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SECRETARIAT FOR FUTURES STUDIES

ANNUAL REPORT

— 1978

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SECRETARIAT FOR FUTURES STUDIES

ANNUAL REPORT - 1978

Survey of Futures Studies in the Canadian Government - Phase II.

During 1978, the Secretariat completed the "Survey of Futures Studies in the Federal Government of Canada: Phase II" which is a follow-up to the Lamontagne Survey of 1975. It is a qualitative assessment and evaluation of government futures work combining new information with data from the original Survey. The prime objectives of the Phase II Survey were to identify the Federal Government's specific needs for futures studies, determine how well these needs are being met, and devise a strategy for improving futures work in the Government and meeting its needs more satisfactorily.

The twelve departments judged to conduct the most promising work were selected for review. Three departments were selected for detailed evaluation of their futures efforts - the Department of Communications, the Department of National Defence, and Transport Canada. The period focussed on for the purposes of the review section was from 1976-1977, while the evaluation covered the years 1972-1977. The conclusions and recommendations advanced by the Survey are highlighted in the executive summary to the Survey, a copy of which is appended to this report as Attachment 1. Terminated as Project I.P. 16/59

Review of Canadian and International Futures Research.

A review of Canadian and international futures research has been completed and is being co-published by MOSST, the DSS Publishing Centre, and Multiscience Publications of Montreal. This publication reviews futures research and related activities in Canada up to the fall of 1977. It also assesses futures work being conducted internationally in other countries where this work is of special significance for Canada.

The Review was designed to respond to the emerging needs and increasing demand for an overview of futures research underway in the public and private sectors in Canada. It is the first time such a comprehensive account of futures research has been published by the Canadian Government.

The report does not purport to be an evaluation of futures research. It can be most productively seen as a review which surveys and summarizes major national and international initiatives in the field which have been undertaken in recent years. It should provide a base of information for planners, researchers, students, and the interested public; and for all, an assessment of the state of futures research in Canada. Terminated as Project I.P. 19/71.

Interdepartmental Committee on
Futures Research - Meetings.

During the past year, the Interdepartmental Committee on Futures Research held the following meetings:

<u>Date</u>	<u>Speakers</u>	<u>Subject</u>
Jan. 9/78	Ian MacDonald, President, York University.	Futures Options in Economic Policy for Canada.
Feb. 23/78	Anne Cheatham, Director, Congressional Clearing- house on the Future.	Futures Research in the U.S. Federal Government.
May 18/78	M.-J. Drouin, Director, Hudson Institute of Canada.	Canada Has A Future.
Dec. 7/78	R.H. Clayton, Project Leader, Futures Studies, Institute for Research on Public Policy.	Canada's Future Energy Situation.
Jan. 8/79	B. Dewar, MOSST. M. Kirby, President, Institute for Research on Public Policy. C.S. Holling, Director, Inst. of Animal Resources Ecology, University of B.C. H. Swain, Director General, Electrical, Coal, Uranium and Nuclear Energy Branch, Dept. of Energy, Mines and Resources.	The Past and Future Value of the Inter- national Institute for Applied Systems Analysis to Canada.

Interdepartmental Committee on
Futures Research - Workshops.

The following workshops were also held in specialized fields as described.

<u>Date</u>	<u>Speakers</u>	<u>Subject</u>
Jan. 19/78	M. Stephens, MOSST.	Some findings from the Lamontagne Survey: Phase II - A survey and a qualitative assessment.
Jan. 31/78	R. Tassé, Deputy Minister, Department of Justice. A. Lamer, Chairman, Law Reform Commission.	The Future of Law and Society.
Feb. 8/78	A.A. Maslin, Social Scientist, USSR Academy of Sciences.	Social Forecasting in the Soviet Union.
Feb. 10/78	A. Kantrowitz, Sr. Vice-President, Director, Avco Corporation and Chairman and Chief Executive Officer, Avco Everett Research Laboratory Inc.	Science Court.
Feb. 21/78	J.J. O'Shaughnessy, Director, Switching Systems Development, Bell Canada. K. Pieper, Director, Technology Programs, Bell Canada. G.T. Clark, Assistant Director, Switching Systems, Bell Canada. D.A. Carruthers, Director, Terminal & Transmission Systems Development, Bell Canada. J.R. Barry, Director, Network Development and Standards, Bell Canada.	Technology and Bell Canada.

ICFR - Workshops continued

<u>Date</u>	<u>Speakers</u>	<u>Subject</u>
June 29/78	Ian Burton, Ann Whyte, Consultants, University of Toronto. B. Stannard, J. Willis, Emergency Planning Canada. D. Crenna, Central Mortgage and Housing Corp. Z. Zeeman, Institute for Research on Public Policy. P. Pocock, Consultant, Science Council.	Early Warning Systems.
Aug. 22/78	G. Thompson, Bell Labs. C. Coll, Dept. of Electrical Engineering, Carleton University. J.W. Halina, Director General, Research Policy and Planning, Dept. of Communications. ---and staff	The Electronic- Information Society II.
Oct. 12/78	D.C. Thom, MOSST. C. Wenaas, Director, Economic Intelligence, Dept. of Industry, Trade and Commerce. R. Matthews, Economist, Economic Council of Canada. J. Gilmour, Science Advisor, Science Council of Canada. H.E. English, Dept. of Economics, Patterson Centre, Carleton University.	Canada's Industrial Future. Attachment 2.

National Futures Conference, 1978.

The Secretariat was active in the 3rd National Futures Conference organized primarily by the Centre for Policy and Management Studies of the University of Ottawa. Two members of the Secretariat participated extensively in the conference organization and proceedings. The conference is invaluable in that it constitutes a forum in which the Canadian futures community comprising professionals and lay-people from all fields can meet to review developments, exchange ideas, and generate initiatives on long-range public policy issues.

The gist of the 1978 Conference can be discerned by referring to the agenda and organizational format, here appended as Attachment 3. Additionally, three features of the Conference merit highlighting due to their uniqueness. First, the conference was both co-organized and co-implemented by six policy institutes and agencies. The participation of both the Economic and Science Councils of Canada along with the Institute for Research on Public Policy of Montreal signified the importance which the government research community ascribes to this area of activity. Second, for the first time, senior management in the Government from both the research and policy fields was actively participating in and contributing to the discussions of significant issues facing both the country and the Government. And third, considerable effort was expended in formulating a separate "stream", to look at the impact of science and technology on Canada's industrial and social development in the future.

Visits

Canada - U.S.A.

The Secretariat exchanged visits with the Congressional Clearinghouse on the Future of the U.S. Congress. The Director, Ms. Anne Cheatham, addressed the Interdepartmental Committee as indicated above, on futures work and long-range analysis being conducted by the U.S. Government in both the Executive and Legislative Branches. The Secretariat returned the visit and had discussions with different experts in the fields of long-range analysis and planning in the U.S. Federal departments and Congressional agencies.

Canada - Europe

As a result of the visit of an EEC delegation representing its scientific and futures sector, a series of agreements was reached between Canada and the EEC in the field of futures research and long-range analysis. The three proposed areas of collaboration are highlighted in Attachment 4.

EXECUTIVE SUMMARY

THE BASIC OBJECTIVES

- .To identify, in specific terms, the Federal Government's need for futures studies;
- .To determine the extent to which these needs are presently being met by futures work and long-range analysis in the government; and,
- .To devise a strategy for improving futures work and long-range analysis in the government so as to better fulfill these stated needs.

THE BACKGROUND

The Survey reviews and evaluates futures studies in the Federal Government as a follow-up to the Lamontagne Survey of 1975 - Phase I. This was published by the Special Committee of the Senate on Science Policy as Issue No. 13 in June 1977. Phase I was designed to be a quantitative analysis of futures work in government and to yield some basic data about budgets, personnel, projects, and publications. It sketched out the major contours of the field in government and tracked the preliminary directions which it was taking. Phase II, on the other hand, is designed to be a qualitative assessment of futures work in government, using both the information generated by Phase I, and new material collected specifically for this purpose.

THE PROCEDURE

The introduction reviews the general state of futures studies in the Federal Government, utilizing as a base the previous publication of MOSST, "The Lamontagne Survey of Futures Studies: An Analysis and Summary".

In the second section, the twelve departments selected for review were judged to conduct the most promising futures work in the Federal Government. The period covered, for the purpose of this review section, is from January 1976 to March of 1977.

In the third section, the prime futures efforts in three departments, namely the Department of Communications, the Department of National Defence, and Transport Canada are evaluated using a methodology developed by the Futures Secretariat. This evaluation covers the period 1972-1977.

Observations regarding the state of futures studies in the Federal Government are provided in the final section.

Appendix I contains a brief summary and comparison of nine world models. These models represent a serious attempt to relate essential economic and social variables on a global basis. Appendix II outlines in brief the significant long-term models which have been developed to investigate, from various perspectives, the future of the Canadian economy. Appendix III consists of two important efforts in the Canadian Government to explore alternative environmental trends and prospects for Canadian society in the future. Appendix IV summarizes the Futures Program of the Institute for Research on Public Policy.

The review of futures work in the Federal Government (Section II) synthesizes information gained through interviews conducted by the officers of the Technology Assessment Division. The methodology is based upon work being developed on the production and use of futures research in government. The overviews of Canadian economic models (Appendix II) and environmental designs for Canada's future (Appendix III) were distilled from material supplied to the Secretariat by the relevant federal agencies.

THE CONCLUSIONS

The report established the following key points with respect to the first objective outlined above:

- .The primary needs for futures work in the government are those of general projection, early warning, policy development, strategic planning, goal and value definition, and resource planning (page 52-3)
- .In the case of policy development, the special needs are those of addressing policy issues of special importance to the future; assessment of future implications of present policies and programs; identification of preferred future conditions and situations (i.e., policy targets); identification of alternative policy options; extrapolation of consequences and implications of feasible policy options; and, identification of comprehensive, long-term policy objectives. (page 52)

In determining the extent to which the stated needs were being met, the report was encouraging in its balance of success against perceived deficiencies. It noted the capacity of the government for realizing as yet largely unfulfilled potential. In particular,

- .The overall success of departments in structuring and developing futures studies in a way which will satisfy their requirements is less than it could, or should, be - particularly in light of the considerable resources committed for futures work in the Federal Government.
- .Several of the governmental needs in this field are quite adequately met by many departments. Most notable are the general projection and the early warning functions (page 52) which the futures work reviewed can be seen to perform well.
- .Four departments - Department of Communications, Department of National Defence, Department of Energy, Mines and Resources, and Transport Canada - have planned and developed their work so that it effectively fulfills their requirements and, to a considerable extent, those of the government as a whole.
- .The contribution of futures work to government policy and planning in most departments has not been realized as yet. Most noticeably, deficiencies occur in the clear identification of long-term objectives, the relationships between these objectives, and the exploration of alternative policy options for achieving these objectives.

THE RECOMMENDATIONS

There are two main aspects involved in designing ways to improve departmental futures work and long-range analysis so as to better fulfill requirements of the government. One is identifying those aspects of present futures work which most significantly need to be improved and which require special attention. The other is determining how to organizationally bring this about. On the first, the report advances the following recommendations:

- .Departments should conduct futures work and long-range analysis in such a way as to ensure that it is applicable and useful to governmental policy and program planning.

- .Futures work can only be useful in the consideration of those problems and objectives which are uniquely long-range in character. Consequently, a special effort should be made to determine, in advance of the research, which of the problems confronting the government are especially important for the future and which could be profitably investigated.
- .It is important that long-term objectives be identified and interrelated so as to highlight conflicts which bear upon shorter-range goals and interests of the government.
- .An effort should be made to establish priorities among long-term problems of concern to the government.
- .Alternative policy options for achieving long-term objectives should be identified and then evaluated by tracing through the implications of each option. Additionally, an effort should be made to examine the effects of the most promising policy options in the light of alternative developments in the national and international environments.
- .Alternative plans and strategies should be established on the basis of this review of policy options open to the government.

With respect to how these recommendations could be organizationally brought about, three main points emerged from the report.

- .It is imperative that senior management be kept involved on an on-going basis throughout the process of planning and developing futures work in government. This underlines the need for regular feedback to, and direction from, senior management where the departmental futures or planning group is concerned.
- .Continuing evaluation is a vital process to ensure that the best directions and opportunities for futures work and long-range analysis are explored. The Secretariat for Futures Studies is useful in keeping the field moving in the Federal Government, especially where it both develops and catalyzes innovations, and ensures the continuous exploitation of the potential of futures studies.

.It is important that results of futures work and long-range analysis be widely distributed. This will encourage the acknowledgment of divergent views in the work of the department concerned. It will also help to ensure that parties who stand to be affected by the analysis will be well informed about that analysis. The Secretariat can perform an equally significant role in this dissemination process.

THE INTER-DEPARTMENTAL COMMITTEE ON FUTURES RESEARCH

SEMINAR ON

"CANADA'S INDUSTRIAL FUTURE"

OPENING REMARKS

BY

D. C. THOM

October 12, 1978

Political economy has two basic preoccupations: wealth creation and wealth distribution. Today we will be preoccupied with an aspect of wealth creation, more precisely, with the future of Canadian industry. As someone with some navigational experience both at sea and in the air, it seems to me that to plot a future course, one should have the best possible notion of where one is now. And in dealing with that particular problem, it is helpful to know how we got there. Hence in these opening remarks, which I will try to keep brief, I would like to deal with some aspects of where we are and how we got there. During the balance of the day, there will be some further elaboration of this issue. More importantly, we will be hearing various views of the directions in which perhaps we will be moving in the future.

Now, assuming the availability of adequate capital and more or less fixed endowment of resources, our ability to create wealth is determined by our potential labour supply and the efficiency with which we use it. The size of our labour force is, of course, a function of various demographic factors of which the more difficult to project are the changing participation rates of various age groups, notably the younger and older ends of the spectrum and the changing participation rates of women. It is also a function of the availability of labour from abroad the kind of immigration policy we have in place to regulate that inflow in terms of both quantity and qualifications. To give you some idea as to the importance of these factors, the Department of Finance estimates that with a reasonably constant rate of productivity increase of about 2%, rates of gross national expenditure growth in Canada on a cyclically adjusted basis can be expected to decline from a range of 5 to 5½% in the 1960's to something like 3 to 3½% in the 1990's.

For me, at least in terms of my work, the more interesting element of the problem is the efficiency with which the labour force is used as reflected in rates of productivity increase. In part, national productivity is a reflection of industrial structure. Chart 1 shows, over a reasonably extended period, the distribution of employment by major sectors: manufacturing, agriculture and natural resources, and other goods and services.

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CHART 1

PERCENTAGE DISTRIBUTION
OF
EMPLOYMENT BY INDUSTRY
(FULL-TIME EQUIVALENT)

Manufacturing	26.8	24.8	22.1	21.1
Agric & Natural Resources	25.1	14.7	9.0	7.0
Other Goods and Services	48.1	60.5	68.9	70.3
	1949	1961	1971	1975

One sees a relatively stable situation in terms of manufacturing, a gradual decline over the past quarter of a century. If you look at the data presented in the Economic Council's Fifth Annual Review, one sees that manufacturing employment has accounted for approximately the same proportion of total employment since 1880. What is rather striking is the sharp decline in relative agricultural and natural resources with a compensating growth in other goods and services including construction, as well as personal business services. Again the trend goes back a hundred years with agricultural and natural resources declining sharply from a time when it was almost 50% of the employment in Canada. Existing forecasts suggest that

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these trends are likely to continue and that by 1990 manufacturing may account for only 17 per cent of employment, the resource sector perhaps 6 per cent, while other goods and services would employ 77 per cent of the labour force.

Chart 2 shows similar trends but in terms of the value of real output. Again you can trace these kinds of trends back over a hundred years.

CHART 2

PERCENTAGE DISTRIBUTION
OF REAL OUTPUT BY INDUSTRY

Manufacturing	29.5	29.0	26.8	22.1	22.1
			9.6	6.7	6.8
Agric. & Nat. Res	15.9	13.5			
Other Goods & Services	54.6	57.5	63.7	70.0	69.9
	1949	1961	1971	1975	1977

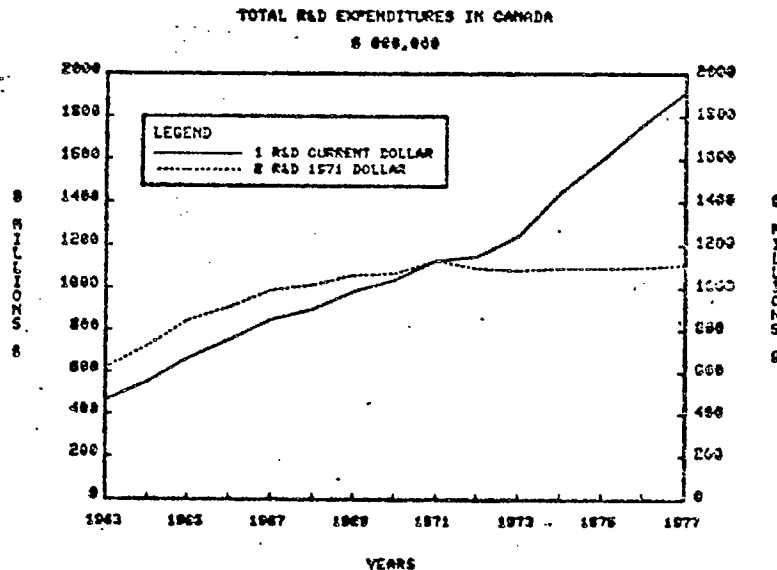
Now within a given industrial structure, innovation, as Schumpeter pointed out some 65 years ago, leading to both new and more efficient products and services, is a key factor in economic growth. But "innovation" is difficult to quantify and we tend to use research and development as a proxy. But it should be understood that R&D is an imperfect proxy which does not include marketing, design, and other elements of the innovation process. Innovation also embraces incremental production improvements not recorded in company accounts, and therefore, not recorded in R&D statistical series. Nor do R&D statistics take into account

- 4 -

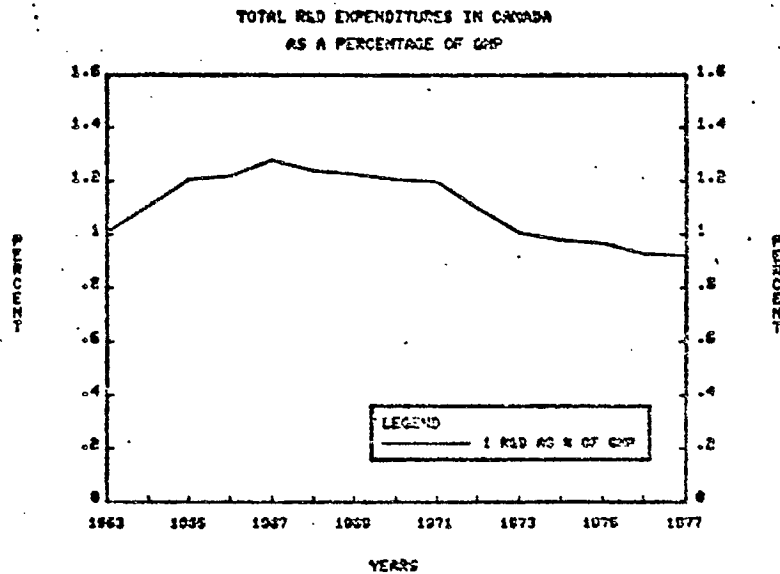
important components such as technology inflows in the form of imported engineering services. Imperfect or not, data on R&D is about the only data relating to innovation which we have on a consistent and comprehensive basis.

In Canada the R&D expenditure record is given in Chart 3. We have here since 1963, which is the length of this statistical series, total R&D expenditures in Canada both in current dollars, as represented by the solid line, and in 1971 dollars, as represented by the dotted line. As you can see, our expenditures on R&D really slackened off at the end of the 1960's and at the beginning of the 1970's, and has remained virtually constant since then. Naturally that produces a decline as a percentage of GNP which is shown in Chart 4. The decline, in these terms, started rather earlier in 1965 or 1966.

CHART 3



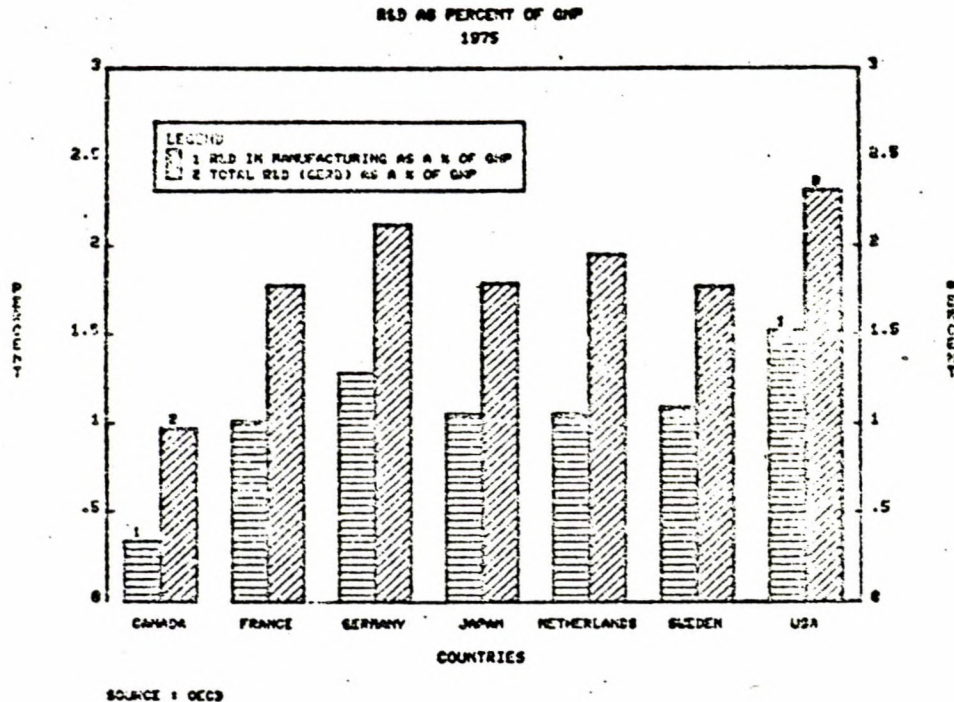
- 5 -

CHART 4

International comparisons are tricky and frequently misleading, but I think it is quite clear from Chart 5 that relative to many other OECD countries, our rate of spending for R&D is significantly lower than the others. In large part, we believe that this is a consequence of our industrial structure, and more particularly, because of the high degree of foreign ownership. We tend to acquire a lot of our technological innovations, data, information, whatever, from parent companies in the form of engineering services, which do not show up in the R&D statistics.

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CHART 5



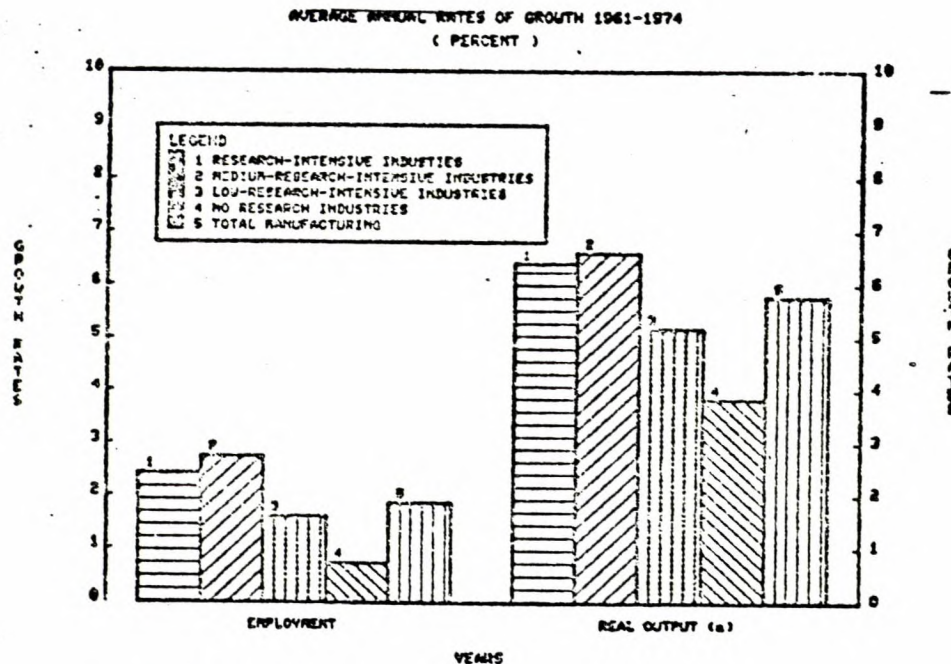
For example, if one adds up the amount of research and development done by the parent automotive companies relative to their sales in the U.S. and then uses that figure against Canadian sales, you end up with a notional Canadian automotive R&D budget which I believe is something in the order of three hundred or four hundred million dollars. In fact, almost no research and development is done in Canada in the automotive sector. But if you take a look at payments to non-residents for engineering services it comes very close to that kind of figure.

There are some difficulties with that of course - it doesn't put our industry in a highly competitive position; it doesn't employ our highly qualified manpower and it leaves us vulnerable to off-shore decision taking. It also has implications in terms of an ancillary infrastructure. That is, if General Motors provides MacKinnon industries with a design for an automotive engine in the form of manufacturing drawings and specifications, that design will call for components such as Fram filters and A.C. spark plugs, also off-shore designs.

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Now I would like to turn rather more specifically to R&D in the manufacturing sector partly because it is such an important performer of research and development and partly because it is the sector for which we have done most analysis. We have looked at manufacturing industries at the SIC two digit level and have grouped them according to their research and development expenditures, relative to their value added. Looking at the various parameters we get these kinds of results: In Chart 6 we have the employment and real output of manufacturing sectors grouped into highly research intensive industries, medium and low research intensive industries and those sectors which do no research. At the two digit level, we are dealing with 20 industrial sectors. One sees that in terms of growth in employment, medium-research intensive industries grew at close to 3% annually in the period 1961 - 1974 and highly-research intensive industries at a slightly lesser rate. This contrasts rather sharply with those industrial sectors that do no research at all. Again, on real output we find medium-research intensive industries and highly-research intensive industries perform better in terms of real output. We get similar sorts of results in terms of productivity (Chart 7) except that in this case research-intensive industries rank higher than medium R&D intensive industries.

CHART 6

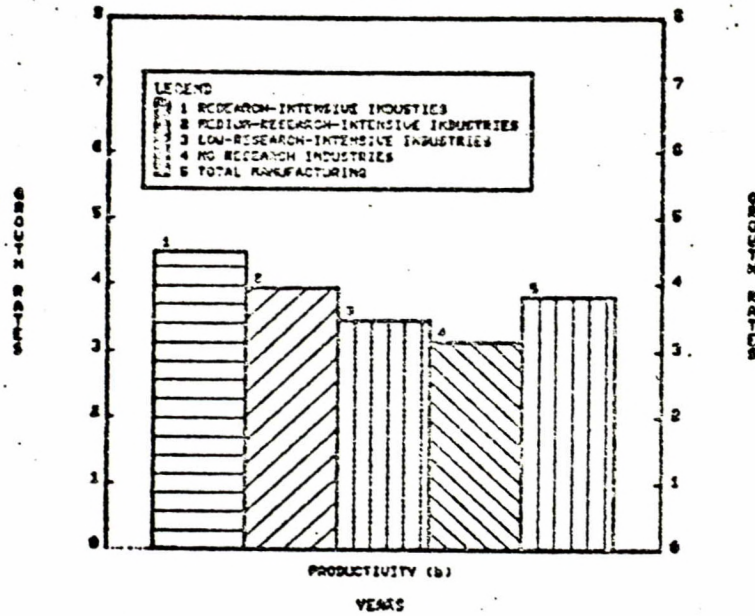


SOURCE : STATISTICS CANADA

a . 1971 DOLLARS

CHART 7

AVERAGE ANNUAL RATES OF GROWTH 1961-1974
(PERCENT)

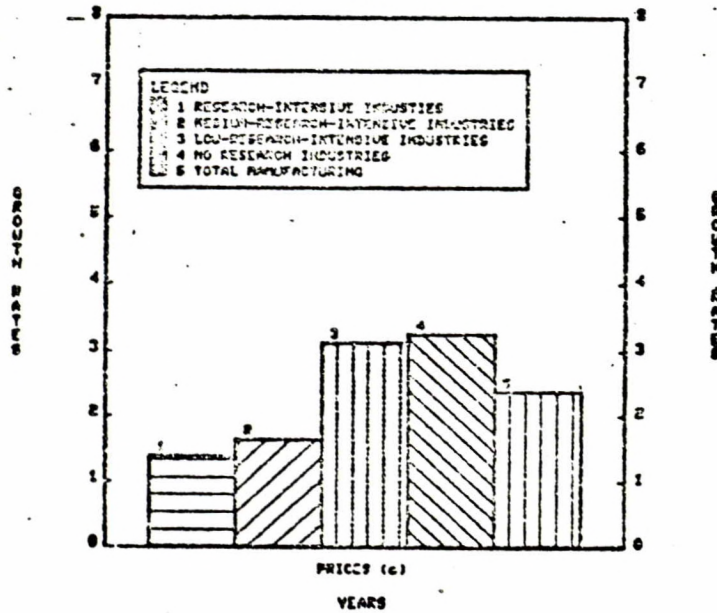


SOURCE : STATISTICS CANADA

b . REAL OUTPUT PER PERSON

CHART 8

AVERAGE ANNUAL RATES OF GROWTH 1961-1974
(PERCENT)



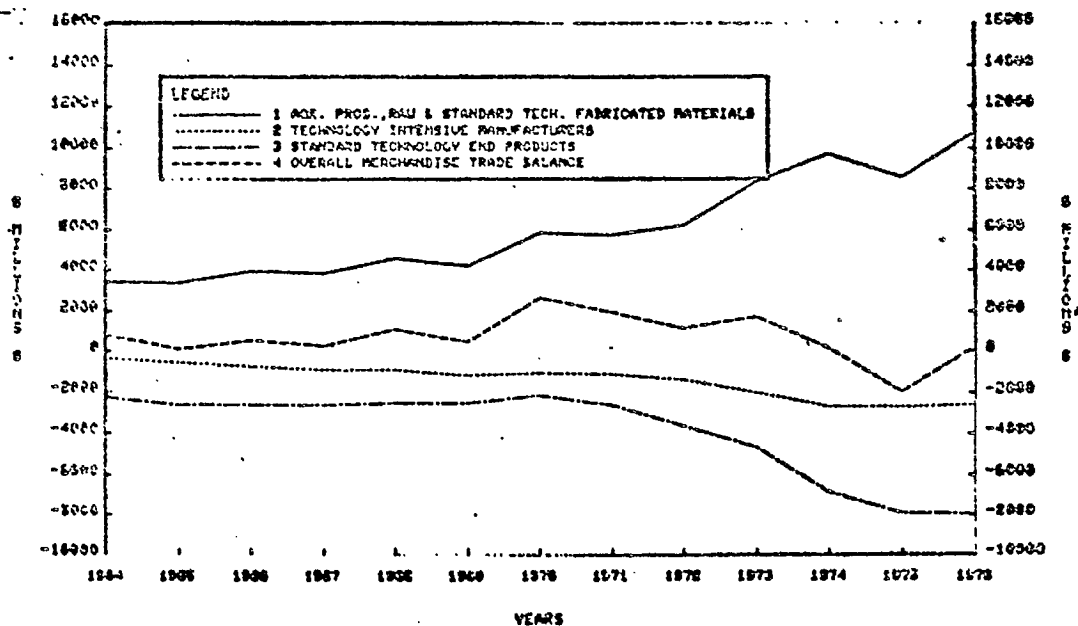
- 9 -

Finally we see from Chart 8 that industries characterized by relatively high levels of research performance tend to have lower rates of price increases.

One of the interesting things to note is that R&D is often directed at the production of new products rather than to productivity within the company itself. Through a process of diffusion the productivity benefits of research and development may be realized by the users of the products rather than by the manufacturers of those products. For example, airlines do no research and development themselves but they have been very effective in terms of utilizing technological developments of the aircraft and the computer industries. The obverse can also be true. In the extractive industries for example, the product may be simply a billet of lead or copper indistinguishable from the product decades ago. But the smelting processes are now very highly sophisticated in terms of process engineering and computer control.

We have also looked at commodity trade according to research intensity and we get the results shown in Chart 9. Now what we have done here is replicated in the Canadian situation some work that was done by the Department of Commerce in the States. We have gone through the commodity classification item by item and sorted commodities into two piles, according to whether they were relatively above average in terms of R&D expenditures per dollar sales, or not, and then examined our trade performance in some detail. As is quite evident, our trade balance is highly dependent upon agricultural output, raw materials and standard technology fabricated materials.

CHART 9

CANADIAN MERCHANDISE TRADE BALANCES
(\$ MILLION)

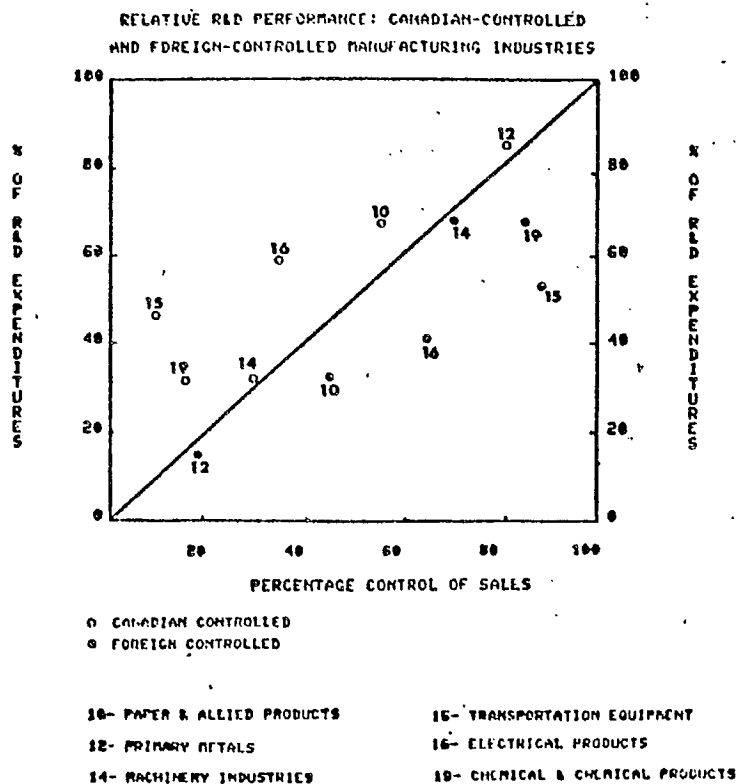
SOURCE :

- 10 -

In 1976 there was a trade deficit of about 2.6 or 2.7 billion dollars in technology-intensive commodities while in 1976 the GNP was around 190 billion, so as a percentage of GNP the merchandise was about 4% of the GNP, and for technological-intensive products, the deficit was about 1½ per cent of GNP. In fact, that is, if you trace it back historically, a fairly consistent pattern in Canadian trade. By and large, we have become wealthy by trading our commodities; sufficiently wealthy that we have been prepared to pay a premium to have our automobiles and refrigerators assembled in Canada, and sufficiently wealthy that we have fairly consistently bought hi-fi's, T.V.'s, and electronic calculators from Japan and other countries.

Now, for me, the worrisome thing about that is not that we have a trade deficit per se, because there is bound to be a deficit somewhere in the balance of payments account. What is worrisome to me is that over the last 30 years Canada has invested very heavily in our educational system with the result that we have a labour force which is very highly qualified in terms of abstract symbol manipulating skills. It is in the production of products using such skills that one would hope to see Canada exploiting that comparative advantage. But we have a persistent deficit in precisely those goods; a situation which suggests that we are not fully utilizing this advantage. Finally, looking at the influence of foreign ownership in the six most technology-intensive industrial sectors which perform about 85% of all industrial research and development in Canada, we have Chart 10.

CHART 10



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For each of these six R&D intensive industrial sectors, we have looked at the R&D performed by the Canadian-owned component, and the R&D performed by the foreign-owned component. Horizontally, we have percentage control of sales and vertically, percentage of R&D expenditures. If R&D expenditures in each of these sectors is proportional to control, they naturally all lie on the 45° line. What is rather remarkable is that the Canadian-owned component represented by the white circles, all lie above the line and the foreign-owned component lie below, sometimes by a substantial amount.

Paranetically, I should point out that the transportation equipment sector (No. 15) is distorted because there are two quite different components; one is the automotive industry which does no research and development, although it is entirely foreign-owned, and that throws the figures out rather substantially. The other major component is the aerospace sector which does a great deal of research and development.

Well, that pretty well sums up in very brief fashion our work in the Industry Branch of the Ministry over the last two or two-and-a-half years.

There is one last paper which is in the process of preparation at the moment which deals with international comparisons and shows, for example, on the basis of OECD statistics, that we have been creating jobs in the manufacturing sector in recent years at a faster rate than most other advanced nations. And it also shows that this kind of slow decline in manufacturing which we have seen for Canada in fact is characteristic of all members of the OECD. Various papers are available for anyone who wants to pursue this work in more detail. For example, Ranga Chand has an article in the current issue of the Conference Board's Canadian Business Review which sets out some of this work in more detail. But all of this work has, in some sense I think, been something of a diversion. I feel intuitively that the marginal return to work looking at that large service sector would be high relative to the same effort spent on manufacturing, and we now indeed have a work program underway to do just that.

With respect to the service sector, there is a tendency to think in terms of your local bar or laundromat. But there are highly technology-intensive services related to business - we have for example a good deal of expertise in locating mineral deposits, bringing them into production, and in refining the output; business services which are highly competitive internationally, including aerial surveying, geophysical surveying, process engineering and the like. In fact, in Canada's Centre for Remote Sensing, we are developing some extremely advanced

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techniques. Similarly, we have services related to services and we have consulting engineers in Canada with an internationally-competitive capability in airport construction. And, of course, we have technology-intensive personal services such as health care. We also have some unexpected specializations such as that of Dilworth, Secord and Meagher Associates Ltd., the engineering firm which did the design work for the large astronomical telescope that was being considered for construction in British Columbia. That project fell through, but not before all of the design had been completed and had been submitted to astronomers around the world for comments and evaluation. That has led to this consulting company developing a competitive expertise in large astronomical telescopes recognized on a world-wide basis. This firm has designed, I think, something like eight of them in the ten years since.

Well, I have run past my time limit. I hope that provides some sort of basis for the discussions which will take place today.

SHAPING the FUTURE: CANADA in the GLOBAL SOCIETY

TYPE OF SESSION	DAY & TIME	SESSION CONTENT				
Plenary Session	Wednesday August 23 7:30- 9:30 pm	1 Formal Conference Opening - Chairman Senator Maurice Lamontagne 2 Keynote Address "Shaping the Future: Canada in the Global Society", by Aurelio Peccer, Founder & Chairman, Club of Rome 3 Response by Michael Small, Ottawa, "A Youth Perspective on the Future"				
Theme Conference Sessions		Culture, Society & the Individual Chairman: Therese Lavoie-Roux, M.N.A., Quebec	Governance Chairman: Lucien Lamoureux, Ambassador to Belgium	Science & Technology Chairman: Leon Katz, Science Council Secretariat, Saskatchewan	Business & Labour Chairman: Michael Kirby, President, Institute for Research on Public Policy	The Economy Chairman: Sylvia Ostry, Chairman of the Economic Council
	Thursday August 24 9 am - 12:30	CSI-1 Diversity & Integrity in Canada's Future Speakers: Judith Vaillancourt, University of Montreal, Hugh Brody, Scott Polar Research Institute, Cambridge; Earl Shorris, Contributing Editor, Harper's Magazine	G-1 Governing Canada: The Challenge of the Global Society Speaker: Paul Gerin-Lajoie, President, Groupe Gerin-Lajoie Discussants: John W. Holmes, Canadian Institute of International Affairs, John Sigler, Norman Patterson School of International Affairs	ST-1 Science, Technology & Social Choice Speaker: Joseph Coates, U.S. Congress, Office of Technological Assessment Discussants: Byron Wall, University of Toronto; David Bates, University of British Columbia	BL-1 The Future of the Market Enterprise System Speakers: William Dimma, President, Torstar Corporation, R.B. Bryce, Former Deputy Minister of Finance	Ec-1 The Canadian Economy in a Global Perspective Speaker: David Slater, Director, Economic Council Discussants: Arthur J.R. Smith, Assistant to the President, INCO, Ltd. Robert Joyce, Department of Finance, Canada
	Thursday August 24 2 pm - 5:30	CSI-2 The Many Images of Man Speaker: Gregory Baum, St. Michael's College, Toronto Discussants: Howard Eisenberg, M.D., Rosedale Medical Centre, Toronto, Wilfred Pelletier, Thunder Bay	G-2 The Limits to Effective Governing Speaker: Eduard Pestel, co-author of Mankind at the Turning Point Discussants: Gordon Smith, Privy Council Office, Peter Dobell, Director, Parliamentary Centre, Foreign Affairs and Foreign Trade	ST-2 The Coming Shape of Human Settlements Speaker: Michel Chevalier, Universities of Montreal and York Discussants: Peter Land, Illinois Institute of Technology, Kirk Foley, President, Urban Transportation Development Corporation	BL-2 Business Government & Labour Interactions: Issues for the 1980's Speakers: John Crispo, University of Toronto; Jack Munro, President, International Woodworkers of America; Paul Leman, Vice-Chairman, Alcan Aluminum	Ec-2 Economic Growth: Master or Servant? Speaker: Ezra Mishan, London School of Economics Discussants: Gilles Paquet, Carleton University; L. Douglas Lee, Senior Economist, Joint Economic Committee, U.S. Congress
	Friday August 25 9 am - 12:30	CSI-3 Responsibility & Response-Ability Speaker: James Robertson, Management Consultant, London Discussants: Inger Hansen, Privacy Commissioner, Canadian Human Rights Comm, William Dyson, Vanier Institute of the Family	G-3 Distributing the Powers to Govern Speaker: Ronald W. Watts, Principal & Vice Chancellor, Queen's University Discussants: Stanley Roberts, President, Canada West Foundation; Jules Briere, Constitutional Lawyer, Quebec City	ST-3 Democracy in the Knowledge Society Speaker: Roy Megarry, Vice-President, Torstar Corporation Discussants: Michael Marien, Information for Policy Design, New York; Ruben Nelson, Square One Management	BL-3 Productivity Changing Concepts Speakers: Dorothy Walters, Director, Economic Affairs, INCO, Ltd. Eric Trist, Universities of Pennsylvania and York	Ec-3 Government Participation in the Economy Speaker: Almarin Phillips, University of Pennsylvania Discussants: John Langford, York University, Marie-Josée Drouin, Executive Director, The Hudson Institute, Montreal
	Friday August 25 2 pm - 5:30	IS-1 Communicating in the Global Village Chairman: A Davidson Duntion, Carleton University Speaker: Hugh Kenner, Johns Hopkins University Discussants: Betty Zimmerman, CBC, Donald Evans, University of Toronto	IS-2 Small is Beautiful? Chairman: J. Rennie Whitehead, Chairman, Canadian Assoc., Club of Rome. Speakers: George McRobie, Head, Intermediate Technology Development Group, London, Justice Thomas R. Berger, Supreme Court of British Columbia	IS-3 Changing Rhythms of Work & Leisure Chairman: Jane Dobell, Chairman, Ottawa Bd of Education Speaker: David Lewis, O.C., Carleton University Discussants: Francis Bregha, University of Ottawa, Jacques Gagne, Director, Federation of Local Centres of Community Services, Quebec	IS-4 The Difference of Man - & The Difference It Makes Chairman: Theodore F. Gaerls, University of Ottawa Speaker: Aristide Esser, Man-environment Relations Inst., New Jersey Discussants: Jerzy A. Wojciechowski, University of Ottawa; Norman White, McMaster University	IS-5 Technology, Nature, & the Limits of Satisfaction Chairman: John Shepherd, Executive Director, Science Council of Canada Speaker: William Leiss, York University Discussants: Vivian Rakoff, Clarke Institute of Psychiatry, Peter Dawson, Tomkins Institute, Newfoundland.
Plenary Session	Saturday August 26 9 am - 11 am	Summation of Conference Findings (a) Chairman: Senator Maurice Lamontagne (b) Speakers: Sam Nilsson, International Federation of Institutes of Applied Studies Sweden World Perspective Walter Baker, University of Ottawa Canadian Perspective				

SUMMARY OF DISCUSSIONS AND AGREEMENTS ON

FUTURES RESEARCH

-EEC DELEGATION VISIT-

Discussions between the EEC Delegation and the Canadian government on the subject of futures research were extensive. They ranged from a review of the EEC's new FAST program (Forecasting and Assessment in Science and Technology) to an overview of the major initiatives which the Canadian government has taken in futures work and long-range analysis.

The Delegation and MOSST reached a consensus in their first meeting on September 11th as to the areas in which collaboration in the futures field should be developed.

1) Dissemination of futures research

Much attention has been directed to the development of futures research in Western institutions, but comparatively little to the process of presenting it to senior management. Even less effort has been devoted to the dissemination of this work to the private sector, universities, and the general public. The Delegation and MOSST agreed that the presentation and dissemination of this kind of work was integral to the capacity of government and society to consider the future on a well-informed basis. Specifically, the proposal was advanced to explore the feasibility of convening a bilateral seminar in the spring of 1979. Consultations at that time could focus on alternative strategies for remedying this deficiency in the West.

2) Stanford Research Institute (SRI) Project

The SRI of California, U.S.A., identified in a recent study forty-one national and international problems likely to materialize in the near and not-so-near future. The T.A. Division of MOSST has already reviewed this study in the course of developing the research framework for long-term S&T priorities for Canada. The Delegation proposed that it would be mutually beneficial to critically evaluate the SRI

catalogue of crises and issues from both a Canadian and a European perspective. The commitment to joint action in this case would take the form of an exchange of analysis between the FAST Team and the T.A. Division of MOSST.

3) Methodologies in Futures Research

The many techniques and methodologies available for use in futures research cover a large spectrum. Attempts to assess and evaluate the comparative merits of these approaches have usually been meagre and frequently partial. A consensus emerged between the Delegation and MOSST as to the suitability and the timeliness of a jointly-supported effort to examine alternative methodologies in futures research. Special attention will be given to the application of these methods in the governmental context.

NEW LIAISON NETWORK
FOR FUTURES RESEARCH

BETWEEN THE CANADIAN GOVERNMENT

AND THE EUROPEAN ECONOMIC COMMISSION

GOVERNMENT OF CANADA

EUROPEAN ECONOMIC COMMISSION

SEPTEMBER 1978

