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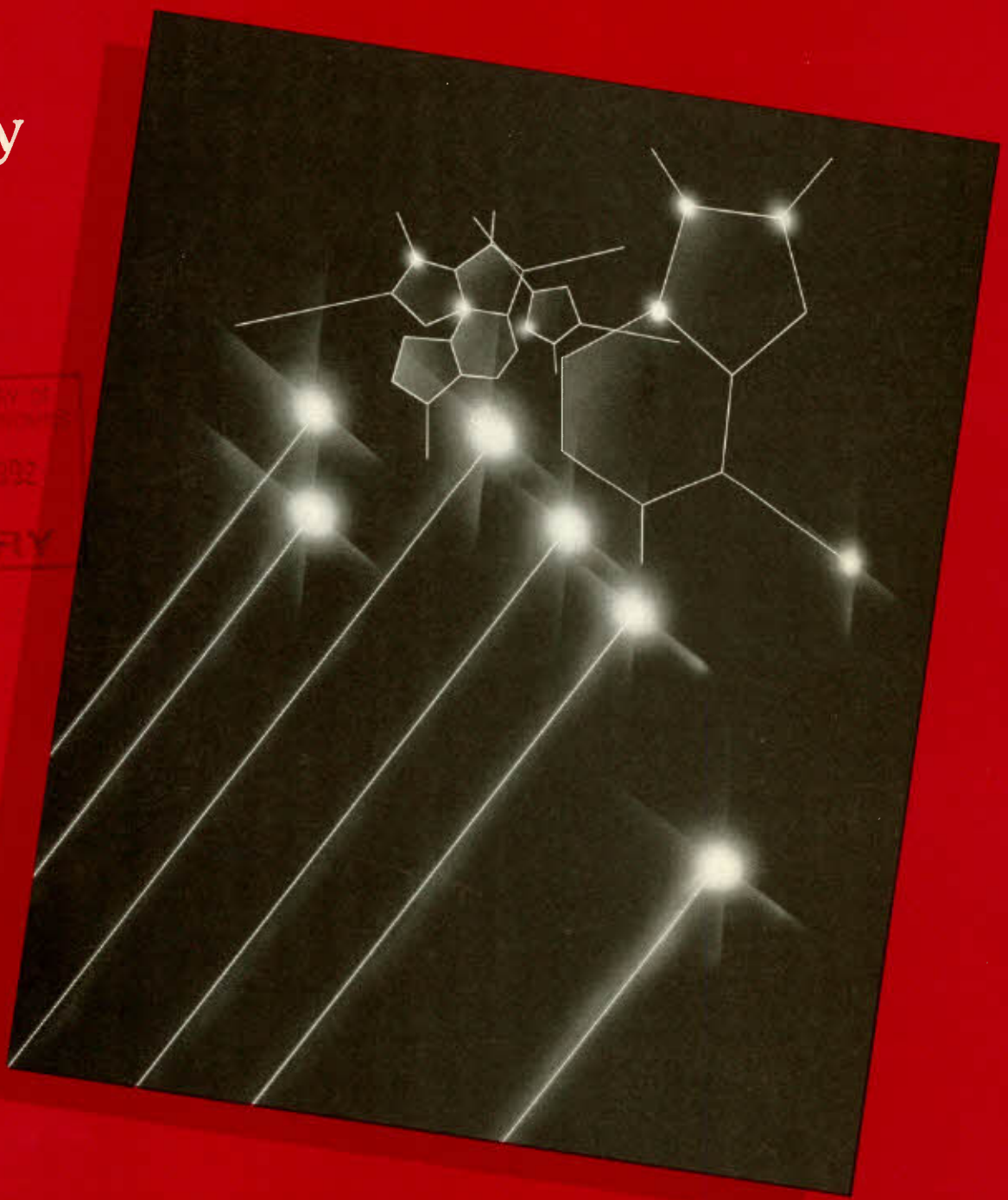
Economic Council of Canada Volume 8, No. 1, 1987

Making technology work



- The rising cost of hospital care
- A new project on regional development

PUBLICATIONS

New Council Statement

Making Technology Work: Innovation and Jobs in Canada (EC22-142/1987E; $4.95 in Canada, $5.95 elsewhere).

In this Statement, the Council examines the impact of technological change on the labour market, including its impact on jobs, income, and on particular groups of workers such as women, young people, older workers, and the disabled. It identifies the technologies that have been introduced and the kinds of firms that innovate. It also looks at the management of innovation within firms and its impact on Canada's industrial relations system. In addition, the Council puts forward a policy framework designed to encourage rapid technological advance while minimizing the costs of adjustment.

New Council Report

Innovation and Jobs in Canada (EC22-141/1987E; $10.95 in Canada, $13.15 elsewhere).

This research report provides the detailed analytical findings that support the Council's Statement on the impact of technological change on the labour market.

Colloquium Proceedings

The Council's two-day Colloquium on Aging with Limited Health Resources pinpointed some of the key issues and potential developments in the health care field that will confront Canada as a result of its aging population. It brought together some 100 participants from diverse backgrounds in scientific and social research, economics, health administration, and government. A summary of the Colloquium proceedings was featured in *Au Courant* (Vol. 7, No. 1). The papers presented at the Colloquium have also been collected in a volume of proceedings, which can be ordered in accordance with the information below.

Aging with Limited Health Resources: Proceedings of a Colloquium Held in Winnipeg, May 1986 ($9.95 in Canada, $11.95 elsewhere).

Research Studies

Research studies are published by the Economic Council in both official languages. A list of titles is available on request. Each study clearly attributes the findings and conclusions to the individual author or authors rather than to the Council. (Ordering information below). One new title has been published since the last issue of *Au Courant*.

Canadian Hospital Costs and Productivity, by *L. Auer* (EC22-138/1987E; $8.95 in Canada, $10.75 elsewhere).

Reprint

The following Council Statement has been reprinted and can be ordered in accordance with the information below.

Competition and Solvency: A Framework for Financial Regulation (EC22-134/1986E; $4.95 in Canada, $5.95 elsewhere).

How to order

Research studies and Council reports are available across Canada from bookstores where government publications are sold. (A list is available from the Council on request.) These publications can also be ordered by mail from the Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Canada, K1A 0S9. (Please be sure to include a cheque or money order made payable to the Receiver General for Canada.)

Discussion Papers, *Au Courant* and the *Annual Report* are available without charge from the Information Division, Economic Council of Canada, P.O. Box 527, Ottawa, Ontario, K1P 5V6.

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The Economic Council reports featured in *Au Courant* reflect the viewpoint of Council members. Research studies, technical reports, discussion papers, and other background papers are prepared for the use of the Council by members of its staff and others. The findings of these reports are the personal responsibility of the authors. Neither the original publication of these studies and papers, nor their condensation for the purposes of this magazine, should be taken to imply endorsement of their conclusions and recommendations by the members of the Economic Council.

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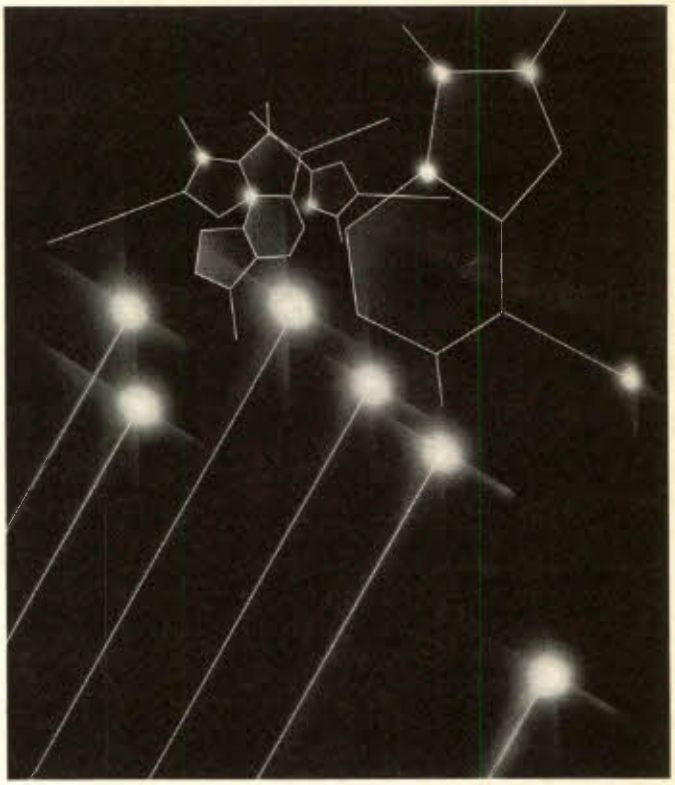
Making Technology Work

Innovation and Jobs in Canada



Canadian jobs and living standards are at risk because of this country's failure to perform better in the global technological race, says the Economic Council of Canada.

The fact that Canada lags behind many other industrialized nations in the development and use of new technologies is "an urgent national problem of major proportions," the Council says in its Statement, *Making Technology Work: Innovation and Jobs in Canada*. At the same time, Canada needs policies to encourage technological change while minimizing the costs of adjustment. "The two points are mutually dependent," the Council explains. "Without rapid technological advance we stand to lose competitiveness and jobs. Without a secure, flexible, highly skilled work force we face slower technological advance."

Much of the evidence put forward in the Council's Statement (a separate research report contains detailed findings) is based on results of the Working with Technology Survey – the first of its kind in Canada and one of the most comprehensive worldwide. The survey looks at how widely computer-based technologies have diffused in Canadian industry and how firms are responding to them. Close to 1,000 establishments responded in all industries except agriculture, fishing, construction, and public administration. The survey focused on the computer-based technologies because they are expected to have the most wide-ranging impacts on work in the short-to-medium term; they have evolved rapidly, diffused widely, and are highly visible; and they are considered an "enabling" technology that permits change in other fields.

The results

Seventy-five per cent of the survey respondents introduced some type of computer-based technology between 1980 and 1985. Almost two-thirds was in the form of office automation equipment (personal computers and word processors, for example); slightly less than a quarter, in process technologies (such as computer-aided manufacturing and design, computer numerical control, and automated material handling); and the remainder, primarily in industry-specific applications. The expected trend in the 1986-90 period is towards increasing diffusion and more sophisticated use of all types of computer-based technology, and more emphasis on process automation in particular. Most firms cite increased productivity as the main reason.

To determine which industries used computer-based technology the most, the Council developed two measures of "technological intensity": the ratio of employees who were actually working with computer-based technology; and the ratio of expenditures on that technology to total sales over the period. Four industries ranked high on both counts: communications and other utilities; wholesale trade; finance, insurance, and real estate; and business services. Three sectors scored particularly low: leather, textiles, and clothing; wood and furniture; and primary metals.

International comparison

While Canada does have some notable technological strengths – in telecommunications, large-scale engineering, agriculture, and forestry, for example – the majority of Canadian producers are slow to adopt innovative practices. In particular, there is a substantial Canadian lag behind other countries in the adoption of process automation technologies, while capital investment in this area "is also lagging seriously," the Council reports. The gap between Canada and other countries is even wider because of Canada's lack of experience in learning how to apply the new technologies.

"The stakes are high and getting higher, and Canada has to act now," the Council says. "Failure to do so will lead to a loss of prosperity and jobs as Canada's competitive position deteriorates."

While many Canadians have welcomed technological change, others share misgivings about its impact on jobs and income. The Council examines this issue at length, including the impact of new technology on women, young people, older workers, and the disabled. It also looks at the management of innovation within firms and its impact on Canada's industrial relations system. Finally, by determining where the impacts of technological change are likely to be felt, the Council is able to suggest policy responses that will encourage technological advance while minimizing the costs of adjustment.

Tech change and the job market

The new technologies have the potential to create both winners and losers.

Thus, while some occupations will experience significant growth in numbers, others – notably clerical and machining and related occupations – will dwindle. The mismatch between patterns of growth in some occupations and decline in others will create serious problems in terms of labour market adjustment. Even within occupations, many of the new jobs created by tech change will be available only to those who are capable of working with the new technologies. To compete, Canada needs "an industry structure and a labour force that are adaptable in the face of change and that are responsive to it," the Council says.

Historical trends

To project the impact of tech change on future employment, the Council initially looked at historical trends. It also had to disentangle the effects of tech change from other factors shaping the economy, such as changes in demand and in the mix of goods and services used to produce a product. (In automobile production, for example, more plastic and fewer steel parts are being used today.)

In isolation, new technologies and innovative management practices can increase productivity and thus reduce the need for labour. But productivity growth also increases efficiency and subsequently raises producers' and workers' incomes, which stimulates demand. Hence more workers are needed to meet the higher demand. So, indirectly, tech change can increase employment. Between 1971 and 1981, in fact, total employment grew by 30 per cent in Canada primarily as a result of growth in final demand.

Of the 85 occupational groups the Council studied, tech change had a positive net effect in the vast majority of instances. (Only in the cases of general office clerks, farmers, nursery and other farming occupations, textile processing, "other" metal machining, labouring in construction, and "miscellaneous" occupational groups did employment decrease over the period.) Moreover, tech change acted to increase employment directly in 43 per cent of the occupations employing 36 per cent of all workers. As well, some wholly new occupations were created (including videotex page designers, fibre-optic cable splicers, and nuclear technologists), while others disappeared (pneumatic riveters and rail switch repairmen, for example).

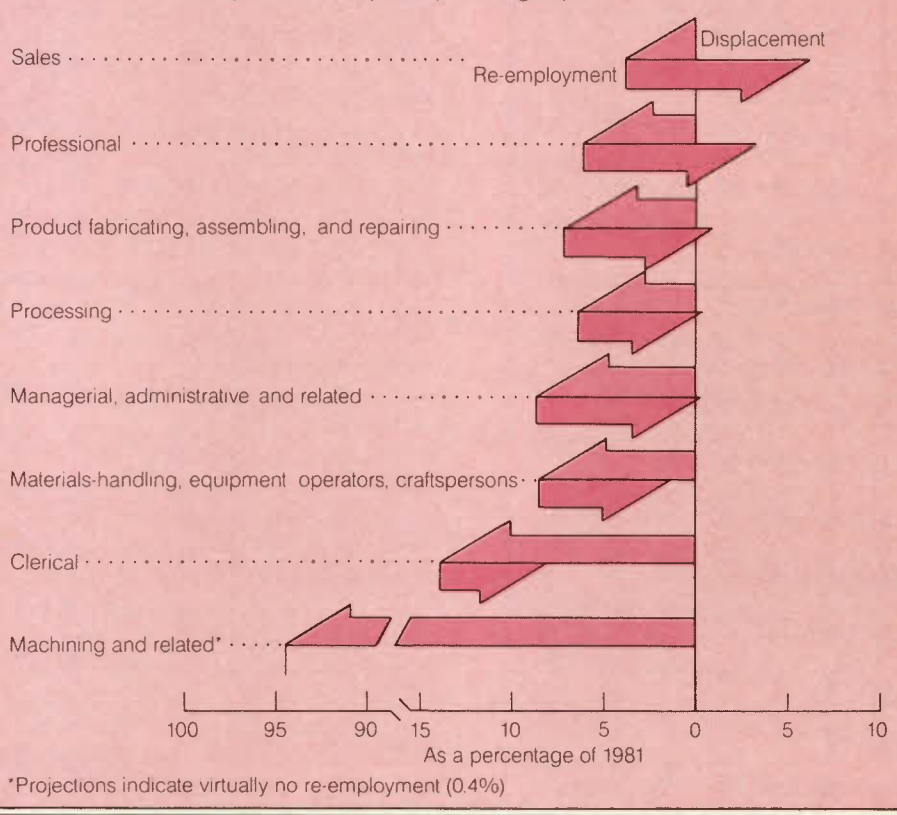
High-tech sector

To see how users of new technologies compared with non-users, the Council classified industries as low-, mid-, or high-tech, based on the proportion of their intermediate inputs that was considered high-tech. An industry that purchased sophisticated electronic components to produce a finished product would be considered high-tech, for instance. Among the high-tech industries are communications; finance, insurance, and real estate; machinery; electrical and electronic products; and trade.

Overall, the high-tech sector

How tech change will affect employment by 1995

Relative to 1981 employment levels by occupational group



*Projections indicate virtually no re-employment (0.4%)

experienced higher rates of employment and output growth throughout the 1970s and into the 1980s than did the mid- and low-tech sectors. Only in a few industries – notably electrical products and automotive industries – did output growth in the 1981-85 period fail to offset the negative employment impacts associated with productivity growth, with the result that recent employment growth in those industries was negligible. The high-tech industries also fared better in terms of cost efficiency and had higher wages and wage-rate growth over the period. Even though jobs grew more rapidly in high-tech firms, however, labour displacement still occurred. Some staff were transferred, some underwent retraining, and others were laid off. In all, tech change caused "major shifts" in the occupational structure of employment, the Council concludes.

Employment projections

Three elements will critically affect the nature and scope of labour market adjustment in the future: how well the economy performs (demand); how evenly the productivity gains are shared; and how well the impact of the various technologies on employment is understood. In the last regard, the Council breaks new ground by incorporating into an employment-projection model technical information on how labour market requirements change when microelectronics-based technologies are introduced into the office and on the shop floor.

Using its Microelectronic Simulation Model in a number of scenarios, the Council finds the impact of tech change to be highly uneven across occupations. While it has the potential to cause considerable worker displacement, tech change can also produce large productivity payoffs, resulting in new jobs or "re-employment" (see chart). In fact, such re-employment more than offsets the displacement effect in sales; professional occupations; product fabrication, assembly, and repair; processing; and managerial, administrative, and related occupations. Certain other occupations may, however, experience considerable job losses, most notably machining and related occupations, and clerical jobs. Materials handling, equipment-operating, and crafts occupations are affected negatively as well.

Middle-class erosion

Major debate rages over whether tech change is eroding the size of the middle class by creating high-skilled and low-skilled jobs, but few in between. New technologies are also said to contribute to the shift in jobs from goods production to service industries, many of which offer low-paying and part-time work only. While the Council did not find any conclusive evidence, it points to a number of possible warning signs of middle-class decline.

> *There are disquieting signs that changes in the composition of the middle class are taking place.*

First, in many respects, Canada is still only at the early stages of the current wave of technological advance. As the new technologies evolve and spread, shifts in the distribution of income may yet occur. Indeed, in the United States, where tech change has progressed more rapidly, indications of a middle-class erosion do exist. Second, there are disquieting signs that changes in the composition of the middle class are taking place. The Council emphasizes that such changes "must be reflected in the policies that are put into place to facilitate adjustment."

Tech change and women

For women generally, tech change holds out prospects of benefit and bane. On the one hand, women held more than half the new jobs that were created in the high-tech sector over the 1971-81 period. On the other, female employment was heavily concentrated in three industries that employ high proportions of clerical workers – retail trade; finance, insurance, and real estate; and services to business. Hence it appears that the disturbing trend towards "ghettoization" of women in clerical occupations is continuing in the high-tech sector. Moreover, as employment opportunities dwindle in manufacturing and in transport, communications, and other utilities (where relatively good pay and working conditions are found), the balance of job availability has shifted to industries such as community, business, and personal services; and finance, insurance, and real estate – where many female workers have experienced relatively lower earnings, and less stable and permanent labour-force attachments.

Furthermore, part-time work has been on the increase in recent years, and almost three-quarters of it is accounted for by women. While the majority of women who are working a shorter week appear to want only part-time jobs, a growing minority would prefer full-time work. Finally, women in high-tech industries do not necessarily earn the highest incomes. Average employment incomes for a range of clerical occupations in 1980 were consistently lower in this sector, in fact.

Special groups

Tech change may also exacerbate the disproportionate employment difficulties of young people, older workers, Native peoples, and the disabled, the Council says. For example, Native peoples' concentration in a few primary activities (hunting, fishing, trapping, and forestry) and in remote areas of the country may isolate them from the opportunities that new technologies present. For the disabled, physical access remains a problem. For young people, the often bewildering array of career choices is now complicated by a rapidly unfolding occupational structure and accelerating obsolescence of skills. The latter development has an even greater effect on older workers.

Each of these groups suffers from major inadequacies in education, the Council finds. Moreover, tech change conspires most notably against the least educated groups by creating fewer employment opportunities for them. "A recurrent theme in all aspects of our work on employment and new technologies is the crucial importance of education and training," the Council points out. If young people are ill-prepared educationally, they could well be the victims of the new technologies. For the substantial portion of the working-age population who are beyond normal schooling years and who suffer educational deficiencies, imaginative remedial programs of literacy, educational leave, and private and public vocational training are needed.

Innovation in the workplace

Tech change is more than just robots and computers.

As the Japanese and Swedes have demonstrated, it also involves creating an innovative workplace environment to inspire the "people" side of the enterprise. In Canada, though, far too many organizations pay only lip service to that principle, the Council says.

Since most tech change requires new skills, for example, training is important. While there have been instances of substantial employer-sponsored retraining in Canada as a result of tech change, the Working with Technology Survey suggests that these efforts are not typical. To date, most training has been relatively informal and of short duration. More than half of it involved clerical workers only. When tech change affected high-level skills, companies generally tended to hire externally rather than upgrade existing personnel. Since most tech change involved relatively small, stand-alone office applications, companies have been able to get by thus far without much staff retraining. But the number of people working with sophisticated technologies – from robots to computer numerical control - is expected to rise dramatically in the future.

Innovative practices

The Council's research suggests that there are two essential ingredients in organizational innovations: the organization of work (job redesign through enlargement, rotation, or enrichment, for example); and processes for decision making (such as quality control circles and various forms of industrial democracy). Comprehensive models of organizational innovation contain elements of both.

Among the 65 per cent of respondents in the Council's technology survey who instituted some type of organizational innovation, the most common form was decision-making arrangements, such as joint labour/management committees. These committees, however, tended not to have a major participative role in the tech-change process. Other forms of innovation were reported less frequently. Still, increasing numbers of Canadian companies recognize the benefits of workplace innovation, including increased productivity, cost reductions, lower absenteeism, better safety records, and enhanced quality. "On balance, however, it appears that many establishments in this country are operating according to traditional principles of work design and decision-making," the Council concludes.

Industrial relations

Tech change is creating serious challenges for Canada's industrial relations system as well. For one thing, it appears to be threatening union membership by accelerating the shift in employment away from traditionally unionized occupations, since collective bargaining is practised least in the industries labelled high-tech. In some instances it may also threaten the relative bargaining power of unions by offering employers the potential to control production off the shop floor (in automated factories, for example). In principle, however, union officials tend to accept tech change, provided that consultation precedes its introduction and that management makes every effort to minimize the adverse effects on workers.

Collective bargaining

At the moment, only a minority of Canadian labour contracts have clauses related to tech change. (The Council looked at written agreements because they are the "rule book" governing the union/management relationship.) The most common clause was "advance notice prior to the introduction of tech change"; however, it was absent from over 60 per cent of the agreements examined. Even after legislation was enacted to encourage collective bargaining over tech change – in Manitoba, Saskatchewan, British Columbia, and federally – the change in the incidence of techology-related clauses was modest. Furthermore, collective bargaining over tech change has not been very successful, partly because of restrictive definitions of what constitutes tech change and partly because of the difficulties in separating its effects from other factors causing job displacement. Finally, of the four jurisdictions, three (excluding B.C.) allow parties to opt out of the legislation, provided agreements have clauses to resolve tech change issues.

Blueprint for action

Tech change will bring economic progress and jobs to Canada – provided that businesses apply the new technologies more rapidly and that governments adopt the right labour-market-adjustment policies.

At the moment, however, there is cause for concern, for the following reasons:

- Canadian industry continues to lag behind other countries in adopting new technologies.
- Tech change is never smooth and balanced. It creates both winners and losers and Canada must do a better job of helping the losers cope. And,
- The pace of change in the global economy will remain rapid and may accelerate. The next round of innovation will have more profound employment consequences.

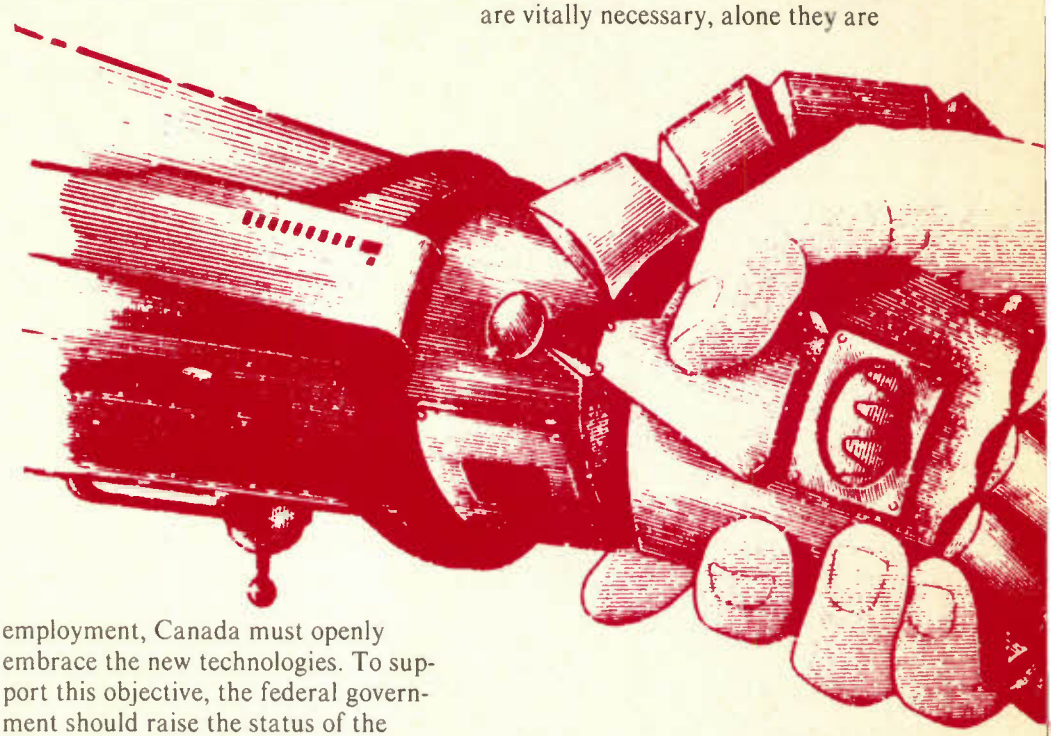
In the Council's view, Canada lacks the explicit national commitment to new technologies and the cohesive framework of policies that must accompany such commitment. Accordingly, the Council has developed a policy framework that rests upon the "twin pillars" of recognizing the need for rapid technological advance, as well as human resource development. In constructing its framework, the Council was guided by the following principles:

- The choice of technologies, training, and adjustment mechanisms will generally be market-driven.
- At the same time, governments have an important role in establishing the climate within which change must occur.
- Governments should continue to finance training and other adjustment policies, but this should be done mainly through the reallocation of existing funds rather than through substantial new expenditures.
- Adjustment programs must be flexible enough to meet the varying needs of individuals. And finally,
- The common interest among Canadians in sharing the prosperity and jobs that tech change can bring should be recognized and enhanced.

The Council puts forward a number of specific policy measures to support each of its five major policy objectives.

Technological advance

First, in order to increase productivity, competitiveness, incomes, and employment, Canada must openly embrace the new technologies. To support this objective, the federal government should raise the status of the Minister of State for Science and Technology to that of senior Cabinet Minister. Provincial governments and the media can provide leadership too, by raising the profile of science and technology issues. In addition, the Council sees two ways to improve the extensive network of high-tech and innovation centres that have been established in recent years to promote technological advance. First, a directory is needed to help entrepreneurs identify which centres are the most appropriate for the needs at hand. Second, the expertise of all centres should be rounded out to include not just the purely technical aspects of tech change but the human-resource planning and management aspects as well. Since Canada must stay attuned to advances in technology and their impacts, the Council also suggests focusing the efforts of the Canadian Labour Market and Productivity Centre on the single, urgent, and enormously important national issue of tech change.



A skilled work force

The Council's second policy objective recognizes that while new technologies are vitally necessary, alone they are insufficient. A well-trained, flexible, and committed work force is equally important.

In the area of education, a two-pronged attack is necessary. First, school retention rates and average educational attainment levels must be raised to improve the prospects of new entrants to the labour market. Second, for the adult worker, imaginative remedial education programs and vocational training are required.

In the workplace, support for employer-based training programs in selected highly skilled occupations affected by tech change should be an explicit priority in federal training programs. The Skill Investment component of the Canadian Jobs Strategy is of considerable interest to the Council because it supports the kind of skills-development arrangements called for in a high-tech labour market. But ways must be found to make these

approaches more attractive because of the poor "take-up" rate by individual companies. The Council also focuses attention on the feasibility of a paid-education-leave policy in Canada, possibly through a voucher-style program to cover the costs of employer- sponsored training. In this way, workers could spend the vouchers (on tuition, for example) to learn the skills they consider most appropriate. At the same time, the federal government should build on the Council's innovative work in the area of labour market forecasting, so that Canadians can better anticipate the effects of tech change on the job market.

Adjustment assistance

Since tech change is uneven and disruptive, an adjustment policy is required to minimize the costs and share the benefits. To support this policy objective, the Council suggests expanding the federal government's Industrial Adjustment Service (IAS) through a gradual increase in its financial and personnel resources. The IAS encourages labour and management to work together when economic or tech change causes labour market adjustments. At the moment, it lacks the resources to meet a substantial and growing market for its service.

A national adjustment policy must also give special consideration to those people and groups who may assume disproportionate transition costs. In particular, part-time workers – many of whom are women, older workers, the young, and the disabled – are penalized by not sharing proportionately in the benefits and protection available to full-time workers, such as private-pension-plan coverage and eligibility for unemployment insurance. While this issue is complex, it must be dealt with now, in view of the sheer extent of part-time employment, the Council notes. Disabled persons may be disproportionately affected by tech change as well, despite the opportunities for advances in their quality of life. Solutions to meet their special needs in the workplace are often simple and inexpensive but not always obvious to employers who have had little experience in this regard. The Council says an agency like the Job Accommodation Network in the United States could be established in order to supply information on technical aids and architectural modifications, to provide real-world examples of similar situations and the solutions developed, and to recommend types of equipment and sources of supply.

Innovative management

Because successful tech change depends as much on innovation in the organization of firms and in the development of human resources as it does on technical expertise, Canada must innovate on both fronts. In other words, the most successful businesses will employ managers who have some technical understanding, as well as scientific and technical staff who have some sense of business management. And both will have an appreciation of the relationship between human resources and technological change. Too often, however, the bridges between these skills "are conspicuously absent," the Council says.

Accordingly, steps should be taken by engineering and business schools to produce more fully rounded graduates. There should also be stronger links between the business and advanced-education communities through cooperative education and exchange programs, including more at the senior-management level. For a system of exchanges to work, however, participants should not see their career prospects threatened by a move to another environment for a period of time. The growing trend towards having business people advise on academic programs should be taken one step further by involving them directly in learning and teaching experiences. Generally, cooperative arrangements produce large payoffs by helping businesses and educational institutions allocate their resources more efficiently and effectively, the Council notes. Industry associations can play a coordinating role in this regard.

Innovative management within companies is needed as well, with the focus on the management of people, the interaction of managers and workers, and the organization of work. The key ingredients of an effective and enlightened management style that were distilled from the Council's case studies include: preplanning of both the social and technical aspects of innovation; involvement of all the principal stakeholders in the innovation process; development of more collaborative and flexible work designs and methods; commitment to the existing work force; retraining and skills development; and management training that imparts an understanding of the organization and of the human-resource consequences of tech change.

Industrial relations

Finally, a more constructive industrial-relations climate is essential if Canadians are to enjoy the fruits of technological progress in a fiercely competitive world, the Council says. In this respect, British Columbia's current legislative approach to tech change would be helpful to other jurisdictions. Companies are unable to opt out of the B.C. legislation, as they can elsewhere; there is a less restrictive definition of what constitutes tech change; and a procedure exists for referring technology-related disputes to binding arbitration.

Other measures are needed as well, because the majority of Canadian workers are outside the collective bargaining system. In addition, many public-sector workers are barred from negotiating tech-change issues, and formal bargaining over technology tends to be sporadic and, too often, defensive in nature. The Council supports the idea of establishing labour/management committees empowered to deal with such concerns as job wages, retraining, and health and safety issues arising from tech change. The Council's intention in making this suggestion is not to circumvent existing collective arrangements but to encourage employers and workers to address ongoing innovation-related issues mutually.

Why hospital costs are soaring

Canadian hospitals may have to be much more selective in their adoption of state-of-the-art medical technology, in order to bring their rising costs under control.

As well, policy makers should be seriously considering alternative methods of delivering hospital care to prevent these costs from getting out of hand, says economist Ludwig Auer in a research study written for the Economic Council.

Auer carried out an extensive analysis of changes in Canadian hospital costs and productivity between 1960 – a few years after a new Act of Parliament had provided Canadians with guaranteed access to hospital services – and 1980. His study takes into account over 90 per cent of all hospital beds in Canada and is based on hospital data provided by Statistics Canada and by Health and Welfare Canada. In conducting his research the Council economist experimented with various approaches to the measurement of output and productivity – an area of great concern to economists because of the growing importance of the service sector in the economy.

At the outset, Auer acknowledges that Canada's health care system "provides ready access to high quality care for all Canadians" at a reasonable cost, by international standards. He warns, nevertheless, that costs have been rising steadily over the years, in no small part because of rapidly increasing hospital expenditures – which grew at an average annual rate of 15 per cent between 1960 and 1980, and which accounted for 40 per cent of the rise in total health costs.

Reason for rise

Auer examines in turn the possible explanations for this alarming increase: growth in population, admission rates, higher wages and prices, and/or variations in hospital care.

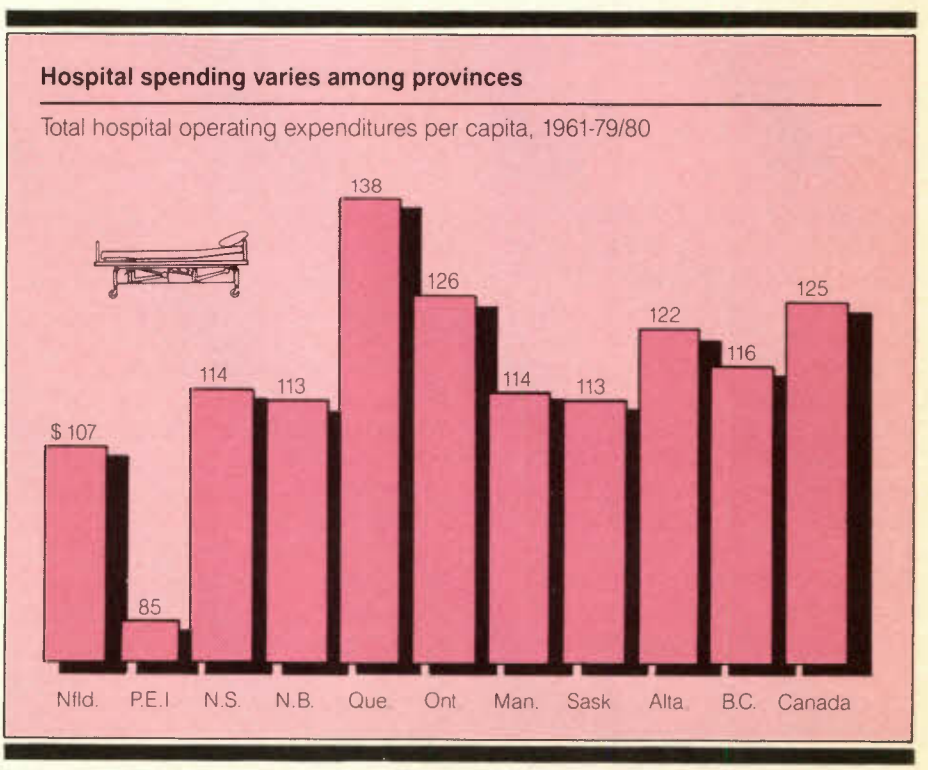
Only one-tenth of the rise was attributable to population growth, he found. An increase in the number of elderly, who require more hospital care, was offset by the lower admission rates for young women, caused by the sharp reduction in birth rates.

While the rate of hospital admissions changed very little, however, the costs per admission climbed steadily, primarily because of the higher wages paid to hospital staff. But a noticeable increase in the services provided by hospitals also pushed up costs. Auer attributes this higher service volume to two things: a surge in the number of services – nursing, administrative, and diagnostic/therapeutic – provided for each patient (which he terms "case intensity") and an increase in the number of personnel hours and materials required by each service unit ("task intensity"). A good example of case intensity, he notes, is found in the higher number of radiological examinations and treatments carried out over the period. Greater task intensity is evident in the longer hours that nurses spent with patients. A striking example is in obstetrics, where nursing hours per delivery almost doubled over the 1960-80 period – an increase associated with the doubling of the rate of caesarean births between 1972 and 1981.

This intensifying of services accounts for the slow productivity growth between 1960 and 1980, Auer says. Using a variety of measures, his estimates range from an annual decline of

Hospital spending varies among provinces

Total hospital operating expenditures per capita, 1961-79/80



2.3 per cent to an annual growth of 0.9 per cent. Only if the benefits to the patient prove commensurate with the increased services, can productivity be said to have improved, he argues.

But the jury is still out in this regard, Auer claims, citing as a prime example the widespread use of expensive "halfway" technologies and treatments that provide comfort but not cures. (Expenditures on the terminally ill are a prime example.) Given that cost restrictions will probably compel hospitals to be far more selective in patient treatment, "there is an urgent need for a cost/benefit evaluation of surgical interventions, alternative treatments, and associated hospital costs," Auer concludes.

Provincial comparisons

Auer also examined provincial differences in hospital spending and productivity. He found that operating expenditures varied by as much as 40 per cent (see chart) primarily because of variations in admission rates – which ranged from 25 per cent below to 25 per cent above the national average in Quebec and Saskatchewan, respectively.

Interestingly, Auer observes, those provinces with lower admission rates recorded higher levels of service intensity – and thus higher per-patient costs. (Saskatchewan and Quebec are almost mirror images in this regard.) "It is tempting to conclude," Auer surmises, "that costs per patient and admission rates were not independent of each other, but that higher admission rates were linked with lower costs per patient and lower admission rates with higher costs."

Determining differences in hospital productivity across the provinces proved to hinge on the choice of output measure, Auer found. When hospital output is measured by the number of patients, for example, Quebec proved to be the least productive with an average of 12 patients per staff person-year; Prince Edward Island was the most productive, with 21. But when output is measured by the volume of hospital services provided, the reverse proves to be the case.

Finding solutions

Bringing hospital costs under control will require productivity improvements, Auer concludes. In other words, hospitals will have to be more efficient in their delivery of services of the same or better quality.

Auer describes several methods that might serve to achieve this goal. One option is a new system of accounting and payment schedules based on diagnosis-related groups (DRGs) currently being introduced in the United States. Under this approach, average treatment costs are set for a long list of DRGs. When the actual cost of treatment is lower, the hospital can retain the difference; when higher, it must record a loss. Auer cautions that this method has some shortcomings but argues that it would be useful in cutting down on excessive hospital treatment.

Another option is the use of a prepaid health care system, whereby individuals or companies would pay an annual sum for guaranteed health care. Again, there would be some drawbacks to using that system in Canada, but Auer suggests trying it out in targeted areas to test its efficacy.

Finally, Auer stresses the need for cost/benefit evaluation of hospital treatments, and he advocates the development of new labour-saving technology – an area that has attracted little funding to date.

Canadian Hospital Costs and Productivity, by L. Auer (EC/22-138/1987E; $8.95 in Canada, $10.95 elsewhere).

Debunking unemployment myths

Misconceptions about the nature of unemployment and its causes could frustrate attempts to help Canada's jobless, says a leading authority on the subject.

Claude Forget, head of the recent Commission of Inquiry on Unemployment Insurance (the Forget Commission), says that poor analysis of the unemployment problem threatens to lead policy makers "down the wrong track" in prescribing solutions. Speaking at a recent Economic Council seminar, Forget outlined the main findings of the Commission report and challenged some of the major assumptions about unemployment in Canada.

Finding the causes

For example, the lack of job opportunities in many isolated regions of the country is perceived to be a key cause of high regional unemployment. To help deal with the problem, the unemployment insurance program is tailored to reflect regional circumstances. But location may not be the most significant factor contributing to the regional variation in unemployment rates. Instead, the age of the unemployed, sex, education, occupation, and industry, as well as the rural-urban mix, may account for much of the difference. Consequently, new programs that go to the root of the problem would probably do more good than an increase in unemployment insurance benefits, Forget says. "Giving more money to a region where poor education contributes to unemployment certainly won't solve the problem," he explains. "I question whether the regional factor contributes to unemployment as much as we tend to think it does. Let's dig a bit deeper, do more analysis. By focusing on the regional factor, we tend to see income transfers as a remedy for income disparities. But there are deeper causes that can and should be addressed."

Forget also questions the assumption that unemployment is a problem belonging chiefly to lower-income groups. In fact, well-to-do Canadians are almost equally at risk. In about 8 per cent of the families with the top 1 per cent of income, for example, at least one family member experienced unemployment in 1981, compared with 12 per cent for average-income families. Moreover, less than 9 per cent of the unemployed became social assistance beneficiaries once they exhausted their unemployment insurance benefits. "This seriously challenges the propriety of using unemployment insurance as an income-redistribution vehicle," Forget says.

Growth in jobs

Canadians have been led to believe that relatively high unemployment in recent years has resulted from a significant deterioration in Canada's employment prospects. In reality, says Forget, there has been healthy growth in the job market. About 60 per cent of Canadians held jobs in 1986. That is within half a percentage point of the highest employment ratio on record, which occurred in 1981.

As for reforming the unemployment insurance program, Forget expressed confidence that much of the Commission's outlook will eventually have an impact on policy. He says the report offers "a moderate alternative" to other suggestions put forward in the debate so far, despite the controversy over the minority view expressed by dissenting members of the Commission. And while it will take some time to implement the changes because of the complexity of the system, "there are a number of factors at work that will facilitate change," he says.

For one, the pent-up frustration and dissatisfaction with the program among Canadians "is a potent force that will not disappear," Forget insists. The program is now so complex to administer that claims officers routinely process less than 10 claims a day as opposed to about 60 a decade ago, he says. The cost to administer the program now exceeds $900 million a year (excluding the benefits paid to unemployed workers).

Second, the provinces share a common interest with Ottawa in reforming the entire income-security system. Without mutual concurrence, neither party can make significant changes even to programs they directly control. Finally, the impending debate over tax reform provides an opportunity to bring in needed improvements in social policies.

New Director discusses Council

Last March, Caroline Pestieau was appointed as one of the Council's two full-time Directors. A graduate of McGill, Louvain, and Oxford universities, she had served as Commissioner of the Quebec Access to Information Commission since 1983. Before that, she worked at the C. D. Howe Institute as a research economist, senior economist, Director of Research Studies, and Head of the Montreal office. While at C. D. Howe she was Project Manager of the Accent-Québec program, which produced 14 studies on the Canada-Quebec economic relationship. She is also the author of several studies in the areas of industrial and commercial policy.

In the following interview with *Au Courant*, Pestieau discusses some of her views of the Council.

Au Courant: *Which direction would you like the Council to take in the next few years?*

Pestieau: Well, I think there are several different ways of looking at direction. As far as research is concerned, I'm pleased with the directions we've been taking in the last 18 months or so. I'm very glad that we're able to do something on agriculture because I think this problem is underestimated outside the Prairie provinces. I think we're going to have to continue looking at trade adjustment, and I think we're going to have to give a lot of importance to the service economy – both domestically and internationally. As for how we go about our business, I think the Council needs to strengthen its communications with different clientele across the country, particularly provincial decision makers. In fact, we've already started doing this in the agricultural field and in the social-policy and tax fields.

Au Courant: *What other clientele should we be dealing with at this point?*

Pestieau: I think we have to try to cover the waterfront, which is very difficult. We need to strengthen relations

Caroline Pestieau

with the legislators in the 11 governments, and particularly with the Finance Committee of the House of Commons. At the same time, we have to renew relations with the business and labour communities. Of course, there are also the federal and provincial bureaucrats, so we've got a lot of bases to cover.

Au Courant: *From a personal point of view, what do you hope to contribute to the Council?*

Pestieau: It's difficult to say at this stage. I see my role as a coordinator and communicator in helping to make the results of the Council's research understood and widely available. I see it as working very closely with the research groups to build on the policy implications of their findings. I think that the Council's empirical findings are gold mines; but, too often, the fuller policy implications of its research are not fully exploited. So I hope to have a kind of bridging function between the people who are desperately trying to understand the key economic issues and the resources we have at the Council to identify and elucidate them.

Au Courant: *What major economic issues should the Council be addressing?*

Pestieau: Well, I've referred to the agriculture one, which I think is extremely important. I think we're going to have to do quite a lot of work on services. We've just launched a project on international financial services, in fact. We're going to have to concentrate more and more on looking at trade in what were once considered nontradeable goods, such as business and professional services via computer-linked telecommunications. We should also be studying the economic implications of demographic changes, the changing age structure, and the dependence on immigration in certain areas of the country. Above all, I think we're going to have to look at the labour force, particularly the development of human capital because of its importance in helping Canada to compete in a rapidly changing global environment.

Au Courant *What insights has your extensive background in Quebec provided that might be useful in discussions with that province?*

Pestieau It's given me insight into the way that different regions of Canada can experiment. Quebec has been experimenting in several areas – social policy, tax incentives, and so on. One example on the investment side is the Quebec stock savings plan. I believe it's healthy and important that different regions be encouraged to experiment in policy development, so that others can adopt what works and reject what doesn't. I think the Council has to be more present in Quebec, and I hope that I may be instrumental in this regard. The Council has to address problems that are of interest not only to Quebec bureaucrats but also to Quebec management and to the various labour movements in the province. I would hope that the Council would be able to organize round tables and seminars to exchange ideas on major issues with Quebecers.

S·P·E·A·K·I·N·G · O·U·T

Canada's economy has been growing at a steady pace over the past few years, but the growth figures mask a dismal performance in some regions.

In Newfoundland, the unemployment rate remains at about double the national average; in Saskatchewan, farmers are reeling from the drop in grain prices; and in Alberta, oil revenues are drying up. Regional disparities have persisted in Canada despite government attempts to encourage regional economic development. In fact, many observers argue that Canada's regional development policies are in disarray. In response to this situation the Council has launched a new project to examine directions for regional development and to put forward policy options. *Au Courant* spoke with project director Dal Brodhead to find out what the project entails.

Au Courant: *Why is the Council undertaking this project now?*

Brodhead: I think there's fairly widespread agreement that Canada's regional policies are outdated and need rethinking. Governments are already involved in that process. The Council has a unique opportunity to make a contribution as a national organization reflecting regional and sectoral interests. There's no doubt that for Canada, as a whole, regional economic development is crucial. We need a policy that can address the unique concerns of the different regions. That's quite a challenge.

Au Courant: *Are regional disparities getting worse?*

Brodhead: I think there's a perception that things are getting worse, and in some cases it's true. In Newfoundland, for example, there continues to be high unemployment. In Saskatchewan, the agricultural economy is quietly going up in smoke for a host of reasons, some of them well beyond the boundaries of regional or national jurisdiction. In Ontario, on the other hand, the economy is generally in pretty good shape. So the contrast is quite sharp in some cases, and the

Dal Brodhead

relative regional disparities remain just as great as ever in spite of all the past efforts.

However, I think it's important to look beyond the current situation. Perhaps the regions that are thriving today won't be so prosperous tomorrow; perhaps the foundations for growth are weak, and hence we have a much broader problem to address in this country. Part of the objective of this study is to identify promising approaches and areas of strength upon which we may build.

Au Courant: *In the past, how effective have government policies been in combatting regional disparities?*

Brodhead: Some of the programs have had significant impact, particularly in terms of putting together the infrastructure necessary for regional economic development. In the 1970s, the federal and provincial governments undertook a major thrust in regional economic development. Some of these initiatives were successful, but conditions have changed. There is the view that we've been concentrating too much on either macro regional development or on smaller-scale individual entrepreneurial projects, to such an extent that we are missing out on a whole range of opportunities in between. There is the issue of access to capital: how regionally accessible and how risk-averse is it? Under the centralized banking system in this country, local branches don't necessarily invest in their communities, and there is an apparent lack of development capital in the less prosperous regions and communities.

Au Courant: *In the final analysis, is there really a solution to the "boom and bust" cycles of a resource economy such as Canada's?*

Brodhead: It depends on whether you subscribe to the view that our economy has to be forever based on the exploitation of our natural resources or whether it can be strengthened by diversifying into other areas, such as the service sector. The main thrust of this project is to take a look at some of the innovations that have been taking place at the community or local level throughout Canada. Basically, we'll be looking at the key ingredients of success in the rebirth of selected communities that have managed to overcome a trend toward economic stagnation. In many cases the success seems to have been linked to a whole range of smaller developments that are less flashy than the costly efforts to develop megaprojects.

I think we have to get back to basics, to talk to the people at the community level who can tell us which projects have been successful and which ones have been instructive failures. The definition of success should have more to do with what the people in the regions feel than with any kind of national overview that we can come

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up with here. We're not really engaging in successful regional development if we improve a company's profit record without doing anything for the quality of life in the community concerned, perhaps by improving its capacity to survive in the long run.

By talking to people at the local level we can come up with a better sense of what we've learned about regional development over the past while. Therefore it's important that we engage in extensive consultations with different groups and individuals, some of whom may not have been consulted in the past. After the project has been completed and the files have been put away, we hope to leave behind an increased awareness of what regional development is all about, to leave people better equipped to engage in regional development, and to improve its policy formulation in the future.

Au Courant: *What approach will you be taking?*

Brodhead: Most of the work will be done outside Ottawa. We'll have four regional coordinators who will discuss with people in the regions the development initiatives that have been undertaken in the past, which will help us to construct guidelines for a national policy on regional development. We're not talking about high-profile consultations but, rather, low-key discussions involving the people who've been involved in the practical side of regional development – business groups, community leaders, labour groups, and the cooperative movement, for example. There will be some research done in Ottawa as well. I'm hoping, too, that we'll have the capacity to link up nationally through a computer-assisted communications network. Not only would this save time and travel costs, but it would permit other groups across the country to interact with us.

Au Courant: *What sort of policy options do you expect to put forward?*

Brodhead: It's a little difficult to second-guess what we're going to be saying in the final report, partly because we haven't yet had the consultations that are fundamental to the approach we're taking. Nor have we reviewed the massive amount of literature on regional development. But I could see the possibility of more emphasis on helping communities identify their options and opportunities, and providing them with the support needed to encourage regional development, rather than simply concentrating on trying to woo a major manufacturer into a region with an incentive grant, for example. We'll be looking at the Canadian as well as the U.S. experience in this regard. Then we'll be able to develop some policy options.

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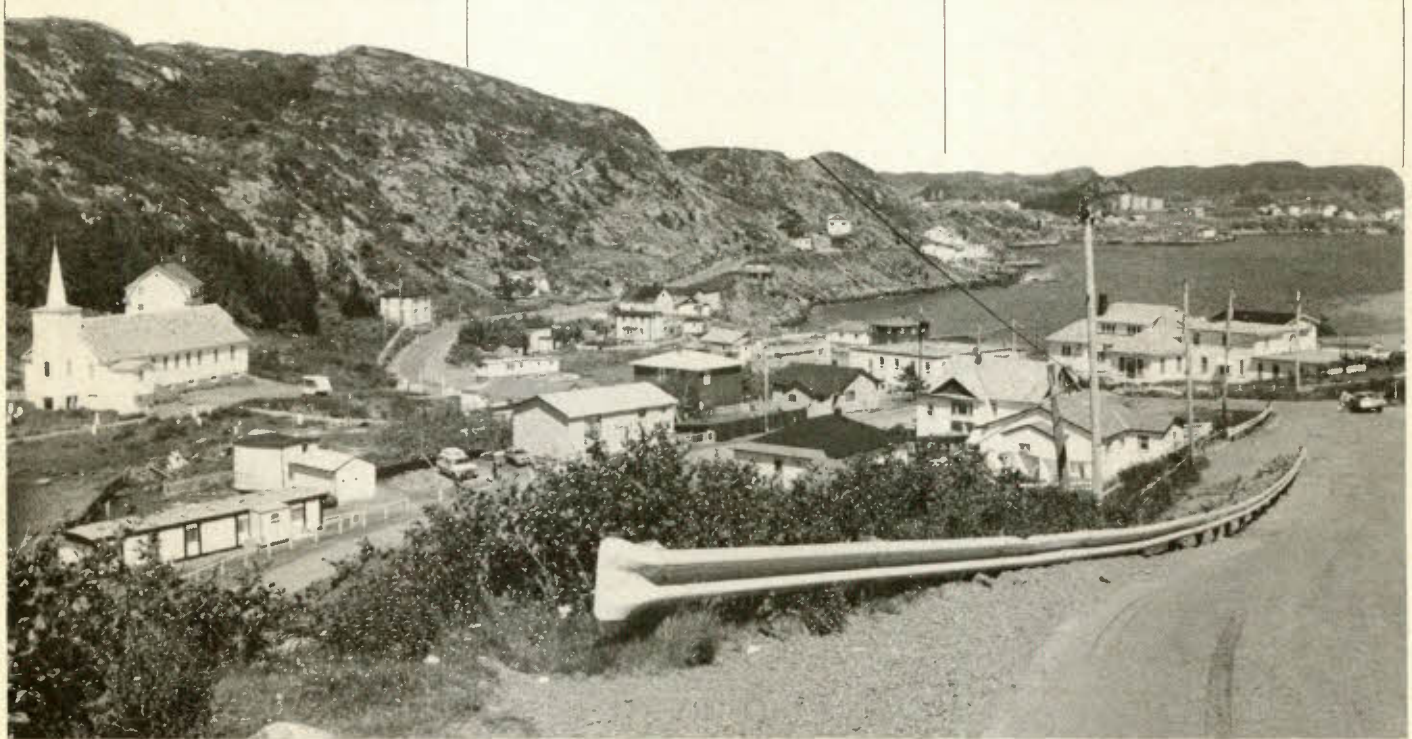

Smaller communities may lack development capital.

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