONS

The raison d'être of the multinational corporation, as defined in Chapter 1, lies in its superiority due to the transmission to subsidiary units of technological and entrepreneurial skills and to the establishment of a unified global strategy which yields benefits to constituent units as well as to the whole. These two centralizing forces tend to undermine the autonomy of constituent units to a great extent. Yet, in reality, communication, motivational and operational difficulties, as well as the necessity to adapt to the local environment, militate in favor of a substantial degree of decentralization of authority to the managers of national subsidiaries. Also, the costs and difficulties of communications between headquarters and subsidiaries may counterbalance some of the gains expected from centralized policies.

From the corporate management's point of view, there are policy decisions for which the benefits of a unified strategy and the centralized coordination of skills are superior and thus ought to be made by the central headquarters, whereas others ought, to the extent possible, to be delegated to subsidiaries. Naturally, as in any organization, domestic divisions, corporate staff and subsidiaries will argue and bargain over the types of decisions that will be centralized or decentralized.

Subsidiary management, on its own or by design, will argue that deconcentration of decision is necessary in order to deal with national demands, legitimate national interests and the particular characteristics of the national markets. Some subsidiary managers will want to build an organization that is as conditionally autonomous as possible and thus include activities such as research, development, manufacturing, as well as marketing.

Corporate management by contrast will stress the benefits to be gained by the whole as well as its constituent parts arising from central coordination and aggregation of activities such as product planning, manufacturing logistics and sourcing, distribution of work, financial flows and operating methods (John Fayerweather, 1969). In short, we find that autonomy is the result of a trade-off between the advantages procured by a centralized decision-making process and the requirements imposed by a complex environment.

AUTONOMY IN THE CONTEXT OF AN OPEN-SYSTEM

As we have already pointed out, no enterprise is entirely autonomous! The need to exchange resources of varying kinds with relevant organizations in its environment, as well as the obligation, first to acquire legitimacy and social recognition of its role, and second to adapt its values to those of societies, makes any enterprise an open system. (Talcott Parsons, 1960. Daniel Katz and Robert L. Kahn,1966). Information search and feedback is another major dimension of the dependence of any organization on its environment.

Enterprises interact with their environment and decide to undertake or leave to the environment activities which they consider crucial. More precisely, we accept the paradigm which views organizations as purposeful systems containing conditionally autonomous subsystems. (Russell L. Ackoff and Fred E. Emery, 1973). Briefly, this means that:

1. In the pursuit of objectives, enterprises have the ability as well as the necessity to constrain the autonomy of subunits in varying degrees, because of interdependencies.

2. Subunits have the capability and the ability to act purposefully within those constraints. (R.M. Cyert and J.G. March, 1959).

Although enterprises cannot be self-sufficient, they have options over what activities to undertake internally and what activities to leave to external organizations. Naturally, a situation of dependence on external organizations is thus created. This is the usual approach to autonomy. The more internal activities, the more autonomy and conversely, the more external dependence, the less autonomy. For example, authors such as J.J. Servan-Schreiber, who concern themselves with technological innovation, have stressed the necessity for internal research activities. Others, on the other hand, have indicated that, given the rate of change in technology and the number of contributors of innovations and inventions, a situation of calculated dependence is the rational solution. However, in order to increase their autonomy, enterprises will try to place boundaries around those activities which, if left to the environment, would lead to unmanageable uncertainties.

The definition of autonomy that will be adopted for this analysis will be a multidimensional one, from the viewpoint of a purposeful subsystem. A subsidiary will have three kinds of relationships: extra subsystem, extra system and inter-system. Extra subsystem relationships refer to the myriad marketing, production and managerial activities by means of which the subsidiary generates a profit. Inter-system activities include vertical and horizontal relationships with other controlling or technological units with which the subsidiary is linked. Extra system activities refer to institutional relations by means of which a subsidiary adapts to its local social environment.

Using these three dimensions, we will assess IBM Canada on two criteria: first, a set of a priori objectives and second, the achievements of IBM Canada with respect to these objectives. The typology appearing on Exhibit 6 describes our method. Thus, IBM Canada will be autonomous to the extent that it manages its interdependence with other organizational units and obtains a favorable bargain. The capacity to design products suited to Canadian users' requirements and the ability to develop institutional relations programs, constitute another aspect of autonomy. Finally, national control of local marketing, production and development operations represent the last facet of autonomy.

Before assessing IBM Canada's autonomy, the IBM system in theory and in practice will be analyzed.

THE IBM SYSTEM IN THEORY AND PRACTICE

As a first step we will describe the premises of the organization design at the IBM Corporation which underlie the framework within which any national subsidiary operates.

THE PREMISES OF THE IBM SYSTEM

These premises are obviously highly contingent upon the types of products, technology and international expansion which are characteristic of IBM and the data processing industry. These specific premises constitute the basic elements of the global decision model which underlies major design choices at the IBM Corporation. By global decision model is meant an understanding first of the structure and dynamics of the system which characterized the data processing industry and second, of the key organizational tasks necessary to meet the system's requirements on a world-wide basis. The formulation and implementation of strategy on a world-wide basis is a characteristic not only of the IBM Corporation but of other multinational enterprises, such as Massey-Ferguson among others.

From the available evidence we have been able to identify two sets of premises, those pertaining to the data processing and office product industry and those more immediately related to IBM's organizational architecture.

1. The Data Processing and Office Product Environment

This environment, although in constant flux, can nevertheless be characterized along four lines.

a. A Universal Marketplace

The market for data processing products is international and universal. IBM offers the same product line world-wide because data processing users everywhere tend to demand the best technological procedures and the most advanced products. Nonetheless, the life cycle of particular products may be different for some geographical areas.

Exhibit 6

Measurement of Autonomy

DIMENSIONS

ASSESSMENT CRITERIA	INTER-SYSTEM	EXTRA-SYSTEM	INTRA-SUBSYSTEM
A PRIORI OBJECTIVE	Top Management Formulates Strategy to Manage Interdependence	Adapt to Relevant Social Environment	Design Own Structure and Develop Operating Plans
EX-POST ACHIEVEMENT	Obtaining Favorable Exchange and Fair Share	Design Products Meeting Local Users' Requirements; Develop Programs of Social Responsibility	Management Evaluated against Objectives it has Agreed to

The problems IBM products are designed to solve, and the solutions themselves, are not unique to one country or any subset of countries, but are universal. IBM products must be flexible enough to accommodate national requirements without basic changes in design (Gilbert E. Jones and Jacques B. Maisonrouge, 1973).

b. The Pressure of Technological Change

Technological change is a driving force within the industry. Instead of a tapering off of developments, one is faced for the time being with an exponential growth in technology. Development is being directed to meet users' requirements, including the requirement to increase productivity by stressing on-line systems, data bases and data communication facilities.

c. A Differentiated Marketplace

Contrary to the accepted belief, a computer is not only a gigantic calculating machine limited to a Central Processing Unit and a number of memories. Software, peripheral products and communications systems have evolved into scientific, technological and commerical fields of their own. For instance software developments are intimately associated with the "hardware business". In recent years many of the changes which have characterized the industry have originated from the software sector. For example, the Virtual Memory concept enhanced the capacity of the CPU probably more than any other hardware development during the last five years.

d. Competition is International

Competition in the data processing field is international, thus requiring a global strategic approach. Almost every major computer manufacturer in the world (CDC, Sperry Rand, Honeywell, NCR, Burroughs, Digital Equipment, Siemens, Hitachi, I.C.L.), is an international enterprise. Competition in the various national markets is oligopolistic. Most companies competing in the industry are listed among the 500 largest industrial corporations and among the 200 largest foreign enterprises in Fortune. Competition is also strong from smaller companies including mini-computer makers, peripheral vendors, computer service and software suppliers.

These four premises as to the nature of the environment lead to the conception of key organizational tasks. These key tasks are: continuous research, efficient and rapid product development, rationalized manufacturing, a world-wide presence and a medium and long-range planning capability. In

turn, these major organizational tasks will have to be made operational by the structure and processes, as well as by the allocation of resources and skills among the various organizational units.

2. The Organizational Premises of the IBM Corporation

In attempting to meet these objectives IBM has developed a number of features which taken together (i.e. in interaction) define the architecture of the organization. Such organizational premises, in conjunction with the environmental ones described earlier, define the background against which IBM Canada operates.

a. The Need for Central Coordination and Design

The design of the system-wide organization structure and policies needs to be centrally planned in order to meet the aforementioned objectives. The key organizational tasks of research, product development, and manufacturing need to be centrally coordinated to meet market requirements and to ensure world-wide consistency and efficient allocation of corporate resources. Furthermore, the benefits to be derived from the international rationalization of tasks in manufacturing, new product development and research require central coordination.

As a consequence the organizational tasks of research, product development and manufacturing are to be conceptualized as systems and broken into interrelated responsibilities and missions, which are to be allocated, within certain constraints, to the domestic and foreign organizational units best equipped to achieve the highest system performance. Products are to be manufactured world-wide for world-wide use. Efficiency of rationalized manufacturing is critical to maintain computer prices at competitive levels. Research and development laboratories are to be located in advanced industrial educational environments where a large market for IBM products and scientific manpower resources exist.

As a result of IBM's principles and business conduct guidelines, a number of system-wide policies and practices ensure uniform behavior with respect to personnel and customer relations. IBM's principles apply to all subsidiaries and to all employees. Business conduct guidelines which are designed to implement IBM's adherence to the uniform standards of business ethics and to comply with U.S. anti-trust laws become basic policy throughout the system.

b. Decentralization to Responsibility Centres

Responsibility for research is assigned to the research division which reports directly to the Corporate Office.

Responsibility for the coordination of rationalized activities in the field of product development and manufacturing is assigned to the major operating product groups in the United States, namely, the Data Processing Product Group (DPPG) for data processing products and the General Business Group (GBG), for small computer and office equipment products. Thus, the need for integration and the rationalization of those activities where benefits accrue to the whole system, will be handled by relatively powerful product oriented groups.

Organizational tasks not imperatively requiring central coordination are to be decentralized to accountability centres close to the points of execution. These accountability centres are to be organized along geographic and product dimensions rather than functions and are to undertake both development and operating responsibilities. A number of operating mechanisms organized in a formal planning system will ensure the coordination, first of the world-wide matrix for research, product development and manufacturing, and second of the objectives of each subsidiary with those of the entire corporation.

c. Adaptation to Varied National Environments

Participation in the economic life of various nations requires that national interests, good corporate citizenship and national legal requirements be meshed in with broader corporate goals. The problems of coordination and integration of its total operations requires that IBM maintain total ownership of its subsidiaries. Investors should share in the entire world-wide company, not in national subsidiaries. Yet to assure the representation of national interests and aspirations, virtually all employees and directors of IBM subsidiaries are to be nationals of the countries in which they function. In addition, in larger countries, manufacturing and development missions are to be established in addition to marketing and service functions. Attempts are to be made to balance in monetary terms, manufactured output and sales in large national markets.

What emerges from these initial considerations is most certainly the picture of a strong, tightly organized corporation, but also one that must operate in a highly competitive, fast-changing environment, where science, technology and marketing mix more closely than in any other field. In the data processing field, the high costs of doing research, the homogeneity of tasks everywhere, the limited pool of talent, suggest an international perspective. In the following section we will attempt to identify some of the IBM responses to its environment and in particular how it has actualized the organizational premises of central coordination and decentralization.

THE ORGANIZATION OF THE IBM SYSTEM

The premises which have been identified lead to a number of world-wide design options. The requirements, first of meeting the key organizational tasks of new-product development, research, rationalized manufacturing and performance control, all of which need central coordination, and second of decentralizing to responsibility centres, lead to a matrix system where some conflicting responsibilities contend.

Criteria for the Organizational Configuration

The need to deal with product, functional and national requirements, which of course have some degree of conflictual elements, has led to an organizational architecture based on three criteria: segmentation of the organization; maintenance of an International division; and the establishment of subsidiaries. (C.H. Clee and W.M. Sachtjen, 1971).

A. Segmented Organization

The segmentation of the organization on the basis principally of product lines and product development is the first dominant criterion at the IBM Corporation. The line runs between the Data Processing and the General Business Groups. Moreover, in the United States, the data processing product groups are still divided according to functions, i.e., marketing on the one hand and manufacturing and development on the other. Marketing responsibilities in the United States are assigned to the Data Processing Marketing Group and to the General Business Group. The U.S. Data Processing Product Group and General Business Group have world-wide responsibility for the coordination of manufacturing and product development. In the major foreign subsidiaries (but not in the United States), the two basic divisions, data processing and general business, are usually found, and both are basically marketing units.

B. The Maintenance of an International Division

Contrary to the often mentioned prescriptions as to the necessity of a geocentric organization and a global strategy, IBM Corporation has maintained an international liaison structure the staff of which acts as intermediaries between corporate top management, product divisions and subsidiaries management.*

Up to the middle 1960s, the international division had operated with a high degree of autonomy though much of the product development activities had emanated from the U.S. product group divisions.

---

* - Concerning the transient nature of the international division, see S. Robock and K. Simmonds, 1973.

Espousing the Chandlerian thesis (A. Chandler, 1962) many authors have suggested that the international division is merely a transient form. Once an enterprise's business becomes more international and it adopts a global strategy,* the international division is supposed to give way to geocentric structures based upon world-wide product divisions, or world-partitioning into geographic areas. This did not happen at IBM.

The rationalization policy developed in the middle '60s has led corporate top management and corporate staffs to get more involved in world-wide policy and strategy formulation. Yet, the international liaison has been maintained so as not to disrupt delicate working relationships, and because existing operating processes allow the adequate flow of information and decisions.

C. A Network of Subsidiaries

The establishment of subsidiaries in diverse countries responsible for the coordination of all marketing activities, product development, manufacturing and management activities as well as external relations within the country is a trade mark of the IBM Corporation. This basic organizational architecture of the IBM Corporation has exhibited remarkable stability over time although specific components have changed. The major operational units divided along product and geographic criteria have been designed to make sure that on the one hand product development and rationalization requirements are properly attended to by strong operating divisions and on the other hand that the requirements of adaptation to national environments are stressed by operational units close to execution.**

In the following section an attempt is made to see how the two forces, centralization and decentralization, have been made to work in a way which promotes rationalization, efficiency and interdependence.

Rationalization and
Interdependence in the IBM System

The rationalization policy was decided upon in the middle '60s in order to increase the efficiency and balance in a business which was becoming more and more international in scope.

From the point of view of top management, the corporate headquarters and the product groups would retain authority for world-wide strategic planning and control while subsidiaries would be given operational responsibility. The application of the rationalization policy has shifted a number of policy

---

* - For a discussion, see L.E. Fouraker and J.M. Stopford, 1968.

** - For an examination of the criteria of design in a multinational corporation see J. William Widing, 1973.

decisions concerning manufacturing and product development from the international division but has permitted a number of subsidiaries to participate actively in the strategic mission allocation process. In other words, in the process of designing the structure IBM's top management separated conceptually, on the one hand the decision to departmentalize the organization into differentiated units, and on the other the decision to assign or delegate missions to operating units.*

IBM has 41 manufacturing plants located in 16 countries. Rather than letting each plant or country attempt to produce the complete product line or develop its own products, manufacturing and development are planned centrally.

Each plant specializes in a particular product or group of products which it manufactures for its local customers as well as for export. In turn, each country imports the products it does not manufacture. According to IBM's executives, the rationalization policy allows better management of trade balances and achieves economies of scale.** The rationalization decision-making process begins with development engineering in order to avoid duplication of activities considering the investment expenditures in research and development. Moreover, approaching development activities on an international basis allows IBM to be more responsive to customer expectations in all the countries in which it does business. World-wide management of development assures availability of the same technology to all countries.

Finally, world-wide management of development is essential because of the interdependencies among products, services and support activities. Each laboratory has its own domain of specialization and has a direct association with the plant or plants which manufacture the products or components for which that laboratory is responsible. In this way, a laboratory can be associated with a number of plants and in turn, a plant which manufactures two or more products is associated with a number of laboratories around the world.

Table 15 shows for some products the existing relationship between plants and development laboratories.

Another dimension of the rationalization policy concerns sourcing decisions, that is the allocation of manufacturing missions to one or two plants.

In the case of complete products (as opposed to components, the sourcing decisions for which are often made at the local level), the decisions are likely to be made at the A/FE, EMEA or corporate level. One of the major

---

* - To use a parable, IBM has built palaces instead of tents but the activities that go on in the palaces vary to meet the demands of the environment. See B.L.T. Heaberg et al., 1976.

** - As it is pointed out by many observers, this policy also ensures that no one subsidiary has complete control over the development and manufacturing of any major products.

Table 15

PRODUCT/PLANT/LAB

EXAMPLES

PRODUCT	LAB	PLANT	MARKET
129 (key punch)	TORONTO	TORONTO	WORLD-WIDE
3717 (low speed printer)	ROCHESTER	ROCHESTER TORONTO	U.S. EMEA/AFE
5415	ROCHESTER	BOCA RATON VIMERCATE TORONTO	U.S. EMEA AFE

considerations is that of cost: capital requirements, duty, freight and volume. As volume increases, second and third sources become attractive (See Exhibit 7). Over time, manufacturing at IBM has, in the words of one executive, moved "from a 'pot-pourri' to rationalization". Once a manufacturing plant has been selected to produce a particular product, that plant has a major responsibility for reviewing all parts and sub-assemblies for the product and for determining their sourcing.

In addition to costs, a number of factors are involved in sourcing decisions. First, the resource availabilities and expertise in the diverse plants and subsidiaries. Second, the constraint of full employment and the plant size ceiling to limit the economic and social impact of IBM on any community. Finally, because of governmental insistence and/or self-imposed constraints, attempts are made to balance imports and exports in the major countries in which IBM sells products and operates manufacturing facilities.

As a consequence of the engineering strategy - which establishes specific relationships between development laboratories and manufacturing plants - and of sourcing decisions, a complex network of interdependencies and a particular geographic plant distribution emerge. (See Table 16, and Exhibits 1 and 2 pages 25 and 26).

Exhibit 7

Procurement Decision

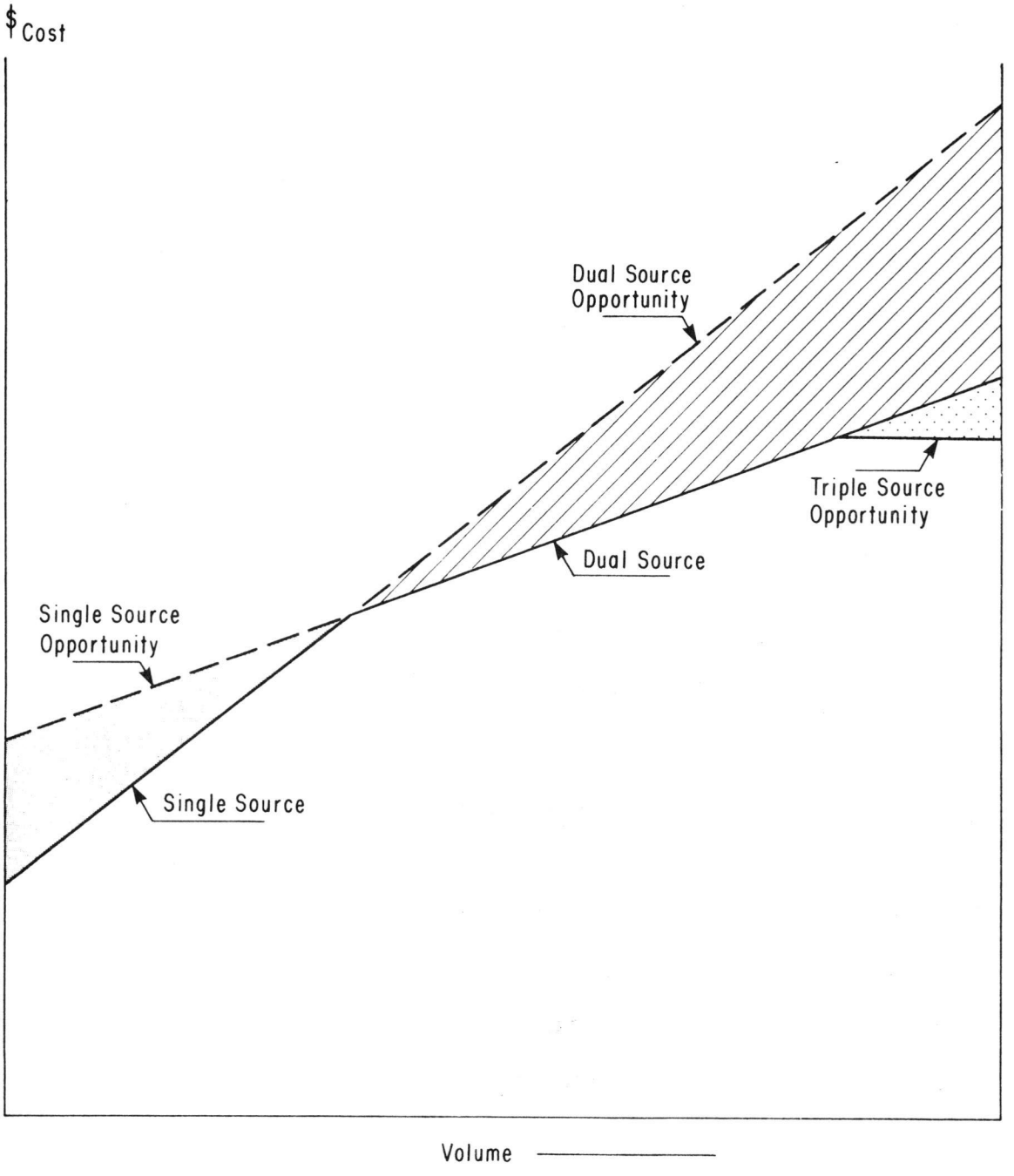


Table 16

PLANT DISTRIBUTION

COUNTRY	PLANT	TYPE
CANADA	TORONTO	GS
	TORONTO	OP
	BROMONT	OP/COMPONENT
JAPAN	FUJISAWA	DP
	YASU	COMPONENT/DP
BRAZIL	SUMARE	DP/OP/GS
ARGENTINA	BUENOS AIRES	DP
COLUMBIA	BOGOTA	OP
MEXICO	GUADALAJARA	OP
AUSTRALIA	WANGARATTA	OP
INDIA	BOMBAY	DP
U.K.	GREENOCK	DP
	HAVANT	DP
FRANCE	ESSONNES	COMPONENT
	BOIGNY	OP
	MONTPELLIER	DP
	BORDEAUX	COMPONENT
GERMANY	MAINZ	DP
	SINDELFINGER	COMPONENT
	BERLIN	OP
	HANNOVER	COMPONENT
NETHERLANDS	AMSTERDAM	OP
SWEDEN	JARFALLA	DP
ITALY	VIMERCATE	GS
SPAIN	VALENCIA	DP

Table 16
(continued)

PLANT DISTRIBUTION

COUNTRY	PLANT	TYPE
U.S.A.	SAN JOSE	GP
	BOULDER	OP
	ROCHESTER	GS
	AUSTIN	OP
	LEXINGTON	OP
	HUNTSVILLE	FS
	BOCA RATON	GS
	RALEIGH	SC
	MANASSAS	SP
	BROOKLYN	SP
	FISHKILL	SP
	POUGHKEEPSIE	SP
	BURLINGTON	SP
	OWEGO	FS
	ENDICOTT	SP

THE MANAGEMENT OF THE IBM SYSTEM

The organizational concepts that have been outlined in the previous pages convey an impression of rigid organized complexity within the basic structure of the IBM Corporation. The reality, as we have been able to see in our inquiry, is of a highly dynamic nature. Needless to say, the dynamic aspects that we have observed are caused by,

- the rapid rate of change in the products offered by the IBM Corporation and its subsidiaries;
- the rapid rate of change in data processing technology;
- the internal reallocation of resources to the organizational units with the highest growth rate in sales;
- the practice of aiming for full employment.

The mechanism by which the tensions, conflicts and competing claims within the IBM system are handled and the way commitments of individuals and organization units are built indicate, in our mind, that the designers of the organization were sensitive to the need to manage conflicts and power relationships and to devise a motivating environment for their personnel. The management of the IBM system will be examined first through a set of crucial processes that are characteristic of the corporation and then by a close look at the dynamics of the organization.

1. THREE ORGANIC PROCESSES

The flexibility needed to operate in the fast-changing data processing field, the integration of the competing interests of product and area management, and the coordination of planning and development processes, are achieved by a management system which can be called organic*, to use the term coined by Burns and Stalker to distinguish this type of organization from the bureaucratic one.** It is not our intention to discuss the myriad planned or natural organization processes at IBM, but to focus on the major components of its organic management system. We will limit our discussion to three highly interrelated and explicitly designed processes.

A. The socialization process.

B. The "checks and balances" process.

C. The contention and debate process.

A. The Socialization Process

The IBM philosophy of personal commitment to the achievement of goals and plans originated with Thomas J. Watson. As the enterprise grew in size and complexity both in the United States and abroad, a revised version was developed. This IBM philosophy serves as the foundation for personnel management. In addition, business conduct guidelines which are designed to implement IBM's philosophy and principles and to comply with U.S. anti-trust laws are standard policies throughout the system.

Presently, seven principles form the core of this widely diffused set of basic beliefs. In order to convey accurately the high level of "morality" encountered in certain IBM documents, especially those dealing with the code of conduct, we are presenting in integral version the content of the seven IBM principles as furnished by IBM Canada. These are:

1. *Respect for the Individual*

   Especially with respect to his rights and his dignity. It follows from this principle that IBM should:

   - *Help each employee to develop his potential and make the best use of his abilities.*
   - *Pay and promote on merit.*

---

* - For the concept of organic management systems see Tom Burns and G.M. Stalker, 1961.

** - For a discussion of operating processes, see Jay W. Horsch, 1973 and B.L. Hedberg et al, 1976.

- *Maintain two-way communications between manager and employee, with opportunity for a fair hearing and equitable settlement of disagreements.*

2. *Service to the Customer*

IBM is dedicated to giving its customers the best possible service. Products and services bring profits only to the degree that they serve the customer and satisfy his needs. This demands that IBM:

- *Know its customers' needs, and help them anticipate future needs.*

- *Help customers use products and services in the best possible way.*

- *Provide superior equipment, maintenance and supporting services.*

3. *Excellence Must Be a Way of Life*

IBM is known for its excellence. Therefore, every task, in every part of the business, should be performed in a superior manner and to the best of one's ability. Nothing should be left to chance in the pursuit of excellence. As a consequence, IBM must:

- *Lead in new developments.*

- *Be aware of advances made by others, improve them when possible, or be willing to adopt them whenever these fit IBM's needs.*

- *Produce quality products of the most advanced design and at the lowest possible cost.*

4. *Managers Must Lead Effectively*

IBM's success depends on intelligent and aggressive management which is sensitive to the need for making an enthusiastic partner of every individual in the organization. This requires that managers:

- *Provide the kind of leadership that will motivate employees to do their jobs in a superior way.*

- *Meet frequently with all their people.*

- *Have the courage to question decisions and policies; have the vision to see the needs of the Company as well as the division and department.*

- *Plan for the future by keeping an open mind to new ideas, whatever the source.*

5. *Obligations to Stockholders*

IBM has obligations to its stockholders. These require that IBM:

- *Takes care of the property that stockholders have entrusted to IBM.*

- *Provides an attractive return on invested capital.*

- *Exploits opportunities for continuing profitable growth.*

6. *Fair Deal for the Supplier*

IBM wants to deal fairly and impartially with suppliers of goods and services. Thus, IBM should:

- *Select suppliers according to the quality of their products or services, their general reliability and competitiveness of price.*

- *Recognize the legitimate interests of both supplier and IBM when negotiating a contract; administer such contracts in good faith.*

- *Avoid suppliers becoming unduly dependent on IBM.*

7. *IBM should Be a Good Corporate Citizen*

*IBM accepts its responsibilities as a corporate citizen in community, national and world affairs; it serves its interests best when it serves the public interest. IBM believes that the immediate and long-term public interest is best served by a system of competing enterprises. Therefore, IBM believes it should compete vigorously, but in a spirit of fair play, with respect for competitors, and with respect for the law.**

By virtue of its prestige, IBM Corporation and its subsidiaries are able to recruit their employees at entry positions from a large pool of applicants. The average number of applicants per recruited employee is about fifteen. Promotion is usually from within.

---

* - The seventh principle has been deliberately shortened here. A full version will be discussed in Chapter 6, which deals with social responsibility.

The IBM Corporation and its subsidiaries try to create an organization climate which stresses a corporate and an individual commitment to these beliefs. The employee, whatever his level, is not only extensively exposed to this explicit philosophy but IBM management sees to it, by virtue of the extensive corporate use of codes of conduct, management by objectives and employee surveys, that these principles are practised.

The socialization process at IBM has led, it is claimed, to extensive individual commitment and acceptance of the interests and goals of the IBM Corporation (C.K. Prahalad, 1976).

B. The "Checks-and-Balances" Process

The purpose of this second organizational process is to ensure the representation and confrontation of staff, line, product divisions, subsidiaries and headquarters viewpoints. Confrontation is defined as an open and socratic mode of conflict resolution. The end-result is that no one at IBM has sole authority over anything, and everyone is responsible for all those who work under his/her supervision. This in itself ensures that only the most competent individuals will be hired and that it will be impossible for them to carve for themselves an area of exclusive jurisdiction.

The IBM Corporation has not adopted the dual structure with separate product and area divisions so often chosen by multinationals anxious to derive simultaneously the benefits of a product-oriented structure and of an area-oriented structure (Davis, 1974). Instead, the IBM Corporation has maintained a three-pronged differentiation with different specific primary responsibilities, i.e., product divisions in the United States (Data Processing Product Group, Data Processing Marketing Group, General Business Group), a corporate staff in the United States and an international division with subsidiaries.

The contention between objectives co-exists with processes which tend to induce cooperation. Naturally, the influence of different units is unequally distributed and tends to reflect the relative importance of the tasks assigned to each unit. In other words, gains are expected by letting organizational units represent product, corporate and geographic interests. In this fashion operating methods and mission allocations will be worked out in a way that will lead to maximization of corporate utility by accommodation to national environments and by the establishment of policies leading to integration and unity in the areas where expected benefits are large for the whole system.*

C. The Contention and Debate Process

At IBM the allocation of system missions and responsibilities to national, line and staff organizational units is subject to bargaining and is intended to ensure a match between the human and technological resources

---

* - For an analysis of structure and power in the multinational, see C.K. Prahalad, (1976).

of organizational units and the tasks to be accomplished. A distinguishing and specific feature of the organic management style is the mode of decision-making within the IBM Corporation at different levels from the Corporate Review Committee to senior decision committees in IBM World Trade or the national subsidiaries.

The major characteristic of this mode of decision-making is the two-way flow of the influence process. Appropriate senior managers will make final decisions on policies and allocation of missions and set high performance targets. However, organizational units wishing to initiate policy changes, modify performance targets or acquire new missions may also do so within a formalized and legitimate system called the "contention and debate" system. In other words, subordinate units can initiate projects or changes, debate their differences with interdependent units and present a thoroughly researched case to the pertinent level of management.

This mode of decision-making is consistent with IBM's decentralization approach and assures coordination by superior hierarchical authorities without overloading the channels or the decision-makers. The procedure of decision-making is strikingly different from the mechanistic and centralized model of bureaucracy which channels information to the top, assumes that only the top management has the required competence, and invites top management to get involved in substantive details.

2. THE DYNAMICS OF THE ORGANIZATION

Checks-and-balances and contention, as well as the other operating processes of IBM, are designed to produce a dynamic organization, one which will react quickly to changes in its environment and even initiate such changes. Such processes can easily overload the decision-making ability of any organization. Two areas have been chosen to illustrate the dynamic unfolding of the administrative process. First, a brief description of the phases of organizational decision-making at IBM will be given. The reader will immediately see the intertwining of the three organic processes that have been discussed and the change potential that can be triggered by the decision-making procedures. Second, in order to illustrate the weaving of the contention system and the mission allocation process within the IBM Corporation, the New Product Development process will be described.

A. Organizational Decision-making at IBM: Integration and Change

We have been able to identify five distinct phases of this decision-making process:

1. Responsibility centres wishing to introduce a change prepare a business proposal to be presented to the pertinent level of senior management responsible for the particular subject. Thus, the Canadian senior management will receive business proposals from its operating divisions and will in turn, when appropriate, present its business proposals to A/FE

senior management staff, to the Data Processing or General Business groups management, or even to the Corporate Management Committee.

2. A "business case" is usually a well-researched and documented proposal which indicates the expected benefits and costs to the parties involved, as well as the implications for the IBM organization. It is interesting to note that IBM usually proceeds in the same manner with its customers: a business proposal is presented to potential or established users.

3. Prior to the final presentation to the appropriate decision-makers, the pertinent staffs study the implications of the business proposal and make a formal recommendation to management. Extensive studies and substantive analyses are undertaken to support their recommendation.

4. The final choice is made by management on the basis of two types of data: i) a concise statement of the business proposal and its implications; ii) a concise evaluation and signed recommendations by the appropriate staff persons involved. Top management does not get unduly involved in substantive details but relies to a large extent on the identified evaluation and recommendations of staff personnel.

5. Top management assumes that the contention process has led to modifications of the proposals in such a way that it meets the integration and coordination requirements. The names and recommendations of staff and line persons involved are recorded in the business proposal file. This approach indicates the confidence of top management in the quality of the work produced by subordinates. Line personnel who disagree with the staff evaluation are also given ample opportunity to present their case. A staff person wishing to make a negative recommendation will be heard by the pertinent top management committee. In the absence of such conflict, top management assumes that appropriate analyses have been responsibly performed by those making a positive recommendation and this avoids the need to review all the details of each business proposal.

B. An Illustration: The New Product Development Process

In order to illustrate the weaving of the contention and debate system and the mission allocation mechanism within the management process at the IBM Corporation, a description of the process of developing new products will be given.

Research and development are two separate, though related, activities at the IBM Corporation. The development part of the process begins with an

identification of market requirements, matches these requirements with technological opportunities, and proceeds through a series of activities known as the "Phase Review" Process toward the objective of introducing new and improved products.

The process begins with an identification of market requirements. Some of the sources of inputs to the requirements process are information obtained as a result of customer visits, competitive activity, national or legal requirements in the countries in which IBM operates, joint study projects with customers, perceived industry trends, relationships among and evolution of current products, advances in technology or research innovations, special study groups which concentrate on particular applications, or surveys undertaken to determine the needs, desires and expectations of customers.

The development process involves many organizational units, namely, staff and line functions in the Data Processing Product Group, in the Data Processing Marketing Group and in the General Business Group, as well as the development laboratories and the subsidiaries.

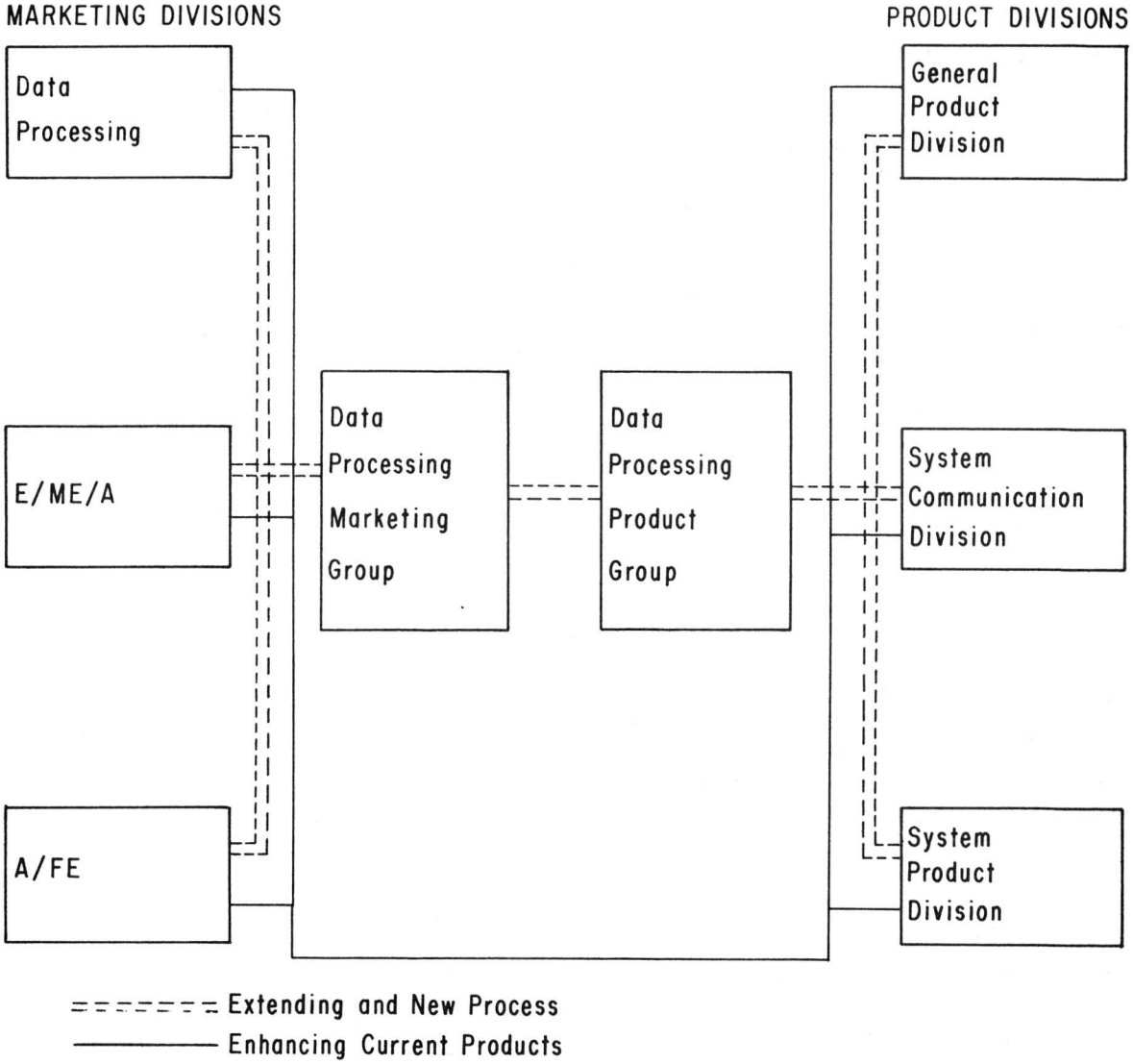
Also there are marketing groups in A/FE and E/ME/A involved in these processes. In Canada and other major IBM national organizations, groups called Product Line Management and Industry Marketing are responsible for the identification and description of user requirements. (See Exhibit 8 for the links between the units involved.) While the process within the General Business Group involves very much the same sequence of activities and the same type of interactions, we will limit our analyses to the process of new product development in the data processing area.

The Data Processing Group development process is complicated and involves interactions among several organizational units. The three development divisions of the Data Processing Product Group (SPD, GPD and SCD) are at the hub of development activities; services, marketing and manufacturing groups around the world all make significant contributions. IBM, it should be stressed, develops a single, broad product line to meet world-wide market requirements. That product line consists of compatible families of hardware and software components, which can be combined in various ways to build systems with different attributes of performance, function and reliability. Moreover, in this process there are many interrelated development projects in progress at the same time in different laboratories. Therefore a management discipline is required to coordinate and monitor the progress and essential characteristics of these numerous development projects.

The process is highly interactive. Interactive analyses are often required before it is established that there is in fact a product concept for which technological possibilities exist and which meets marketing objectives. For instance, IBM Canada may perceive a specific marketing requirement within its environment. The requirement is sent to the A/FE Product Line organization. A/FE working closely with IBM Canada then refines that requirement, assigns it a priority, does some initial work to determine whether the other marketing units in A/FE, E/ME/A or the United States have a similar need. This requirement is then forwarded to the

Exhibit 8

Product Requirements Planning Processes



Data Processing Marketing Group staff which has a major responsibility to analyze the requirements from the various marketing units. In turn, the Data Processing Marketing staff refines the requirements further and undertakes additional analysis involving the various marketing units in order to understand, and if possible reconcile, differing needs. At this point, the Data Processing Marketing Group, if it concludes that the requirement has been adequately defined and is expressed in terms that can be understood and acted upon, forwards it to the DP Product Group Development Staff, which collects these market requirements, assesses them and usually also forwards them to the various development divisions for review and comment. Thus, the Data Processing Product Group evaluates these marketing requests and responds to the DP Marketing group generally in terms of product comments or preliminary objectives. Basically, these comments pertain to the marketing requirement input and are influenced, among other things, by what can be supplied in terms of technology within the time frame requested.

Once the requirement is accepted by the Development Staff of the Data Processing Product Group, it is assigned within the contention system to the appropriate division, depending on the discipline or development expertise required. At that point the product development project is launched into the Phase Review Process. This assignment does not by any means ensure that the proposed product will go through a complete development cycle. It is the entry into the first stage of a fairly extensive development cycle that may typically last anywhere from three years to perhaps seven years. At almost any point during the cycle, a review of the product may indicate that further development efforts are not warranted or that major adjustments in the specifications are required.

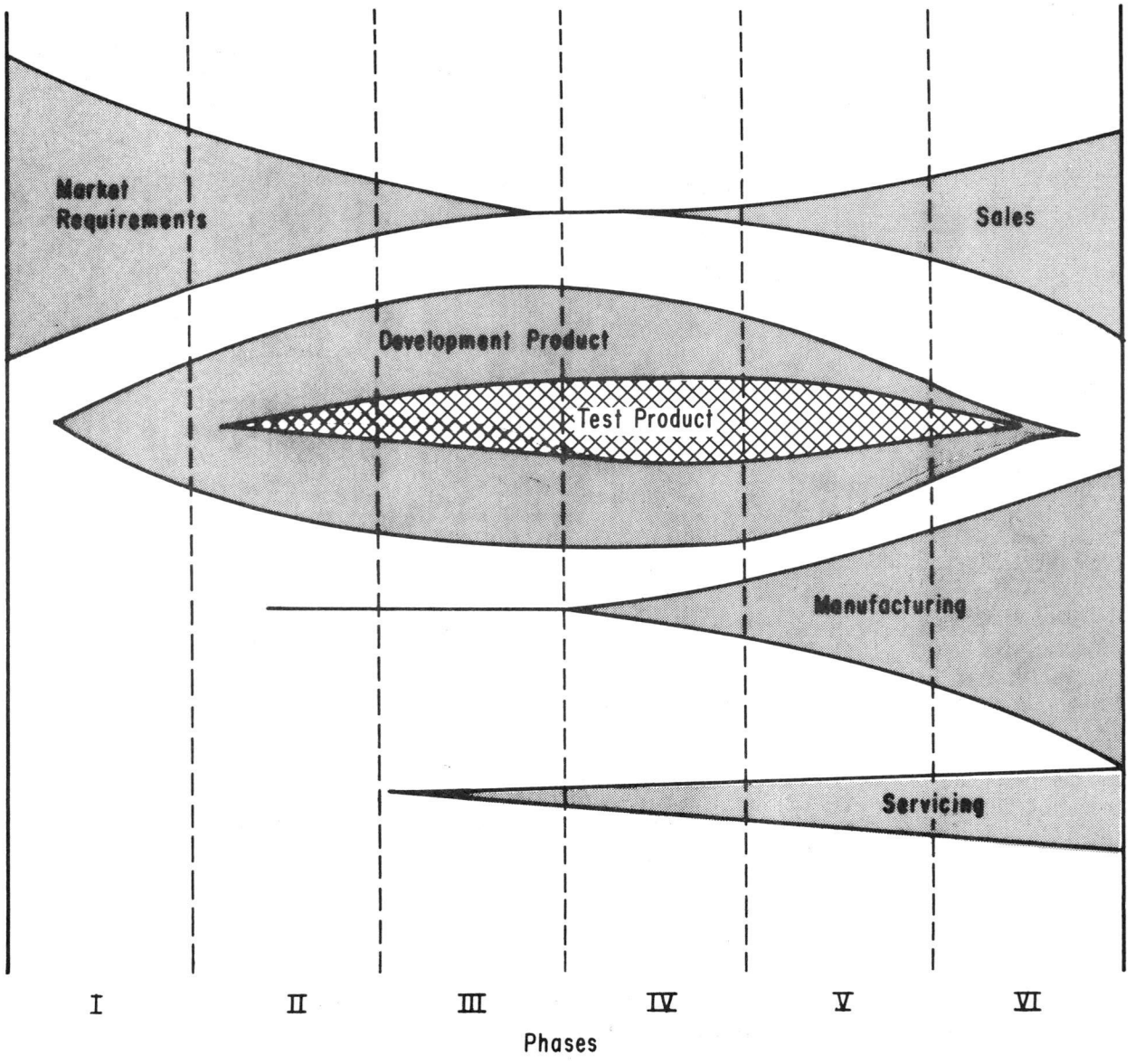
Following the market requirements analyses, the "Phase Review" process is composed of six sequences (see Exhibit 9). The first three phases include feasibility studies, product objectives and final product specifications. At the end of the third phase, the product is made available to the marketing units for announcement. Extensive testing and pre-production activities occur during phase IV. During this phase, manufacturing takes responsibility for the product and first customer shipment occurs at the end of phase V. Phase VI concerns the management of the end-of-life cycle.

This concludes our survey of the IBM global system. Indeed, we have observed that, as is characteristic of systems, there is no single source or centre of innovation, decision power or control. Not only are the United States and international operations closely interconnected but their interconnections are not one-way streets from the subsidiaries to the U.S. corporation or vice versa. This interdependence of all elements is to be found not only among the national subsidiaries but also within each working module of the corporation. Even such usually non-divisible phenomenon as authority is broken down within the corporation into multiple components.

In the next section of this chapter we will examine the working of one component of this system, IBM Canada, and how it developed within this corporate framework.

Exhibit 9

New Product Development Process Phase Review



IBM CANADA WITHIN THE IBM SYSTEM

IBM Canada is a wholly-owned subsidiary of IBM World Trade Americas/Far East Corporation. It is not merely a statutory entity but an organizational unit, the management of which can be evaluated along well-defined performance criteria (Demza, 1975). Briefly, IBM Canada is an organizational unit entrusted with decentralized revenue and profit performance responsibilities, but embedded in a world-wide, centrally coordinated product development and manufacturing matrix. A number of system-wide policies and practices ensure central coordination.

As such, its degree of autonomy will vary according to which criteria are used to assess it. Moreover, in trying to arrive at a diagnosis of the degree of autonomy, one has to keep in mind the key organizational tasks that must be performed for survival and success in the data processing field.

In this section we shall try to assess the autonomy of the Canadian subsidiary by focusing on a series of critical elements: first, the organizational premises; second, the activities of the board of directors; third, the mode of developing and the content of the annual operating plan, and fourth, the interdependencies in product development and manufacturing.

ORGANIZATIONAL PREMISES

The organizational design of the basic structure of IBM Canada is largely determined by the premises described in the previous section. Insofar as IBM Canada is concerned, the following premises seem to guide the organizational design:

IBM Canada: A Decentralized Performance Centre

The management of IBM Canada is responsible for:

1. The achievement of objectives in the area of sales, revenue, productivity, return on investment and profit;

2. The management of development, manufacturing and service activities in Canada;

3. Good corporate citizenship and external relations in Canada, in keeping with Canadian legal requirements and IBM's management doctrine.

IBM Canada: Highly Interdependent with other IBM Organizational Units

IBM Canada is inserted in the world-wide product development and manufacturing matrices of the IBM system. Reciprocal interdependencies exist by virtue of the allocation of specific missions. Thus, IBM Canada

is a sub-unit responsible for specific international product development missions (some key entry products, custom products within IBM, WT A/FE and WT EMEA advanced programming), manufacturing missions (key entry products, custom systems, substrates, typewriters, and magnetic media products), as well as the management of an IBM A/FE communications competence centre.

IBM Canada: A Reactive and Proactive Agent

IBM Canada is an organizational unit which must respond to initiatives taken by hierarchically superior coordinative and planning units but it can also initiate proposals and participate actively in the contention system to which we have previously referred. Its ability to engage in the selection and acquisition of missions depends on the strategic abilities of its top management, on its skill and expertise base, as well as on its contributions to total revenues.

INSTITUTIONAL STRUCTURE

IBM Canada reports to the IBM World Trade Americas/Far East Corporation (A/FE), as indicated in Exhibit 10. Within A/FE, responsibility for operations is split between the Vice-President, Americas, and the Vice-President, Far East, both of whom reside at A/FE Headquarters located in Mount Pleasant, New York. Reporting to the Vice-President, Americas, are two areas: Latin America and Canada. A/FE staff functions, as in the corporate headquarters, include finance, legal, marketing and services. They provide advice to country, area and headquarter's management including A/FE's Chairman and Chief Executive Officer, and its President. The IBM World Trade Americas/Far East Corporation has its own board of directors (see Table 17).

The Board of Directors

As indicated previously, IBM Canada has a board of directors which is normally made up of between 11 and 14 directors (see Table 17). Until 1950, the membership of the Board was composed exclusively of IBM employees. At that time, it was decided to include outside representatives to reflect a Canadian point of view. In keeping with this decision, Mr. Hugh Scully, who was the former Consul-General for Canada in New York City, was named to the Board in 1950. The following year Mr. Henry Borden, the President of Brazilian Traction, Light and Power Company Limited, also joined the Board. By the 1960s the company had achieved its goal of having a majority of outsiders on its Board.

The Board of Directors meets regularly five times a year and there are usually one or two special meetings. Meetings are usually held at the headquarters in Toronto. However, it has become traditional for the Board to hold one meeting each year in a Canadian city other than Toronto.

The Board of Directors of IBM Canada functions in much the same way as that of any large company. The items on the agenda of the meetings can be grouped into two broad categories of formal and general business.

Exhibit 10

IBM World Trade
American/Far East Corporation

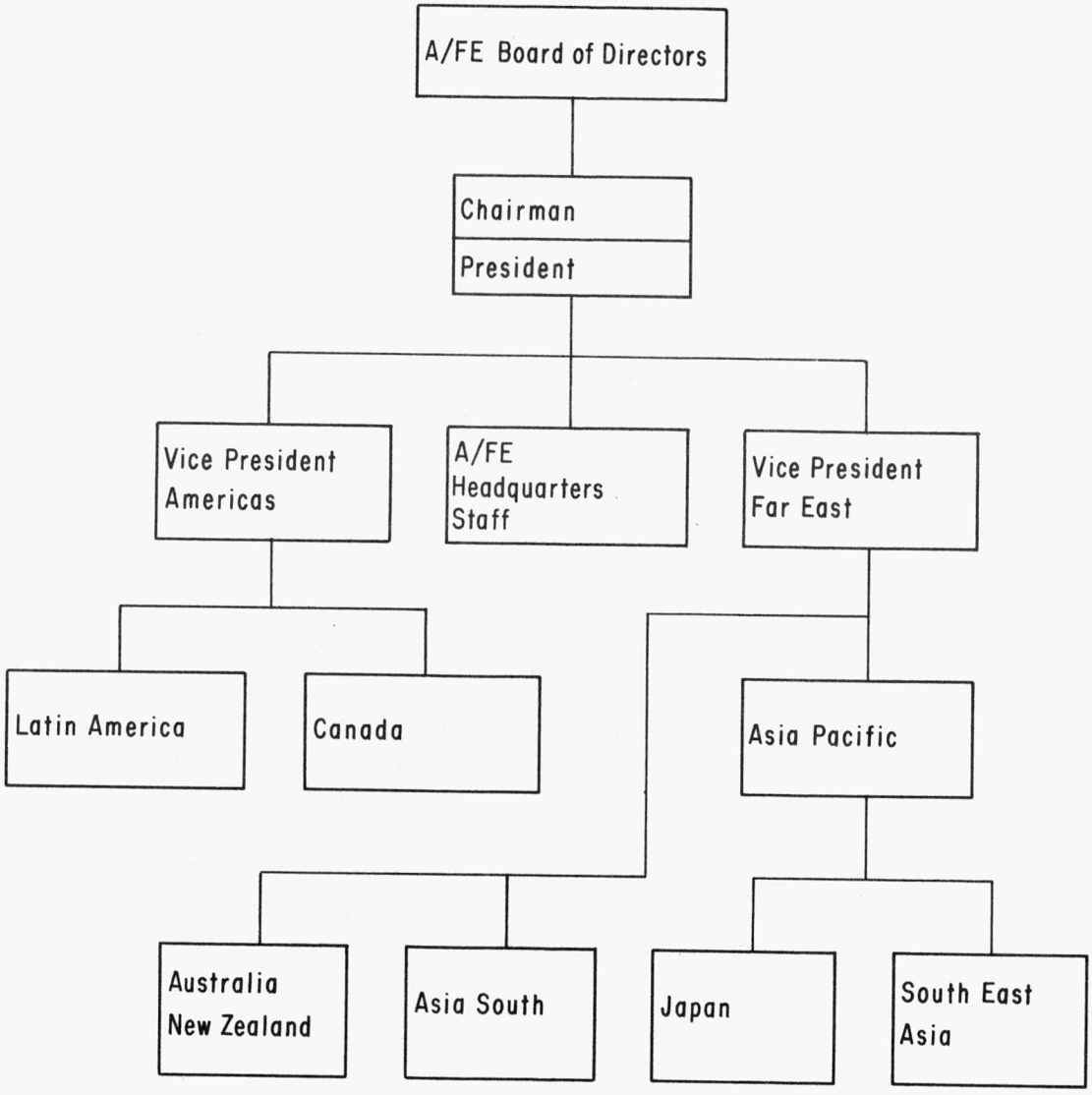


Table 17

BOARDS OF DIRECTORS OF IBM WORLD TRADE A/FE

AND OF IBM CANADA AS OF MARCH 1976

IBM WORLD TRADE A/FE

Thomas J. Bata	Chief Executive, Bata Shoe Organization, Toronto, Canada
William W. Eggleston	President, IBM World Trade Americas/Far East Corporation
Thomas P.F. Hoving	Director, Metropolitan Museum of Art, New York City
Warren C. Hume	IBM Senior Vice President
Gilbert E. Jones	Vice Chairman of the Board of IBM and Chairman of the Board of IBM World Trade Corporation
Lorne K. Lodge	President, IBM Canada Limited
Dean R. McKay	IBM Senior Vice President and Group Executive
David C. Moore	Former Vice Chairman of the Board, the Haley Corporation, New York City
Akio Morita	Chairman of the Board, Sony Corporation, Tokyo, Japan
Ralph A. Pfeiffer, Jr.	Chairman of the Board, IBM World Trade Americas/Far East Corporation and IBM Senior Vice President
Richard C. Warren	IBM Vice President
Gordon R. Williamson	Vice President, IBM General Business Group/ International Division
Bertram H. Witham	IBM Treasurer

IBM Canada

John E. Brent	Chairman of the Board, IBM Canada Ltd.
Thomas J. Bata	Chief Executive, Bata Shoe Organization
Henry Borden	Director and Past President, Brascan Ltd.
Bernd P. Kuehn	Vice President, DP Marketing, IBM World Trade Americas/Far East Corporation
Allen T. Lambert	Chairman and Chief Executive Officer, The Toronto Dominion Bank
Lorne K. Lodge	President and Chief Executive Officer, IBM Canada Ltd.
André Monast	Senior Partner, St.-Laurent, Monast, Walters, Gagne and Vallieres
Peter S. Morine	Vice President and General Manager, General Business Group, IBM Canada Ltd.
Ralph A. Pfeiffer, Jr.	Chairman and Chief Executive Officer of IBM World Trade Americas/Far East Corporation
Dr. Arthur J.R. Smith	Vice President, Inco.

Some examples of formal business matters are as follows:

- Approval and release of financial statements;

- Approval of dividend policy and declaration of dividends;

- Approval of borrowing, financing and banking arrangements, land transactions, major capital expenditures, changes in benefit plans, new benefit plans, and delegation of signing authorities;

- Annual appointment of the officers of IBM Canada and appointment of directors to fill vacancies.

The general business section of the agenda consists of a series of regular reports which are given at each meeting as well as informal discussions on subjects which are relevant to the company's operations in Canada. The regular reports are given by senior officers of the company, and deal with reviews of the financial, sales, and manufacturing performance for the previous quarter, as well as with a review of external issues and problems which have a bearing on the company's operations.

In the course of reviewing these subjects, the officers who present the reports also present management's analysis of future trends and expectations and compare these with the company's targets for the current year. Further, on an as-required basis, the Board is given reports on product announcements and on significant changes in the company's operations, such as changes in organization and in marketing and manufacturing operations.

Finally, the Board is kept informed of and consulted on important proposals which are being considered by Canadian management.

Thus, the role of the Board is to help ensure that a constellation of Canadian interests, namely, those of IBM's Canadian employees, Canadian interest groups, as well as the interests of the Federal and Provincial governments, are well represented and reconciled with the interests of the IBM Corporation. In the broadest sense, the Board -

a. Reviews and approves all matters which customarily require formal Board action.

b. Oversees the performance of the officers responsible for the operations of IBM Canada. In this context, the Canadian management is usually evaluated on the following criteria:

   - revenues and profits
   - control of costs and expenses
   - employee relations
   - external relations

c. Assesses the image of the company with respect to its Canadian corporate behavior and its external relations.

The decision to rationalize manufacturing in Canada provides an interesting example of the role of the Board with respect to a decision of high strategic importance to IBM Canada and the IBM system. Although the rationalization program did not need formal Board approval, the Board was kept fully informed by IBM Canada's management and the views of the directors were solicited as the negotiations progressed.

The Board was first told about the rationalization concept at its meeting on October 10, 1967. The Chairman informed the Directors that preliminary talks were taking place with IBM World Trade Corporation and the corporate manufacturing staff regarding the feasibility of establishing a plant mission for IBM Canada. At their meetings during 1968, the Board was kept informed of the progress of the discussions and the proposed plans, particularly the proposal to make the Don Mills Plant the manufacturing source for the 029 and 059 key punch machine. As well, the Board was told that the Company was negotiating to become the North American manufacturing source for centain OP products. In November 1968, the Chairman called a special meeting to get the Board's formal approval for the proposed plan to construct an addition to the Don Mills Plant. The Board learned at that meeting that the transfer of the 029/059 program to Canada was being accelerated. Moreover, the Chairman informed the directors at the same meeting that the company had also acquired manufacturing responsibility for selected office products to be exported to various countries.

Most of the activities undertaken by large corporations who have outside directors are initiated by management, not by the Board. The Board did not initiate the rationalization concept for IBM Canada. The initiative came from professional managers both within IBM Canada and the IBM Corporation; Canadian management prepared the business cases and carried out the negotiations. Furthermore, the allocation of missions within the IBM management system has evolved into an institutionalized process of almost continuous negotiations and bidding by many IBM companies. Decisions eventually have to be arrived at in an international context. Nevertheless, the Boards of Directors of these various companies are in a position to assess the proposed programs for their national implications and, depending on their assessment, can either support local management or can express their concerns as further input to the negotiation process. In the case of the rationalization program, the Board of Directors of IBM Canada supported the initiatives taken by the Canadian management.

The most important role of the Canadian Board is to provide a link between the Canadian subsidiary and the Canadian social, economic and political environment. This information exchange role allows the management of IBM Canada to better assess the impact on IBM of major changes in the environment. In addition, the Board is a useful channel to convey to IBM Canada and to the IBM Corporation a Canadian point of view on the conduct of IBM's operations in Canada.

Outside directors are also useful in bringing to the attention of IBM Canada's management the reactions of the business community to its policies and practices.

In conclusion, the technological intensity and international interdependencies which characterize product development and manufacturing within the IBM system do place certain limitations on the institutional role of the Board with respect to planning in those areas. However, the Board of Directors actively supports the Canadian senior management in many ways in these important areas, including management's initiatives to -

- acquire manufacturing and development missions;
- develop the skill base which is a necessary prerequisite to obtaining such missions;
- develop the human and managerial resources to compete effectively and aggressively as a subsidiary within the IBM network.

• • •

The institutional structure, as we have seen, is well established. But to what extent does it contribute to the autonomy of the Canadian IBM system? We take up this point in the following section.

AUTONOMY OF LOCAL OPERATIONS AND TECHNOLOGICAL INTERDEPENDENCIES

Developments in the field of management information systems and the availability of data processing capabilities might lead one to the hypothesis that IBM's corporate management has built a centralized system in Armonk, N.Y., which focuses all decisions at the top. Naturally, a concrete management information system has been designed to utilize order processing and sales data, that is, in areas where the information can be realistically and systematically collected. In turn, this information is used to establish sales quotas and assess performance.

However, insofar as strategic information and knowledge of the milieu is concerned, it is impossible to codify and transmit these intangible data in an integrated information system. The data can only be transmitted through interpersonal communications which naturally leave a large zone of discretion to the actors involved.

The proximity of Canadian management to execution, and conversely the distance separating headquarters management from operations, creates a situation conducive to effective decentralization and autonomy. It is difficult for headquarters management to challenge the Canadian management insofar as adaptation of local operations to the requirements of the national

environment is concerned. However, because of the integrated system required for the management of high technology products, the Canadian subsidiary is subject to a number of interdependencies related to development and manufacturing which tend to lessen its autonomy.

Autonomy of Local Operations

Except for 13 foreign IBM employees on international assignments in Canada, virtually all employees of IBM Canada, from the president to the factory worker, are Canadians. Personnel management is strictly a Canadian responsibility. It should be noted that IBM Canada also has 81 employees on international assignment in the United States, Western Europe, South America, and Asia.

Within the framework set by the IBM Corporation, the Canadian management has latitude in the internal allocation of its managerial and financial resources, in the elaboration of marketing strategies, and in the design of product and services geared to Canadian industry needs.

One may get a sense of the autonomy of IBM Canada's management, insofar as local operations are concerned, by analysing the process of developing the annual operating plan.

Example: The Annual Operating Plan Process

The planning process as it operates at the IBM Corporation and IBM Canada, serves three basic purposes:

a. It drives the system by stretching its revenue-generating potential and inducing binding commitments from operating units.

b. It serves as a major coordinating and planning tool throughout the organization.

c. It serves as a performance evaluation and control instrument both for the IBM Corporation and for IBM Canada, through the commitments which are extracted from all operating units.

The operating plans span a two-year horizon with a major emphasis on the first year. The planning process involves all levels of management at IBM Canada, i.e., Headquarters, Division, Function, Region, Branch and Department, as well as Headquarters' Management and Staff in the A/FE Corporation.

The operating plan itself comprises several targets and objectives, the main ones being sales and installation volumes, revenues, costs, expenses, profits and personnel resources; it is detailed and quantitative, and covers every element of revenue, cost and expense for every branch and department of

the company. Once the operating plan is in place, actual performance of the company's operations is measured against the plan on a monthly basis. As an integral part of this monthly review, the company monitors variances to the plan and if these variances should become significant, the company goes through the process of preparing a formal amendment to the plan. Because of the dynamic nature of the company's business, there is invariably at least one plan amendment each year, and sometimes more.

The formal plan cycle begins in June of each year. At that time, the A/FE Corporation provides the Canadian company with operating plan objectives, including sales, revenue, profit and resource objectives, and with assumptions which can be used in preparing the IBM Canada operating plan.

The objectives and assumptions represent the best judgment of what the A/FE management consider to be realistic targets for the Canadian company. These targets generally contain few surprises for the Canadian management, because the Canadian company and other parts of the IBM organization are continuously exchanging data and information on an ongoing basis, pertaining to all parts of the operations. In addition to this type of information, the A/FE Corporation is also receiving information on a continuing basis from the development and manufacturing groups and from other technical areas of the IBM Corporation. For example, the development group provides A/FE with information on new products to be announced and available during the plan period, and also information on any product enhancements or improvements which are planned for announcement. The manufacturing group provides information on manufacturing sources and on the projected costs of manufacture, as input to the planning process. The field engineering group provides information on various service ability assumptions.

The A/FE management also has information about a variety of international economic factors which they might consider relevant to the plan period. IBM Canada regularly provides information to A/FE management concerning Canadian economic indicators, as well as information on various external factors which could have an effect upon the Canadian operations. These external factors would include such items as proposed tax changes, government policy papers, legislation pertaining to foreign subsidiaries, the Anti-Inflation program, to name a few. In addition to all these inputs, the A/FE management is fully informed about the current operations in Canada and is able to assess whether the Canadian management is projecting significant variances which will have an effect on next year's operations. Equally important, A/FE management is aware of IBM Canada's performance over a period of time, and takes this into account when establishing targets for the Canadian operations.

In June, IBM Canada freezes its latest economic assumptions and provides these to the operating divisions. Each division then formally updates its sales forecasts and the related revenues. During this phase, each marketing representative is required to prepare a sales forecast for his own territory and the marketing staff organization at Headquarters matches up these forecasts against the product improvements and the new products which are expected to be announced during the plan period. The senior management of the Canadian company then reviews these forecasts and revenue projections in

relation to the objectives which have been provided by the A/FE Corporation. The Canadian senior management may then agree that the A/FE objectives are realistic and attainable, or may decide the Canadian company cannot accept these objectives, in which case there is negotiation with A/FE management until agreement is reached. Once agreement is reached, the Canadian senior management provides the key sales, revenue and profit targets to each of its Divisions. This phase of the operation plan process is usually completed in early July, and, during the remainder of July and the first part of August each Division prepares a detailed plan covering its operations. These plans encompass all elements of cost and expense required to achieve the projected business volume and revenues.

During this elaboration phase, there is continual dialogue between the personnel of IBM Canada's Divisions, the Headquarters staff, and the A/FE staff. For instance, the Divisions are consulting with the personnel staff at Headquarters regarding the compensation program, and with the Communications staff, to make known their requirements for product promotion, advertising, videotapes, etc. At the same time, the Division staffs are consulting with their counterparts in the A/FE Headquarters to ensure that they understand and agree with the various assumptions they have been given.

As the Divisions' plans begin to take final shape in August, the final review and approval process begins. At this stage, the Divisions' plans are tested and challenged by the various Headquarters' staffs. During this phase, there is considerable debate and issues are identified, and many of them are resolved at the staff levels. In September, the Divisions present their proposed plans to the Senior Canadian Management Committee and also identify the unresolved issues. The Headquarters' staff groups are also present at these meetings to present their views on the unresolved issues and to help identify alternative solutions. The senior management group examines the issues and assesses the alternatives which may be available. Following these reviews, Canadian management may conclude that the plan cannot be made to reflect the original objectives agreed to in June. If this should happen, Canadian management takes its business case to A/FE management and further reviews and negotiations take place until there is agreement on an acceptable plan. When agreement is reached between IBM Canada and the A/FE Corporation on the operating plan, the divisions of IBM Canada negotiate the detailed plans at the individual branch and department levels.

Negotiating the objectives to be incorporated into the plan and modifying them, is a good example of the operation of the contention system. For instance, in 1974, the office products sector of IBM Canada had difficulties meeting its sales quotas. Having assured themselves that previously accepted quotas were effectively too high in the light of present conditions, the Canadian senior management put together a business case and presented it on two occasions to the Office Product senior management in the United States. After much contention and debate, the Canadian senior management had its business proposal accepted, and sales quotas were revised downward.

World-wide plans are established for development and manufacturing operations. The Canadian laboratory and the Canadian manufacturing plants

are involved in planning activities which extend beyond the Canadian operations. Nevertheless, these operations, insofar as they pertain to Canada, are an integral part of IBM Canada's operating plan. Canadian management, therefore, is very directly involved with these plans and must be satisfied that the planned volumes and space requirements, capital expenditures, cash requirements, compensation and benefit plans, cost allocations, etc., are fully integrated with the total Canadian operations to produce an acceptable operating plan for the Canadian company (see Exhibit 11.

Capital expenditures for rental machines and parts are integrated in the annual operating plan and approval of the plan constitutes approval for these expenditures. Capital expenditures for plant, machinery and equipment are decided in Canada, though these proposals may be submitted to A/FE for review and approval. According to IBM Canada's management, there are relatively few capital expenditure requests which exceed the Canadian company's discretionary limits of authority.

The limits of authority vary according to the type of expenditures. Generally speaking, limits are fairly liberal for expenditures associated with current operations. For example, local management has authority to acquire lease facilities for its branch operations up to a value of $4 million. This limit is sufficiently high to let the Canadian management decide on most branch leases. For any capital expenditures involving new operations, such as buying land or erecting a new building, limits are set very low and for all practical purposes, such expenditures have to be approved by A/FE. In any event, the decisions concerning these types of investments are usually centrally coordinated and the need to have the capital expenditures approved by A/FE reflects this situation.* It should be pointed out that these types of investments occur very infrequently.

The operating plan is one of the most important management tools within IBM. It provides the company with a driving mechanism used to extract strong commitments from all operating units throughout the line hierarchy. The overall preliminary objectives, set in terms of sale and profit targets, are decided at the highest level of the Corporation and are deliberately set at very challenging levels. Using these as a base at the outset of the planning process, the whole organization, and in particular the senior management of the subsidiaries and of the IBM Corporation's operating divisions, enters in a seven month process of negotiating commitment of performance for the year ahead, on the basis of these high achievement objectives.

Interdependence with the System

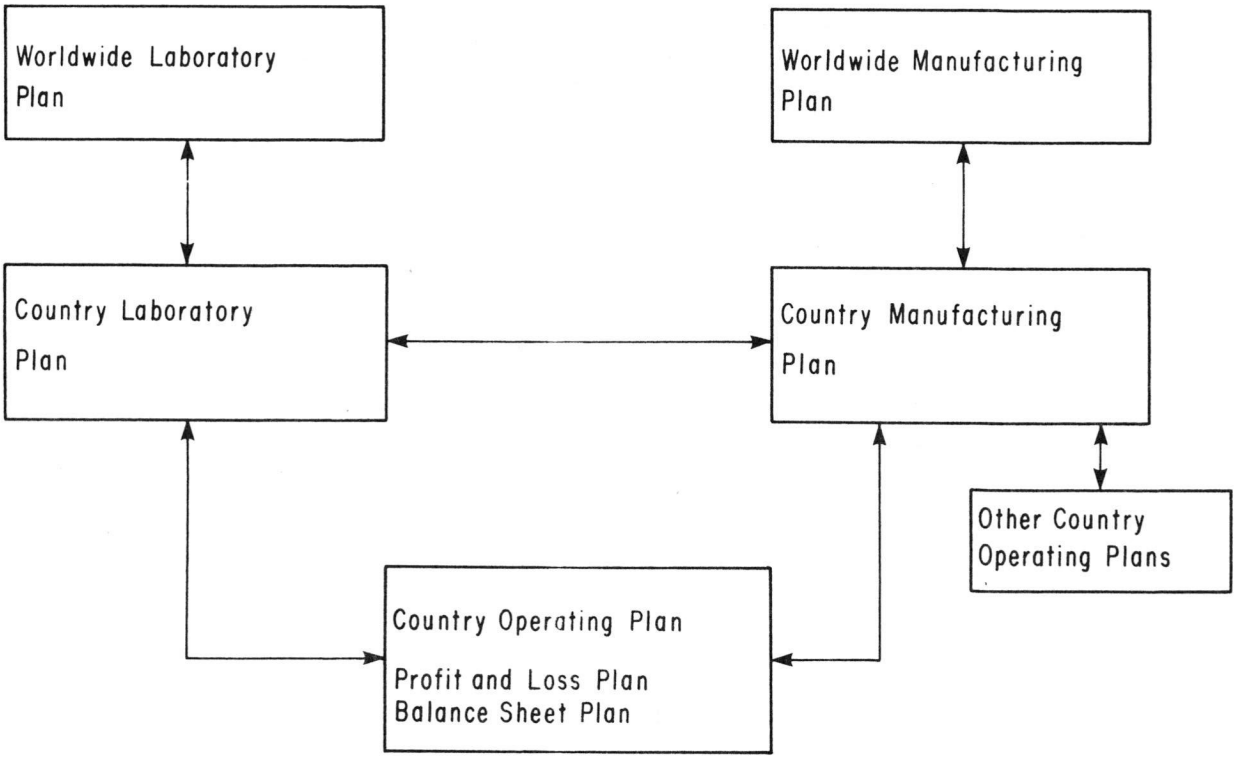
Given the nature of the rationalized system for product development and manufacturing some of IBM Canada's activities are highly enmeshed in an

---

* - Moreover, the IBM Corporation controls the design standards and the environmental impact of any facilities that it owns,

Exhibit II

Plans Interactions



interdependence network which is centrally managed. The operations of the Canadian Development Laboratory and the 1968 realignment of Canadian manufacturing missions, serve to illustrate this interdependence.

(a) The Development Laboratory

The Canadian laboratory was established in 1967 and presently employs over 300 persons. It is one of a network of 21 development units around the world. Outside of the United States there are development laboratories in Canada, Japan, Switzerland, Austria, Australia, France, Germany, Holland, Sweden and the United Kingdom.

The Canadian laboratory's budget in 1975 was approximately $10.7 million. Of this, approximately $8.3 million represented funding for a variety of projects from the IBM Corporation. $1.4 million represented product engineering work in Canada and $1 million was spent on specific Canadian product development. In its brief existence the Canadian laboratory has grown rapidly and has developed expertise particularly in software.

The size of a development laboratory is influenced by a number of factors such as the type of development activities, the amount of work being done to support manufacturing and funded out of product cost rather than from the world-wide budget, and the demonstrated technical competence of the laboratory. Moreover, the IBM Corporation does not automatically establish a laboratory in a country when sales reach a certain level. The size of a laboratory, once established, does not vary in proportion to country sales or personnel.

The IBM Canada laboratory performs four specific functions: Advanced Programming Systems, Special Engineering, Product Engineering and Canadian Development. The choice of these functions has been largely that of IBM Canada's senior management. In terms of laboratory skills the laboratory is more than 50% oriented towards software. The laboratory is self-contained; it has its own engineering design and its own computer operation. About two-thirds of its members have university degrees, and a significant number of the remainder have community college backgrounds. The scientific disciplines represented are primarily electrical and mechanical engineering, physics, mathematics and computer science. The increasing number of computer science graduates is in line with the shift to software development.

The Advanced Programming Systems section has become a centre of competence for the whole of the IBM Corporation, through its involvement in investigating the "front end" of the software development process within the customer's operations. A significant amount of money in the customer's installation goes into developing programs or applications to meet his specific business needs. The "front end" of the process, which includes creation, design and specification is a very costly and resource-consuming segment of that activity. Therefore, it is an area that the laboratory is trying to address, not only to automate but to make the computer more accessible to the non-data processing professional. The section has also been investigating aids and packages to test any applications or code that the customers generate on their installations.

The Canadian laboratory has also been engaged in some of the design activities of a large system to support the world-wide customer engineering needs in the IBM Corporation. Regarding program products, the Canadian laboratory has designed the PCP/7 and the CSMP. The Process Control Program/7 is basically a computer program for IBM's System/7. The function of this computer program is to monitor and control continuous industrial processes. The Continuous Simulation Modelling Program is a digital simulation of continuous systems. This program has been marketed in 12 countries throughout the world and it is used by universities, various manufacturers, research establishments and consultants.

The Special Engineering section's responsibility is the design and development of special products for Canada, Latin America and Australia, as well as for E/ME/A. This group is also responsible for the design and development of enhancements for the 129 and 5496 data entry world-wide and for various other products for A/FE and E/ME/A.

The Canadian laboratory has developed expertise in the design of off-track betting systems. IBM was asked to quote on some off-track betting installations throughout the world and the Canadian laboratory developed a product to address this need.

Another special engineering project concerns telephone data systems. IBM Canada was asked to respond to a need in Europe to support telephone exchanges which had 5,000 subscribers or less. The Canadian laboratory developed a small computer in a joint study with the Norwegian Telephone Company, and installed a prototype in an exchange in Tonsberg, a town located about 100 miles south of Oslo. Pursuant to the joint study, the program entered the formal development cycle and it was announced in A/FE and E/ME/A last year.

A final example is the design of the 3611 Banking Terminal. From some joint studies that were done with the Toronto-Dominion Bank and other banks in Canada, the Canadian marketing staff identified a need to build a unique passbook-only printer to meet Canadian banking needs. Subsequently, this requirement was refined, forwarded to A/FE marketing and then accepted for development. It was assigned to the Canadian lab for design. This is a good example in which a requirement within Canada was subsequently perceived as a need throughout the world and the product was ultimately announced as a world-wide banking terminal.

The Product Engineering group has world-wide primary engineering control for the 129 and 5496 data entry products. Thus, all further development of these products including any additional features or engineering changes is done within the Canadian laboratory. It is also responsible for supporting the Toronto manufacturing operations.

A section of the laboratory concentrates on development projects unique to Canadian customers. This group has been largely involved in the banking area and has developed the Canadian On-line Banking System or COLBS.

The Bank of Montreal project was the first in-house banking system for a chartered bank. The development involved terminal units and control units. Some of the loop-type communications technology that was used in that product was eventually adapted for the 3600 banking line which was announced later. Products were manufactured in Canada. Another significant project for the Canadian laboratory was a Department of National Defense inventory control system, which involved development and manufacture of a special terminal in Canada.

(b) Realignment of Manufacturing Missions

With the rationalization policy, IBM Canada assumed new data entry missions in data processing in 1968. For instance, it was assigned North American and subsequently world-wide responsibility for the 129 Data Recorder. In 1972, the Bromont plant was opened for the production of substrates for export to the United States. In 1973, data processing manufacturing missions were realigned,with IBM Canada becoming the main source for the following products for A/FE: data entry equipment, low-speed printers and small computer systems. In 1975, the Bromont plant was expanded to accommodate increased typewriter and magnetic card reader production.

This realignment of Canadian manufacturing missions should be seen against the background of the world-wide coordination of manufacturing activities within the IBM system. There is a central point for the manufacturing control and coordination of machine orders. Called CCOP (Consolidated Customer Order Processing), it is located in Sterling Forest, New York. The Data Processing Marketing Group and subsidiaries in A/FE and in E/ME/A, transmit their customer machine orders to CCOP where they are consolidated and redistributed to the various plants around the world for scheduling, manufacturing and shipment to the customer.

In the case of A/FE, orders coming from the branch offices are consolidated at various order control locations, one of which is in Canada. These locations in turn forward the orders to CCOP. In the United States, the branch offices utilize an on-line terminal system called Advanced Administrative System (AAS) through which their requirements are transmitted to CCOP. In the case of E/ME/A, a CCOP location in Havant, England, consolidates order activity. The two CCOP locations (Havant and Sterling Forest) teleprocess information back and forth on a daily basis, assign bills of material to the orders and in turn teleprocess the orders to the correct plant of manufacture.

PROCESS OF GAINING A FAIR SHARE

As has been shown, IBM Canada has considerable autonomy in designing and executing its annual operating plan. Nonetheless, the Canadian management is under pressure to meet ambitious sales growth objectives, just like other operating divisions of the IBM Corporation. Furthermore, the extent of interdependence of IBM Canada with other organizational units insofar as product development and manufacturing is concerned, has been illustrated

by numerous examples. In this section we will analyze the process by which IBM Canada enlarges its activities in the field of development and manufacturing.

The Process of Enlargement

In a situation of interdependence, any subsidiaries' management has a number of strategic options. It can attempt to:

1. Reduce the necessity for inputs and exchanges within the system and thus incorporate within its domain, self-sufficient research, development, and manufacturing activities that presently exist elsewhere within the system. This approach can be characterized as autonomy by isolation.

   In the case of the data processing industry where the rate of new product introductions is high, such a strategy, if it were possible, might have negative consequences for users. As previously noted, there are economic and strategic reasons for developing and manufacturing products on a world-wide basis. With a highly fractionalized and loosely coupled organization, the rate of new product introductions could be lower and the costs of products higher.

2. Plan the growth of the subsidiary, not only in terms of sales volume but also in terms of the acquisition of new product and manufacturing missions which heighten its interdependencies with the system, but lead to the development of specialized expertise and skill bases, which in turn increase the power of the subsidiary within the global system.

   This approach may be termed autonomy within interdependence. It calls for dynamic management and accommodation to nationalistic and government pressures by the acquisition of a fair share of responsibilities and missions within the integrated system. The Canadian senior management seems to have opted for the second option, by focusing on the incremental acquisition of autonomy.

The contention system and the rationalization policy of IBM permits negotiations and initiatives by aggressive subsidiaries to modify their jurisdiction and acquire new missions. In the highly competitive IBM system, a subsidiary, to use a laconic phrase, "gets what it deserves".

The factors which influence the acquisition of autonomy at the margin are of two kinds: permissive and strategic.

The permissive factors are those which refer to the resources upon which the Canadian top management can articulate business proposals for the acquisition of missions. These are:

a) adequate sales growth performance;

b) an appropriate skill base;

c) a demonstrated quality of management;

d) national government industrial policy objectives which enhance the local management's cases for the acquisition of new missions.

The strategic factors refer to the ability of the subsidiary management to play the game so as to obtain what the system allows. These strategic factors include:

a) the design of an information system so as to stay formally and informally alert to opportunities;

b) a dynamic style of management which scans the environment for opportunities and initiates proposals.

Without the existence of a solid and growing sales volume, it is difficult for the Canadian management either to build an organization with high quality manpower and expertise or to support their business proposals for the acquisition of manufacturing missions. Within the context of the rationalization framework, growing sales in a particular country lead to the recognition of the need to offset high levels of equipment imports for world-wide sources. As previously indicated in Chapter 2, during the 1960s, Canadian sales grew at a slightly faster rate than in the United States, but at a slower pace than in Europe.

In order to be in a position to acquire new product and manufacturing missions, a subsidiary must build a skill base that gives it a distinctive competence in areas that are critical within the system.

The elaboration of a skill base is a lengthy process which requires decisions at different points in time. The Canadian management has taken important strategic decisions such as orienting the development laboratory more toward software than hardware, and in acquiring manufacturing missions in the office products sector.

Examples of Enlargement

We will consider two cases of enlargement: the decision to orient the Canadian development laboratory toward software, rather than hardware, research and the decision to build the Bromont plant.

a) Software Orientation of the Laboratory

The decision to orient the laboratory more toward software than hardware is one that the Canadian management took by assessing the uncertainties and opportunities involved: it was not, it appears, centrally imposed. The decision came as a result of the diagnosis of a number of trends in the evolution of data processing technology. These trends show that the glamor

of building central processing units is still very big indeed, but the reality of data processing systems architecture is one of assembly of circuits integrated into cards.

Authoritative studies of trends in data processing budgets have concluded that the largest proportion of the data processing budget in the future will be that spent on non-hardware items. Data processing equipment is effectively providing more performance per dollar spent and the less controllable cost has now become that of salaries for the end users of systems. Therefore, the requirement to make the user of a computer complex more productive has clearly emerged. Many suppliers and users have concluded that systems must be more reliable to give users and their application programs continuous access to the machine via terminals.

As customers add application programs, the system control programs that are controlling the central processing units have now become complex and in addition, application programs have also grown more complex. The significant use made of data base and data communications (DB/DC) systems in the third generation era is increasing and the requirements for better DB/DC systems are growing.

Finally, the trend in systems use is toward on-line processing, that is the accessing of computers at sites remote from the actual processing and toward allowing the person who is accessing the machine (the end user) to relate to his application program without the need for a sophisticated understanding of the technology.

The general orientation of the laboratory in software development is criticized by some observers, notably in government and academic circles, on two grounds. First, software technology offers less manufacturing spin-off potential than hardware technology,especially in the IBM system, where product technology is controlled by the development laboratory responsible for hardware development. Second, software development at the Canadian laboratory is not of the highest level (such as basic system architecture); it is said to be not of the most sophisticated and advanced type because of its emphasis on custom projects with limited potential for generalization. The critical areas of development in software technology are carried out in research laboratory and not at the development laboratory level.

Any evaluation of the decision by IBM Canada to channel its development expertise in the area of software should be based on two considerations. First, the potential of software development work, relative to that of hardware development work. Although comparisons are difficult to make, IBM Canada considers that in the long term, the potential of software development is just as large if not more so than that of hardware development. Second, one has to consider the competitive situation in the development area within the IBM system that existed in the late 1960s and the early '70s. If entry conditions were more permissive in software development, the decision of IBM Canada may be justified strictly by competitive criteria.

b) The Decision to Build a Plant at Bromont, Quebec

The decision to build the Bromont plant is a good indicator of the interdependencies in manufacturing and of the strategic planning role which the Canadian management plays in the development of the company's activities. The decision took place naturally within the framework of the rationalization policy and in a context of competition with other manufacturing plants which had adequate technological skills.

In the late 1960's it became apparent that the IBM Corporation needed additional plant capacity for the manufacture of micro components. Through their day-to-day contacts with the world-wide manufacturing organization, IBM Canada's management became aware of this opportunity. The Canadian management had been looking for opportunities to expand manufacturing facilities in Canada, and concluded that it was in a position to put forward a strong business case in this regard. The Canadian management was also aware that a new components manufacturing facility would be in keeping with the Canadian government's objectives for the data processing industry in Canada, i.e., to increase exports to offset the high levels of imports from the United States and other countries.

One of the very early steps was to identify a suitable location. A search was undertaken, and Bromont, Quebec was selected. The site was ideal in many ways:

- There was an adequate pool of necessary skills within the area, including CEGEP and university graduates;

- It was within driving distance of what would become an affiliated plant in Burlington, Vermont;

- It would provide IBM Canada with an opportunity to decentralize its manufacturing operations which up to this point had been concentrated in Toronto; finally,

- It was a move that would be encouraged and welcomed by both the Federal Government and the Quebec Government.

IBM Canada's management proceeded to develop a detailed business case based on the Bromont site and presented it to Corporate management. After considerable discussion and evaluation, the Canadian proposal was accepted and the IBM Corporation through IBM Canada, committed itself to a substantial capital investment and the provision of workload to sustain the new plant facility. One of the factors that strengthened the Canadian business case was the possibility of receiving DREE grants, Bromont being located in a designated area. However, grants were only one of the several factors which were considered in reaching the final decision.

As a result of changes in technology, which have greatly reduced the demand for the types of components being built in Bromont, the original

mission there has been largely replaced. Over a period of time, the Bromont Plant will become an office products manufacturing location. That decision has been made by the Canadian management as a result of a business proposal. The original plant opened in 1972, with 204,000 square feet. It was enlarged in 1975 by 186,000 square feet, on the same site. Today, IBM employs over 600 people in Bromont.*

CONCLUSION

The analysis that has been undertaken in this chapter leads us to conclude that IBM Canada is acting as a quasi-independent business insofar as domestic operations are concerned. IBM Corporate management confines its control to variables and policies which they consider critical for the system as a whole, namely growth and performance targets, large capital expenditures, business policies, new product development coordination and manufacturing missions allocation. The basic driving mechanism of any IBM subsidiary is the annual plan, which is negotiated with IBM Corporate management and which defines a set of objectives to which the subsidiary management is strongly committed.

Within the constraints set by the standard policies, the centrally managed items and the objectives of the annual plan, IBM Canada has much latitude in the conduct of its operations and in the orientation of its development. IBM's organizational climate and policies foster and encourage competition and negotiations among its various units on any contentious issue, within the boundaries set by the rationalization of tasks.

IBM Canada's development in the context of that organizational structure has been rapid in the past eight to ten years. It has acquired important manufacturing missions and has developed a strong base in key entry and word processing products; both are categories of products which should become increasingly critical with the expansion of the distributed processing mode of system architecture. In 1967, IBM Canada had much less than its "fair share" of IBM's manufacturing capacity, if "fair share" is measured by comparing the relative importance of IBM Canada's domestic revenues and domestic production within IBM. It has now more or less achieved parity in terms of manufacturing output. The development laboratory, created in 1967, employed more than 300 people in 1976. Whether its basic orientation towards software development is sound from a strategic point of view is a

---

* - The original grant from the Department of Regional Economic Expansion (DREE) was of the order of $6 million, on an overall projected investment of $23 million. DREE grants are based on the size of the capital investment and on projected employment and are disbursed over a period of several years. When the mission of the plant was changed, $3 million had been disbursed and it was then agreed between IBM Canada and DREE to forego the balance. No grant was asked for the 1975 addition to the Bromont plant, although it was eligible.

matter of opinion and only time will tell whether IBM Canada's choice of orientation was judicious. Finally, a number of new products both in the software and hardware areas have been designed in Canada to meet specific Canadian users' requirements in industries such as banking, insurance and brokerage. In the next chapter we will discuss in greater detail the programs developed by the Canadian management to adapt to the socio-political environment of Canada.

• • •

Let us assume for a moment that the IBM Corporation were a Canadian-owned-and-managed enterprise and then ask ourselves what differences it would make. First, the requirements of competition and the key administrative and organizational tasks would remain the same. As a consequence, similar organizational design premises would probably be adopted.

Second, the important markets being the United States, Western Europe and the rest of the world, one would see a number of subsidiaries with marketing, service, development and manufacturing activities. Manufacturing and development activities would be centrally coordinated in Canada because of the need to rationalize activities, but actual operations would be distributed in many centres because of the necessity of adapting to the requirements of diverse national interests and governmental pressures. Competitive pressures and the need to manage the orderly flow of technological skills would militate in favor of the adoption of a rationalization policy. The deployment of activities would closely resemble that which was observed in this case study.

Third, foreign subsidiaries would be managed by nationals, not only because of constraints in the supply of Canadian managerial personnel experienced in international operations but also because of the need to conform to legitimate foreign concerns and to adapt to national "milieus".

Fourth, one would expect to see a corporate headquarters located in Canada and probably a research laboratory and a few development laboratories. The hypothetical corporation would channel royalties on technology toward Canada but would redistribute a good portion of it to laboratories scattered around the world.

Research laboratories however would be located in other countries besides Canada because of the availability of highly qualified scientific manpower resources in the United States and in Western Europe and the limited supply of such resources in Canada.

In brief, the architecture and modes of operations of the hypothetical corporation would be quite similar to the one observed in this case study. Nonetheless, the overall proportion of the employees of the corporation who would be located in Canada might be superior by a few percentage points

(as compared to present), because additional technological and administrative activities would then take place in Canada rather than in the United States. Along with royalty and dividend payments, this would be essentially the only difference.

It is interesting to note that Massey-Ferguson, one multinational enterprise which is Canadian-owned, has been a pioneer in the design of rationalization policies in manufacturing and product development, as opposed to American competitors like Deere and Case, which have important domestic markets. Massey-Ferguson has been obliged to focus its activities in foreign markets. As a consequence, it has adopted a number of policies which lead toward internationalization of markets, rationalization of tasks and naturalization of subsidiaries.

CHAPTER 5

IBM CANADA'S POLITICAL POWER

Political power is viewed as a process of influence by which IBM Canada could be conceived as trying to use its resources to influence political elites and government officers in order to affect the outcome of public decision-making in its favor.

The chapter will be divided into two distinct sections. First we will undertake a short review of a number of issues related to the alleged power and influence exerted by corporations and their managers. Then we will look at three areas where indications of discretionary use of "slack" in economic resources by IBM Canada's top management to influence the activities of government might be observed. The alleged political power might be observed from a combination of activities in three areas.

1. political donations

2. lobbying activities and their outcomes

3. relations between elites, or the "Bohemian Grove" hypothesis.

Commercial relations between IBM Canada and the various governmental authorities are not discussed in this chapter. Although IBM Canada is a major supplier of data processing equipment and services to government, IBM Canada's conduct with respect to these sales conforms to accepted norms of competitive behavior.

POLITICAL POWER AND THE CORPORATION: SOME ISSUES

Effective organizations achieve high returns not only through efficient internal economic management but through favorable transactions with their economic and political environment and by securing commitment, contributions and identification from their employees. The fact that corporate management attempts to motivate employees and controls the internal decision-making process is not seen as a source of major social problems. However, it is the possibility that corporations, especially multinational ones, can exert private external political power that inspires a sharp debate in public circles. In Canada, the importance of foreign ownership has brought the added dimension of whether private political power is being exerted by foreign interests or their representatives.

Let us look briefly at a few of the main themes that are discussed in the social science literature and in public discourses. Our purpose here is not to settle these issues but to indicate some of the reasons for the

concern about the political power of multinational corporations operating in Canada and to identify areas where manifestations of political power might be observed in the specific case of IBM Canada.

The first theme is that economic surpluses could be used by corporate management to gain political advantages. Many economists and sociologists note that corporations create slack resources which can be utilized in a discretionary fashion by top managers. Slack resources can be allocated by top management internally to powerful interest groups or externally to gain market and political power. Thus, economic slack might be invested by managers who control the corporation, in political activities in order to influence the legislative process, to maintain favorable governments and to increase the acceptance of their managerial ideology in society. These fears have been exacerbated by recent disclosures in the United States and Canada of illegal political donations and bribes paid by large private and public corporations to political officers. Yet, many of these payments were made in order to sell products and not necessarily to gain political power.

The second theme is that corporate elites not only escape democratic control but are in a position to influence political elites and senior government officials. Private power centres, even if the power held by socially responsible professional managers, are seen as illegitimate because they escape democratic control and are judged not to be sufficiently kept in check either by stockholders or by democratically elected public representatives. This is especially true of multinational enterprises which are said to operate in ways to escape, to a large extent, public control by national governments. Furthermore, many radical critiques view the leaders of business and public enterprises as constantly originating from the upper class (or assimilated into it).

Not only are private power groups insufficiently checked, it is argued, but they are in a position to influence and co-opt public authorities or public servants by subtle mechanisms of elite interactions. Club memberships, continuous interactions and common experiences are said to give the business elite a privileged access to government decision centres (sometimes including labor union officials). Relations between business, government and cultural elites lead to a meshing of powerful groups thus creating the conditions for social engineering activities favorable to these elites. This meshing of elites is often referred to as the "Bohemian Grove" hypothesis.* These intercourses between distinct elites lead to policy-planning and to the emergence of a cohesive national upper class which communicates its plans and opinions to government authorities (Domhoff, 1975). The third theme is that these interactions between private and

---

* - The Bohemian Grove is a select club in California which organizes meetings and retreats where top executives, government officials, academics and artists meet in plush surroundings and discuss social and political problems.

public elites lead to the emergence of a cohesive ruling class which conspires to run society. The conspiracy theory of society consists in the identification of groups of men who plan and bring about their visions and conceptions of social arrangements by virtue of the fact that they control more power resources than other citizens.

Those who share the conspiracy theory of society argue that power is concentrated in a united and solidary ruling elite which manipulates laws that regulate the system and dominates social structures through force and constraint. Some studies of institutional and community power tend to conclude that business is the dominant group and that the political sphere is, in many ways, subservient to business (Hunter, 1953, Mills, 1966 and Domhoff, 1971). This ruling elite controls the mechanism of social mobility, conspires in the board room and turns politicians into puppets of the businessman, it is said.

Two Canadian studies adopt the conspiracy theory and conclude that the political sphere and the state find it difficult to resist pressures from the private sector. First, an institutional study by sociologist Wallace Clement, (1975), attempts to replicate John Porter's well-known study, The Vertical Mosaic. Clement, by using the same methods as Porter, tries to show that the economic elite of Canada in 1972 is more exclusive in social origins, more upper class and more closely knit by family ties than in 1952 and that entries into boardrooms were few for those of non-British origin. Furthermore, Clement argues that, given links between the mass media and big business, the latter use their power to subvert the public interest. Big business controls two important functions in society, namely creation of ideology and money-making and is thus in a position to impart its preferred view of the world to readers and audiences. In Canada's economic history, according to Clement, two major processes have unfolded: increasing centralization and concentration into fewer and larger firms, and increasing penetration of the economy by foreign corporations, especially U.S. direct investment. Direct foreign investment by multinational enterprises has had a significant effect on the structure of the economic elite. Two types of business elites exist in Canada: first, the indigenous elite, which is closely associated with Canadian-owned enterprises in the areas of finance, utilities, and transportation, with smaller participation in manufacturing and resource-based industries. Second, a comprador elite which is composed of the senior management and directors of international corporations operating in Canada, mainly in the manufacturing and resource sectors. This group, according to Clement, is subservient to foreign parasite elites which control major multinational corporations. The comprador elite parallels rather than displaces the traditional indigenous elite. Moreover, the comprador elite has only secondary power within the overall multinational framework and is continentalist in its orientation.

The second study is the doctoral dissertation submitted at the University of Toronto by Pierre Fournier.* It concerns the political power of 100

---

* - Now published under the title The Quebec Establishment.

large businesses in Quebec. The argument, based on questionnaire responses, is that business institutions and the individuals who manage them dominate the economic structure of Quebec and also wield a substantial amount of political influence (Fournier, 1976).

The conspiracy theory is not the sole mode of explanation of social reality. A number of sociologists and political scientists have argued that society is a complex system held partly by shared values and in which power is diffuse and checked. Their writings constitute the pluralist approach to the analysis of power in society. Pluralists argue that decision-making centres in society are heterogeneous, conflictual and segmented. Moreover, politicians, senior government officials, and other leaders who are not directly connected with the profit-making sector act autonomously.

The pluralists recognize the existence of private power enclaves such as corporations, unions or interest groups, which contend with governments, but do not see these as forming a cohesive group. Studies by Robert Dahl and others conclude that elites are heterogeneous and that political decisions bear on specific issues where different interest groups employ power resources such as money, patronage, etc. to exert influence (Dahl, 1961). For every issue, one is likely to find a different distribution of power. For any issue, different actors are activated who have different values and demands, and the outcome is not always in favor of one particular group. Few men or groups have enough resources to consistently achieve their preferred outcome. Moreover, no one is totally lacking political resources. Slack economic resources held by corporations are not easily transformed into political resources. The aggregate political resources of interest groups offset the concentrated economic resources of the wealthy. Power is widely dispersed, yet it may be concentrated in different organizations which are in conflict of interest situations. There is thus elitism in pluralism as a result of differential participation.

In view of the difficulties involved in defining and measuring political power, it is not surprising that the evidence concerning power distribution in society is inconclusive. Collected data is thus interpreted along the lines of <u>a priori</u> conceptual schemes and preferred models of society. Some view society according to the power conspiracy paradigm and thus describe power as concentrated in a ruling elite, while others adopt the integrative pluralist model and describe power as diffuse, in spite of the presence of competing private and public elites.

Moreover, strong disagreements arise concerning the definitions of elite, ruling elite, and power. Differences in the observed distribution of power are often related to methods of measurement. As C.W. Gilbert has shown, results reported and methodologies used are highly correlated (Gilbert, 1968). Reputational techniques and institutional studies generally conclude that power is concentrated, while studies of decision issues and participant observation arrive at different findings. Studies by sociologists generally come to the conclusion that power is centralized, while studies conducted by political scientists often conclude that power

is dispersed within a complex system. The choice of an interpretation model is not easy and the evidence is conflictual. A scholar who has a proper research methodology and attempts to correct all biases finds it difficult to paint a picture of reality which conforms to ideological presuppositions (Porter, 1975). Karl Popper, a noted philosopher of science, who argues that the task of social science is to analyse intentional human actions within institutions and their unintended consequences strongly criticizes the conspiracy theory of society (Popper, 1965).

> I do not wish to imply that conspiracies never happen. On the contrary, they are typical social phenomena. They become important, for example, whenever people who believe in the conspiracy theory get into power. And people who sincerely believe that they know how to make heaven on earth are most likely to adopt the conspiracy theory, and to get involved in a counter-conspiracy against non-existing conspirators. For the only explanation of their failure to produce their heaven is the evil intention of the Devil, who has a vested interest in hell.
>
> Conspiracies occur, it must be admitted. But the striking fact which, in spite of their occurrence, disproves the conspiracy theory is that few of these conspiracies are ultimately successful. Conspirators rarely consummate their conspiracy.
>
> Why is this so? Why do achievements differ so widely from aspirations? Because this is usually the case in social life, conspiracy or no conspiracy. Social life is not only a trial of strength between opposing groups: it is action within a more or less resilient or brittle framework of institutions and traditions, and it creates - apart from any conscious counter-action - many unforeseen reactions in this framework, some of them perhaps even unforeseeable.

IBM CANADA AND POLITICAL POWER

For the purpose of this study, political power is viewed as a process between two groups of actors: the first group of actors is the top management of IBM Canada while the second group of actors is composed of elected representatives and senior public servants responsible for public policy. The first actors can use political resources such as donations, representations or lobbying activities in order to influence the outcome of decisions critical to the data processing industry and to IBM Canada.

We have chosen to assess the political power of IBM Canada by looking at three phenomena:

1. Political donations
   A portion of the economic surplus of IBM Canada might have been used for political donations to different provincial and federal parties.

2. Elite interpenetration
IBM Canada's top management may be involved in social clubs or political parties and thus have a privileged access to government decision centres.

3. Lobbying activities
IBM Canada or the data processing industry may invest substantial resources in trying to influence the outcome of decisions by civil servants, regulatory agencies or politicians in a way favorable to their interest. Four specific cases will be discussed.

POLITICAL CONTRIBUTIONS

For over 35 years, IBM Canada contributed regularly to major Canadian political parties, both at the federal and the provincial level. The officers involved in these remittances were the president, the vice-president of finance, and on occasion the regional marketing vice-presidents. The secretary of the company, who was also responsible for communications with governmental authorities, was kept informed. The board of directors was aware of IBM Canada's policy on this matter. Known to the auditors, these contributions were never considered as deductible expenditures for tax purposes. From 1970 to 1974 inclusively, total annual contributions averaged $36,000 a year. In 1974, a year when federal elections were held, they totalled $67,500, the largest total amount of political donations.

Contributions were paid both to federal and provincial parties, and were usually split roughly equally between two major parties in the jurisdiction, except in provinces where the New Democratic Party was such a party. No contribution was ever channelled to the New Democratic Party because no requests were made by this party.

There is no evidence to suggest that the contributions were used for specific political purposes, but rather that IBM Canada followed a standard practice of large Canadian corporations, which at that time was legal, generally accepted, and fairly well-known. According to IBM Canada, "political contributions by Canadian companies, in support of the Canadian political process and in accordance with the Canadian law, are appropriate".*

The fact that IBM Canada made contributions to political parties was not known at the IBM Corporation, at least at the level of the Office of the Chairman. Moreover, IBM Canada was the only IBM affiliate which was following this practice. On July 31st 1975, IBM Canada decided to abide "to a single world-wide IBM policy on this matter and, accordingly, to forego the practice of making political contributions".*

---

* - From a letter of Frank T. Cary, Chairman of the IBM Corporation sent to the IBM Corporation's shareholders and quoted in an IBM Canada press release, dated August 1, 1975.

The issue is whether IBM Canada made these contributions to gain special treatment from politicians. No evidence supports this hypothesis. First, IBM Canada's donations were always made in response to requests by political parties. The large contributions of 1974 resulted from larger than usual requests from political parties whose treasuries had been depleted in the 1973 general election. Second, the amounts donated by IBM Canada are trivial in light of their annual profits and of the economic issues where IBM Canada could benefit from special treatment. For instance, on a single issue (to be discussed later), IBM Canada is involved in a dispute with both the federal government and the Ontario government over a tax measure which cost IBM Canada $1.8 million in 1975.

ELITE TRANSACTIONS

This study found no evidence that IBM Canada's senior managers regularly interact at the social level with public figures. Moreover, contacts for official business purposes are relatively few.

Contacts with cabinet members or government officers take place openly either directly or through the Canadian Business Equipment Manufacturers Association. During the course of a typical year, the president of IBM Canada and the general counsel can have four or five telephone conversations with cabinet members either at the federal or provincial level. Often, these conversations are initiated by the cabinet members themselves as part of consultations which they hold with the senior officers of many Canadian firms. On a few occasions, IBM Canada's senior officers have met officially with cabinet members and senior government officers. These meetings were requested either by the government or by IBM Canada or by CBEMA. No personal relationships were involved but only official ones.*

IBM CANADA'S LOBBYING ACTIVITIES

Corporations interact more and more with government authorities. The broadening role of governments in the Canadian economy generates an increase in the number of occasions where corporations feel that they should make their points of view known to governmental authorities. Moreover, as governments increase their role in the economy, they solicit the views of of corporations. In fact, governments appear to have become the main initiators of corporate representations to the governmental authorities.

---

* - However, some cabinet members and deputy ministers are invited to attend "Executive Briefing" sessions, in their role as "chief executive officers" of departments which are customers or potential customers of IBM Canada. The invitations are extended by marketing executives. "Executive Briefings" last from one to several days and may be held in Canada or in the United States. Moreover, numerous elected officials and civil servants have visited or attended one-day seminars on data processing at the Ottawa Presentation Centre, a facility maintained by IBM Canada in Ottawa. All costs associated with these activities are borne by IBM Canada.

The word "lobbying" is used to describe the corporate activity of making representations to governments and it should not be interpreted in any pejorative way. It consists basically in presenting solicited or unsolicited briefs to committees, task forces or working groups composed of middle and senior civil servants. These presentations are sometimes followed up by exchanges of correspondence and of additional less structured meetings. Only seldom does it involve any political figures of cabinet rank.

IBM Canada's lobbying activities are carried on either by IBM executives or through the Computer Group of the Canadian Business Equipment Manufacturers Association (CBEMA). IBM Canada does not employ any outside "consultant" for the purpose of representing it to governmental authorities. Whenever appropriate, IBM Canada prefers to channel its representations through CBEMA where it is an active member of the Computer Group. This Group is made up of the following companies:

- Burroughs Business Machines Ltd.
- Control Data Canada Ltd.
- Hewlett-Packard (Canada) Ltd.
- Digital Equipment Canada Ltd.
- Honeywell Information Systems
- IBM Canada Ltd.
- NCR Canada Ltd.
- Olivetti Canada Ltd.
- Phillips Electronic Industries Ltd.
- Sperry Univac Ltd.

Given the experiences of the computer industry with anti-trust related matters in the United States, it is not surprising that the activities of the Computer Group of CBEMA are mostly limited to channelling to the various governmental authorities, and in particular the federal government and its agencies, the common point of view of the computer equipment manufacturers.

Four issues have been selected to analyse IBM Canada's lobbying activities. The selected issues cover a wide range of areas and reflect the overall lobby activities of IBM Canada.

1. The tariffs on imports of computers.
2. The Ontario Government's disallowance as deductible expenditures for tax purposes of 5/12 of royalties paid to related non-residents since 1973.
3. The regulations governing the interconnections of a user's own equipment to federally regulated common carriers' facilities.
4. The Department of Communications policy regarding private and public telecommunication networks.

During the course of this study, other issues of lesser importance where IBM Canada was involved in lobbying activities were assessed but are not discussed here: the purchasing policies of the federal government with respect to the Canadian content, the revision of the capital cost allowance on computers, the federal sales taxes on computers.

1. The Tariff Classification of Computer Equipment and Components

The Tariff Board in 1972 solicited briefs from interested parties on the subject of revising the structure of the Canadian customs tariff on computers and related telecommunications equipment.

Computers and computer parts are presently found under various classifications. Most computer equipment and components are subject to a most-favored-nation (MFN) tariff of 10% although MFN tariffs applicable to computer equipment and components vary between 0% and 20%.

Canadian computer users, on the whole, favor the elimination of the tariff on computer equipment and components. Most computer equipment sold in Canada is imported. Moreover, the size of the Canadian market does not justify the establishment of Canadian production plants to manufacture the complete computer product lines. Thus, according to users, tariff is equivalent to a revenue-grossing tax on Canadian users of computers. One of the best organized users' group, the Canadian Association of Data Processing Services Organization (CADAPSO) has been making annual representations to various federal government authorities in order to obtain a revision of the tariff on computers.

The Computer Group of CBEMA, and some of its members acting independently, have submitted briefs to the Tariff Board. Generally, their briefs called for a revision of the various classifications pertaining to computer equipment and components and lower tariffs on computer and computer related equipment and no tariff on computer components.

The industry, in asking for a revision of the classifications, was requesting two new classifications, one for computers and maintenance parts and one for manufacturing components. This was justified by the manufacturers mostly on the basis of administrative efficiency.

> The multiplicity of tariff classifications and rates impedes import procedures not only for IBM Canada Ltd., but all Canadian data processing manufacturers and the Canadian Customs as well. It results in the preparation of complicated multiple line, multiple page import entries for each shipment of parts and the separate classification of each part number even though the parts are used to manufacture one product line, namely data processing equipment. Also, each entry must be checked by Customs. This procedure adds substantial unnecessary costs to both the importer and Canadian Customs.*

---

* - IBM Canada, April 1972.

Lower tariffs were justified on the basis of the particular structure of the Canadian industry which is highly integrated with that of the United States. The tariff's main effect is to increase the price paid by Canadian users for their equipment. They do not in any way "protect" Canadian manufacturers and thus do not in any significant manner stimulate Canadian production. Moreover, CADAPSO members were worried about competition from U.S. Service Bureaus who can sell their services at lower prices, since there are no duties on the import of computer services. Based on IBM Canada's data, we estimate that the tariffs result in a price increase of about 5% on computer equipment sold in Canada.

IBM Canada's brief to the Tariff Board also suggested the application of an "earned concept" to establish the annual value of imported goods by a specific company which would be subjected to the tariffs. Under the concept, a company could earn the right of importing duty-free equipment by increasing its Canadian production by an equivalent amount. A three-year phase-in period was suggested.

According to IBM Canada, this proposal would encourage production of data processing equipment in Canada and would also result in lower prices as, under its proposal, manufacturers must pass on any cost savings to the user.

The adoption of the "earned concept" would benefit IBM Canada more than any other computer manufacturer in Canada since IBM Canada has the largest Canadian manufacturing base. (Control Data Canada Ltd. is the only other major computer manufacturer with substantial manufacturing capacity in Canada.)

Nevertheless, the "earned concept" has some merits in an industry where the economies of scale definitely do not justify fully integrated manufacturing operations. As has been said before, the present tariffs result mostly in higher prices for Canadian users, and do not in any significant way encourage Canadian production.

One can argue with the specifics of IBM Canada's proposal, and in particular whether the base for earning the right to duty-free import should be an equivalent increase in Canadian production. A stronger argument could possibly be made for using exports as a base for earning this right.

The "earned concept" was developed by IBM Canada's management and submitted formally to the Tariff Board in 1972. Moreover, IBM Canada referred to it in many subsequent briefs to various federal departments. However, there is no hard evidence that a concentrated high priority lobbying effort has been associated with the promotion of the concept. Yet it represents an original contribution of IBM Canada to the public debate on the revision of the Canadian tariff structure.

2. The Disallowance of 5/12 of Royalties by the Ontario Government.

On April 12, 1973, Mr. John White, then Treasurer of the Ontario government, announced in his speech on the budget, that 5/12 of royalties or similar payments paid by a company to related non-residents would not be allowed as a deductible expenditure for the purpose of computing the Ontario Corporate income taxes. IBM Canada was probably the company most affected by this fiscal mea re. In 1975, the disallowance increased its tax payments to the Ontario government by $1.8 million. In 1973, the Ontario government had forecast annual additional revenues of $5 million from this change.

At the time, the federal government imposed a 15% withholding tax on all royalties paid to non-residents. This withholding tax is incorporated in the Canada - U.S. tax convention. For some time provincial governments, and in particular the Ontario government, have tried to get from the federal government a fair share of the proceeds of these taxes. So far they have not been successful.

The evidence we have seen suggests strongly that the Ontario disallowance measure was implemented mainly to increase the pressure on the Federal government to share the proceeds of the withholding taxes. The Ontario measure is equivalent to about one-third of the federal withholding taxes. However, it applies only on royalties paid to related non-residents whereas the federal withholding taxes apply to all non-residents. The Ontario measure effectively increases the total taxes on royalties from 15% to 20%.

It seems that the Ontario government would consider withdrawing this measure if the federal government would consent to share the proceeds of the withholding taxes. However, it has been more than three years since the measure has been adopted and there is no indication that a breakthrough is coming soon.

IBM Canada mounted a strong "lobbying" effort to bring about a resolution to this deadlock since it is uniquely affected by the measure. Royalty payments are relatively important in the IBM system (about 10% of gross revenues). Royalties cover among other things, development costs, technical information, development of educational material, along with the usual right to patents, trademarks, copyrights and access to know-how, software and supporting documentation. For most foreign-owned Canadian subsidiaries, development costs, technical information and the development of educational material are incorporated in the transfer prices and are not covered by royalty agreements. In IBM's case, transfer prices do not include these costs which are covered by a separate royalty agreement.

Within the IBM system, transfer prices for equipment are based solely on manufacturing costs. IBM Canada has argued that its royalty agreement is fair and equitable for Canada. The comparison of IBM Canada with other Canadian manufacturing companies, particularly in related sectors, does show a much higher profitability for IBM Canada. This is indirect evidence that royalty payments are not used to transfer before-tax-income from IBM Canada

to IBM Corporation.* Moreover, the fact that the royalty agreement has been accepted by the Department of Revenue indicates that it meets the "reasonableness" criterion.

Because of its unique royalty agreement, IBM Canada is in all probability the company most severely affected by the Ontario measure. Feeling that it was caught in a federal-provincial jurisdictional conflict over tax sharing, IBM Canada has been making continuous representations both to the Ontario government and to the Federal government. Over the past three years, on numerous occasions, it has met or written to, among others, the Ontario Treasurer, the Ontario Minister of Revenue, the Ontario Minister of Industry and Tourism, the Ontario Premier and the Federal Minister of Finance, to try to correct what it felt was an inequity. Under the Canada-U.S. tax convention, withholding taxes on royalties paid to non-residents are limited to 15%. Despite this, IBM Canada has not been able to convince either the federal government nor the Ontario government that its royalty agreement was not a suitable battleground to settle a federal-provincial tax dispute.

3. The Interconnection of Users' Owned Equipment to Common Carriers' Equipment

Common carriers (i.e. telephone, telegraph and telecommunications companies) have traditionally defended aggressively their right to approve and often to own any equipment which gives access to their networks. Telecommunications is becoming an integral part of most large computer systems. When a machine "talks" to another machine through the facilities of a common carrier, it is important to decide at exactly what point the "exclusive territory" of the common carrier begins, and who should specify the interconnection standards between the user's equipment and the common carrier equipment.

The computer manufacturers are deeply involved in this issue, since they manufacture most user equipment, while common carrier equipment is manufactured mostly by the telecommunications manufacturing industry. The issue has two questions:

1. Where should we draw the frontier between user's controlled equipment and common carrier equipment? This will delineate the market accessible to the computer equipment manufacturers at the periphery of the common carrier controlled equipment market.

2. Who should elaborate the standards for the interconnection equipment? The computer equipment industry is opposed to letting the common carriers specify these standards on the basis that the common carriers could specify overly restrictive standards. Moreover, it wants to minimize the administrative procedures associated with certifying the equipment and make sure that the certification process is supervised by an independent party and not by common carriers.

---

* - In the period 1971-1975, IBM Canada's net before-tax-profit rate on sales averaged 17.5%. According to Statistics Canada, the equivalent statistics for all Canadian industries was 7.2% and for manufacturers of electrical products, it was also 7.2%.

The federal government has sustained a public debate on the Canadian communications policy since 1969, through the publication of various working papers, studies and position statements on the subject.* In 1973, it commissioned 22 working groups of civil servants to study various aspects of the computer communications industry.

The computer manufacturers cooperated closely with the various working groups. The computer group of CBEMA was their main channel of communication.

At the outset, the position of the federal government on the specific issue of interconnection was closer to the position of users and manufacturers than to the position of the common carriers. This was evident in one of its earlier public reports, "Branching Out", published in 1972. Moreover, in a 1973 position paper, the following statements were made by the federal government, as elements associated with "the federal government's current perception of a viable computer/communication policy..." (Government of Canada, 1973).

Statement 7 "The government favors relaxation of the rules under which computer-service firms and users are given access to carrier transmission facilities, provided that

- the communications components of their services are integral to their computer service operations,
- there is no duplication of the protected basic public services offered by the carriers,
- the computer-service firms conform to technical and operating standards and specifications approved by the appropriate regulatory authority.

Statement 8 For this purpose, computer service firms and users might be permitted, using their own equipment if desired,

- to achieve more efficient use of transmission facilities by concentrating and multiplexing signals,
- to attach remote data terminals to the public switched networks, subject to the approval of the appropriate regulatory body".

Two other statements, #6 on access to transmission facilities and #9, on sharing of data transmission line, also bear on the problem of interconnection.

---

* - The best known are: "Telecommunication Study", 1969; "Instant World", 1969; "Branching Out: Report of the Canadian Computer Task Force", 1972; "Proposal for a Communication Policy for Canada", (Green Paper), March 1973; "Computer Communication Policy", a Position Statement by the Government of Canada, April 1973, Ottawa.

A working group was set up to study the issue further. The computer group of CBEMA formed a telecommunication committee to ensure that the views of the computer industry were known to the working group. The broad objectives of the CBEMA committee were to ensure that the certification process for the interface equipment would not be too costly, that the interface standards were not overly restrictive, and that the certification procedure was administrated by an independent party. More specifically, it asked that the technical specifications for the interfacing equipment be elaborated through a consensus of the interested parties, namely the common carriers, the equipment manufacturers and the Department of Communications. Any equipment meeting these specifications could then be attached, with the burden of the proof in declaring equipment non-eligible resting with the common carriers.

The report of the working group recommended liberalized attachment of user-provided equipment to carriers' networks. Meanwhile, the Department of Communications was also studying terminal attachment. In May, 1975, the department issued draft specifications for interfacing certain devices to the networks of the federally regulated carriers.

The process of elaborating the specifications was to be done in two stages. The first stage was to be the elaboration of specifications for voice communication and the second stage was to be the elaboration of data communication specifications.

The first stage is now completed. CBEMA perceived these initial specifications as too restrictive and favoring the common carriers. After consultations with all parties, users, equipment manufacturers and common carriers, the Department of Communications established a consensus over a revised set of specifications.

On the whole, the CBEMA members are reasonably satisfied with the final specifications except for a clause requiring mandatory testing of prototypes by the Department of Communications. Manufacturers asked that testing be done by recognized independent laboratories, anywhere in the world.

Stage two, dealing with interface specifications for data transmission, is now being undertaken. IBM Canada is hopeful that the final specifications will not be more severe than the voice interface specifications and it will continue to emphasize the need for certification by any qualified laboratory anywhere in the world.

The elaboration of the specifications of the interconnection of user's owned equipment to common carriers equipment, documents fairly well those lobbying activities of IBM Canada which are carried through CBEMA. In this specific instance, it seems that the CBEMA lobby was fairly effective as it was able to convince the Department of Communications to modify its initial specifications for voice communications.

4. The Canadian Telecommunication Policy: Private vs Public Switched Network

The geography of Canada and the distribution of its population along a narrow east-west corridor has brought the Federal Government to favor the existence of strong national public networks for telecommunications, taking the form of telecommunications facilities accessible to all and provided by common carriers. Telecommunications is used here in the restricted sense of the electronic transmission of data over common carriers facilities. The two major Canadian common carriers in this field are the Trans-Canada Telephone System (TCTS), a joint venture of the major telephone companies, and CNCPT, which evolved from the telegraph operations of the railroad companies. Both carriers offer a wide range of services for the transmission of data, from low speed analog services over existing telephone circuits to high speed digital transmission over specialized facilities.

There seems to be a consensus, both in government circles and among users and the telecommunications industry, that the two existing common carriers can supply adequate service and that it may not be in the best interest of Canadian users to foster the establishment of a third national common carrier.

Thus, for the time being it seems that the Canadian Telecommunications industry will be structured around the facilities of the two existing national common barriers. This is accepted by most, if not all parties involved in the field of telecommunications in Canada.

A contentious issue however, is the relative importance of public switched networks and private networks in the future Canadian telecommunications system. A public switched network is accessible to any user. Among the best known networks of this type in existence are the public and TWX (TCTS) networks. A fundamental characteristic of a public switched network is that the routing of data is controlled by the operator of the network, namely the common carrier.

Private networks are operated by users on facilities leased from common carriers. In such networks, transmission facilities are dedicated to specific users. IBM Canada operates several private networks. It has two national networks on leased lines from TCTS which are used in providing services such as time sharing. It also operates three regional networks, in Quebec, Ontario and in the Western Provinces. These networks link the data centres within their regions.

From a user's point of view, the choice between using a private network or a public switched network will depend on a cost/benefit analysis. High volume users will tend to use private networks while low volume users will opt for a public network. All things being equal, a private network is less constraining on a data processing system than a public network, but requires higher volume to justify its use.

Manufacturers of computer equipment and in particular of mainframes, favor the coexistence of public and private networks. Dedicated facilities will usually impose fewer constraints on the design of a data processing system than a public switched network will. Moreover, if a private network is used, a manufacturer does not have to worry whether the semantic structure of its software is compatible with the public network transmission and switching mechanisms. Finally, with dedicated facilities, a manufacturer can integrate the communications control equipment with the data processing equipment and can design its own communications control equipment without worrying about the restrictions that a public switched network usually imposes.

The Department of Communications seems to favor the development of a small number of financially strong networks in Canada. Officials of the Department seem to feel that the proliferation of private networks could weaken public switched networks by diverting heavy users' traffic. This concern might explain why the Department of Communications does not show any enthusiasm towards common interest private networks where numerous users share a private network. Common carriers now permit only single user private networks. The 1973 position paper in computer communications policies stated that "the sharing of data transmission lines and facilities by computer service operators and users will be permitted". So far, nothing has been done to suggest that this 1973 policy statement will ever be implemented.

Technological advances in the transmission of data, namely packet switching, have also created a new area of contention between computer manufacturers and common carriers. Common carriers are in the process of implementing "packet switching" networks. (In Canada, their commercial names are Datapac and Infogram). Packet switching technology should bring down transmission costs as it permits a denser transmission of data.

On a conventional public switched network, a specific circuit is dedicated to a user when he wants to transmit a message. Under packet switching technology, a data message is broken into small individual packets. Each packet is addressed and routed individually. At the receiving end, the original data message is reconstituted.

Packet switching transmission requires modifications to the existing "protocols" used by computer manufacturers. A protocol, in simple terms, is the basic semantic structure underlying messages which are transmitted. TCTS has developed a protocol which is now in the process of being recognized internationally. Computer manufacturers will have to adopt this protocol if they ever want their equipment incorporated into data processing systems using packet switching transmission. According to manufacturers, this could entail major modifications to existing data processing equipment.

Transmission represents less than ten per cent of the cost of data processing systems. Mainframe manufacturers are concerned that common carriers, with such a small share of the total expenditure dollars, will

impose costly specifications to suppliers of services and equipment. Thus, packet switching technology forces mainframers to redesign their protocols to accommodate to the specifications of what they consider more or less an outside party, the carriers.

The private network vs public switched network issue is basically one facet of the more fundamental issue of the respective role of common carriers and computer manufacturers in the computer industry. Private networks minimize the interference in the data processing industry by the common carriers. The mainframers vs common carriers issue crops up under various guises. In the United States, A.T. & T. wishes to enter the market of intelligent terminals, a move which is opposed by the manufacturers who argue that a regulated business should stay in a regulated field, except through an arm's-length subsidiary. On the other hand, the IBM Corporation has entered the telecommunications field through an arms-length investment in a newly established satellite common carrier. In Canada, the conflict has clear nationalistic overtones, the telecommunications industry being Canadian-owned and the computer industry foreign-owned.

A large proportion of the representations made to government authorities by the computer manufacturers deal with communications issues. More often than not, the manufacturers try to limit the "interferences" of the common carriers in their industry.

One issue which is typical is the implementation in Canada of an Electronic Payments System (E.P.S.). Briefly, E.P.S. is designed to replace the paper flow system for settling financial transactions. Under E.P.S., instead of writing a cheque, an individual will insert a credit/payment card into a special credit/payment machine. This machine will be linked to a national electronic payments system. By pressing a few keys to identify the receiver and the amount to be paid, the transaction will be recorded instantaneously as a debit in his bank account and a credit in the receiver's bank account. Bank branches, other deposit-taking institutions and participating commercial users will be interconnected within the E.P.S.

In 1975, the Department of Finance and the Department of Communications issued a joint statement of policy concerning the establishment in Canada of E.P.S. Although on many aspects the document was vague and general, reflecting the large amount of development work still to be done, it was specific on some points. Thus, in its conclusion, the position paper supports the concept of a public common user network jointly operated by the users, the carriers and the manufacturers and noted that "this does not preclude the use by individual institutions of private communications systems for purposes that are *entirely internal to the institution and unrelated to payments transactions*".* It observes in conclusion, that "the widespread use of a common carrier user network may present some temporary, inconvenience for computer manufacturers (read IBM) who have chosen to provide an integrated system which includes communications services" (Turner and Pelletier, 1975).

---

* - The italics are ours.

The position of the federal government with respect to E.P.S. stems from two overall objectives of 1) the maintenance of two financially strong Canadian-owned common carriers in the field of data communications and 2) the establishment of public networks accessible from all parts of Canada. The E.P.S. traffic, which will presumably become the major component of the total data communication volume, would be the backbone of the public networks and would ensure their financial viability. Thus the Federal Government recommended a system which would channel communications pertaining to financial transactions through all the public networks maintained by the common carriers. To ensure maximum efficiency, it also opted for packet switching technology.

The monopolization of transaction-oriented financial communications by the common carriers over public networks will have a substantial impact on IBM Canada. IBM is by far the largest supplier of data processing equipment to Canadian financial institutions. It is also recognized as a leader in transaction-oriented systems and thus should be expected to maintain its present lead. Furthermore, IBM Canada's Data Centres are under contract with several institutions to provide transaction-oriented services.

What the position paper in effect proposed is that under E.P.S., IBM Canada would have to take new partners, namely the common carriers, that all the dedicated transaction oriented networks would have to be phased out, that it would have to rely on a new technology developed by carriers (packet switching), that there would probably be a need to modify substantially its current equipment to make it compatible with E.P.S. because the system specifications will be standard and universal, that there would probably be a substantial increase in the competition for transaction-oriented equipment, and that traditional suppliers to the telecommunications industry would probably get a larger share of the market for communications control equipment in E.P.S. network.

IBM Canada made various representations to federal authorities, before and after the publication of the position paper, to present its views on transaction-oriented systems and on the future of the Canadian payments system. It advocates a prudent and "go slow" approach with E.P.S., since much of it involves new or undeveloped technology. It also advocates that users have the option of selecting the communications services of their choice, including dedicated lines or switched facilities.

A committee was set up in 1975 by the federal government to study the technical aspects of E.P.S. Financial Institutions, equipment manufacturers and common carriers have representatives on the committee. The committee has not filed its report yet. However, officials at the Department of Communications and at the Department of Finance seem confident that the general structure of E.P.S. outlined in the 1975 position paper, will be kept. Moreover, it seems that transaction-oriented private networks will not be allowed.

The general orientation of E.P.S. cannot be interpreted as being in any way biased towards IBM Canada. That such a development could occur in a field where IBM Canada has proven expertise and is recognized as the leading supplier, shows something of the limitations of the company's ability to influence government authorities.

CONCLUSIONS

Much has been said about the exercise of political power by multinational corporations in countries where they operate. Our analysis of IBM Canada suggests a different reality. IBM Canada's political power seems quite limited and not much use seems to have been made of whatever political leverage it could muster.

Three observations may help to explain this situation. First, IBM Canada is run by professional managers, who have risen through the ranks of the organization over twenty or thirty years. Their professional achievements have been primarily related to selling data processing equipment and services. Very rarely, in their years as middle managers, were they exposed to situations where political power would have helped them achieve their objectives. Moreover, as managers of a subsidiary of a multinational corporation, their chief concern is the long term profitable growth of their company through expanded sales in their traditional field of expertise. The relatively stable legal environment in which IBM Canada operates in Canada and the fact that its managers see their role much more as running a corporation than building one are not conditions that foster the need for political power.

Second, if IBM Canada were involved in acquisitions, were a very diversified corporation or were an autonomous organization that would need the support of the Canadian Government for expansion in foreign markets, then one could expect it to secure a stronger political base. In a small town, it is more probable that the owner of a local business will be more involved in municipal politics than the manager of the local A&P store. To a certain extent, this analogy applies to countries. The fact that IBM Canada is in a field of business that is not regulated or dependent on government contracts or permits also does not create an internal need for securing political power. A subsidiary in a resource based industry, such as mining or forestry, would probably consider good political relations more important than a subsidiary active in consumer or industrial products. From a corporate point of view, IBM Canada interfaces with government regulators mostly in areas dealing with computers/communications. Although a growing field for IBM Canada, government actions in this area cannot be interpreted as highly threatening to the survival of IBM Canada.

Third, IBM Canada is a subsidiary of a foreign corporation. Governments incorporate more and more among their economic missions, the development of Canadian owned (or Alberta owned, Québec owned, etc.) corporations, as well as reducing unemployment, controlling inflation and ensuring economic growth. As a result, subsidiaries of foreign corporations see themselves as increasingly discriminated against as a group, by government actions.

The Ontario fiscal measures mentioned earlier, apply only to subsidiaries of foreign corporations. Officials at the Department of Communications would like to see a stronger Canadian presence in the computer/communications industry. Industry, Trade and Commerce is concerned that, while the service bureau industry in Canada is largely Canadian-owned, the largest organization in the field is IBM Canada. This generalized nationalistic attitude and the avowed mission of encouraging the development of Canadian-owned corporations, may exert some influence on thousands of decisions made yearly by governmental authorities.

A subsidiary that is integrated into an international system of production, such as IBM Canada, is also penalized as a supplier to governments who have a Canadian-content preferential policy. Industry, Trade and Commerce might applaud the increased exports by IBM Canada but the Department of Supply and Services penalizes IBM Canada because an increasing amount of the product line is imported.* International rationalization can increase exports, which is fine from a Canadian point of view. But it has another consequence: exports become more specialized, while imports become more diversified. Although Canadian production increases, more products sold in Canada are imported. Thus, a decreasing number of IBM Canada's products qualify on a Canadian content rule.

It is doubtful that more political power to IBM Canada would do much to counter governmental discrimination towards foreign-owned Canadian subsidiaries. As one senior official of Industry, Trade and Commerce puts it, "it has nothing to do with IBM Canada - it's a fine company - but I.T.C. has to stimulate the development of Canadian-owned companies". On matters where discrimination towards foreign-owned corporations is encountered, more political power in the hand of one specific company would probably not help. Collective power might be more effective, but the general trends of the past few years in Canada indicate that whatever this collective political power may have been in the past, it is now on the wane.

Finally, IBM Canada suffers on the political front because it is IBM, a giant by international standards, and accordingly is felt by many not to need any help. To the extent that governments are biased towards smaller firms, IBM Canada is at a disadvantage. Given the size of IBM, most, if not all its competitors, can make a good case of being the little company trampled on by the giant.

The general thrust of IBM Canada's actions in the "political" and governmental areas has been to foster its identity as a good corporate citizen which makes substantial contributions to the Canadian economy.

---

* - There are several points of contention between IBM Canada and the Department of Supply and Services, for instance, the Canadian content issue and the terms of sales, the latter one being the more important issue. The Department specifies terms of sales on such things as warranty and services which are not met by IBM's world-wide terms. IBM Canada made numerous representation to officials of the Department to have the terms changed, but so far has met with little success.

Whenever its commercial interests are threatened by a governmental decision, it will forcefully present its point of view. It has the resources and the technology which permit it to present strong cases.

The issue of IBM Canada's political power was examined within a general consideration of power relationships in society with its resilient network of countervailing sources of power and influence. The rather sober and modest claims of corporate power that one is prepared to make as a result of this exercise are certainly empirically justified in the case of IBM Canada. The specific issues (reviewed in this chapter) where IBM Canada had high stakes have rarely resulted in resolutions favorable to IBM.

Furthermore, recognizing the limited usefulness (and futility) of such activities to its operations, IBM Canada does not invest much effort and resources to gain political power. Its public interventions are limited to presenting its case through proper channels on specific operational issues. We have found no evidence nor was anyone able to offer any information that would contradict that statement.

CHAPTER 6

IBM CANADA AS A CORPORATE CITIZEN

The Roots of Corporate Social Responsibility

Since the publication in 1932 of Berle and Means' The Modern Corporation and Private Property, "capitalist" societies have been engaged in a forlorn quest for an appropriate definition of the role, justification and "raison d'être" of large corporations.

Berle and Means' careful chronicle of the divorce between the owners of large corporations and their management raised fundamental questions about the legitimacy and accountability of corporate managers. If their relationship to shareholders is largely ceremonial and pro forma, by which alternative principles of social justice and equity can the immense power invested in them be defended?

This was the question of great and obvious social portent. As was to be expected, it was exhaustively debated by a succession of well and ill intentioned writers, the most popular contribution being J.K. Galbraith's The New Industrial State (1967). The alleged lack of legitimacy on the part of corporations* and their managers provided a handle for a concerted attack on capitalism and an unrelenting insistence upon a broadening of governmental control of, and intervention in, the private sector. If corporations are not really "owned" by anyone, then, it is claimed, they should be made responsive to the demands and expectations of various constituencies.

The articulate barrage of arguments was effective. Corporate managers became defensive about their role and apprehensive about the future of the corporation. To cope with these changed circumstances, management theologians, always attuned to the vibrations from the left, defined the canons of the "new manager" as a man of many constituencies, a nimble balancer of conflicting interests, an impartial purveyor of amenities to one and all, a human synthesizer of the rights and interests of all parties which might directly or indirectly be affected by the actions of the corporation. Whether managers actually internalized these norms of conduct is a moot point. Business circumstances were changing; the greatest threat to a corporation's survival often came from its social and political

---

* - This claim of illegitimacy is made with greater insistence in the case of multinational corporations, the affiliates of which are deprived of even the flimsy fiction of being "owned" by citizens of the host country.

environment and not solely from the economic or competitive environment. Such risks have to be managed.

Most large corporations are in industries with high levels of concentration and therefore enjoy some measure of market power (as defined and discussed in Chapter 3). Therefore large corporations function with organizational slack which they may "invest" in the most productive way. If the most severe threat comes from existing competitors or from potential new entries to the industry, part of the slack may be "invested" in additional advertising to achieve increased product differentiation, or price strategies to stave off newcomers to the industry. However, if the long-run survival of the corporation is contingent upon its relationship with the socio-political environment, then a portion of this slack should be used to improve the corporation's level of social acceptance. Therefore, top management will take certain actions, because in their opinion these actions are in the enlightened self-interest of the corporation. However, these actions will also be assessed by management on the basis of how they will be perceived by other key audiences in terms of their socio-political acceptance.

As a consequence the more diversified and turbulent the social environments in which a corporation has to operate and the more organizational slack it enjoys, the more exemplary that corporation should be as a citizen and the more articulate its stance on social responsibility. The IBM Corporation's actions are a demonstration of that proposition.

IBM CANADA AS A CORPORATE CITIZEN

Our purpose is not to undertake a social audit of IBM Canada but to assess its performance based upon a number of dimensions which are indicative of good corporate citizenship and voluntary discretionary actions. As indicated previously, subsidiaries of multinational enterprises, such as IBM Canada, will try to acquire legitimacy in the countries in which they operate by exemplary behavior in their relationships with interested "publics" and with the national government.

IBM's philosophy of corporate responsibility originated with Thomas J. Watson and was further refined by Thomas J. Watson, Jr., who became President of the IBM Corporation in 1952. These men said that "an organization's basic philosophy, along with its spirit and drive, played a far more important role in its success and achievement than its physical and financial resources, organizational structure, or product line". This philosophy was formulated as a set of principles which were outlined in Chapter 4. The seventh principle deals specifically with the issue of social responsibilities and corporate citizenship. It states:

> *"IBM should be a good corporate citizen. We accept our responsibilities as a corporate citizen in community,*

national and world affairs;we serve our interests best when we serve the public interest. We believe that the immediate and long-term interest is best serviced by a system of competing enterprises. Therefore, we believe we should compete vigorously, but in a spirit of fair play, with respect for our competitors, and with respect for the law. In communities where IBM facilities are located, we do our utmost to help create an environment in which people want to work and live. We acknowledge our obligation as a business institution to help improve the quality of the society we are part of. In the conduct of all our business activities, IBM takes positive actions to insure equal opportunity to all, without regard to race, color, creed, national origin, age or sex. We want to be in the forefront of those companies which are working to make our world a better place".

We will try to assess the degree to which IBM principles of social responsibility are translated into managerial policies and operationalized into discretionary actions which go beyond the requirements of the law. These areas will be dealt with:

A. The acceptance of, and cooperation in attaining, national goals such as the following:

- stable employment
- reduction of regional disparities
- adaptation to local cultural characteristics.

B. Curtailment of IBM Canada's ability (because of its MNC status) to evade Canadian laws or to hamper, to its profit, the implementation of some national policy on transfer prices, dividend and royalty payments. The MNC can have a tremendous, and largely uncheckable, impact upon the economic situation of a country. We shall examine specifically the behavior of IBM Canada in these areas in order to assess:

1. <u>The balance-of-payment</u> impact of IBM Canada and the efforts made to reduce negative effects.

2. <u>The cost of technology to Canada</u>. Canada benefits from the import of technology, the development costs of which were assumed elsewhere. However, IBM Canada is paying royalties to the parent company and the question arises as to whether we are being charged a fair price for that technology.

C. The voluntary financial support and encouragement of artistic, educational, athletic or charitable activities.

A. ACCEPTANCE OF, AND COOPERATION IN ATTAINING, NATIONAL GOALS

IBM's corporate principles lead IBM Canada to be, in its own words, "conscious of its responsibilities at the national level". The company acknowledges the government's economic and social concerns, and sees the need to operate in a way which complements the direction of national policy. Corporate responsibility in this area is evidenced at IBM Canada by a number of self-imposed decision rules. Some of the self-imposed constraints are:

Full employment;

Regional distribution of activities and support;

Adaptation to Quebec's particular cultural context;

Business conduct guidelines.

Full Employment

Since its inception the IBM Corporation, as well as IBM Canada, has been able to maintain a practice of full employment for employees through retraining and career change for personnel, and through mission reallocation for manufacturing plants. As a result of manpower planning which has made it possible to anticipate staff imbalances, IBM has been able to avoid laying off employees when workloads declined. When such imbalances occur, programs are introduced to transfer employees from areas of the business in which there are manpower surpluses to areas in which additional manpower is required. Such transfers usually involve substantial retraining.

One example at IBM Canada of this manpower balancing process occurred during 1971-72 when 66 employees from the Data Processing Customer Engineering function were moved into marketing positions in the Data Processing Division. In 1970, the manpower planning process indicated that changes in business volumes and technology would result in manpower surpluses in the Customer Engineering function. Accordingly, a program was established to identify candidates interested in a transfer to the DP Marketing function. Customer Engineering Managers across the country were asked to nominate potential candidates who in turn were asked to consider transfer opportunities. Candidates who volunteered were tested and interviewed extensively before positions in marketing were offered. Successful candidates were entered into the regular basic training program for DP marketing on the understanding that successful completion of the course would lead to a marketing career path. Of the 66 candidates who successfully completed the training program, 48 are still employed in DP marketing. Of the remainder, 13 have transferred back to Customer Engineering or other functions, four have resigned, and one is on a leave of absence.

A second example is the reallocation of mission at the Bromont plant where the full employment practice was a key element in the decision to

develop office products manufacturing to replace substrates manufacturing. The phasing out of substrates production in Bromont due to technological changes and to the gradual obsolescence of substrates, was thus replaced by new activities.

According to IBM executives, the practice of full employment "is not motivated strictly by altruism but also by the belief that mutual respect between employees and the firm leads to higher performance" (Business Week, 1975). Obviously the practice of full employment decreases resistance to changes and allows greater efficiency in the allocation of resources.

Full employment is only one of a number of personnel policies and practices at the IBM Corporation and IBM Canada. For instance, recruiting is basically at entry position levels as the company has a policy of promoting from within. IBM's recruiting objective is to hire on the basis of qualification without regard to race, religion, color, national origin, age or sex. These policies were established before discrimination was prohibited by law. IBM does not use psychological or intelligence testing. Skills and aptitude tests are used only if they have been validated and when they are pertinent to specific jobs. Furthermore, extensive internal training programs are undertaken for scientific, technological and administrative jobs.

Regional Distribution of Activities

IBM offers its products and services on a coast-to-coast basis. The company's policy is to deploy its facilities and resources as close as possible to its customers. IBM Canada currently operates 56 branch offices in 27 major cities. Major regional support facilities are located in Toronto, Montreal and Vancouver, along with education facilities and computing centres. In addition to these facilities, IBM Canada operates 12 Datacentres across Canada linked by teleprocessing facilities provided by the common carriers. Exhibit 12 shows the geographical distribution of IBM Canada's activities. IBM Canada offers nation-wide services and has followed a uniform pricing policy throughout the country, in order to provide equal access to services across Canada. Regional distribution criteria is also reflected in the distribution of corporate support programs and grants. Table 18 shows donations by region, for 1975.

The French Language Policy

The formulation of a French language policy at IBM Canada has evolved over many years. The French language had been used in the business operations of IBM Canada, in the Province of Quebec, since it began doing business there early in the century. Recognizing the increasing language training requirements of employees, IBM developed a Second Language Program in 1967 under which employees were reimbursed for the full cost of English and French language training in Montreal and later in Quebec City and Ottawa. During the period 1969-1973, IBM Canada undertook an analysis of the situation of the French language with employees and managers in the Province of Quebec, and developed action programs in response to the input collected.

Exhibit 12

IBM Canada Facilities, 1975

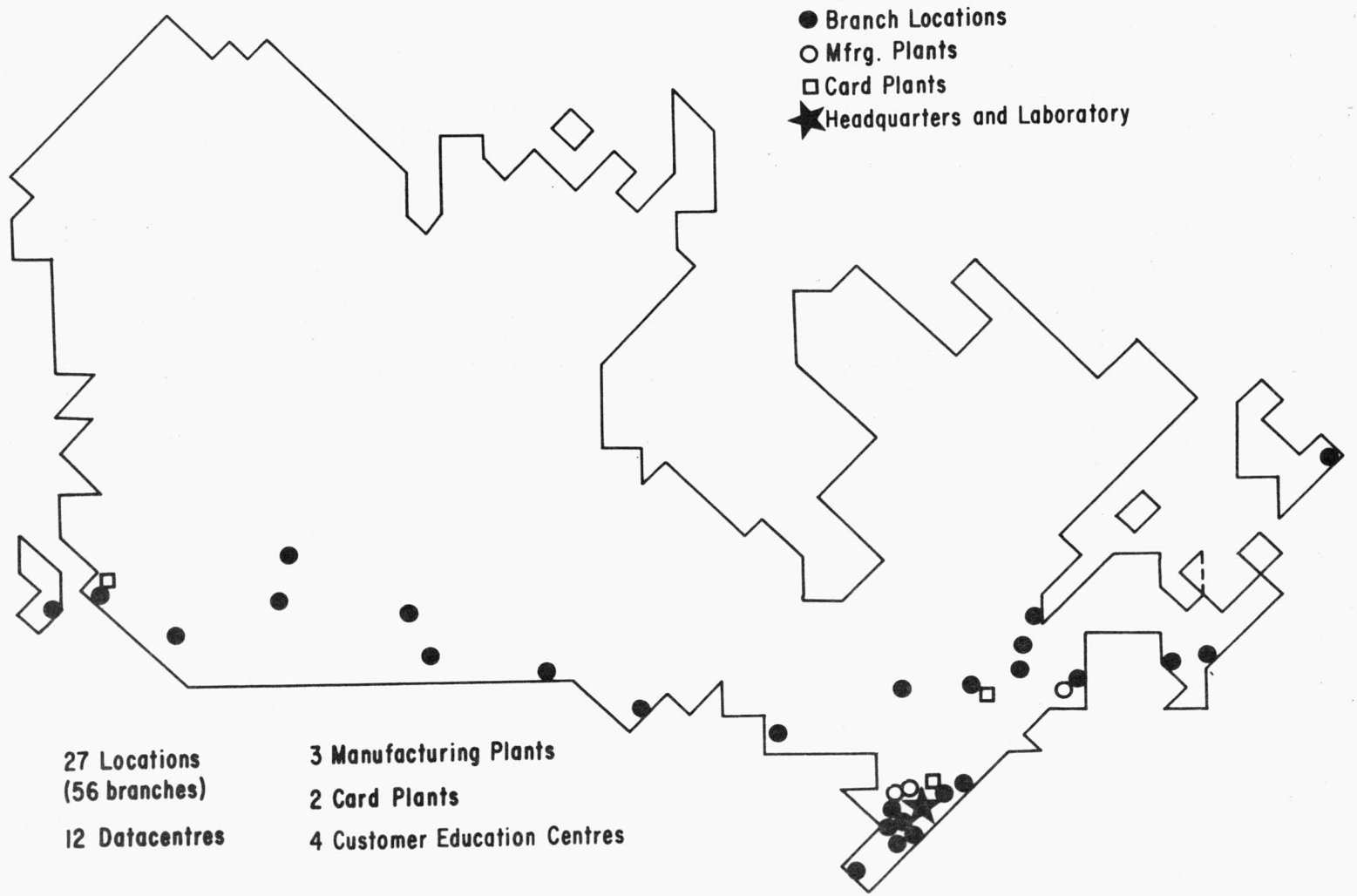


Table 18

DONATIONS BY REGION - 1975

REGION	1975 $	% OF PROVINCIAL DONATIONS	% IBM POPULATION
WESTERN	146,191	19.5	11.8
CENTRAL	444,135	59.3	67.5
EASTERN	158,612	21.2	20.7
SUBTOTAL	748,938	100.0	100.0
NATIONAL	101,443		
TOTAL	850,381		

Finally, in 1973, IBM Canada published a language policy which stated that it was the objective of the firm to establish a fully bilingual operation in the Province of Quebec. To meet this target, increased emphasis was placed on recruiting bilingual employees, establishing bilingual capability as a key criterion for management, and encouraging participation in language training programs. In addition, a translation department was established in Montreal to provide the French language documentation needed by employees and customers. At the same time, the number of education programs available to employees in the French language was increased.

As noted IBM Canada adopted a formal French language policy in 1973, one year before the Quebec National Assembly passed the Official Language Act (Bill 22), and at least three years before it was due to apply for a certificate of francization. In 1969 IBM Canada submitted a brief to the Gendron Commission emphasizing the use of the French language in Quebec operations and its recognition of the language rights of all its employees; but the brief also pointed out the importance of English as the international language in the Data Processing industry and the need for English language ability for career advancement within the IBM organization in Canada and abroad.

IBM's language policy establishes French as the working language in Quebec locations and bilingualism at the Montreal office. It also establishes guidelines in the areas of recruiting, manager appointments, translation and education.

At the end of 1975 IBM employed 1,980 persons in the Province of Quebec, approximately 20% of the company's total work force. Of these, 624 were employed in manufacturing. At the end of 1975, 64% of the employee population was bilingual (up from 58% in 1971), 82% of IBM's employees in Quebec could speak French, and 72% of its managers in Quebec were bilingual, up from 55% in 1971. While IBM strongly encourages all employees to become bilingual, there are a number of locations in the Province of Quebec in which French is the working language. At the company's plant in Bromont, and in the offices at Sherbrooke, Quebec City and Three Rivers, French is the working language. In Montreal both French and English are used.

Business Conduct Guidelines

IBM Canada has developed its own version of "IBM's Business Conduct Guidelines" to operationalize the principles of social responsibility that were described previously. The guidelines were designed to comply with Canadian legal requirements, specifically the Combines Investigation Act.

A booklet describing the guidelines is sent annually to every employee who regularly has dealings outside the company, outlining IBM's expectations of the individual's personal code of business behavior. As such, it provides a set of ethical norms of interactions, not only with customers, but with suppliers and competitors as well. Employees, whose behavior does not conform to these guidelines, are penalized or may be fired in extreme circumstances.

B. CURTAILMENT OF OWN POWER AND ACCOMMODATION TO GOVERNMENT REQUESTS

In the previous chapter we have looked at the influence which IBM officers might (or might not) exert on political authorities. In this section we are looking at IBM's accommodation to the "moral suasion" applied by Canadian political authorities. In the mid-sixties, the Federal Department of Industry, Trade and Commerce (ITC), published what is now known as the "Winters Guidelines", which constituted the Canadian Government's unofficial policy toward multinational corporations doing business in Canada. Among other things, the guidelines recognized the need for world-wide rationalization of the manufacturing activities of multinationals, and consequently, the constraints on the autonomy of a national subsidiary. On the other hand, the guidelines called for increased manufacturing and R & D activities in Canada, because of Canada's growth potential and the need to expand the country's technological capacity.

The computer industry was viewed as a key industrial sector by I.T.C. Yet it was understood that an indigenous Canadian computer industry was neither a necessity nor a sufficient condition for the extension of data processing services in Canada. Moreover, although it could have economic and political merits, the development of an independent Canadian capability in the design and manufacture of computers was thought extremely difficult

to achieve in practice. Thus, the leading role of multinational corporations in the development of the computer industry in Canada was recognized. The objectives of the federal government's policy were oriented toward increasing the amount of manufacturing and R & D in Canada, generally on the grounds that this would improve the balance of trade, create employment opportunities, create the potential for technological spin-offs, improve Canada's technological infrastructure, and open new market opportunities for Canadian vendors.

Discussions between I.T.C. and IBM Canada were initiated in 1967. With the arrival of Jean-Luc Pépin at the head of I.T.C. in 1968, the discussions became more specific. At a formal meeting held in Ottawa in 1968, and attended by Mr. Pépin and senior officials of the department and by the president of IBM Canada and other senior officers, IBM Canada and I.T.C. arrived at a set of five-year objectives, dealing with value added in manufacturing, R & D expenditures, balances of trade and purchases from Canadian suppliers. During Pépin's tenure at I.T.C. (1968-1972), annual meetings were held to review the progress made by IBM in meeting these objectives. Pépin's policies were pursued by his successors at I.T.C., Mr. Gillespie (1972-1974) and Mr. Jamieson (1974-1976). In 1974, the results of the first five-year "period" were appraised. In an internal memo of the Electrical and Electronics Branch of the Department of Industry Trade and Commerce dated September 1975, the following evaluation was given:

> "... beginning in 1968, it (IBM Canada) accepted certain commitments with respect to R&D and manufacturing. As a result, over the five-year period, 1968-1973, plant output as a percentage of domestic revenue, increased by 18% while R&D expenditures more than tripled on the same basis. A virtual balance in trade was also achieved. The company also provided technical assistance to a number of suppliers to increase their technological capabilities. It therefore made a contribution to each of the goals listed above."*

In 1974, IBM presented a second set of targets for the 1974-1978 period. It called for increased manufacturing and R&D activities, increased purchases from Canadian suppliers, a balance of trade in equilibrium. It also included targets on regional distribution of personnel.

It may be argued that IBM Canada would have pursued the same policies and achieved the same results without any discussions or "commitments" to I.T.C. Officials in the department seem to think that their "suasion" program was effective. There is no doubt that IBM Canada's top management aims at achieving these targets. Given the constraints of the IBM system, the selection of such targets for any subsidiary is a difficult task. These targets were definitely the targets of IBM Canada and should not be seen as a moral commitment of the IBM Corporation. It was the responsibility of IBM Canada to achieve them within the framework of opportunities offered by the IBM system.

---

* - "An appraisal of the industrial development aspects of the computer services and manufacturing industry", Department of Industry, Trade and Commerce, Ottawa, September, 1975.

Despite the relative success of the first five-year commitments, there are still important areas of disagreement between IBM and I.T.C. For instance, I.T.C. was concerned by the transformation of the Bromont facility from a substrate plant to an office products plant, seeing it as a switch from a high technology product to a lower technology line of products. I.T.C. would also like IBM Canada to do more in the field of hardware, while IBM Canada has decided to emphasize software development in its laboratory. In the opinion of IBM Canada's management, software development offers more potential within the IBM system than hardware development. IBM Canada manufactures mostly office products, data entry stations and small computer systems. While not forsaking other lines of products, IBM Canada feels that its present line of manufacturing missions offers a good base for future growth. Without specifically disagreeing with this conclusion, I.T.C. would prefer IBM Canada to acquire manufacturing missions for more technologically advanced products.

Both IBM Canada and I.T.C. seem generally satisfied with the program of mutual consultation set-up in the late '60s. However, each party sees it in a slightly different perspective. For IBM Canada it is a duty to cooperate with the government in achieving national goals. Given the government objectives, IBM Canada's executives can better plan their development strategy within the IBM system. However, they stand firm against suggestions by I.T.C. which they do not feel are in the best interests of IBM Canada. Thus, they pursue their policy of emphasizing the laboratory's software capability. On the manufacturing side, they emphasize the development of the office equipment and data entry stations line of products on the grounds that these products offer a sound basis for growth and that IBM Canada's competitive position within the IBM system is highly favorable in these fields.

I.T.C. seems to view the program as trying to get favorable "commitments" from IBM Canada. Since grants and procurements policies are not very effective with multinationals such as IBM, moral suasion is the most effective tool for implementing the government's industrial policy. Although it is generally happy with the results of its suasion program, I.T.C. would prefer more extensive communications with IBM on a regular basis, and access to more information. It is also frustrated in its attempt to bring a "technological" upgrading of IBM Canada's development work (more hardware oriented) and manufacturing operations (large computer systems or components). These frustrations are mainly the result of specific choices by IBM Canada's management. What IBM Canada sees as opportunities within the IBM system, I.T.C. sees as constraints imposed by the IBM Corporation on its Canadian subsidiary. Thus, I.T.C. would like IBM Canada to acquire more autonomy to free itself from these constraints. From IBM Canada's viewpoint, the IBM World-wide Organization is its only marketplace for its manufacturing and development output. Giving more "autonomy" to IBM Canada will not necessarily increase its competitiveness in this marketplace.

By focusing on two specific areas, the balance of payments and the costs of technology, we will be able to explore to what extent the subsidiary of a multinational can adapt to meet the goals of the host country.

1. The Balance of Payments of IBM Canada

The balance of payments of a corporation can be broken down into two elements: trade and other payments. The balance of trade is useful in assessing the contribution of the subsidiary to national employment. The balance in other payments reflects the relative costs to the national economy of having in the country a subsidiary which imports technology, expertise, trade marks, management and capital.

In the context of an international operation, a subsidiary would have a zero balance of trade if its imports are equal in value to its exports. Inasmuch as one accepts the argument that a multinational operating on a rational basis should be treating equally all countries where it operates, a "zero" balance of trade is the best that can be achieved in fairness to all. As it can be seen in Table 19, IBM Canada's balance of trade went from a deficit of $32 million in 1968 to parity in 1975, while imports increased by more than 100%. On that basis, we can say that the level of employment associated with manufacturing activities in Canada meet the criteria of "fairness".*

In the past 10 years, three types of actions were taken by IBM Canada to increase its contributions to the Canadian economy. First, IBM Canada sought and won more manufacturing missions. In the IBM system, manufacturing capacity usually leads to increased exports. As manufacturing was rationalized and greatly increased, starting in 1968, exports of manufactured goods went from $43 million in 1968 to over $150 million in 1975.

Second, IBM Canada put more emphasis on its International Procurement Program (I.P.P.), aimed at increasing sales by Canadian suppliers to other IBM Corporation affiliates. Under this program, which is a world-wide IBM Corporation program, the subsidiary acts as a broker and receives a procurement fee of 5% plus a 15% uplift on any sales by these suppliers to an affiliate. This 20% is not counted in the bidding price submitted by a supplier to an IBM affiliate and thus does not contribute to weaken the competitiveness of their bids.

---

* - An alternative test of the "fairness" of national employment is based on the comparison of the relative importance of manufacturing employment and of domestic revenues from operations of IBM Canada within IBM world-wide. IBM Canada's manufacturing employment represented at the end of 1975, about 3.3%-3.4% of world-wide IBM manufacturing employment, whereas the same ratio for revenues from operation was 3.8%. The difference is equivalent to about 300 employees. However, this method assumes that the labor intensity of Canadian manufacturing activities is the same as that of the overall IBM manufacturing activities.

Table 19

IBM CANADA LIMITED

BALANCE OF TRADE

($ MILLION)

	1968	1969	1970	1971	1972	1973	1974	1975
IMPORTS	74.6	95.1	101.7	149.7	176.9	157.3	205.8	164.7
EXPORTS*	43.1	59.3	91.1	133.1	167.5	147.3	167.7	167.2
BALANCE OF TRADE	(31.5)	(35.8)	(10.6)	(16.6)	(9.4)	(10.0)	(38.1)	2.5

* - This includes export sales by Canadian manufacturers to IBM affiliates where IBM Canada acts as a broker and receives a commission. It also includes purchases made by the IBM Corporation (U.S.) directly from Canadian suppliers (approximately $3 million in 1975) and sales of services by IBM Canada laboratory to other IBM affiliates.

IBM Canada's I.P.P. was geared toward the billion dollar market represented by the purchases of IBM's United States manufacturing plants. The program has been fairly popular with IBM Canada suppliers. Yet it remains small, dollar-wise, with minimal impact on the balance of trade. In 1975, I.P.P. exports added up to $5.3 million and have been stable for the past four years. IBM executives are of the opinion that though opportunities have been offered to Canadian suppliers, few of the potential firms choose to profit by them. A number of reasons can be listed: quoted prices are not competitive, U.S. duties add to costs, and Canadian suppliers are unwilling to invest in the necessary production equipment in order to bid competitively with their U.S. competitor.

Third, IBM set up a development laboratory in Toronto in the Fall of 1967. In the IBM system, development labs are considered as contractors to the various development divisions and manufacturing plants. IBM Canada's laboratory has grown at a fairly rapid rate since its foundation. Its operating budget went from $1.5 million in 1968 to nearly $11 million in 1975.

It has developed special expertise in the field of software, although it gives full development support to IBM Canada for custom systems that the Canadian company sells and is the support lab for some of the Toronto plant's manufacturing activities. Development projects undertaken at IBM Canada's lab which are funded by the IBM Corporation may be seen as exports of technological services by the lab. In 1975 this funding exceeded $9 million. The growth potential of IBM Canada's laboratory and its future contribution to the balance of trade and payments of IBM will depend largely on whether the selection of software as a distinctive field of expertise was a judicious choice. Since IBM Canada was late in setting up its own lab, other development labs had already acquired an expertise in hardware. Thus, the management of IBM Canada felt that software offered a better potential for growth, given the competitive structure of development activities within IBM, the technological resources available in Canada and the growth potential in the software field.

Given the competing forces at work, the best that can be achieved for affiliates such as IBM Canada is a balance between imports and exports. In all industrial countries where it has substantial sales, IBM is subject to governmental pressures to achieve a "favorable" balance of trade. Since the bulk of its sales is in these countries, it becomes rather difficult to achieve a positive balance of trade in any of these countries, as a surplus in one country brings about a deficit in another. The only sales that contribute to an overall surplus in the balance of trade of IBM affiliates are those made to communist countries and to the developing countries where IBM does not have manufacturing facilities. These sales represent a small proportion of IBM's total sales.

The balance of payments of IBM Canada showed a chronic deficit until 1975. Given a more or less zero balance of trade, the balance of payments is mainly affected by royalties and dividends payments. The standard royalty agreement of IBM establishes the royalty payments as 10% of the gross revenues on sales or leases of most products and services provided by a subsidiary in its domestic market. Excluded are sales of some services. Office products have been included in the base since the early 1970s. After withholding taxes, royalty payments represent 8% to 8.5% of IBM Canada's domestic revenues. In 1975, they amounted to $47 million. The dividend pay-out ratio of IBM Canada is patterned on the IBM Corporation's pay-out ratio, which ranges, over the years, between 40% and 55% of after tax earnings on domestic and export revenues. In 1975, IBM Canada's dividends amounted to $34 million after payments of withholding taxes. Altogether, dividends and royalty payments may be expected to represent, over the years, between 13% and 17% of domestic revenues. Whether these payments are too high is an issue which will be tackled later in this chapter. A pertinent question is whether these payments, whatever their size, could be offset by receipts, in order to achieve a more favorable balance of payments from a Canadian point of view.

Any substantial surplus in the balance of trade in IBM manufactured products is difficult to achieve as we have mentioned earlier. However, the International Procurement Program can lead to a surplus in the

balance of trade, by opening foreign IBM plants to Canadian suppliers. We are of the opinion that IBM Canada's I.P.P. has not yet achieved its full potential. IBM Canada has not persuaded I.T.C. that it could not enlarge the program substantially. On the other hand, governmental efforts could be directed at increasing the participation of Canadian suppliers in IBM's International Procurement Program. If substantial efforts were made to identify potential suppliers and to improve their technological ability and productive capacity, it seems to us that Canada could get a larger share of the billion-dollar market which the IBM U.S. manufacturing plants represent. However, potential sales from this source should be assessed conservatively as the Canadian electronic components industry is relatively marginal compared to its United States counterpart.

Another source of foreign earnings is represented by funded development projects to IBM Canada laboratory. The IBM Corporation annually channels between 5% and 6% of its revenues into development expenditures. A substantial proportion of IBM's research expenditures concern space programs - projects which have almost no equivalent in Canada. Based on the IBM Corporation's total expenditures, IBM Canada's share in 1975 might have been around $30 million, instead of the $11 million which was actually spent in the Toronto laboratory. IBM Canada is fully aware of the discrepancy and is eager to reduce the gap. Funded development projects are highly competitive within the IBM system. The IBM Canada laboratory budget has been growing at an annual rate of over 20% in the past few years. Whether the laboratory can maintain this rate of growth in the highly competitive IBM environment is debatable.

IBM Canada's strategic decision to build a strong expertise in software will probably turn out to be the most critical element in the future growth of the laboratory. If it turns out to be a sound choice, IBM Canada's laboratory could substantially increase its share of IBM's development funds. Another option open to IBM Canada would be to try to get a second laboratory in Canada, in a field where Canadian expertise is available, such as communications hardware. However, to acquire a second laboratory in a field where IBM Canada does not have any manufacturing mission would be quite an achievement and the probability that it could be done is low.

Finally, IBM Canada's balance of payments can be improved by further capital investment from the IBM Corporation. IBM Canada has relied mostly on internal cash flow to finance its growth. Capital investments by the IBM Corporation are infrequent. The IBM Corporation injected $25 million into IBM Canada's capital stock in 1969, and added $15 million in 1971. Both investments concurred with expansions of IBM Canada's manufacturing facilities. IBM Canada's paid-in capital now stands at $75 million.

To conclude, given the constraints within which a multinational firm such as IBM operates, it is difficult to foresee a positive and substantial contribution to the Canadian balance of payments by their Canadian subsidiaries. Even if royalty or dividend payments were cut down, they probably still could not be offset by larger development funding. One possible offsetting positive contribution would be to encourage the expansion of the International Procurement Program. Increased purchase of the IBM Corporation's shares by Canadian residents and institutions could also offset the negative contribution of the dividend payments of IBM Canada to the IBM Corporation.

2. The Cost of Technology

The cost of technology brought into Canada by multinational corporations is a controversial issue. The IBM Corporation has a uniform standard royalty agreement with all but a few of its subsidiaries.* The royalty arrangement, with no substantial change, has been in force since the early fifties. Subsidiaries pay nearly 10% of their gross domestic revenues** to the IBM World Trade Corporation. In return subsidiaries have:

> The exclusive right to buy IBM products at intercompany prices which contain no charge for R&D costs;
>
> Access to commercial, manufacturing and scientific know-how which is being developed within IBM;
>
> Access to all technical, education and training literature and material as well as software programs; and
>
> A license to use all patents, trademarks and copyrights of IBM.

Even if one were to assume that no value is set for the permission to use the trademark, the agreement could be considered "fair" if the IBM Corporation and its affiliates did spend around 10% of their gross sales revenues in the development and diffusion of technical, manufacturing and commercial know-how. On the basis of available information, the agreement passes this test. First, it is known that the IBM Corporation spends on a consistent basis between 6% and 7% of its gross revenue on

---

* - In a few developing countries, currency exchange regulations or other regulations prevent IBM from applying its standard royalty agreement. Costs of technology are then recovered through special arrangements such as special transfer prices.

** - Sales of some special services are excluded. IBM Canada's service bureau sales, for instance, are excluded, but royalty is payable on the commercial rental value of the internal equipment used to perform these services.

technical research and development, 5% to 6% being for development expenditures. This excludes some of the development on manufacturing processes. If the annual cost of developing manufacturing processes, training material and commercial know-how, and the annual cost of maintaining an information exchange system are added, the 10% rule of thumb is in all probability justified. The value of the IBM trademark is difficult to estimate. Yet, it could be argued that as the single shareholder of IBM Canada, the IBM Corporation more or less has to let its affiliate use its trademark; but IBM Canada is deriving a substantial marketing advantage from the use of the trademark, the commercial value of which is due to past efforts of all IBM affiliates.

The fact that the royalty agreement has been in force for over twenty years in all the major industrialized countries of the Western world is another indication that the royalty agreement is acceptable. Also, the Canadian fiscal authorities have reviewed the arrangement on a regular basis and have so far not challenged it.*

Royalty payments within the IBM system are supposed to cover actual costs sustained by the "system" for activities which benefit all affiliates and which are never incorporated in inter-company transfer prices. The major activity is R&D. The other activities are product and marketing support and manufacturing know-how, the development of training materials and the use of trademarks, copyrights and patents. To the best of our knowledge, the evidence indicates that the agreement is fair and that payments more or less cover the benefits received under the agreement.

Although dividend payments represent a smaller amount than royalty payments, it is proper to ask whether they are justified. IBM Canada adopts more or less the same pay-out ratio as that of the IBM Corporation. That rule, as such, is a fair rule. Its application would be "unfair" if IBM Canada would artificially inflate its earnings by following different accounting procedures than the IBM Corporation, which is not the case. By calculating its earnings on the same basis as the IBM Corporation and by paying in dividends in the same proportion of its earnings as is paid by the IBM Corporation, IBM Canada's dividends can be said to represent its "fair share" of the dividends paid to its ultimate owners, the IBM Corporation's shareholders.

---

* - The Ontario government's disallowance of 5/12 of the royalty payments in the calculation of taxable income is not related in a specific way to the IBM Canada royalty agreement (although IBM Canada is thought to be the company most affected by it) but is rather a by-product of the standard disputes between provincial governments and the federal government over fiscal matters.

C. "PUBLIC INTEREST" PROGRAMS

In attempting to operate in such a way as to "serve the public interest", IBM Canada has undertaken a number of voluntary and discretionary programs of support and encouragement.

Environment

IBM operates in an industry which causes few pollution problems. Nevertheless, IBM's position is an active one, as indicated by a statement made by Mr. T.V. Learson, then Chairman of the IBM Corporation, at the 1972 Annual Meeting. "Our objective is to return air and water to the environment in the same or better condition than we found them and to recycle chemicals and solid wastes. We intend to be a leader in this field, to meet or exceed the toughest standards we find anywhere".

Attempts are made to preserve the natural setting of all company building sites and locations, and to reduce noise levels. IBM has developed a Corporate Facilities Practice document which describes the process involved in siting a new plant or other facilities. The document also includes an environmental assessment checklist which references all factors which could negatively impact the environment. IBM has also committed itself to the conservation of energy and other resources. IBM Canada's Don Mills facilities have been recycling paper and data processing card stock since the early 1960s. More recently, IBM Canada also began a major program to reduce the consumption of electricity by some 18% per year, and fuel consumption by some 30% per year.

Privacy and Data Security

IBM acknowledges a responsibility to respect the privacy of employees and other individuals who come into contact with the enterprise, to participate in the public debate on the issue and to assist in the formulation of appropriate public policy. IBM has published "Four Principles of Privacy":

1. *Individuals should have access to information about themselves in record-keeping systems. And there should be some procedure for individuals to find out how this information is being used.*

2. *There should be some way for an individual to correct or amend an inaccurate record.*

3. *An individual should be able to prevent information from being improperly disclosed or used for other than authorized purposes without his or her consent, unless required by law.*

4. *The custodian of data files containing sensitive information should take reasonable precautions to be sure that the data are reliable and not misused.*

In the area of data security, IBM indicates that it shares a responsibility with the user of data processing equipment. This responsibility is to assist customers in achieving the level of security in their systems appropriate to their needs, and to provide data processing products and services which help solve security problems.

In addition, IBM has allocated resources to the study of data security questions. In 1972, for example, IBM funded four major, independent studies, by the TRW Systems Group, MIT, the State of Illinois Department of Finance, and IBM's Federal Systems Division.

Corporate Support Programs

In 1975, IBM Canada contributed $850,000 to a variety of Canadian organizations. This represented an average contribution equivalent to $80.00 per employee, and .62% of Net Before Tax Income. According to the most recent data available, IBM Canada's performance in this area compares favorably with that of other leading companies in Canada. A 1974 survey of 212 Canadian firms, indicated that corporate contributions to community and cultural organizations of all kinds averaged $43.00 per employee, and .5% of NBT Income.

In 1975 the following distribution of donations was made:

- approximately 4% of donations were made to civic improvement programs. For example, support was extended by IBM to campaigns organized by the YMCA and the Metropolitan Toronto Zoo;

- 10% of all contributions were made to cultural organizations such as the Canadian Opera Company and the National Ballet;

- 32% of contributions were made to health and welfare organizations an over half of all contributions in this category were made to United Way campaigns across the country. Contributions were also made in 1975 to the Canadian Heart and Canadian Cancer Societies and to agencies dealing with alcohol and drug concerns;

- 54% of donations, the largest category in IBM Canada's corporate support program, went for educational support.

Current education projects funded by IBM Fellowship grants include studies in education at the University of Saskatchewan's Institute of Child Guidance and Development, a cancer chemotherapy study at McMaster University, and a project to preserve and catalogue French-Canadian literature and folkloric archives at Laval University.

CONCLUSION

The material reported in this chapter suggests that IBM Canada has an organized and coherent approach to long-term risk management and social responsibility. The IBM Corporation and IBM Canada have a well developed set of policies, resources and programs for institutional

affairs. This stance is related to the fact that they are conscious of their legitimacy problems and of the necessity of operating as a good corporate citizen.

This coherent and articulated approach is primarily the responsibility of top management and of the board of directors, but staff people are also highly involved in the preparation of decisions. The methods of decision-making in these areas are systematic and comprehensive. In philanthropic activities, IBM Canada is increasingly concerned with the identification, analysis and interpretation of public attitudes and issues, the formulation of policies and programs in response to such and the assessment of feedback from the company's various constituencies.

IBM Canada has self-imposed managerial policies to serve Canadian national goals. IBM Canada's top management has proceeded to joint consultations with Canadian political authorities and are thus pursuing a policy of accommodation and restraint. Finally, IBM Canada's discretionary programs are numerous and represent a substantial allocation of corporate funds.

CHAPTER 7

THE RELATIVITY OF POWER

INTRODUCTION

The thorough analysis of the workings and entrails of a large organization is always a sobering experience; most often, the complex configuration that emerges from such an undertaking fails to fit snugly into comforting a priori conceptual molds, nor does it provide much heady gratification to those of a Manichean bent.

The "axial principle" of our study of IBM Canada has been power, that elusive and evocative quality which refers at once to a process, a state and an outcome. In this study we looked for its manifestations in the marketplace, on the Canadian political scene* and in the internal functionings of the IBM system itself.

We found in IBM Canada an organization whose size, technological importance and "multinational" status notwithstanding, does not in any way constitute a threat to the State and to the Canadian citizenry. If that were the working hypothesis, it can safely be rejected. The trite statements about countervailing power are accurate to a fault. IBM Canada's operations are ensconced in a web of institutional constraints and subjected to dynamic market forces; the power of IBM Canada is thus very relative and limited to a fairly narrow band of discretionary actions.

What is the power of IBM Canada? Its economic power will be manifest in its ability to influence the structure of its market in a way more favorable to to its institutional goals. Political power will be manifest in its ability to influence the political structure of Canadian society so that it is more favorable to its institutional goals. The institutional power of IBM Canada within the IBM system is its ability to shape its own destiny.

We therefore conclude this sinuous study of IBM Canada by a condensed summary of the relevant conclusions and findings dispersed throughout the preceding pages.

IBM CANADA'S MARKET POWER

IBM's particular status in the data processing market can only be described by a superlative. It is much bigger than any of its competitors. Its line of

---

* - A rather obvious observation should be made here. We assessed and documented IBM Canada's actual power expenditures. We did not conjecture about the political power that IBM could attain if it chose to invest a much larger part of its considerable resources to gain political leverage.

products is much wider than that of any of its competitors. It outspends any of its competitors on R & D. Its profits are substantially higher than any of its competitors. It gets substantially more of the total amount spent on data processing than any of its competitors. It sells its products in a lot more countries than any of its competitors. These statements apply to the IBM Corporation on a world-wide basis, and to IBM Canada on a Canadian basis. Yet, in a different context and with different words a similar description could have been made of Napoleon's France in 1810!

The object of our concern, therefore, was not the market power that IBM might have had in the past, nor whether it reached its present status because it was able to exercise market power, or because it had the foresight to plan its product development and marketing strategies so as to benefit fully from emerging trends in technology and in the marketplace.

We attempted to understand the historical trends of the data processing market and to make projections as to the kind of marketplace and competition which will more likely evolve from this point on.

The critical elements behind IBM's success are found in the fifties. At the outset of the computer age, IBM had two assets which, in retrospect, were critical to its success. First, it dominated what turned out to be the major market in the computer business, data processing. Second, it had a hard-driving, highly motivated sales force.

A critical decision made in the early 1950's was to develop a general purpose computer, which turned out to be most attractive for business operations. There were no general purpose business computers on the market. This venture turned out to be very successful, but at the risk of making obsolete IBM's major product line, tabulating and sorting equipment. Within a period of three years, IBM, a late starter in the computer industry, became the dominating force in the data processing market, with over 80% of the sales as early as 1956.

Another change, nearly as critical, occurred between 1955 and 1965, as IBM mutated from a feudal, sales-oriented company, to a professionally-managed, technically-oriented company. This transformation, which may be attributed to the foresight of IBM's senior management, prepared the company for the risky leaps to the 360 and 370. No other company has managed to blend so successfully, management, and in particular sales skills, and technical expertise. And few large companies ever considered committing, over a period of four to five years, about 40% of their gross annual revenues to the development of a new product. IBM did it with the 360, and that decision, more than anything else, consolidated its leadership in the data processing market. In the process, it built what are probably now two of its most important assets: a large base of installed systems structured around IBM technology, and the largest cash reserve of any industrial company in the world.

That IBM might have made use, during this period, of some questionable and possibly illegal commercial practices, is for the courts to decide. However, the impact of such practices, if ever they were used, was minimal on IBM's success.

The 360 family of computers, was the right product at the right time, and the marketplace acknowledged it. It wasn't the most sophisticated technology, and it probably did not include the best products available at the time from a technological point of view. But it was the right concept at that time, for the development of the data processing industry. IBM delivered what the marketplace wanted; it had credibility among buyers, and they did buy.

The 370 family was also a product line for its time. It could have been an answer to some of IBM's competitive problems: the growth of the leasing companies, the appearance of plug compatible products for the 360 system, the presence on the market of comparative products superior to the 360 family of products. But it was the right product for the time and the marketplace again acknowledged it.

As we look ahead however, powerful market trends are fast reducing the competitive shelter afforded by the standard barriers to entry in the data processing industry: technological superiority, economies of scale and product differentiation.

First, technological progress, originating from multiple sources, facilitates entry on the basis of innovative products. Second, the proliferation of tasks now assigned to the various elements of a data processing system creates ample market opportunities for enterprising organizations. Third, the growing sophistication of users and the de-mystification of the computer make the security blanket offered by the traditional mainframers obsolete. Fourth, the growing role of telecommunications in data processing opens highly porous avenues for new entries: computer services, intelligent terminals, mini-computers. Fifth, a related development is the clear trend towards competitive activity on a product-by-product basis rather than system-wide. The entry is much easier and ensures strong competition on each product component of the system. Sixth, the growing role of service bureaus which offer the potential user an alternative set of "products" from which to choose. To a large extent, these North American trends are also present in Canada. It is doubtful that IBM Canada's "skill, industry and foresight" will be sufficient to maintain to its present level IBM's leading role in the Canadian data processing industry.

POLITICAL POWER

The debate about the political power of multinational corporations has been focused mostly on specific interferences by some multinational corporations in the political process of some countries (ITT in Chile, United Brands in Honduras and Guatemala). Yet, multinational corporations derive most of their political leverage not from specific political interferences but from their discreet role as international arbitrageurs between countries. MNC's are well aware of the specific and often conflicting interests of the countries where they operate: more employment, an improved balance of trade, more investments, more development activities, a diminished foreign presence in the economy.

The multinational corporations, to the extent that their decisions are affected by the national claims, requests and desiderata, reflect in their distribution of activities and their policies the varying levels of political articulateness and activism on the part of national entities. Rarely will a multinational corporation set up one country's interests against another's: that would be indelicate and explosive. However, in its decision-making process it will consider, in addition to internal factors, the extent to which it may or must comply with particular national demands and whether the same compliance, if or when exacted by other countries, makes for a viable economic situation. The result of that process is to turn the MNC into a form of political arbitrageur, contributing through its reactions to local demands, to the equilibrium of the international economic order. That is a source of some power for the multinational corporations as a whole.

It is therefore with the somewhat condescending attitude of a worldly sophisticate that the IBM Corporation considers the national interests of countries as reflected in the proposals made by each affiliate eager to get a larger piece of IBM's development and manufacturing pies. In the final analysis, the value of the case presented by an affiliate and defended by its management influences the allocation process. But the role of "national" variables in the final decision is mitigated by other strategic variables and by IBM's need to maintain the equilibrium of its system. In short, the decision process will make difficult any precise assessment of the role played by national demands.

One of the many limits to corporate political power is the need for such power. Surely, before making a decision to allocate any development or manufacturing mission to a country, IBM will assure itself that the local conditions meet some minimal requirements which will allow it to function effectively. Thus, it will expect, from a particular polity, a firm commitment to maintain the basic structure of the economic environment of multinational firms. This is a minimal requirement which cannot be traded off against higher expected returns. Thus in a sense, IBM tries to ensure at the outset of its involvement in any country that it will not need to exert political power.*

This is not to say that particular national interests do not in fact affect IBM--quite the contrary. IBM Canada has many points of contention with the Canadian government. Concerns about foreign control of the economy are reflected in numerous policies and administrative practices of the federal government and of the provincial governments. IBM faces this situation in most countries where it operates outside the United States. Thus, as one could expect, it developed strategies to mitigate these nationalistic pressures. The naturalization policy (management by nationals), the decentralization policy within an international contention system, relatively high standards of corporate social responsibility and evaluation of the affiliates' performance with respect to its relations with host governments are manifestations of this concern for legitimacy in countries where it operates.

---

* - The fact that IBM maintains dual sourcing capability for any major product and that no affiliate, except in the United States, has complete control (development, know-how, manufacturing capabilities) over any major product provides an incidental but useful insurance against any potential quirk in the political environment of any of its affiliates.

One of the basic tasks of the senior management of any organization is long term risk management, so that the organization will enjoy a stable environment for the development and the application of its technical expertise. High standards of corporate social responsibility are a means to that end for a corporation of high visibility. Thus, IBM tries to maintain high and uniform standards of corporate social responsibility on a world-wide basis. IBM Canada's political donations, minor and acceptable in Canada, contravened unwittingly, IBM's international standards. Thus, the IBM Corporation asked IBM Canada to stop the practice. Inasmuch as it wants to keep its freedom to deploy its resources in the most efficient manner on a world-wide basis, IBM will ensure that no bad apple spoils its international strategy. Thus, like any other IBM affiliate in the country where it operates, IBM Canada will play according to the rules of the game as defined by the IBM Corporation, rules designed to meet the most demanding criteria of any country where IBM operates. In the specific instances of lobbying documented in Chapter 5, IBM Canada's behavior was definitely meeting the standards of conduct expected from any corporation which is rightfully participating in the Canadian political process. The outcome of these lobbying activities showed that being part of one of the largest multi-nationals does not give IBM Canada any special political power in its negotiations with Canadian government authorities.

THE AUTONOMY OF IBM CANADA

IBM Canada's status as a subsidiary does not confine its institutional power to that of a mere appendage to a parent organization. It is a member of a select club of affiliated organizations which share a common technology, common products and common management techniques and procedures. It is a club which offers to its members much opportunity for individual development within a unique contention or bidding system. In return, the affiliates have to follow the rules laid down by the IBM Corporation, the club owner. Each affiliate must achieve high and demanding performances in terms of sales and profitability. Affiliates must also abide by a common and strict set of principles with respect to its employees, clients and socio-economic environment. Finally, affiliates pay annual dues, in terms of royalties, of roughly 10% of their gross revenues.

The club offers many opportunities to its members. They can bid on any development or manufacturing project knowing that their "business case" will be judged on its merits, according to established criteria. Moreover, the system is set up so that all the critical information is available to all members. Given the high level of achievement expected of all members, the contention system which evolves from this particular structure is highly competitive. Each member tends to get only what it deserves.

The success and growth of an IBM affiliate depends very much on its ability to build a base of expertise which will permit it to acquire additional missions. Only seventeen IBM affiliates have development or manufacturing missions; each of these is eager to expand its activities in development and in manufacturing. A necessary condition for acquiring additional missions is a satisfactory performance in terms of sales and profitability. Annual sales and profit objectives, negotiated between the affiliates and the corporate headquarters, or more accurately IBM EMEA and IBM A/FE, are incorporated in a binding annual plan. IBM expects a strong commitment on the part of an affiliate to the

objectives agreed upon. Repeated and unjustified failures to meet them would hurt severely the credibility of the affiliate and would hamper its chances of getting new missions in development and manufacturing in addition to signalling a change of the guard in the management of the affiliate. Therefore, given satisfactory operating results, an affiliate gets new missions by successfully bidding on projects in fields where it has proven expertise.

In such a system, the growth potential of an IBM affiliate depends largely upon its skill at spotting opportunities, its foresight in building expertise in fast growth fields and its ability to prepare competent and persuasive business cases. The future growth of IBM Canada, to a large extent, rests upon the judiciousness of past decisions made by the Canadian management.

IBM Canada has opted to build its manufacturing base mostly in typewriting and key entry products. Many considerations dictated this strategic choice: growth potential, relative competitiveness, IBM Canada's manufacturing know-how at the time it started to acquire missions in these fields and the location of IBM Canada's plants relative to the development laboratories to which these products were assigned. IBM Canada has been reproached with the fact that its manufacturing missions are, it is alleged, in low technology areas. Such an evaluation is highly debatable. New technology and central processor technology are often mistakenly characterized as technologies of a higher level, presumably because they are perceived as more complex. However, on the basis of usefulness and growth potential, it may well be that the technology associated with terminal units should be deemed superior, as this market area has a very high growth potential in the near future.

If ever the emerging links between word processing and data processing equipment develop into a new market, IBM Canada's expertise in both typewriting products and key entry products will provide it with a very valuable technology.

IBM Canada's development laboratory has developed a software expertise rather than a hardware one. This is a strategic choice of critical importance. Software offers easier entry but lab power in the IBM system is still based on hardware products. Evidently, IBM Canada's management, having carefully assessed the trends in the data processing industry, has determined that software development will become more important and therefore that the lab should build its expertise in this area. For the time being, the IBM Canada laboratory is far from being a powerhouse in the IBM system; whether it will become one depends very much on the soundness of the strategic decision.

To what extent has IBM Canada benefitted and to what extent will it continue to benefit from the IBM system? The answer is difficult since the alternatives are all hypothetical. Presently IBM Canada is a wholly-owned subsidiary, managed by Canadians, which negotiates annual sales and profit objectives. It has access to IBM's technology and manufacturing and commercial know-how, wherever developed in the system. The cost of this technology to Canada (roughly 10% of gross domestic revenues) is, in our opinion, a fair price.

IBM Canada can acquire manufacturing and development missions in a system where these missions are assigned on a rational basis to the affiliate which presents the best "business case". Since the late sixties, when this rationalized process was fully implemented, IBM Canada's manufacturing operations have grown rapidly. The development laboratory was created in 1967. Nine years later, it

had a budget of around $11 million and a staff of over 300 people. Compared to other laboratories in the IBM system, it is still a small to medium-size laboratory. Partly because of strategic choices, it is not responsible for the development of any major product. The future growth of the laboratory will depend on its capacity to get an increasing load of development missions in the software field.

IBM Canada's exports have grown rapidly since rationalization was implemented. But so did imports. Given the constraints inherent in any international system of rationalized manufacturing operations, it is difficult for any country's subsidiary to have a positive balance of trade. Thus IBM Canada's balance of trade which has been slightly negative in the past years, should not be expected to improve substantially in the future.

The balance of payments of IBM Canada has been negative, due to substantial royalty and dividend payments to the IBM Corporation. The main offsetting inflows of funds have been equity investment and research grants to the development laboratory. The prospect for the future is a continuous deficit in the balance of payments of IBM Canada. Even if the lab increases its budget from slightly less than 2% of sales, its present level, to 6%, the world-wide average for IBM, royalties would still be more substantial than research fundings. Moreover, IBM Canada's dividends to the IBM Corporation are not offset in Canada's balance of payments, by the IBM Corporation's dividend payments to its Canadian shareholders.

"WHAT IF...?"

Restructuring IBM has become a popular intellectual exercise. The laudable quest is for a better industrial arrangement, one which would yield better results for Canadian society. We must examine some possibilities. Let us first consider the hypothetical case of an arm's length subsidiary with a minority of Canadian shareholders.*

This company would have to negotiate a commercial and technical agreement with the IBM Corporation. There seems no reason to believe that the terms of this agreement would be superior to those of the existing one between the IBM Corporation and its wholly-owned Canadian subsidiary on such matters as transfer prices, royalties, access to technology, restrictions on sales territories, etc. In fact, a deterioration of the terms could be a highly plausible outcome. Furthermore, a separate agreement would have to be negotiated for IBM Canada to gain admittance to the product development and manufacturing "private club" of IBM affiliates. Though it might receive assurances of equal treatment, in practice it is highly doubtful that such an arrangement could last. Enterprising affiliates would duplicate IBM Canada's laboratory expertise in order to outbid

---

* - That such a joint venture is anathema to the IBM Corporation is immaterial for the purpose of this analysis.

them (with the help of a grain of understandable chauvinism) on critical development missions. The information network to which IBM Canada has access now would deteriorate as structural links between the "new" IBM Canada and the rest of the system weakens. That would have a major impact on the ability of IBM Canada to detect opportunities at their early stage. Finally, the right of the "new" IBM Canada to enter in joint ventures with non-IBM companies would be regulated by the technical and commercial agreement.

All in all, the alternative of an arm's length subsidiary, with minority Canadian ownership, or any variant of that formula, may reveal itself to be inferior to the present arrangement in terms of benefits to Canada. Any such arrangement would weaken IBM Canada's access to the IBM information network, and reduce the opportunities of IBM Canada within the IBM system. More autonomy for the management, which could result from the new structure, would not compensate in benefits for the costs of the foregone opportunities.

In a more general attack on IBM, it is claimed that the corporation must be divided up. The actual market power of the IBM Corporation, it is alleged, results in allocative inefficiency and a slower rate of technological development, because entry to the industry on the part of small, innovative firms is extremely difficult.

Any proposed break-up invoking the market power argument could not be along product lines (office products, medium-size and large systems, general or small systems and the service bureaus). Since there is little or no cross-subsidization between IBM's product groups, each group already functioning more or less autonomously, a break-up of the IBM Corporation along product lines would not significantly reduce the alleged market power of any of the resulting companies. The only argument which could justify a break-up by product lines is an economic power argument, or basically "bigness per se is bad". That concept is not yet incorporated in U.S. anti-trust laws but there is already a legislative current to support such a posture (e.g. Senator Hart's bill on "no fault" monopolization).

Brock is advocating a break-up along functional lines, through the formation of four new companies (Brock, 1975, chapter 13). The Maintenance company would take over the maintenance of all existing IBM products. The Peripheral company would take over the development and manufacturing of "peripherals" that is, auxiliary memories and terminals. The Marketing company would take over the actual leasing contracts of equipment and would get the marketing personnel. The CPU company would take over the development and manufacturing of CPU's and components. The non computer operations (such as the Office Products Division) could either be made into a separate company or be assigned to any one of the four companies.

According to Brock, this reorganization "would improve performance with minimal disruption". The four companies would compete against each other and would be free to develop on their own, as independent companies.

Brock's restructuring is a crude carving of the IBM Corporation. Basically, he is trying to define a new original state of competition where there would exist more permissive conditions of entry. Thus, the division into two companies

of the manufacturing and development operations (CPU and Peripherals) is an attempt, first to cut down in size the largest manufacturer in the industry, and second, to make entry much easier for small firms in the peripheral equipment industry, since the new CPU company would presumably have to rely, at least at the outset, on outside suppliers for its peripheral equipment. The Maintenance company is proposed so that new entrants in the design and sales of new systems could count on the presence of a maintenance company to service the systems they would install.

However, Brock's proposal shows a poor understanding of IBM's internal organization. For instance, the key role of the development laboratory within IBM is ignored. The development laboratories are essential to the Maintenance company, since they control the technical aspects of a product over its life cycle. There would not be any strong incentive for a lab in company A to design ways of improving an existing product or the maintenance of a product owned by company B and serviced by company C. Thus the Maintenance company would have to build its own development lab, which would have to develop expertise in a wide range of products. This is a rather costly and sterile undertaking if it does not also lead to new product development. And if it does, then the industry may quickly evolve back to its former structure.* At any rate, the absence of a large maintenance company offering its services to small manufacturers does not seem a hindrance to new entry. In the data processing industry, product and system maintenance rely on close communications between the field forces and the designers of the products or the systems. Products and systems in this industry are highly complex and over their life cycle, a specific product or system will be constantly improved. Although this does not preclude the appearance of independent maintenance companies, it underlines the importance for any manufacturer of a captive maintenance service in close communication with its development laboratories. If IBM were to spin off its maintenance field force, two things could happen. Either the new company would enjoy a fictitious autonomy, actually being highly dependent on IBM for its survival, or IBM would gradually rebuild a maintenance capability and the spin-off company would dwindle to a size congruent with the real demands of the market.

The Marketing company would be mostly just another leasing company, a very large one for that matter, with an excessive number of salesmen. It could negotiate with various manufacturers the right to market their products, but it is highly doubtful that there is a demand for such services. An elementary knowledge of marketing strategy will quickly reveal why the manufacturer of a technical product with extensive post-purchase servicing will not, except for a short introductory period, relinquish control over its distribution channels and servicing activities. As a matter of fact, there are numerous leasing companies in existence now and such arrangements have yet to blossom.

---

* - That is, a maintenance company which has a development laboratory working on new products will soon want to market its products, thus gradually evolving to the status of another data processing company. The market forces quickly taking their toll, the market structure which would emerge would look very much like the one presently observed.

The Peripheral company would be one of the numerous companies in the "peripheral equipment" field with lines of products designed for IBM systems. As entry is relatively easy in that field at the moment, the presence of an additional strong new competitor will not modify the market configuration. It would increase competition somewhat, but that is a quality which is not lacking in that market sector.

Finally, the CPU company would limp for a while, without an integrated sales force, without its own field maintenance organization and without the capacity to develop full systems. The other "mainframers" would be happy with this drastic reduction of competition in systems design and sales, and customers would suffer. In due course the CPU company would rebuild an integrated sales force and a maintenance organization, as a matter of sound corporate strategy. It would in all probability continue to produce computers designed for IBM systems. However, the evolution of these systems would slow down, since the CPU company, and for that matter the other newly created companies, would not have all the resources necessary for maintaining the present rate of development of IBM systems.

It is our contention that the marketplace is benefitting from IBM's expertise in the development of new systems, such as transaction-oriented systems. Any attempt to break up IBM in such a way that it cannot offer systems expertise and a full line of products for any system that it designs may reduce the options available to the customers.

It is also our contention that entry into the manufacturing of any product compatible with IBM-designed systems is relatively easy and the recent instances of successful and highly profitable entries into the manufacturing of large CPU's support this point. As the evolution of IBM-designed systems slows down and gets more predictable, many more entries may be expected.

The break-up of IBM through anti-trust actions seems to us completely useless. As the market evolves, it will become more and more evident that IBM's market power is eroding, that it is not a deterrent to entry and that it does not affect negatively the efficiency of the industry, au contraire.

CAN CANADA BENEFIT MORE FROM IBM?

The Department of Industry, Trade and Commerce has been using moral suasion to get IBM Canada to increase its contribution to the Canadian economy. In that respect, I.T.C.'s interest and IBM Canada's interests are congruent. Any increase of IBM Canada's contribution to the Canadian economy can be translated in an increase of IBM Canada's institutional power within the IBM system. In view of this fact, it is a fair assumption that IBM Canada's management is as much, if not more, interested in a larger and stronger IBM Canada than I.T.C.is. Otherwise, there would be some dramatic faults in the IBM Canada's system of grooming and selecting its top management, something which we certainly did not detect.

Increased Manufacturing and Development Activities

IBM Canada's autonomy is subject to some basic rules. It must sell IBM products and services in Canada. It can develop or manufacture IBM products and services to the extent that its bids for specific missions are successful. The bidding is highly competitive, partly because the IBM Corporation has taken measures to ensure its competitiveness. But it offers a huge market, and opportunities are numerous, considering the limited number of potential bidders in the system.

A first condition for a stronger and larger IBM Canada is a better IBM Canada. Any measure which improves the quality of IBM Canada's management and technical expertise contributes to strengthening its bargaining position within the IBM system. This is particularly true of product development expertise, as there are few development laboratories and they play a critical role in the IBM system. Any measure contributing to the increase of IBM Canada's development expertise, such as a major development contract or a second specialized development laboratory in Canada, could do much to strengthen IBM Canada's institutional power within the IBM system.

Increased Technological Contribution

Canadian governmental authorities could encourage flows of technology from IBM to Canadian companies. In that respect, IBM's International Procurement Program is an instrument of high potential. The U.S. IBM market is a billion dollar market. So far, I.P.P. has been running at about $5 million a year, which is smaller than a similar program run by Xerox Canada. IBM Canada receives a 20% mark-up on any sales made through I.P.P., although this 20% mark-up is not included in the bidding price. Thus, there are incentives for IBM Canada to increase the volume of sales of Canadian manufacturers to IBM affiliates, especially in the United States.

Through moral suasion bearing on mutually agreeable targets for I.P.P. the Department of Industry, Trade and Commerce could open new markets for Canadian manufacturers and channel IBM's technology to them.

Increased Autonomy

The new federal government guidelines defining "good Canadian behaviour" by foreign-owned subsidiaries, call for increased autonomy. This study has documented the finely calibrated checks and balances and network of interdependencies within which an affiliate's autonomy is defined. At IBM, we find that there is considerable latitude left to the Canadian management in the planning of the development of IBM Canada. However, yearly plans with sales and profitability targets are one of the main driving mechanisms behind IBM's growth. Thus, their determination is highly centralized, although the affiliates participate in the setting of their annual objectives.

Production and development are organized on an international basis, through a competitive system. IBM Canada's institutional power in these areas is that of any organization operating in any highly competitive market. Whether a different arrangement would yield better results is highly debatable.

IBM Canada does not have the autonomy to enter into a new field of activity without the consent of the IBM Corporation. So far, the IBM Corporation has restricted its activities or those of its affiliates to the fields of data processing and office equipment, except for a small arm's length subsidiary in publishing. The IBM Corporation is showing more interest in telecommunications, a field that the Canadian government has restricted to Canadian-owned concerns.

On matters of internal organization (pricing, terms of sales, deployment of resources), IBM Canada has substantial autonomy, and it is difficult to see how more autonomy could increase the benefits to Canada.

IBM Canada must adhere strictly to a demanding code of conduct and an articulate set of policies with respect to its personnel, customers, and suppliers and its social responsibility. These may be constraints on IBM Canada's autonomy but we fail to see the benefits accruing from their removal.

CONCLUSIONS

It is tempting to write a fable of unbridled power about IBM. The esoteric field it is in, the composure and self assurance of its managers, the gigantic sums that it juggles and the worldly span of its operations, all contribute to the facile inference of great and avaricious power and influence on economic and political events.

Our survey of IBM Canada has established to our satisfaction that the power balance in our society is not tipped in favor of IBM Canada. In its market activities, IBM will be increasingly besieged by competition on all fronts, for all products and all services that it offers. If it is to maintain its leadership (and an eroded leadership at that) it must relentlessly improve the performance and pricing of its products and services, to the ultimate benefit of Canadian users.

As a corporate citizen, IBM Canada's behavior is exemplary. Its high visibility and global scope makes unsavory political actions on its part improbable, indeed foolish. Therefore, strict codes of conduct legislate its operations in any country. Its intervention in the political processes of the country are largely limited to presenting its case on specific contentious issues, through regular channels.

Within the delicate equilibrium of the IBM system, the autonomy of an affiliate is evidently relative. However, the affiliate's management is

responsible for the planning and development of its skill base in manufacturing and development. To augment the missions assigned to the affiliate, its management must prepare and defend its cases in a competitive evaluation process. As such, the size and importance of an affiliate is contingent upon the "skill, industry and foresight" of that affiliate's management.

What we have observed, therefore, is a well-managed organization which in our opinion, has been and will likely continue to prove beneficial to the Canadian economy and society.

This is a conclusion lacking in dramatic intensity, but, in the economic realm, that is as it should be. Such are the tales of power in modern democracies, not "full of sound and fury", but filled with the hushed clash of divergent interests pursued in increasingly constrained settings.

REFERENCES IBM

1. Ackoff, R.L., Emery, Fred E., On Purposeful symptoms, Chicago: Aldine - Alherton, 1973

2. An Appraisal of the Industrial Development Aspects of the Computer Service and Manufacturing Industry, Department of Industry, Trade and Commerce, Ottawa, September 1975.

3. Bain, Joe, Industrial Organization, New York: John Wiley and Sons, Inc. (2nd edition), 1968

4. Barnett, R.J., Müller, R.E., Global Reach: The Power of the Multinational Corporations, New York: Simon and Schuster Inc., 1974

5. Behrman, J.N., National Interests and the Multinational Enterprise: Tensions among the North Atlantic Countries, New Jersey: Prentice-Hall Inc., 1970

6. Bell, D. The coming of the Post Industrial Society, New York: Basic Book, 1973, page 26

7. Berle, A., Means, G. The Modern Corporation and Private Property, New York, 1932

8. Bradley, G.E., Bursk, E., "Multinationalism and the 29th day", Harvard Business Review, (January - February, 1972), pp. 37-47.

9. "Branching Out: Report of the Canadian Computer Task Force", Information Canada, 1972

10. Brock, Gerald, W., The U.S. Computer Industry: A Study of Market Power, Cambridge: Ballinger Publishing Company, 1975

11. Brooke, M.Z., and Remmers, H.L. The Strategy of Multinational Enterprise: Organization and finance, London: Longmans, 1970

12. Burns, Tom, Stalker, G.A. The Management of Innovation, London: Tavistock Publications, 1961

13. Buzzell, Robert D., Gale, Bradley T., Sultan, Ralph, G.M. "Market Share: A Key to Profitability", Harvard Business Review (January-February 1975)

14. Caves, Richard E., "International Trade, International Investment, and Imperfect Markets", Special papers in International Economics, No. 10, Princeton: International Finance Selection, Princeton University, 1974

15. Chandler, A., Strategy and Structure, Cambridge: M.I.T. Press, 1962

16. Clee, G.H., Sachtjen, W.M., "Organizing a Worldwide Business" in R. Mann (ed), The Arts of Top Management, New York: McGraw Hill, 1971

17. Clement, Wallace, The Canadian Corporate Elite: An Analysis of Economic Power, Ontario: McCelland and Stewart Ltd., 1975

18. "Computer Communication Policy a position statement by the Government of Canada", Information Canada, Ottawa, 1973

19. Craig, W.E., "Greyhound Computer Corporation vs International Business Machines Corporation", Phoenix, 1972

20. Cyert, R.M., March, J.G., A Behavioral Theory of the Firm, 1959

21. Dahl, Robert, A., Modern Political Analysis, Yale University: Prentice-Hall, 1961

22. Davis, Stanley M., "Two Models of Organizations: Unity of Command vs Balance of Power", Sloan Management Review, 16, 1 (Fall 1974)

23. Domhoff, G.W., The Bohemian Grove and other Retreats: A Study in ruling class cohesiveness, New York: Harper and Row Publishers, 1974

24. Domhoff, G.W., The higher circles: The Governing class in America, New York: Vintage Books, 1971

25. Dunning, J.H., The Multinational Enterprise, New York: Praeger, in New Directions in Management and Economics, 1971

26. Dunning, J.H., American Investment in British Manufacturing Industry, London: Allen and Unwin, 1958

27. Dunning, J.H., Economic Analysis and the Multinational Enterprise, London: G. Allen Ltd., 1974

28. Evans, R.W., The EDP Guide: An Authoritative Guide to the Data Processing Industry in Canada, Ontario: R.W. Evans Publications Division Ltd., 1975

29. Fayerweather, J., International Business Management: A Conceptual Framework, New York: McGraw-Hill, 1969

30. Forbes, 1, July 1976, page 134

31. Fouraker, L.E., Stopford, J.M., "Organizational Structure and Multinational Strategy", Administrative Science Quarterly, 13, 1968

32. Fournier, Pierre, Quebec Establishment: Ruling Class and the State, Montreal: Black Rose Books, 1976

33. Foy, Nancy, The Sun never Sets on I.B.M., New York: Morraw Inc., 1975

34. Galbraith, J.K., The New Industrial State, Boston: Houghton Miffin, 1967

35. Gilbert, C.W., Community Power and Decision-Making: A quantitative Examination of Previous Research, in Terry Clark, ed. "Community Structure and Decision-Making: Comparative Analysis", San-Francisco: Chandler, 1968

36. Hedberg, B.L.T., et al. "Camping on seesaws: Prescriptors for a Self Designing Organization", Administrative Science Quarterly, 21, 1, (March 1976)

37. Heilbroner, R.L. "Sinister Multinationals?" The New York Review of Books, Volume XXII, No. 4, March 20, 1975

38. Horsch, J.W., "Introduction to Structural Design", in F.E. Kast and J.E. Rasenzweig, Contingency Views of Organization and Management, Palo Alto: Science Research Associates, 1973

39. "How IBM avoids layoffs through retraining", Business Week, November 10, 1975, page 110.

40. Hunter, F., Community Power Structure: A Study of Decision Makers, Chapel Hill: University of North Carolina Press, 1953

41. "Instant World", Information Canada, Ottawa, 1969

42. Jacquemin, Alex, L'Entreprise et son Pouvoir de Marché, Québec: Les Presses de l'Université Laval, 1967

43. Jones, Gilbert E., and Maisonrouge, J.B., IBM an International Company: Remarks, Speech at the United Nations, September 11, 1973

44. Kaysen, C., Turner, D., Antitrust Policy, Massachusetts: Harvard University Press, 1959

45. Katz, Daniel, Kahn, R.L., The Social Psychology of Organizations, New York: John Wiley and Sons Inc., 1966

46. Kristol, I., "Corporate Capitalism in America", Public Interest, 41, Fall 1975, pp. 124-141

47. Levitt, Kari, Silent Surrender: The Multinational Corporation in Canada, Toronto: McMillan of Canada Inc., 1970

48. McKelven, Bill, Purposefulness in Organizations, Working Paper 73-7, U.C.L.A., Graduate School of Management

49. Mills, C.W., The Power Elite, New York: Oxford University Presse, 1956

50. Paquet, Gilles, The Multinational Firm and the Nation State, Canada: Collier McMillan Ltd., 1972

51. Parsons, Talcott, Structure and Process in Modern Societies, New York: Free Press, 1960

52. Popper, Karl S., The Open Society and Its Enemies, Princeton University Press, 1966

53. Porter, John, Foreword in "the Canadian Corporate Elite", Ontario: McClelland and Stewart Lted, 1975

54. Prahalad, C.K., "Strategic Choices in Diversified MNC's", Harvard Business Review, 54, 4 (July - August, 1976)

55. "Proposal for a Communication Policy for Canada", Information Canada, Ottawa, March, 1973

56. Rawls, John, A theory of Justice, Cambridge, Massachusetts: Harvard Business University Press, 1971

57. Robinson, R.D., International Management, Toronto: Holt, Winston and Rinehart, Basic Management Series, 1967

58. Robock, S., and Simmonds, K., International Business and Multinational Enterprises, Homewood, Illinois & Irwin Inc., 1973

59. Russell, Bertrand, Power: A New Social Analysis, London, 1938

60. Salzman, Ray, "The Computer Terminal Industry: A Forecast", Datamation, November 1975

61. Scherer, Frederic, M., Industrial Market Structure: an Economic Performance, Chicago: Rand McNally and Company, 1970

62. Schussel, George, "IBM vs Remrand", Datamation, May-June 1965

63. Shepherd, W.G., "The Elements and Evolution of Market Structure" in Markets, Corporate Behavior and the State, La Hagne: H.E. Stenfert Krvese, 1976, pp. 169-212

64. "Telecommunication Study", Information Canada, Ottawa, 1969

65. United States Court of Appeals, Telex Computer Products Inc. vs International Business Machines Corporation, New York, 1975

66. Watson, Thomas J. Jr., A business and its Beliefs, McGraw-Hill, 1962

67. Widing, J.W., "Reorganizing your worldwide business", Massachusetts: Harvard Business Review, 51, 3 (May-June 1973)

68. Wise, T.A., "IBM's $5,000,000,000 Gamble", Fortune, September 1966