INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

MANUSCRIPT REPORTS

RESEARCH FOR DEVELOPMENT - ATLANTIC CANADA AND THE THIRD WORLD

October 1981
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RESEARCH FOR DEVELOPMENT - ATLANTIC CANADA AND THE THIRD WORLD
Proceedings of a seminar organized by
St. Francis Xavier University
and
the International Development Research Centre
Antigonish, Nova Scotia

1-2 June 1981
Left to right:

Gregory A. MacKinnon, President, St. Francis Xavier University;
Ivan L. Head, President, the International Development Research Centre;
Alexander A. MacDonald, Director, Coady International Institute.
Preface

The International Development Research Centre was invited by Dr. G. A. MacKinnon, President of St. Francis Xavier University to cosponsor and participate in a seminar that would: (1) provide the research community in the Maritime Provinces and Newfoundland (the Atlantic Region) with information on the experience of IDRC in supporting Third World research, particularly in areas of interest to the Atlantic region; and (2) to share information on the Atlantic region's experience in linking research and development and to identify potential research capacity in the region for collaboration with Third World institutions.

The two-day seminar was highly successful and the individual workshop reports proved sufficiently valuable to warrant relatively wide distribution. We are grateful to the many people who chaired the various workshops and also to the rapporteurs who did an excellent job in preparing the final summaries of discussions. We hope this informal report will prove valuable to the participants and to the many people who were unable to attend the seminar, but who expressed considerable interest in it.

The success of the seminar was due in large measure to the imaginative planning and hard work of Dorothy Lander and her colleagues at St. Francis Xavier University, and to Tony Lovink of IDRC who acted as the seminar coordinator.

Reginald MacIntyre
Director
Communications Division

September 1981
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CHAPTER 1

Opening Address
Ivan L. Head,
President, The
International Development
Research Centre,
Ottawa, Canada

My first words are to you, Father MacKinnon, to thank you and St. Francis Xavier for your hospitality in acting as hosts to this seminar. IDRC is proud to be associated in this endeavour with a university that has long accepted the entire world as its campus, and has had an extraordinarily creative effect on the minds and attitudes of persons in dozens of countries.

My colleagues and I are very pleased to be able to join in discussions about developmental issues with the research institutions of the Atlantic provinces. This region has for more than two centuries regarded itself as part of an extended trading community which included the islands of the Caribbean. In this place there is no novelty in the proposal that trading partners require a mutuality of benefit if commerce is to continue. The disappearance of that mutual benefit — or its alteration to a markedly unbalanced relationship — is one of the issues to which the current North-South debate addresses itself. The goal of mutual advantage is stressed again and again by the Brandt Commission and indeed by the more recent report of the House of Commons Special Committee on North-South Relations. That latter committee was chaired by a Maritimer, Mr. Herb Breau.

From the Brandt Commission report, entitled "North-South: A Programme for Survival", let me quote only a single sentence: "At the beginnings of the 1980s the world community faces much greater dangers than at any time since the Second World War."

Development, as all Canadians know, is a profoundly complex, and often uneven activity. Seldom is development progress simultaneously
advantageous to all elements of a community. Seldom are the indices of that progress both evident and acceptable. The impact of change on developing countries today is often harsh, seldom fully anticipated, and never totally absorbed. The role played by science and technology in this process of change can be every bit as brutal in social result as it was during the industrial revolution in Europe. Yet a failure to employ science and technology in the search for answers to the pressing problems of the developing countries will contribute to deteriorating, often savage, conditions. Agricultural productivity will fail to maintain pace with rising population levels. The continuing quest for fuel will diminish forest stands often to a point of destruction. The absence of sanitary water supplies and adequate public health systems will contribute to disease and death. Inadequate economic opportunity will foment unrest and political instability.

Two hundred years ago, when seamen from this region began to set sail for distant destinations, conditions permitted the quarantine of adverse circumstances. Today our fate is influenced heavily by events far away that are inexorable in their momentum and in their capacity to encompass us. The nations of the world have become entwined inextricably in a web of inter-dependence. Neither countries as industrially powerful as the United States nor as rich in resources as Canada can regard with indifference the social and economic turmoil now so prevalent in so many regions. Those countries described as the Third World now form a significant element in the overall global economy. At this time the Third World generates some 18 per cent of world income. Third World markets play a vital role in the economies of the industrialized countries. The United States and the European Economic Community send more than one-third of all their exports to developing countries. The Japanese figure approaches one-half. In comparative terms this means that the United States exports twice as much to the developing countries as to the EEC; the EEC three times as much to the developing countries as to the United States. The collapse of Third World markets would have a calamitous effect on the economies of the North. A failure of Third World markets to grow would have a serious depressant effect upon economic activity in the North. Economic stagnation in the North can likely be overcome only by economic buoyancy in the South.
A failure to find some relief to the Third World fuel shortage will have calamitous effects on our biosphere. Close to half the world population depends on firewood and its derivative charcoal for cooking and heating. Studies estimate that some 1 billion people are able to meet their minimum requirements only by cutting wood in excess of sustainable supply. Under present trends of population growth, fuelwood demands, and forest depletion, more than 2.3 billion people will need to be provided with alternative fuels by the year 2000.

And a failure to find some response to the acute economic crises faced by so many of the developing countries will lead inevitably to political instability and to the infectious spread of insurrection and turmoil. In the words of Premier George Price of Belize: "...the only issue that counts in Central America is the North-South dialogue. If you don't bring stability and justice to the markets in sugar or coffee, you will never have stability and justice in the countries that produce them."

The contribution of science and technology to the solution of these and other developmental problems is attracting increasing attention from the international community. Indeed, the woeful incompetence of the developing countries to engage effectively in research of their own design was noted by the Pearson Commission a decade ago. Of all R & D engaged in worldwide, less than 3 per cent was then located within the developing countries. The decision of Parliament to create IDRC in 1970 was taken in large measure as a means of contributing to that indigenous competence in those regions. The research supported by the Centre must be, insist our Governors, of a practical nature. In that respect, we attempt to encourage developing country scientists to be of the same bent as those men and women who developed England in the late 18th century. Writing of them, Bronowski says:

"...the new inventions were for everyday use. The canals were arteries of communication; they were not made to carry pleasure boats, but barges. And the barges were not made to carry luxuries, but pots and pans and bales of cloth, boxes of ribbon, and all the
common things that people buy by the pennyworth...
Technology in England was for use, up and down the country, far from the capital."

Unfortunately, not in all instances can one assume today that technology in developing countries is for common use, or that rising national incomes will contribute to the basic infrastructures and, most important, to the agriculture sectors so necessary in order to raise living standards. FAO has produced the disturbing fact that more than 100 countries in the world are currently in a food deficit position, that is they consume more food than they produce. When one realizes that the population of the world is increasing by 100 million persons per year, and will continue to do so at least until the year 2000, and that for all practical purposes the prime arable lands are now all under food cultivation, this current food deficit circumstance is a sobering proposition. Future increases in food production will come about not from a land-based agriculture but from a science-based agriculture. It will come about as well only when governments bring into focus the attention and the discipline necessary to introduce changes in the system.

In some instances this is happening. Foodgrains production in India, for example, has risen from some 82 million metric tons annually 20 years ago to 132 million metric tons at present. India is now self-sufficient in cereal grains. But India is an exception to a worsening situation. For the third year in succession world grain stocks are expected to decline, and this notwithstanding the prospects of a bumper United States winter wheat crop. World grain production, according to FAO estimates, may drop by as much as 6 million tons this crop year. Nor are demand prospects encouraging. The International Food Policy Research Institute (IFPRI) reports that annual imports of basic food staples into Sub-Saharan Africa increased from 2.0 million tons in the period 1961-1965 to 4.6 million tons during 1973-1977. IFPRI projections suggest that, with no change in currently discernible trends, net annual grain imports into that region will rise to 8-9 million tons by 1985, and to 26-30 million tons by 2000.
Why is this so? Why, with all of the effort that has been devoted to agricultural research by the international community, has there not been some pronounced gain? The problem is complex, and so is the diagnosis. It varies, too, from place to place. Yet among developing countries, there appears to be a definite correlation between growth in national income and growth in agricultural imports. An examination of the circumstances in 13 oil producing developing countries over the five year period ending in 1978 reveals the following:

Of the 12 countries capable of domestic agricultural activity, the percentage increase in national income in every instance exceeded the percentage increase in agricultural production.

In 10 of the countries the percentage increase in agricultural imports exceeded the percentage increase in agricultural production.

In 8 of the countries, the percentage increase in agricultural imports exceeded even the percentage increase in national income.

In all too many cases, sometimes with startling impact, the availability of foreign exchange earned from oil exports has led to the importation of food rather than to an increase in domestic food production. In extreme cases, growth in food imports is outstripping growth in food production by more than 2 to 1. In these instances not only is the demand for increased food translated into off-shore purchases rather than allowed to act as a stimulus for domestic production, but the consumption patterns generated become an actual depressant for local agriculture. New tastes are developed. Convenience foods come to be favoured. Necessary but expensive capital investments in irrigation, in storage and transportation facilities, and in agricultural research are postponed.

In many instances, the knowledge required by developing country governments to introduce reforms falls within the agricultural or medical sciences. In many other instances, however, information is
required permitting governments to judge more accurately the social and economic conditions which influence decision and which must be reflected if policy changes are to be effective in their result. Indeed, as we have come recently to know in Canada, the dimension of development which is much the most elusive of understanding and much the most resistant to alteration is the social element.

Science and technology, no matter how skillfully applied, are not the final determinants of the quality of a society. Bronowski insists on reminding us of this fact. "The ascent of man", he says, "is always teetering in the balance. There is always a sense of uncertainty, whether when men lifts his foot for the next step it is really going to come down pointing ahead. And what is ahead for us? At last the bringing together of all that we have learned, in physics and in biology, towards an understanding of where we have come; what man is."

We in Canada live in very privileged circumstances, and in the result, argue and cavil over very selfish issues. It is difficult if not impossible for us to relate to starvation and malnourishment and endemic poverty. We tend, as is natural, to push into the future these images and to delay our response to them. Albert Camus had an answer for that. In his novel "The Fall", he wrote: "Don't wait for the Last Judgment. It takes place every day."

Indeed it is taking place every day for untold numbers of persons in developing countries, a large proportion of them infants and young children. That knowledge is shared by them, by us, and by our common Creator. Added to it must be the knowledge that our failure to contribute to the remedy cannot any longer adequately be explained either economically or morally.

In the course of the discussions here at Antigonish, we of IDRC will seek to acquaint our Atlantic scientific colleagues with those
areas in which their activities and their renowned competence can be employed for the support of research in the developing countries. In the scenic and moral setting of St. Francis Xavier I am confident that our examination of these issues will maintain the necessary balance of integrity and comprehensiveness. I look forward very much to a stimulating colloquium and, thereafter, to a rich and lengthy period of collaboration for the benefit of the peoples of the developing regions.
Mr. Chairman, Distinguished Guests:

I extend a cordial welcome to all who have come to St. Francis Xavier University to participate in the Seminar on 'Research for Development'. It is my sincere hope that your visit to St. Francis Xavier will be both pleasant and profitable - pleasant for yourselves, and profitable in promoting the worthy cause which brings us together.

In the course of your deliberations you will be exploring areas of vital concern to developing countries, areas of concern ultimately for all mankind. What has always been a moral imperative: to recognize our common humanity, and be, where needed, our brother's keeper - has now become an economic, social and political imperative as well. It is only through resolute action that people of good will can begin to respond to the gigantic challenges that confront us.

The topic chosen for this seminar is a most appropriate one for a university setting. Research is perhaps the principal means for universities to contribute to the essential work of development. In reaching out beyond their own campuses, provinces, even nations, universities are simply being true to their essential nature. I will return to this theme in a few moments, but first I wish to outline for those who may not know it, the story of our experience in this great work.
At this university, we are engaged in an ever deepening involvement with the Third World. Fifty years ago Dr. M.M. Coady travelled the length and breadth of these Maritime Provinces preaching a message of economic liberation through self-help and education. In those dark days of the depression, like was bleak indeed for many of our people, and the prospects were scarcely brighter. It was a happy providence that sent Coady to us. A man of boundless humanity and compassion, a stirring and charismatic character, a visionary who dreamt dreams and believed them, he succeeded to an incredible degree in rousing a dispirited people. Co-ops, credit unions, farmers' and fishermen's associations, people's schools began to emerge. Despondency gave way to hope; hope was transmuted to reality.

Dr. Coady's experience in the Maritimes confirmed his conviction — and with no little justification — that the experiments which proved beneficial on the local level could be adapted for application to any part of the world suffering from inequity and oppression. His was no parochial message; it was one, he thought, that should be sounded to the far corners of the globe. The Maritime Provinces he regarded as a laboratory which could have universal importance. To cite his own words: an area about the size of England with a population and area small enough to be manageable. The research was to go on in this living laboratory and the fruit of this research was to be shared around the world.

His phenomenal success attracted interest from near and far, men and women came to Antigonish to learn from Coady. None departed unmoved by the vibrancy of his message and the magnetism of the man who proclaimed it. They wanted to be assured that his work would continue; his crusade, if you like, for a world in which human possibilities would be given a chance to flourish; a world liberated from disease and misery and cruel indifference.

On the eve of Dr. Coady's death, a decision was made to formalize the structures required to meet the needs of foreign students. Accordingly,
the Coady International Institute was opened in 1959 under the guidance of the first director, Monsignor F.J. Smyth.

The first programs were exclusively concerned with bringing foreign students here to learn of the Antigonish Movement. In recent years the Institute has organized an expanding program of overseas seminars. The Institute has been involved with socially minded people - leaders - from 110 countries in the 22 years of its existence. These are the bare bones of the story. And while I consider this story an exciting and epic one, I recall it not in a spirit of complacency but to illustrate what one small university can do. The legacy which we have received from Dr. Coady and his associates is a rich one; it also places great responsibilities on us. We are determined to honor Coady's memory by extending if possible our commitment to the Third World.

What shall I say of the role of universities generally? If man is to succeed in the struggle to build a brighter and a better world, he will need the talents and the training of the best human resources available. Little wonder, therefore, that universities, the repositories of knowledge, the citadels of intellect, the inspiration for many of man's most marvellous advances, should now be deemed vital to the creation of a society in which it will be possible for man to live in a manner consonant with human dignity. As one of the great institutions of the modern world, the university is uniquely equipped to exercise leadership in this momentous endeavour. It is the most sophisticated agency we have for the advancement of learning through research and scholarship; it is crucial for the transmittal of knowledge to future generations; it is ever more deeply involved in the application of knowledge to the multiplicity of problems which beset society.

The acquisition of knowledge, exhilarating though it may be, is only part of the story. The knowledge that is acquired must be transmitted or it dies. In turn the knowledge acquired and transmitted must be used or it languishes in sterility and inertia. The chemistry of knowledge is such
that those who toil at the frontiers of knowledge are themselves stimulated and enlightened when they witness the interplay and tensions associated with its acquisition, transmission and application. It is this interaction which shows the world what could be rather than what is. Taken separately, the three aspects of knowledge lead nowhere. Together they can change the world.

The three aspects of knowledge have their institutional reflection in the three missions of the university. The acquisition of knowledge is the mission of research; the transmission of knowledge is the mission of teaching; and the application of knowledge is the mission of public service. The three missions of the university are as organically related as the three aspects of knowledge. In the ideal university they will be accorded equal emphasis.

"The noblest of all studies," said Plato, "is the study of what man should be and how he should live." This, I think, is profoundly true. Man has displayed astounding ingenuity in uncovering the secrets of the cosmos, in releasing to his purposes the resources of the physical world, in devising and developing the marvels of science and technology. His giant strides forward in these areas are splendid testimony of man's inherent capacity for achievement and progress. His prodigious accomplishments have served to diminish misery and ameliorate the human condition in manifold ways. Yet we all know that all is not well on this planet - to our shame, far from well! Ignorance, poverty, disease and prejudice are rampant. Standards, values, norms, are decried or rejected. The powerful oppress the weak. Self-aggrandizement and unbridled exploitation have cut deep wounds in the fabric of humanity. Nature herself, often grievously ravaged and prodigally abused, appears now to be taking her revenge and summoning man to sanity.

How should a man live? How should he treat his fellow mortals? What does it mean to be human?
We are here this evening because we are concerned about these questions. Universities have performed outstanding services for society in the past. But not enough! Their future services must be greater still. Their pivotal position in modern civilization even as it affords a unique opportunity also imposes a compelling responsibility. What Whitehead called "the habitual vision of greatness" must be the vision universities hold before mankind. If the vision is to be a reality, we must work to make it so. We must be creative and critical, not merely responsive to the glaring needs of humankind. A university must be true to its name - its province is all knowledge; its concerns the concerns of humanity; its city is the world - the city of the universe. If we are to husband our human and natural resources to the best advantage for the greatest numbers, then our world stands in need of people such as you - people of broad sympathies, people who dream dreams, but people too who are pragmatic and realistic: men and women who will say with Dr. Coady: bread before Beethoven, spinach before Spinoza. But who like Dr. Coady saw the sights and the sounds of the universe, the magnificence of God's creation, the marvels of man's achievements - as the just legacy of all of us.

Much remains to be done - sacrifices on the part of the affluent will have to be made. It will be a struggle. But it is the most rewarding and humanizing of challenges. The most divine too! So long as you did it for these, the least of my brethren, you did it for me. If universities, with all their advantages, do not lead us into this millennium, we are wretched indeed. Your presence, your concern give just cause for hope.

Finally, it is gratifying to note that Canada is playing a leading role in the important discussions that have come to be called the North-South dialogue. With the cold war escalating and renewed saber-rattling among the superpowers, it is important for a country such as Canada to inject a note of sanity and moderation in international affairs - to keep insisting on human rights. The work of the Coady International Institute and the work of the IDRC is basically a defence of human rights. Again, universities and university
personnel should be at the forefront of an enlightened policy which will promote the economic and social welfare of the South - the have-nots of the world. Peace is another word for development. Unless we are involved in development, unless we share - our resources, our knowledge, our technology - we are allowing the seeds of war and hatred to fester: we are not working creatively for peace. The decade we are entering may well be crucial for the future of our life on this planet. How much are we prepared to give; how much are we willing to do? Or, to put the question another way, are we truly human? Are we a positive force for the progress of peoples? Are universities mere ivory towers wallowing in complacency, or are they active catalysts imparting intellectual rigour and scientific precision to the humanitarian instincts which should inspire anyone who cares about man.
CHAPTER 3

The Origins and Functions of

IDRC

Ivan L. Head

The Centre itself was created 11 years ago now, partly as a result of the perceptions of Maurice Strong who at that time was president of CIDA, but elaborated very much by Mr. Pearson in his capacity of Prime Minister, later in his role as chairman of the Pearson Commission, the World Bank Commission and then as the first chairman of IDRC's Board of Governors. At that time, the Pearson Commission estimated that of all research and development activity in the world, only 3 percent was undertaken in the developing countries. Even worse than that, a good deal of that 3 percent fell into categories that the Pearson Commission described as most unfortunate.

Part of this work was repetitious of scientific accomplishment that had long since been established elsewhere and in many respects might have been transferable. In short, the wheel was being reinvented again and again because of the inability of scientists in developing countries to have some awareness of what was happening elsewhere.

After being trained, often to a sophisticated postgraduate level, scientists return to their own countries frequently with a different set of values, certainly often with different research interests. Thus still, in many developing countries, one finds medical scientists for example engaged in work which is looking for some breakthrough on cancer and open-heart surgery techniques whereas the most common or rudimentary public health problems dealing with diseases as common as measles or just delivering sanitary water supplies are overlooked.

The Pearson Commission also found that some research was
downright inimical to the interests of the developing countries. They found scientists in some developing countries working on artificial fibres and thus undermining the chief source of foreign exchange in some of those countries that produce sisal and the like.

The Centre came into being with the intention that it respond to requirements of developing countries as seen by developing countries and it was for that reason that the Centre's unusual international board of governors was created. I should add as well that when the bill to create IDRC went before Parliament, it read "the International Development Research Centre of Canada". Happily, in my view, the opposition parties looked at the bill, and said that this was too chauvinistic, that the words "of Canada" should be taken off. If IDRC was in fact going to be an internationally oriented body, it should appear to be international and every effort should be made to keep it international.

The Centre is therefore not part of the public service of Canada. We are not civil servants, which gives us the opportunity to hire in a very selective fashion so that close to one-third of our staff, both professional and support, are of non-Canadian origin, many of them still non-Canadian. We are not subject to the requirements of the Financial Administration Act, which those of you who have worked in Ottawa will recognize as an important element. It means that our budgetary process is very much an internal exercise. We are subject to the audit of the Auditor General of Canada but we can establish a way of doing things that we feel is most effective and most efficient, and are responsible only to Parliament to defend those decisions.

The board from the outset was divided largely in half. There are 21 members. I am a member by statute but I stand back and do not engage in the voting process and therefore feel that it is fair to say that there are 10 Canadians and 10 non-Canadians. Among the non-Canadians, 6 of the 10 come from developing countries. At the present, we have two from Asia – one from Pakistan and the other from the Philippines.
The Pakistani is the president of the National Bank of Pakistan; the governor from the Philippines is a noted social scientist working in agroeconomics. From Africa, we have two at present -- a former secretary to the government of Nigeria now in private practice; and, from Algeria, a person who is long experienced in the grain trade and understands the international movements of cereal grains and foods. From South America, and the Caribbean -- Rex Nettleford, known to many of you, is from Jamaica and has served for many years on the board, a distinguished social scientist; and now, from Chile, the past president of the Inter-American Development Bank. We have at present, the chairman of OXFAM-U.K.; from France, the President of the University of Paris; a former Commissioner of Education under President Kennedy and Dean Emeritus of Education in Harvard University; and, from Sweden, a biochemist of a considerable international reputation with a great deal of experience in the developing countries. And we like to think that the quality of the Canadian governors and their interest in development activities is every bit a match for those from other countries. Four times a year, our governors appear in Ottawa or elsewhere -- because we do meet in the developing regions on occasion -- and give their instructions and policy directions to us.

The Centre began some years ago to create regional offices so that we would be much more sensitive to the needs of the developing countries. At present, we have five of these scattered around the world: in Singapore; Bogota, Colombia; Dakar, Senegal; Nairobi, Kenya; and Cairo, Egypt. This is where the work of the Centre is done. In Ottawa we attempt to keep the basic support staff and basic managerial elements but we encourage most of the program divisions in the Centre to staff the regional offices with program officers whose task it is to encourage researchers in institutions, be they universities or in many instances government ministries -- where the only action is in a lot of developing countries -- to come to us to make proposals for development research activities and to seek our assistance.

When we look at a project proposal, it is examined against several criteria. The first is that the work is needed and that it has
not been done elsewhere. The fact that it has been done elsewhere does not necessarily cross it out. We don't believe that in large measure technology or many other things are transferable — they have to be adapted to local conditions. But if it is a piece of work that can easily be transferred, then there should be other priorities.

Second, that the project will involve local scientists and will involve as well junior scientists who may not have the opportunity themselves to engage in research. As you will appreciate, in a small university, and sometimes in very large ones, in Africa or elsewhere, there is a small research budget; it will be controlled very tightly by the head of the department and that head will likely ensure that those funds are used by him and by his more senior colleagues rather than giving a chance to a younger PhD who just arrived back on the scene who may have to wait 10, 15 or 20 years until he gets his hands on any research funds. We want to make sure that our projects involve these younger people and, in some instances, we will ask that there be a training mechanism built in to ensure that younger persons will benefit, not only from engaging in the research itself but be given the opportunity to acquire specialized skills in the process.

We will ask as well that the project be one that the government of that country regards as falling into its own development priorities. IDRC's budget is modest and the speed of events is such that we cannot support projects which are in the government's sixth five year plan. We are much more anxious understandably to assist activities that are regarded by the government, not necessarily the particular project but the sector of activity, as of primary importance to the current developmental plans. And that information is brought to us again by our regional offices. Our regional directors are, in all cases but one, citizens of the region. They are required to have connections with the research community and access to the government so that they can gather that kind of intelligence.

Another ingredient is to see whether the research institutions itself takes an interest in the project. Is it going to be a wholehearted and committed participant in this activity or is it going to regard us
as a meddling outsider? Very seldom does the latter take place, but it is important that the institutions be committed. We are not able to fund individual researchers. We have to deal with an institution so that there is some base through which the funds will flow. We will look as well for other collaborators or participants in a project. Can we encourage other funding institutions to take part in this particular activity so that our monies and our experience can be shared and prolonged? Thus in each of these categories, we will assign certain weights.

We are not a funding organization of the kind that some foundations are; for example NSERC in Canada or the Medical Research Council, in which proposals are submitted and cheques are sent by return mail if the proposal is a sound one. Rather we contract with the researchers. We have to insist that most of the ingredients I have described are present, and that we are able to participate in some respect in the assessment and indeed the establishment of the research methodology to ensure that it is sound. Our staff will then regularly visit the project as it is in progress.

We are told that much the more receptive, much the more beneficial part of our relationships with the research activities abroad is not the money but this human element of our scientists visiting these persons who are, in many instances, totally removed from the mainstream of scientific activity. We chat with them about the project, not in a professorial/student relationship, but as peers, sharing experiences, talking about the problems, what is happening elsewhere, encouraging them and, with additional financing from time to time, giving them the opportunity to participate in workshops, conferences, and travelling to talk to their fellow scientists elsewhere. Thus we call ourselves a contract research organization rather than simply a research funding organization.

As you all know, from the outset, IDRC has not been very active in the Canadian research community, and the reason for that is
evident I think. The purpose of the Centre and the directions given us by our Board have been to enhance indigenous research competence in the developing countries, not to enhance research competence in the Canadian scientific community. Because the work is done in the developing countries, we make little call upon scientific expertise in Canada either in Canadian universities or as technical assistance overseas as does CIDA. Nevertheless, from time to time, we do call upon a Canadian university and other scientists to assist us in assessing a research proposal, a research project.

This forum of consultation understandably has led to a sense, on the part of Canadian academics in particular, that they are really only being looked upon by IDRC as a resource group that from time to time we will come and speak to. And we feel badly about this and were delighted therefore that, a year-and-a-half ago, almost two years ago now, during the UN Conference on Science and Technology for Development, the government of Canada proposed that it would finance with additional monies a new program permitting Canadian scientists to collaborate with the developing countries' scientists in research projects of mutual interest, which have been designated as being in the primary interest of the developing countries. These additional funds were to be managed by IDRC. We call the program a cooperative program, and Ernest Corea will tell you more about it.

IDRC has been copied, if we can use that word, by a number of other countries who have thought that this approach to supportive research in developing countries is a sound one. The first country to create a like organization in some respects was Sweden. It did so, however, in a different sense than did the government of Canada. SAREC as it is called, is a branch of the Swedish SIDA and is therefore a governmental activity, whereas IDRC is not part of the government of Canada. We must insist on our independence, and that has been recognized again and again in Ottawa.
The IDRC budget comes to us through normal government processes but ours is not part of the CIDA budget. We are a line item in the government blue book as are other independent and not-so-independent recipients of revenue from the government of Canada. When the ODA, the official development assistance budget, is established, it is done by CIDA, but in a separate CIDA responsibility. In this respect CIDA is acting as the advisor to the government of Canada for the formulation of ODA policy. This puts it immediately into a conflict-of-interest position. CIDA is saying to the government of Canada, this is how ODA funds should be distributed. We think that we, CIDA, should have so much of that fund. In the lineup will be proposals for bilateral ODA spending, the tied-aid CIDA bilateral country-to-country program. There is another line item which deals with multilateral funding; this is the monies that flow to the World Bank, to regional development banks, to IDA (the International Development Association, which is the soft loan window of the World Bank), funds which in the past have been administered by the Department of Finance in Canada. There is another line item which is IDRC, so that we stand on our own, and a fourth line item, which is rather a grab-bag called "other or special programs", dealing with emergency disaster relief assistance and the funding of some smaller activities such as UNITAR and so on. Thus IDRC finds itself in competition for part of the ODA budget with these other activities.

We seek support first from the Standing Committee on External Affairs, in the House of Commons, most recently the special committee on North-South relations, plus the support of whatever ministers take an interest in external activities, not only the Secretary of State for External Affairs but others, to ensure that our share of the ODA pie remains at an equitable level. Our share is growing and we are very pleased indeed with this. The current budget of IDRC from Parliament is $46.2 million with $1 million additional for the inauguration of our Cooperative Programs, for a total of $47.2 million. We are now on a growth curve which is reflective of the commitment of the government of Canada to an increase in ODA, measured as a percentage of GNP to 0.5 by 1985 and to 0.7 by 1990. So there is an overall ODA growth and inside
ODA we are enjoying an increasing share of it.

We must examine within the Centre whether our style of operation will permit us to be more effective with more money. There is likely a limit, and in this respect too, we are different from any other spender of government funds that you have ever encountered. We frankly admit that there may be a point beyond which we would not, in constant dollars, be able effectively to disperse those monies. We do so now under four program divisions. You will hear all about those in the course of discussion, in the workshop and the materials that are available to you.

We are very much the creature of our board of governors. It is the board that sets our policy, the board that insists on the direction, the board that approves every project of $75,000 or more. As scientists you will recognize the amount of reading they have to do in order to acquaint themselves with the kind of decisions they face. We flood them with material and, in many instances, project descriptions including budget pages have as many as 30-35 pages. If they are dealing with 50 or 60 of these at each quarterly meeting, they have their work cut out and we are grateful to them for discharging it so very well.

That is the background of IDRC. The new cooperative program, to which Ernest Corea will now address himself, does have some appeal, we hope, to the research communities in Canada, to those who do wish to participate with us in a much more direct sense than has hitherto been possible for developmental activities.
In his introductory remarks, the workshop Chairman, E.G. Bligh, indicated that the global oceans once considered to be the world's "breadbasket" are fast becoming depleted of traditional food species. Moreover, in many countries of both "the North & South" there is considerable wastage associated with fish harvests. Approximately one-third of the world's landings (72 million tons/year) are used for the production of animal feeds; the large by-catch of nonutilized species is too frequently discarded; and in developed countries such as Canada, on average, only about 30 percent of fish landed is prepared for consumption, the majority of the remainder being discarded.

In Atlantic Canada, fisheries is the number one industry when all sectors are considered, and Canada is the world leader in the export of fish and fish products.

With the advent of the 200-mile limit, a new thrust in fisheries has occurred both in Canada and in developing countries, most of the latter also having declared 200-mile limits. However, on a world scale, there is a shortage of available expertise for implementation of fisheries development programs in developing countries.
Dr. Bligh emphasized the fact that fish can no longer be considered an inexpensive protein source. In Canada increasing prices reflect the requirement for high technology by large-scale world fishing fleets to allow them to remain competitive.

In the quest for greater effectiveness of the large-scale fleets, relatively little technology is being developed for the small-scale fisheries of the world, many of which have larger areas available to them as a result of the expansion of their territorial limits. This is significant since traditionally the small-scale fisherman has produced lower quality fish in the absence of even rudimentary handling and preservation techniques. Successful exploitation of expanded territorial waters undoubtedly will require additional technology.

Atlantic Canadians have the capability and therefore the responsibility of assisting the Third World, but we will have to clearly assess the suitability of our existing technology to the Third World and make adjustments accordingly. We must then temper our offers of assistance with the realization that under current economic constraints, the provision of aid can no longer be a "give-away" program but rather must be considered on a business basis.

Dr. W. H. L. Allsopp, Associate Director (Fisheries), IDRC, then provided a concise overview of small-scale fisheries in the Third World. He emphasized that the major difference between fisheries in Canada and the Third World was that in the former large vessels are the dominant money earners, whereas in the latter most of fisheries production units would be classified as small-scale.

The cogency of this dictum was reinforced by the presentation of a series of 35-mm slides illustrating existing situations throughout the Third World. Particular emphasis was given to the sociological impact flowing from the introduction of larger boats, requiring fewer operators, into areas where previously only small boats with larger crews had been the tradition.
Dr. Allsopp introduced perspective to his presentation by indicating that the current annual world fisheries catch of 72 million tons is provided by boats from 163 countries. Of these countries, about one-half (representing principally Third World countries) produce less than 10,000 tons/year (versus 1.5 million tons/year for Canada) and the average annual catch per fisherman from the Third World amounts to only 3 tons/year, taken primarily by gill nets.

Dr. Allsopp elaborated on Dr. Bligh's statement with reference to fish no longer being a source of inexpensive protein. In many developing countries where the population is concentrated in the coastal areas, there may be no alternative to fish protein. In these areas and others where fish protein is comparatively expensive, it may still be cheaper than pork, beef, mutton or chicken. As well, social and religious dictates of some developing countries prohibit the consumption of many nonfish protein sources.

With respect to aquaculture, Dr. Allsopp indicated that on a world basis, aquaculture is responsible for about 8 percent of the world's annual fish tonnage, most of it in developing countries. In Third World countries, species cultured are most often those low in the food chain such as oysters, mussels, seaweeds and herbivorous fish. Although tropical aquaculture enjoys the benefits of warmer temperatures for faster growth, it also experiences considerable problems attributable to efforts at increased production and intensive culture practices.

Dr. Allsopp indicated that Atlantic Canada has considerable experience in fisheries and aquaculture problems, which could be applied to the problems of the Third World. A classical case was cited of a 1965 study on the economics of fishing boats which presented very useful data relating the profitability of various vessels sizes to operational costs under typical conditions encountered. Although now dated, the study has been useful for developed and developing countries engaged in fisheries throughout the world.
The remainder of the morning session comprised a free-wheeling discussion arising from the points raised by the presentations of the resource persons.

Following these more general deliberations, the problems were focused in the afternoon session by addressing the following topics:

Key Problem Areas - Third World Small-Scale Fisheries
   - Harvesting
   - Processing
   - Diversification (Aquaculture)
   (Overiding theme - Social Implications of Change)

Technology Transfer - A Role for Atlantic Canada
   - Identification of Priorities
   - Special Expertise
   - Institutional Links

For brevity's sake, the distillates of the morning's discussions are included under the appropriate topics of the afternoon session, where in fact most questions were raised again for consideration.

Key Problem Areas

Harvesting

In response to the question regarding the dynamics of the number (10,000,000) of artisanal fishermen in the world, it was pointed out that in spite of the increasing world population, the numbers of small-scale fishermen are declining. This has been attributed to dwindling resources, increasing costs and the erosion of the work ethic (particularly in the Caribbean where one day's tourist charter may be equivalent to more than a week's revenue for fishing).
Past projects directed at enhancing the artisanal fishery have too often focused on providing capital gifts with little strategy for their utilization nor enough credence given to the social implications inherent in their introduction. Examples were cited of abandoned ice plants and idle vessels requiring hard-to-get parts.

The lack of useable assessment data for many areas has led to the absence of management practices in most situations. In some areas, the existence of harvestable catches of nonutilized species has been demonstrated. However, since no markets have been established for these species, the fisherman is understandably loathe to exert any effort to catch fish for which he will not be paid in spite of the protein deficit in his country.

Third World countries need assistance in making choices with respect to the types of vessels and gear which are compatible with species being harvested. Moreover, in most countries, the lack of reliable catch statistics and consequently the absence of management programs means that there are no stock data to assist decision-makers even in the selection of the most appropriate vessels and gear.

Social implications were reemphasized. The question of what becomes of the manpower displaced by the adoption of larger vessels requiring less crew needs answering. Utilization of larger boats implies longer periods away from home. This is not a change in living patterns which will be readily accepted. Traditional day fishermen are resistant to fishing in more distant waters and having to be away from home for more than one day. This type of fishery is only likely to develop through the slow process whereby the newer (younger) entrants to the fishery become trained in intermediate distance fishing.

There is the added problem of increased technical competence required to operate and maintain the more sophisticated vessels and gear involved in the intermediate distance fishery.
In essence, any new technology introduced to Third World countries must be adaptable to their existing social structures and as such the human factor must always be considered.

**Processing**

The discussion with respect to processing revolved around problems associated with producing a stable product, that is, a fish product which can sustain prolonged periods of storage without refrigeration. This is more critical now than in the past, since rising energy costs associated with refrigeration/freezing have resulted in additional costs of fish products processed in this way.

In response to energy-intensive freezing, a new look is being directed towards processing by drying and salting. However, in Canada, no new technology in these areas has been developed within the last 20 years.

In Third World countries, drying of fish has been a technique in existence for considerable periods of time. However, it too has its attendant problems. Drying in countries with simple technology, of course, depends upon there being sun. In many countries, the sun may be accompanied by high humidities which prolong the drying period and can lead to spoilage before a dry product is achieved. Clearly, solar drying is virtually impossible during the prolonged rainy periods which are characteristic of many countries. In many countries, there are problems of insect infestation of dried fish which is not heavily salted.

For those areas where salting is used in processing, there comes a problem of desalting since clean water, necessary for desalting during preparation, often may not be available.

Drying of fish is further complicated by the presence of varying amounts of fat amongst fish species and within the same species on a seasonal basis. Any processing technology introduced will also have to take into account the large diversity of fish species available to developing countries since each species may require a variation in
processing technique.

It was indicated that processing involving techniques other than simple solar drying is expensive. The cost of production and transportation, to inland communities, of stable minced fish, fish sausage or fish burger may well be too high for the people of low incomes.

**Diversification (Aquaculture)**

In many developing countries, the cultivation of fish/shellfish/seaweeds has a long-standing tradition. In developed countries, aquaculture is a more recent event. In both, there is a need for more emphasis placed on technological innovations since to date aquaculture, like small-scale fisheries, has received proportionately less attention than the high-seas fishery.

The introduction of aquaculture to developing countries has considerable social implications. The example was given of experiences in African countries where even the introduction of agricultural practices involving the feeding of range animals came with great difficulty to peoples for example whose tradition was to hunt rather than to engage in animal husbandry. Acceptance is even more difficult of the aquacultural practice of throwing food into caged or ponded water to feed animals which cannot readily be seen.

This again points to the fact that what may appear as a relatively straightforward activity to those of us in the developed world very often requires considerable conditioning on the part of some peoples in developing countries to whom a new technology is being introduced.
A second example of a problem related to development of aquaculture in the Third World concerns the lack of understanding of the recipient countries' needs. An example was given of the development of Tilapia and Carp culture operations in Brazil which may fail because the developers have not taken into account that neither species of fish was readily eaten by Brazilians.

At present, the culture of bivalves, particularly various species of oysters and mussels, is being introduced with success in some countries in Africa, Latin America and the West Indies. The best development of aquaculture in the Third World is evident in Asia, where herbivorous fish species such as the carp and milkfish as well as various species of shellfish and seaweeds have been cultured for many years. The development of more effective techniques continues, some of it through the assistance of international agencies such as IDRC.

It is generally believed that there is an expanding role for aquaculture in the provision of food for developing countries since current production of food by aquaculture practices runs at only about 10 percent of the tonnage from capture fisheries.

Problems encountered in the development of aquaculture operations in Third World countries are summarized in a 1978 paper by Matsuda.\(^1\) The road to a successful aquaculture operation is not short and requires overcoming a linear series of limiting factors, all of which must be eliminated in sequence. Initially, a group of basic conditions must be met. These include: 1) an understanding of the laws of supply and demand which are likely to govern production in any operation; 2) the environmental conditions governing the survival and growth of appropriate species; 3) technical capability as expressed in the availability of adequate culture facilities and necessary husbandry expertise; 4) legality with respect to site availability, regulations

governing operations, waste disposal; 5) experience on the part of the operators at minimizing losses; 6) quality of leadership at all levels; 7) infrastructure — in particular the quality of research and training institutions and all other components of the sectors servicing the operation and 8) the establishment of the short-term economic feasibility to allow a base from which the operation can be developed to full commercial potential.

Solutions to these problems come through the development of adequate research and development programs, the dissemination of information derived from these programs through extension work by the appropriate agencies and the development of markets which will allow the grower a reasonable return for his efforts.

After considerable discussion, it became evident that although Matsuda's comments were directed at problems in developing countries, they are exemplary of problems encountered by those attempting the development of aquaculture opportunities in Atlantic Canada as well.

One of the participants outlined some problems encountered in seaweed cultivation. Essentially, one must discern which species are suitable for culture. This involves establishing market potential for the product. Secondly, the necessary cultivation techniques must be established. This includes research on the life cycle of the species concerned, growth requirements and ultimately an understanding of how genetic manipulation may improve yield.

The operation is then scaled up by the application of the principles of modern agronomy to the cultivation of marine plants.
Technology Transfer -- A Role for Atlantic Canada

Identification of Priorities

After some discussion a single major priority was established. This is to answer the question of how to get fish into the hands of the people of developing countries who need them. The solution to this problem involves consideration of stock management, technique development, education, social adjustment and financial assistance and improved post-harvest technology.

Special Expertise

The development of Atlantic Canada's fishery has had associated with it the development of a strong repository of expertise in its many and varied facets.

Boat Construction

Canada is renowned for the very effective Cape Island hull, which is the mainstay of our artisanal fishery. There is a long tradition of local craftsmanship in all provinces related to its construction. More recently, several builders have been producing glass-reinforced plastic (GRP) hulls that, although expensive, may be a reasonable alternative for those developing countries where suitable wood is in short supply.

Gear Development

In the prosecution of its fishery, Atlantic Canada has had considerable experience in gear development. Although most of our netting and associated components are imported from abroad, our expertise lies in the development of net configuration and catching techniques. The most common artisanal catching methods are: (1) gill nets of several types both fixed and drifting, (2) several small-scale trawls, (3) purse seining, (4) long-lining, (5) weirs and other fixed trap nets.
Handling and Processing

To accommodate the large catches common in North Atlantic waters, Atlantic Canadians have developed expertise in on-board and shore-side methods of preservation.

It was observed that Canadian artisanal fleet does little in the way of on-board preservation even though the techniques are available. However, in tropical developing countries where chances of spoilage are greater, the introduction of vessels capable of trips of more than one day will certainly require on-board preservation, principally in the form of ice.

The on-shore handling and processing of small-scale fishery landings is also an area warranting attention as poor practices contribute to the serious problem of distributing needed seafood protein to inland markets.

Stock Assessment and Management

Considerable research has been contributed by scientists in government and universities related to the assessment and wise use of those species available to us. Indeed, the process of arriving at the best management strategies is achieved through continuous upgrading programs. Both positive and negative results derived from our experiences can be of use in assisting developing countries in avoiding the more obvious pitfalls, thereby arriving at workable solutions more quickly.

Aquaculture

In many respects, Atlantic Canada's aquaculture activities may be viewed as somewhere in the midst of development.

There has been a long history of development of species low in the food chain such as oysters and more latterly mussels. We have now developed a strong information base with respect to growth conditions and cultivation techniques.
However, perhaps our greatest contributions could be derived from the lessons learned in introducing shellfish cultivation to coastal communities. Many of the strategies attempted for this were unsuccessful. We now recognize our mistakes and are in the process of redesigning more appropriate implementation programs. Many developing countries can very profitably avoid these mistakes.

Our greatest experience with finfish has been with the high value salmonids. However, many of the principles developed for fish husbandry, disease prevention and treatment, selective breeding, and artificial manipulation of reproduction through hormone control are of considerable use to fish farmers in developing countries.

Social Sciences

Atlantic Canada is one of the few places where there have been extensive studies of the social impacts inherent in introducing new technology and practices to the artisanal fishery. In this regard, the organization of fishermen's cooperatives have been a renowned pattern for many developing countries.

Institutional Links

Discussions concerning institutional links revealed that, in fact, many institutions already have considerable experience in working with developing countries in carrying out research and development. To list those institutions concerned would almost certainly include all our universities, federal government laboratories, federal and provincial research councils as well as some private consulting firms.

The long list of institutions with their wealth of resident expertise is a clear indication that there is no shortage of talent in Atlantic Canada which could be directed towards Third World small-scale fisheries problems.
A more appropriate question concerns how this talent may be directed towards developing countries. With increasing economic constraints on the domestic scene, the flexibility that once existed in our institutions with respect to making staff available for overseas assignments of varying lengths is becoming increasingly more rigid.

Currently, the infrastructure is in place in many institutions to accommodate and train overseas students in several facets of fisheries research and development. However, there are also strong social implications involved here, since many past experiences have shown that although some overseas training is often desirable or in some cases necessary, the most effective results are derived from the training of people in their own countries, using the tools which are available to them. In essence, linkages must be bidirectional to include training and education by bringing the most promising students from the Third World to Atlantic Canada and by sending our expertise to assist them in their environment. It was agreed that there is an opportunity for reciprocal benefits.

In accomplishing the latter, we must be cognizant of the fact that the achievement of results in the Third World is accomplished under a different set of conditions, than in Atlantic Canada and the rest of the "developed" world, where high technology is more readily available.
CHAPTER 5

Education Workshop

Chairperson: Don A. MacIver
Dean of Education
University of New Brunswick
Fredericton, New Brunswick

Rapporteur: Theresa MacNeil
Chairman
Department of Adult Education
St. Francis Xavier University
Antigonish, Nova Scotia

The Education workshop comprised a two-hour session during which formal papers were presented and discussed. This was followed by a general discussion that continued for another hour and a half. There were 15 participants in attendance and papers were presented by Dr. James Fasano (Acadia), Dr. Don MacIver (U.N.B.), Mr. Donald Snowden (Memorial University) and Dr. Nellie Stromquist (IDRC). The workshop was under the chairmanship of Dr. MacIver, and Dr. Theresa MacNeil of St. Francis Xavier University was the rapporteur.

The aim of the workshop was to introduce to the Atlantic universities the role and function of IDRC in educational research and development. Reciprocally, the Atlantic universities were provided with the opportunity to discuss some of the educational research and development being pursued in Canada, especially in Eastern Canada. The initial task was to discuss the nature and work of the IDRC Education unit, and this was undertaken by the IDRC resource person in the workshop, Dr. Stromquist.

Role and Function of IDRC

Dr. Stromquist, Program Officer in Education of the IDRC, outlined the range of projects of the IDRC Education unit. With a $1.7 million budget the unit's projects are designed to assist in the development and implementation of a large range of small-scale studies. IDRC supports
research that is oriented toward the solution of national development problems and that will increase research skills and their application in the recipient countries. A distinctive feature of IDRC support is that it promotes research by local investigators and allows these same researchers to identify their research questions. The IDRC role is to help refine the research plan and to provide consultative services while the project is underway.

Dr. Stromquist's presentation included a description of the types of education projects that are being sponsored by the IDRC. These included: primary education quality; alternative approaches to literacy; the relationship between education and work (including vocational education); longitudinal studies of socioeconomic and educational student variables and the students' subsequent occupations; examination of educational costs in rural settings; the relationship between preschool and primary education; and teacher training and effectiveness. Stromquist concluded by saying that the impact of the research studies was assessed using various criteria: the study's influence on decision making; its contribution to problem definition and identification, or its role in making research a constant activity.

A brief discussion period following this review of the IDRC role brought out three points: that there is room for developing countries' experience to contribute to the developed countries; that there is an important role for the so-called "rural university" (examples in Colombia, China, India) where, through work on practical projects peasants are given academic credit toward a bachelor's degree; that there is a danger that formal credentials will be more of an inhibitor than a promoter of development.

**The Study of Teaching**

Dr. James Fasano, Acadia University, reviewed an extensive bibliography on classroom research. His review highlighted particularly useful findings and identified the work being conducted on the subject by Canadian researchers, in places such as the Ontario Institute for Studies
In endeavouring to cite the critical variables that influenced teaching, Dr. Fasano indicated that they appeared to be: clarity, variability, immediate teacher feedback, businesslike conduct, direct instruction, and minimal criticism. While the direct influence of such variables on teacher education may appear to be obvious, Fasano cautioned against establishing overly simplistic cause-effect relationships.

The prevailing mood of Dr. Fasano's discussion was one of caution. He was particularly concerned with the tendency of some researchers to adopt a single method of research and not to supplement that method with other approaches. In particular, he expressed concern over restricted approaches to data gathering and problems associated with the limited number of experimental situations where research was undertaken. Another problem that was reflected throughout the paper involved the tendency to accept research findings without reference to the context of the research.

Dr. Fasano contended that the main problem with classroom research in North America was that studies were not replicated under a variety of different conditions, and that variables were not manipulated even when such manipulation was reasonable. This tendency to "one-shot" studies of teaching reflected an inadequate source of long-term funding. Until it is possible to pursue studies over an extended period and under a variety of conditions, more sophisticated understanding of the nature of teaching will be fraught with difficulties.

IDRC and the Study of Teaching

Eight studies relating to teaching effectiveness and teaching training have been sponsored by IDRC. Dr. Stromquist said these studies could be classified into two groups: those which make a priori definitions of what an effective teacher is and those which do not. The first group of studies considers that to be effective, teachers should possess certain qualities, such as egalitarian attitudes or an
intimate knowledge of their community. The second group considers teacher effectiveness as exclusively related to student cognitive growth. In this view, attributes of effective teachers should be identified only by looking at those teaching behaviours that make a difference in student learning outcomes.

In response to Dr. Fasano's presentation, Dr. Stromquist reviewed the range of study procedures used and talked about the teacher-training activities that could be developed from the IDRC-supported studies. The procedures include continuous observation of the teacher's interacting with his community, the study of "critical incidents" to identify teacher behaviours that tend to be especially influential upon students, and observations of the teacher while he teaches subjects about which the students will be tested. Some studies rely upon highly structured observations, others rely on retrospective interviews, and others use ethnographic techniques.

Dr. Stromquist referred to some of the teacher-training strategies in this range of study procedures. These include: experimental exercises to alter teacher behaviour and attitude, increased awareness of the community on the part of teachers, and – where the emphasis is on cognitive growth – a fine tuning of teacher classroom practices.

Dr. Stromquist noted that IDRC also supports a number of studies that assume a less salient role for the teacher. These studies focus on the development of self-instructional materials and the use of community and peer tutors in the classroom.

Extension Education

Donald Snowden of Memorial University discussed the contribution that extension services could make in communicating science and technology to rural communities. He pointed out that the Atlantic region had over 50 years of experience in extension education and that this experience should be used to complement the research relating to extension education in Atlantic Canada.
Mr. Snowden proposed an interesting argument regarding economic development in Atlantic Canada and developing countries. He argued that the Atlantic region is not representative of a rich western society and it has always been something of a poor relation within Confederation. These facts, coupled with low rates of industrial growth and a correspondingly low standard of living, enable the Atlantic region to identify more readily with problems of international development.

Another emphasis of Mr. Snowden's paper concerned the function of extension services as a link between the academic community and the field. Extension performs a kind of translation service in bringing technical information to those who are in a position to use it. While treating this linking role of extension as a given, Mr. Snowden allowed that there is room for extension services to point to more and better ways of linking academic research to problems in the field. According to Mr. Snowden, the extension worker can translate community needs for the researcher. The extension worker can also serve as one who explains the work of the researcher to the community, thus making the work of the researcher acceptable and legitimate. Finally, the extension worker can serve as a disseminator of research findings and encourage their adoption in the field. Experience has provided the extension worker with the kinds of skills that are of use in diagnosing community needs, interpreting training programs, legitimizing research and generally serving in the role of facilitator between the community and the researchers.

In his concluding statement, Mr. Snowden suggested that it is time to pay more attention to those who have studied the early models of extension education developed in the Atlantic region. He acknowledged the need to develop a competent research capacity within the extension services and this could be started by involving those who were experienced in extension work both in Atlantic Canada and in developing countries. He further recommended closer cooperation between the extension services and the larger academic community in Atlantic Canada. It is important
also that all the institutions in Atlantic Canada cooperate in order to share the available resources before entering into Third World-related assignments.

Canadian Approaches to School and Employment

In introducing his paper, Dr. Don MacIver, the University of New Brunswick, drew attention to the title, which included the word "approaches" rather than "research". He explained that research on the relationship between school and work was minimal but that there was considerable activity in the field associated with schoolwork relations. In other words, a good deal is being done but there does not appear to be much objective study of this activity.

Schools in Canada remain oriented to the traditional concept of education that emphasizes (even overemphasizes) the academic dimension. Pupils who are not capable of significant academic achievement, or who are not interested in academic work are perceived to be less competent and are given little opportunity to develop other interests and competencies. This creates a situation in which the pupils who are "failures" according to limited criteria may be perceived as "failures" in some general sense. It is from the ranks of such pupils that the skilled workers of Canadian society are drawn. It is unfortunate that at a time when workers may be required to develop different skills at different times in their careers, when versatility and adaptability appear to be critical, that schools seem to do little but emphasize academic development.

While traditional vocational programs continue to play a part in Canadian secondary education, the most promising activity currently being pursued is in the "cooperative work programs." Such programs are in operation in most provinces in Canada and involve pupils spending time in school and at work. Ideally, the schoolwork activity is carefully coordinated and there is some evidence that the combination has a salutary impact on academic studies as well as work habits.
The cooperation between school and work is not an activity that is easily undertaken. A variety of jurisdictions are involved and there are conflicting interests. Alberta has confronted this problem and has produced a comprehensive guide to cooperative schoolwork activity which may well become a model for action — but the apparent absence of systematic research was noted.

Acknowledging the limited success of the school's contribution to the work experience of students, Dr. MacIver noted that a number of studies have revealed that students prefer to learn about industry in industry. The apprentice and the young worker demonstrate negative attitudes towards school while students who have academic success tend to respond positively to school.

There is a growing tendency in the U.S. for industry to become actively involved in the educational process, but this development in Canada is embryonic. The forestry industry and the dairy industry in New Brunswick have supplied facilities and personnel to work in cooperation with the school system and initial results of these activities appear to be promising. However, there is a lack of careful research regarding the impact of these programs.

In other developments, large industrial concerns and multinational corporations have moved into the business of education, but these developments are not noticeable in Canada. What is apparent is the proliferation of various programs, little systematic research, and absence of an overall strategy. It is clear that Canada can benefit from studies undertaken in other industrialized countries as well as from the kind of research undertaken by IDRC in developing countries.

Group Discussion

The majority of the participants in the colloquium were extension workers or otherwise engaged in extension programs, so that the focus of the discussion centred almost exclusively on the issue of extension services. There is a clear commitment on the part of extension workers
to becoming involved in assisting adults through study and action in problems that were identified as significant. It was felt that the extension programs had a special kind of experience to offer and it was this experience factor that was most significant to extension education.

The concept of the extension experience was explored and while some participants argued that the elements of extension education such as the program, the agent, etc., were parts of a holistic concept that lost integrity when analyzed, a definition of extension education was proposed, i.e., extension education is an attempt to provide to adults education that is not available by any other means. One component of this concept is that there is little distinction between the teacher and the learner; another is that the program emphasis is as much on personal development as on skill development.

The issue of defining and analyzing the concept of extension education was continued as numerous questions were raised regarding such issues as the selection of extension workers, the nature of various models of extension employed in Atlantic Canada, the transferability of extension education, the question of who selects the goals of extension, and so on. Most of these questions were addressed and further issues raised.

It was argued that the philosophy of extension was that of opening up choices and of providing individuals in small communities with viable alternatives. Extension education was described as an experience in adult education that enables people to use their own experience as a vehicle for learning; a system that takes into account the local environment, the local culture, the local power sources. These experiences have produced a force of extension personnel in the region whose skills are highly transferable and, to a lesser extent, persons who are able to help others become effective extension workers.

Some participants claimed that while such an approach may be appropriate in Canada, it was not necessarily the case in other countries.
In other words, the question of the transference of the extension idea to developing countries was raised in the context that some countries impose government goals and do not encourage the establishment of local objectives.

This raised the issue of areas that needed to be researched and it was clear that the transferability of the extension idea needed careful study. It was felt that research on the whole extension concept in Atlantic Canada would prove both useful and interesting.

The workshop concluded with a recommendation that measures be taken to document the region's experience in extension education as preparation for a symposium where the purpose would be to present and discuss models of extension education in the Atlantic region. With the cooperation of IDRC such a symposium could include persons from developing countries who have a strong concern about, or have been on the "receiving end" of such models.
CHAPTER 6

Research Administration Workshop

Chairperson: Brian T. Newbold
Executive Vice-President
L'Université de Moncton
Moncton, New Brunswick

Rapporteur: Niall J. Gogan
Director, Office of Research
Memorial University
St. John's, Newfoundland

Introduction

A total of 19 people representing 11 institutions and agencies participated in the workshop. The Chairman welcomed the participants both in French and in English and invited those in attendance to converse in the French language if they so wished. He reminded the meeting of the three questions referred to in the opening session of the seminar. These were:

1. What sort of expertise and knowledge exists in the Atlantic region?
2. What is the relevance of this knowledge to developing countries?
3. How do we link research to development, including past experiences and what might be done in the future?

The third question also had an element of transferability of research and development and how social infrastructures affected this.

Prior to the seminar, the Chairman, in consultation with the resource persons, had drawn up a format for the workshop. There would be two presentations, one by the Chairman and the other by Mr. Audet, comptroller-general and treasurer of IDRC. These would be followed by four presentations from four people, each representing a small, medium, relatively large and French speaking postsecondary institution. A representative from one of the major Canadian granting agencies would also make a presentation.
After this, there would be an overall discussion with participation from as many people as possible and then a summing up of the workshop with some recommendations for the final plenary session.

Research Administration in the Atlantic Region

Overview

In opening his presentation, Dr. Newbold said he would like to give a general overview of research administration in the Atlantic provinces, paying particular attention to possible applications in international development.

Postsecondary education in the Atlantic region is marked by heterogeneity and complexity. There is a wide range of postsecondary institutions in the region, most of which are involved in research in one way or another, and many of which are involved in research connected with the Third World. To give some idea of the variety of institutions; there are 24 postsecondary institutions, university, colleges and others which come under the Maritime Provinces Higher Education Commission (MPHEC) and also Memorial University. The enrollments vary from 1,200 to 9,000. These have a wide range of experiences and structures. There are, however, three trends which should be mentioned.

1. Over the past 10 years Atlantic universities and colleges have become more involved in research activities.

2. There has been more involvement in research linked with international development. This can be seen through the study done by the Association of Atlantic Universities.

3. More research administration offices have been established in the last few years.
In 1977, only five institutions had research administration offices but at least three more have been established since then, the most recent being at Dalhousie. There are a wide range of structures but usually academic research administration reports through the Vice-President (Academic). Usually, there is a research committee, very often established by the Senate. This wide range of structures parallels what happens in Third World countries.

Offices of research administration in the universities and colleges have many functions and responsibilities. They recommend policies relating to research including, for example, policies concerning university staff-member interests in such things as patent rights, publication rights and copyright, and policies to promote research in areas where university personnel and facilities are less active than wider community or university interests would warrant. These offices are usually involved in the administration of funds coming from such sources as: contract overheads, sabbatical leave grants, and research grants. They have liaison with university committees that are concerned with various aspects touching on research. These offices also collect information and publish bulletins describing research activities and sources of funds. In addition, they keep up-to-date on research grant and contract application procedures for the assistance of faculty.

Problems

There are many different kinds of institutions in the region, but the vast majority of the external funding for research comes from Federal sources and mostly from the three granting councils. These are the Natural Sciences and Engineering Research Council (NSERC), the Medical Research Council (MRC) and the Social Sciences and Humanities Research Council (SSHRC). Particularly smaller institutions, with limited financial and physical resources, have a number of problems in dealing with granting councils.

1. When reporting statistics one realizes that there is a lack of uniformity in classification of disciplines. For example, Statistics Canada and the MPHEC have different classification systems.

2. Lateness in receiving forms from agencies. On some occasions the forms arrive at the university after the agency deadline.
3. Communication problems. The Third World has communication problems, but we also have them in Canada, particularly in relation to the Post Office.

4. Representation of some smaller institutions on committees and councils. Sometimes smaller institutions are neglected when it comes to selecting committee, panel and council members.

5. Smaller institutions are getting an increasingly smaller share of research grants and contracts, i.e., the old problem of the rich getting richer. Perhaps the solution to this is the establishment of quotas per institution. Smaller institutions have to spend the same length of time preparing applications for grants and contracts and have fewer resources to do so.

6. Management of funds. There are a number of problems under this heading.

   a. Delays in signing contracts. The university is often called upon to supply funds from its own resources while it is waiting for the agency to finalize a contract. In smaller institutions it may not be possible for such funds to be available. This problem would be even worse for Third World countries.

   b. The backdoor approach. Frequently, contracts are negotiated with researchers without consultation with department heads, faculty deans or research administration. Although the situation seems to be better than it was, it still continues to some extent. Again, this problem could be very serious in Third World institutions.

   c. Lack of information on agency requirements. Many agencies do not spell out their requirements for financial administration in an adequate fashion. In this regard, it is pleasing to note that the IDRC has published a concise, well written guide entitled *Project Budgeting and Administration*.

   d. Policies of the university not in line with those of agencies.
c. Delays in international development projects. These can be even more serious than the delays when the contract involves just research at Canadian institutions.

f. Stress on university resources. Sometimes, there is insufficient provision for indirect costs.

Generally, however, relations between granting agencies and universities in the Atlantic region are good. Some problems exist as enumerated above, but these can be solved by cooperation.

Presentation by Raymond Audet, Comptroller-General and Treasurer, IDRC

IDRC Financial Philosophy

The role of administration is to support the function of an organization. However, sometimes financial administration is looked upon as a stumbling block. IDRC prefers a team approach and encourages the research staff to work with the administration function.

In funding research in developing countries, many different situations and infrastructures are encountered. Thus, IDRC promotes flexibility in research administration. We should not lose sight of the objective of IDRC, which is to assist developing countries to solve their problems.

Operating Environment

The prime responsibility for carrying out projects is with the recipient institutions. Their administration needs to be strong. Many projects fail because of lack of suitable administrative structures and many people are now saying that more assistance in management is required.

The backdoor approach is still prevalent. In too many cases projects are developed between program officers and researchers without consulting their administrative counterparts. The resulting problems can sometimes take months to be resolved. There is a problem, however, in management infrastructure
in many institutions; in one case, accounting was 5 years behind expenditure. If you do not have the team approach there can be real stumbling blocks.

**Administration of Research Funds**

Many projects are faced with administrative difficulties, such as import restrictions, currency exchange controls, restrictions in hiring project personnel and sometimes, no competent person on the financial side. Financial reports can be a major problem. In some instances these reports have no relationship to the original budget.

Other problems include the transfer of funds, which can take up to 3 months. Sometimes, even though the funds are cabled, the banks will wait months for written confirmation. Another problem is political instability. In one project, there were three changes of government in the country in a period of 1 year.

Although major operational pressures are faced in developing countries, there are also some pressures being faced in Ottawa. There is a continuing effort in trying to maintain flexibility while the Federal government is increasing operational controls, e.g., comprehensive audits, value-for-money, efficiency, effectiveness, program evaluations.

**Approaches to Solving Problems**

1. The main solution still continues to be the maintenance of flexibility. IDRC's expertise in this area has been recognized by other agencies who have asked IDRC to manage funds on their behalf. Included in the list of such agencies are CIDA, USAID, IBRD, as well as Swiss, Dutch and German agencies.

2. Sometimes IDRC manages part of the funds for the recipient. For example, ordering equipment, can sometimes be done more effectively by IDRC than the Third World institutions.

3. IDRC has appointed financial people in regional offices to assist recipients and help prepare reports.
4. Decisions have been decentralized so that quicker reaction on day-to-day decisions can be made.

5. The preparation of the booklet referred to earlier by Dr. Newbold.

6. The development of on-line computer systems to link regional offices to head office so that data is immediately available.

Future Developments

In many organizations the financial departments have been looked upon as bill payers. In other, more advanced organizations, they are now being recognized as an important management resource responsible for the management information systems. IDRC is going one step further in giving a program mandate to its support divisions and funding is being provided to pursue this goal. Workshops are being planned in Asia which will bring together representatives of both the scientific and administrative arms of recipient institutions with the following objectives:

1. To identify financial and administrative problems, particularly in IDRC-assisted projects, but also other problems in these institutions.

2. To determine whether other donors would be willing to offer assistance in this area.

3. To discuss possible collaborative approaches with other donor agencies.

4. To prepare a simplified mini-accounting and reporting-practice kit and present these to recipient institutions.

5. To determine the extent to which the lack of financial training is a source of problems.
Each workshop will produce a report which will include recommendations. Similar activities are being pursued in West Africa.

In summary, IDRC has used its independence from government procedures to introduce flexibility in administrative matters. Further improvements are being considered, particularly to strengthen the financial administrative infrastructures in IDRC recipients.

Panel Presentations

Wayne B. Ingalls, Mount Saint Vincent University

Last year, Mount Saint Vincent had about 1,500 full-time students and 1,100 part-time, with 97 full-time faculty and 77 part-time faculty. Of these faculty members, only 13 were eligible for NSERC grants. In 1974, an Office of Research Administration and a Presidential research committee were established. Only a low level of funding was received amounting to a total of just over $13,000. By 1978-79, this had risen to $140,000 and in the years since it has increased to $220,000 and in the most recent year to $440,000. During the past year there was a change in structure and Dr. Ingalls is now Director of Research and Special Projects. He does not believe that size is the critical factor but what is important is the attitude of both faculty and administration. Mount Saint Vincent looks upon itself as a university and places a great deal of importance on research. Special projects include international development and the office does other things apart from research and special projects administration, such as the preparation of a brief to the Established Programme Financing committee. The business office administers the financial aspect of the grants.

Niall Gogan, Memorial University of Newfoundland

The total enrollment at Memorial is in excess of 10,000 and a little over 3,000 of these are part-time. There are about 650 members of faculty actively involved in research, and about 350 of these have external support for specific projects. The research administration office and the Senate Committee on Research were established in 1972. Quoting from the University's Research Inventory, which is published by the Office of Research, Dr. Gogan
stated that research funding from external sources has grown in the last 3 years from $5.5 to 6.5 and finally to $9 million, and that about 60 percent of these funds come from Federal sources.

At Memorial, the research office deals with much the same functions as outlined by Dr. Newbold in his presentation. The office provides information on sources of funds by informing departments directly, but more importantly, by publishing details on these in the university paper, the MUN Gazette. Other functions of the office include helping faculty members develop their proposals, seeing that the proposals have the necessary departmental and faculty authorization, and reviewing the proposals from the point of view of the university and agency policies.

Like most universities, the financial management of grants and contracts is in a separate office under the jurisdiction of the Comptroller. Nevertheless, the Office of Research pays particular attention to proper budget provisions in grant and, more especially, in contract proposals. In the early stages there was a good deal of discussion with the financial officers on what should go into a project budget and how it should be presented so that it would be compatible with university accounting procedures. In general, this system seems to work quite well.

In addition to the Research Inventory, which lists all specifically funded research each fiscal year, the office also publishes a Research Directory listing the research interests and past, present and potential research areas of each individual faculty member.

Clarence Jeffrey, l'Université de Moncton

The University has about 275 professors and is currently receiving about $1.5 million in research funds from external sources, of which about 50 percent comes from NSERC. There is a council which looks after research with representatives from the sciences, social sciences and humanities. This also fulfills the internal granting function, where small grants are distributed to faculty.
Turning to some of the problems in research administration, Dr. Jeffrey mentioned several aspects of contracts. For example, a major problem exists when researchers negotiate their own contracts. This problem may get worse in the future as there is now a great deal of emphasis being put on the university-industry interface, whereas now most of the contracts are dealt with through DSS with one set of regulations. Another problem with contracts is overhead. He did not feel that a constant level was appropriate.

Sometimes agencies only send one or two copies of forms and information booklets, and it is sometimes not too practical to copy these to send to all those who might be interested. They need more help in publicity from the agencies. Other information that would be useful would be the number of proposals the agencies receives and the success rate.

Robert Kavanagh, University of New Brunswick

The University of New Brunswick has two campuses with a total of about 6,000 students. Formal research administration was started in 1970, and comes under the School of Graduate Studies and Research. The research administration officer in the School reports to the Dean and there is also an advisory committee on research. There is a certain advantage in linking research administration with the Graduate School, because a lot of the research is carried out by graduate students.

The University has quite an active collaboration with developing countries, both through CIDA and through the education of students. UNB is very interested in the problems of developing countries but up to this point the emphasis has been on education.

The activities of the research administration office are much the same as other universities. One point that should be stressed is the compilation of statistics. They publish an annual inventory in much the same way as Memorial, and this could be very useful to the outside world and particularly to IDRC in learning about our areas of competence.
Norman Lamont, Social Sciences and Humanities Research Council

He was glad to have the opportunity to say a few words on the point of view of the granting agencies. He could speak for the SSHRC, but of course, he could not speak for NSERC or MRC. Most of the people at SSHRC are doing the same type of things as they did under the Canada Council. The difference is that the Canada Council was not under the Financial Administration Act but the SSHRC is.

Several deficiencies were listed by the Chairman in his address. Most of these have a counter argument. One of them that has no counter argument, however, is the distribution of application forms; there is no excuse for this. He did not take each point and answer it, but one that he did answer was the criticism that there is a lack of representation from the Maritimes and from small universities. He mentioned that Pauline Jones, who was present at the workshop, is a member of the senior advisory body, and the Vice-Chairman of that body is from Mount Allison. In addition, every fellowship selection committee has at least one person from each region of Canada.

The mandate of all three federal granting councils is to promote research in Canada in the disciplines designated for them. The relevance of the research to international development is not a criterion, although much of the research will become applicable to developing countries. He said, however, that they would be delighted if IDRC would bring to their attention areas not covered by IDRC but which seemed appropriate to the SSHRC. It is conceivable that research of relevance to developing countries could be established as an SSHRC strategic grant area.

On the question of flexibility vs accountability, he said that they were now as free as before because they now came under the Financial Administration Act.
There is one current program of the SSHRC that might be of interest to IDRC, and that is the program of international collaborative research. The purpose of this is the furtherance of opportunities for Canadian researchers to collaborate with their counterparts in other countries but not necessarily developing countries. It covers the cost of going to the other country and doing whatever is necessary for their joint research. It does not usually cover the sort of research costs covered under the research grants program but can cover seminars. They do not look favourably on exploratory trips.

Discussion

The Chairman opened the meeting to discussion and particularly invited those who had not yet spoken to enter the discussion. He also mentioned that Dr. Kavanagh had ended his presentation with two questions and these should not be forgotten. One of these concerned the objectives of the symposium.

In response, Mr. Audet said that he viewed the workshop as an exchange of information. The IDRC wants the universities to know the problems IDRC faces and what they are doing about it; and also to explore the similarity to the problems the universities in the region face as recipients. They also wish to get an idea of the expertise in the region on research administration as well as other areas.

Dr. Newbold mentioned that one way of getting a listing of expertise in the region was to go to the various inventories prepared by universities. L'Université de Moncton publishes a list of resource people giving names, positions, disciplines and expertise. There is also a publication on funded and unfunded research projects and a third type of inventory listing published research. Most universities have these types of publications, usually available from the research administration offices. He also felt that over the last 10 years there has been a lot of expertise gathered in the region in the area of
research administration and that this would be relevant to the type of problems IDRC faces. In addition, the people in financial services departments also have expertise that may be of use to IDRC.

Malcolm MacLeod of Memorial University referred to the main theme of Mr. Audet's presentation, that of flexibility. Procedures that work for projects carried out on or near the campus may not work too well in remote areas. Perhaps if the various administrative functions such as research administration, finance and personnel were gathered together in one office for international development projects the problems might be greatly diminished. The chairman mentioned that although many universities had established international development offices, there was always the dilemma of increasing flexibility while still wishing to maintain the proper controls.

Bill Bhaneja, Ministry of State for Science and Technology asked his university colleagues present whether university researchers have the same problem as government scientists in getting recognition for contract work. Some universities treat contract work including international development activities as equal in importance to teaching, research and community service. Some of the universities do not.

J.J. MacDonald, Executive Vice-President, St. Francis Xavier University, said that NSERC committees were partly to blame. They put the pressure on for publications and very often say that contract research does not count. Dr. Kavanagh said that the problem is not as serious in engineering where there is not as much emphasis placed on refereed publications as there is in the sciences. At UNB contract research is equaled with other types of research. Consulting, however, is more of a problem.

It was mentioned that in 1977-78 MPHEC had done a study on research, including research administration, and there was some follow-up. However, it was doubtful that MPHEC was the most appropriate body to co-ordinate contacts between institutions in the region and Third World countries.
On the question of the interrelationship between research and financial administration, Niall Gogan said that it was quite an important matter for IDRC and he had gathered this from earlier discussions he had with Mr. Audet. In this context, Bill Woolgar in Memorial's Comptroller's office, mentioned the necessity for increased staff when funds and activities increased. He said that computerized statements help a lot in financial administration. One of the problems frequently encountered and not always recognized by the researchers is the time limits on contracts.

Ethel Langille, Dalhousie, mentioned that when agencies were late in supplying the funds, often resulting from lateness in their developing the contracts, the university never received any interest on the money it needed to borrow. Many universities have cash flow problems and this is even more serious for institutions in developing countries. Malcolm MacLeod suggested that such interest charges be added to the overhead charges on contracts.

Recommendations

The Chairman said we should spend the last few minutes in formulating some recommendations to the plenary sessions. It was decided to make the following recommendations:

1. Expertise in the Atlantic Region.
   
   a. It is recommended that IDRC ask each university and college in the Atlantic region what expertise it has in the area of research administration.
   
   b. In order to help listing other expertise, it is recommended that IDRC ask each university and college in the Atlantic region, through its research office, if such exists, to provide its inventories in the following categories:
      i. Listing of research projects.
      ii. Listing of its personnel with their expertise.
      iii. Listing of research publications.
2. In order to be able to link the expertise in the Atlantic region to development, it is recommended that IDRC examine the list from each university and other compiled lists, to determine what expertise in the region has been used up to now in international development activities.

Conclusions

The workshop achieved the following:

1. It identified the experiences and problems encountered in research administration in Atlantic institutions, highlighting those of possible relevance to developing countries.

2. It identified the problems encountered by the IDRC in administering its projects, and indicated solutions and potential solutions to these problems.

3. It made positive recommendations to IDRC on how it could receive more information on the expertise available in the Atlantic region, particularly expertise of potential use to the IDRC.

In overall terms the workshop enabled the university participants to further their understanding of IDRC and its aims, and it enabled the IDRC participants to further understand the nature and problems of Atlantic institutions and to obtain information on the expertise available in these institutions.
CHAPTER 7

Rural Health Care Workshop

Chairperson: Allen R. Cox
Dean of Medicine
Memorial University
St. John's, Newfoundland

Rapporteur: Murray G. Brown
Associate Professor
Department of Preventive Medicine & Economics
Dalhousie University
Halifax, Nova Scotia

Introduction: Dean Allen R. Cox

To set the workshop discussion on Rural Health Care delivery in developing countries in perspective, Dr. Cox noted that 80 percent of the world's population was rural and had little or no access to health care services. High mortality and morbidity rates among rural populations of developing countries were attributable to many factors. Reduction of mortality and morbidity rates required innovative multi-disciplinary research and development combined with program planning and implementation tailored to local conditions. Reliance on advanced Western medicine is impractical due to very low MD/population ratios, the clustering of MDs and hospitals in urban areas, and the high cost of training physicians.

High technology curative medicine programs appeared inappropriate for rural populations in developing countries, both on effectiveness and efficiency grounds. Health promotion programs directed to clean water supplies, improved sanitation, and preventive medicine programs in combination with front-line community health workers appeared to offer greater payoffs, measured by reduced mortality and morbidity.

The challenge was to graft onto the existing rural social systems
a network of community health workers, trained to give first aid and minimum treatment. This would increase the availability of health services and establish in local communities the basis of a communications and referral system involving more highly trained health workers as well as workers in other disciplines (e.g., agriculture, transportation, economic development) whose activities indirectly affect the health of rural populations.

Dr. Cox indicated that the focus of the workshop on rural health care should be to identify Atlantic Canada experience relevant to Third World countries. The agenda for discussion was: 1) primary health care, 2) transportation, 3) communication, 4) nutrition and 5) evaluation.

**Introduction: Lourdes Flor**

It was reported that the Health Sciences Division accounts for approximately 15% of the IDRC program budget and has supported 211 projects involving applied research into health problems of rural and poor urban populations in developing countries. The projects have provided support to various international, national and regional government agencies as well as private institutions.

Areas of concentration include: 1) tropical diseases, 2) fertility regulation, 3) rural water supplies and sanitation, 4) occupational health and 5) health care delivery.

In addition to an introductory overview of IDRC involvement in these programs, a slide/tape show illustrating aspects of these programs was shown later in the proceedings.

**Workshop Discussion**

**Primary Health Care Delivery in Rural Areas**

**Outpost Nursing Programs**

Outpost nursing training programs have been offered by Dalhousie
University since 1967 and more recently by Memorial University. These courses provide additional training to qualified nurses to equip them to deliver health services in remote areas of Northern Canada, Newfoundland and Labrador, where physicians are not routinely available. Discussants agreed that certain aspects of the training, delivery, organizational and evaluative aspects of these outpost nursing programs were directly relevant for some of the health care delivery problems encountered in certain developing countries. It was also agreed that aspects of this Canadian experience might be adapted to Third World situations.

A few nurses from the Third World had received outpost nursing training in the past. At present, however, all trainees of the Dalhousie Program were destined for employment with the Medical Services Division of Health and Welfare Canada, which funds these training programs.

Training includes physical assessments/evaluations (with emphasis on verbal telecommunication skills as well as report-writing skills), treatments of common health problems, community preventive health practices, medical and surgical principles, and nurse midwifery training to international standards.

Those nurses and physicians with direct experience of the outpost nursing program in Newfoundland and Labrador indicated that it met its basic objectives. Discussants disagreed, however, concerning the merits of certain aspects of the program. For example, a physician working with outpost nurses in Labrador favours removal of the training programs from high-technology university hospital settings to rural situations remote from the medical infrastructure, the purpose being to better develop the confidence and nursing skills required. In contrast, another physician perceived that the outpost nursing programs demonstrated the flexibility possible within Western high-technology medical and nursing faculties, which possess the necessary teaching caseloads and expertise, in adapting their teaching programs to serve the needs of rural and isolated populations.
Nonprofessional Community Health Workers: Lay-Dispensers of Drugs

Dr. Sarsfield reported that the Donner Foundation was funding the training of local persons to be non-professional lay-dispensers of drugs in their communities (50-100 population), which may be visited by a physician or nurse infrequently (e.g., every 3 weeks). A drug dispensary with 10-15 drugs is established in a room in the lay-dispenser's home, together with a radiotelephone and couch. The lay-dispenser is given 10-12 weeks training.

Nonprofessional Community Health Workers: Community Health Representative Education for Canadian Indians

Professor L. Batdorf, Department of Adult Education, St. Francis Xavier University, reported his experience in developing a training program for "Community Health Representatives," selected by their Indian communities, in a wide-ranging program involving cultural awareness, community development and health, life style and health, community politics, environmental health, health records systems and managerial skills. This program is funded by the Health Services Division of Health and Welfare Canada.

Self-Help Systems for Rural Women

Professor Mary MacKey, Nutrition Consultant, Memorial University, noted the development of self-help programs for rural women in Atlantic Canada in recent years. These were perceived as important in fostering awareness of, and modifying, the vertical hierarchy in the present health system, which sometimes inhibits the effective cooperation of health services personnel at the community level.

Preventive Medicine/Epidemiology in Rural Areas

The importance of implementing public health and preventive medicine practices of proven effectiveness was discussed. It was also recognized that community health workers may be given an impossible mandate, with their limited training and sparse resources, when told to promote public
health and preventive medicine objectives. The effectiveness of community health worker activities must be monitored by more knowledgeable professionals. Recent experience in East Africa by two of the discussants was somewhat discouraging in this respect. They observed a high prevalence of polio and other preventable diseases, reflecting the absence of basic innoculation programs, while the drug requisitions by community health workers consisted largely of ineffective patent medicines.

Transportation

Air Ambulances

The International Grenfell Association operates air ambulances serving Newfoundland and Labrador. Based at St. Anthony and Goose Bay, these planes are linked by radiotelephone systems to isolated communities, some of which have outpost nurses. Although air ambulances are clearly effective in enabling persons in isolated areas to access health services, the cost is prohibitive for most developing countries. A rough estimate of operating costs for one single-engined plane flying 1000 hours annually was $100,000.

Teaching Health Workers in Rural Areas

It was noted that urban and university-based health profession teachers should travel to rural and remote communities both to teach and to broaden their understanding of local problems. Health profession schools in the Atlantic Provinces have considerable experience in such teaching programs. It was noted, in passing, that very effective small group teaching of medical students was achieved in East Africa through the use of day-trips in a mini-bus, with close interaction between teachers, students and the local environment.

Mobility of Community Health Workers

Given the nomadic habits of populations engaged in hunting and fishing, it is important that community health workers be prepared to travel to even more remote regions as required.
Communication

The full range of communication media was discussed in relation to rural health care. Word of mouth messages, liberally laced with smiles and eye contact, were deemed essential. Use of telephone systems, radiotelephone, citizen-band radio, and satellite telemedicine technology were discussed briefly. The more exotic satellite TV technology had not proved cost effective in experiments conducted in Newfoundland. Telephone conference calls were found to be cost effective for certain university-based teaching of health personnel located in remote areas.

Audiovisual aids were found very effective in teaching health concepts at the community level, and can be adapted for illiterate populations. Newspapers and TV messages are effective in reaching a wider audience. Programed learning audiovisual courses have been developed at St. Francis Xavier University for administrators in Northern Canada. The high cost of some of these communication methods make them nonapplicable to most Third World country situations.

Nutrition

Professor McDowell, Home Economics Department, Mount St. Vincent University, reported considerable experience with nutrition programs in the Dominican Republic, Malawi and Northern Canada. In the Dominican Republic they had established a rural clinic for infant and maternal health care, now staffed by local health personnel. A home-based hygiene and nutrition program has been successful in meeting some of the basic needs for survival, fostering the self-image of local women, and has lead to requests from other communities for assistance in establishing similar programs. Mount St. Vincent is cooperating with the University of Santo Domingo, the Dominican Republic in establishing a nutrition program in that university.

Mount St. Vincent is also assessing the nutrition needs in Malawi and is providing training in Nova Scotia for nutritionists from Malawi.
Nutrition needs in Northern Canada are also under investigation, together with experiments to make better use of local foods (e.g., seal meat) so as to reduce dependency on imported foods from the south. Mary Mackey, nutrition consultant, and Robin Orr, Assistant Professor at Memorial University, reported their involvement with assessments of nutrition problems in Labrador.

Program Evaluation

Methods of incorporating evaluation process within the design of both pilot projects and established programs were discussed. While it is now widely agreed that evaluation processes are desirable it is frequently difficult to devise suitable evaluation methods and criteria. Given the difficulties and costs of conducting rigorous scientific evaluations it may be more cost-effective to adopt process measures of effectiveness rather than impact/outcome measures, which are more fundamental.

Dr. Jon Baggaley, Institute for Research in Human Abilities, reported recent developments in linking micro computers to audiovisual teaching materials to monitor simultaneously the responses of up to 20 observers (students) on a continuous basis during presentation of teaching material. Observer responses may then be analysed by microcomputer to provide feedback to the observer group and to analyse the strengths and weakness of the teaching material. This new Canadian-developed technology was very interesting. Whether it has a potential application in rural health care delivery systems in Third World countries has yet to be determined. The $30,000 cost of the central microprocessor and 20 satellite monitoring boxes probably make alternative methods more attractive.

Summary

The Chairman began the Rural Health Care Workshop by presenting facts concerning the challenges of delivering health services to rural populations in Third World countries. The IDRC representative then summarized the activities of the Health Sciences Division of IDRC in this field.
Discussants agreed that the Workshop should focus on Atlantic Canada experience relevant to rural health care in Third World countries. Discussion focused on 1) primary health care delivery in rural areas, 2) transportation, 3) communication, 4) nutrition and 5) program evaluation.

**Primary Health Care Delivery in Rural Areas**

**Outpost Nursing Programs**

The Nursing Faculties of Dalhousie University and of Memorial University provide further training for qualified nurses intending to practice in remote Canadian communities that do not have routine access to physician services. Atlantic Canada has unique experience in training outpost nurses and in monitoring the success of alternative health care delivery systems to isolated communities in Newfoundland and Labrador and in Northern Canada.

**Lay-Dispensers of Drugs**

Pilot programs are being introduced in Labrador which provide 10-12 weeks training for non-professional dispensers of drugs in small isolated communities. A selection of 10-15 basic drugs are kept in the house of the lay-dispenser, who uses a radiotelephone to seek advice from professional health workers as required.

**Health Representatives in Indian Communities**

The Department of Adult Education at St. Francis Xavier University has experience in designing curriculum and providing training for "Community Health Representatives" selected by Canadian Indian Communities.

**Self-Help Systems for Rural Women**

A variety of self-help programs for rural women in Atlantic Canada have been introduced in recent years. These directly and indirectly foster self-awareness on the health services delivery system and contribute to better access of services.
Preventive Medicine/Epidemiology

The primary role of public health and preventive medicine programs for rural communities in Third World countries was recognized. The supervision and monitoring of primary health-care worker activities by professional health workers was deemed essential, as was the supplementation of their activities by national programs for immunization against infectious diseases.

Transportation

Atlantic Canada has a long history of coping with transportation problems involving hazardous coastal waters. Isolated coastal communities previously receiving health services by occasional visits of coastal ships are now served by air ambulances, but the costs are substantial. There is also experience in providing health services to nomadic populations engaged in hunting and fishing.

Communication

The relative effectiveness of the various communication media in assisting in the provision of primary health services to rural populations was discussed. The discussion revealed a wide range of experience with the use of all forms of communication, including satellite telemedicine experiments.

Nutrition

Nutritionists in Mount St. Vincent University have experience in introducing nutrition programs in Third World countries, together with programs to train Third World nutritionists both in Canada and abroad. Nutritionists from all Atlantic Canada universities represented were involved with the assessment of nutrition needs of Canadians, both rural and urban.
Program Evaluation

The incorporation of evaluative processes in the design and implementation of primary care delivery systems for rural communities was discussed. It emerged that there was considerable experience in Atlantic Canada in coping with difficult problems inherent in measuring effectiveness and efficiency.

Conclusions

The Chairman thanked the discussants for identifying a wide variety of experience in Atlantic Canada concerning the delivery of primary health care to remote rural populations. There was a consensus that some of this experience was directly relevant to Third World countries. There appeared to be potential for adapting some of this experience to meet the challenge of developing primary health care systems for rural populations in Third World countries. Participants indicated the usefulness of this workshop in providing a forum to Atlantic Canada researchers to share their experiences in the health sector.
CHAPTER 8

Training of Third World Students Workshop

Chairperson: Dr. Darrell R. LeBlanc
Chairman
Department of Vocational Education
University of New Brunswick
Fredericton, New Brunswick

Rapporteur: Rev. Howie Gardiner
Assistant Director
Coady International Institute
Antigonish, Nova Scotia

A general theme of this workshop was the "adaptation of Canadian degree programs, development of short-term courses for Third World students, faculty orientation and supervision of such students; and their re-integration into a home environment."

Agenda

The following constituted an initial guideline from which the participants started discussions.

General Objective

To stimulate thinking on the relationship of Canada to Third World countries.

Specific Objectives

(1) To provide an overview of what is happening in the Atlantic provinces.
(2) Discuss training for the Third World and identify what Canada can do.
Focus

(1) Adapting Canadian degree programs to meet Third World needs.
(2) Providing short-term/special courses.
(3) Orienting faculty/staff to Third World needs, working with Third World students.

Discussion

As the discussion got underway, there were many and varied comments on the training of Third World students, both from the standpoint of training done in Canada as well as utilizing programs in other Third World countries. When comments were made relating to institutional involvement, workshop participants were pleasantly surprised to learn of the high degree of current involvement of Atlantic institutions.

Most Atlantic institutions, at least those that have a post-secondary level education mandate, are involved to some degree in Third World activities. Some institutions have personnel who are on overseas assignments. In fact, a recent study conducted by AAU indicated that there were a large number of faculty who were interested in overseas development.

There are also institutions that are responsible for administering, staffing and counterpart training for various types of projects. Examples of the project type of involvement include: Technical University of Nova Scotia - Production of Solar Heating Units and training of local workers; Mount St. Vincent University - Nutrition Training Program in Dominican Republic; Memorial University - Project in Fisheries in Brazil, Research Unit on Vector Pathology in West Africa; University of New Brunswick - Technical Teacher Training in Kenya; University of Moncton - Food and Nutrition Project in Nicaragua.

When discussions centred on training requirements, many participants believed there was a very definite need in the area of project management and evaluation.

This need was highlighted by Allan Rix when he concluded that many requests were for Project management training. He also pointed out the
difficulties in meeting this need. The main problem is the difficulty in locating operating programs at an institution that would fulfill the sometimes unique needs of a particular developing country.

In the discussion that followed, it was agreed that no single institution had a satisfactory project management training program in operation at the present time. However, it was suggested, and participants agreed, that two or more institutions could cooperatively mount a program for a limited number of candidates each year. This was not pursued in terms of taking action or making specific recommendations, but was left as an area to be explored by participants and institutions if they were interested.

When commenting on specific research and training programs needed, workshop participants noted that smaller universities and institutions in the Atlantic region were better suited to meet the needs of students and governments of developing countries. This was possible because of the flexibility of programs, more personalized advice that is available, etc. at smaller institutions.

Participants noted that there were problems when using Canadian programs. The major problems identified by the participants were first that Canadian programs were weak in the area of nonformal and formal teaching information, approaches and application. Secondly, teaching personnel lacked knowledge of the indigenous people, culture, etc. and thus at times found it difficult to relate to Third World students and problems. In other words, Canadian programs are not designed to address these factors.

It was recommended that institutions provide more nondegree types of programs and short "special needs" types of courses and programs. For instance, certificate types of programs rather than formal degree programs. The advantage of following this route would be that the candidate would receive a diploma or certificate with the possibility of advancing to a degree program if he/she proved acceptable. This approach would permit the student to receive training and a recognized
Participants realized that the transferability of knowledge is always a problem, thus total programs must be designed to meet the needs of a specific country and students from the Third World. Because of different backgrounds and opportunities, many foreign students are not able to pass their first year and there is a need for a more organized orientation and private tutoring to offset difficulties experienced during the first year in a new environment.

It was recognized that in research projects and training programs it was difficult to establish any single or unique model. Each country has its own culture, system of education and different priorities. Thus any training or research program must be established according to the needs of a particular country; and not according to Canadian practices and priorities.

The group was interested in establishing more linkages with community colleges and other institutions. Many of the training and research institutions are working in isolation. It was recommended that more effort be put into communicating what is happening, particularly in research. This would keep personnel and institutions informed and reduce if not eliminate duplication of effort.

The whole system of training can be misused. Sometimes a minority, for political or other reasons, are given preference in scholarship selection. Also, the prestige given by many Third World governments to foreign university degrees, regardless of their relevancy, directs many into fields of education advantageous to the individual but not to the development of the Third World country.
When dealing with entrance requirements, emphasis was placed on the fact that the standards of an institution should not be lowered to accommodate the lack of qualifications of Third World students. The solution lies in examining certificate versus degree programs, doing a better job of orienting both students and faculty, providing short courses, and designing courses and programs which will permit students to work effectively in either their own or another Third World country.

Other problems which arise as a result of doing training in Canada are first that training in Canada has led to a "brain drain" for many Third World countries. Secondly, students adopt Canadian attitudes and standards and do not wish to return home and accept a different, possibly lower standard of living. The selection of scholarship candidates was noted as being very important and the key to reducing these problems. It is important to ensure that the candidate has a commitment to contribute to the development of his/her country.

There is also the problem of summer work experience. The fact that foreign students are not permitted to work, presents a problem of providing worthwhile activities during the summer months.

It was stated that there are many opportunities for Canadian institutions to become involved in training and research projects in co-operation with CIDA and IDRC. Workshop participants gained a better understanding of the policies of IDRC as well as the tremendous resources available in the Atlantic region. Judging from the various projects already completed, there are resources in agriculture, health, technical education, research and various skill training. With so many projects mounted and completed by various individuals and institutions it would appear that the next step is to combine resources whereby the expertise can have a multiplier effect.
Co-operation is needed if institutions in the Atlantic region are to contribute to the development of less developed countries. Time did not permit an in-depth analysis of any of the above problems or recommendations. All participants agreed that further action is needed.
CHAPTER 9

Atlantic-Caribbean Cooperative
Research Workshop

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Cove Hill Campus
Barbados

The workshop differed from others in the Seminar in that it took a regional approach to actual and potential fields of cooperation among Atlantic universities and institutions in the Caribbean rather than adopting a sectorial approach to specific fields of research that had received IDRC support.

Several members made valuable contributions to the discussion based on knowledge and experience arising from identification with the region or personal involvement in programs of cooperation. Among these was Dr. Clair Callaghan, who chaired the workshop and in his presentation was able to make direct reference to linked projects in which his university and other Atlantic universities had been involved. The rapporteur of the workshop, Professor Ffrench, had originally been associated with the University of the West Indies at its Mona Campus in Jamaica. Another valuable contributor was Professor Patrick Emmanuel from the UWI Cove Hill Campus in Barbados. As the discussion progressed, it became evident that issues raised and proposals presented were based on first-hand understanding.
The focus of discussion was set forth by the chairman in his opening statement. These were some of the questions for which an answer would be sought.

1. Is there a basis for a special relationship between Atlantic Canada and the Caribbean in our respective research efforts?
2. What are the necessary conditions for effective cooperative research?
3. Are there existing linkages between the two regions in cooperative research and in other programs?
4. What institutions might most effectively develop cooperative research?

In approaching the first question, the workshop took into account the historical relationship between the Caribbean and the Atlantic region of Canada and a certain similarity in the problems faced by each region.

Going back to colonial times, there have been historic trade links between the areas having to do with rum, slaves and sugar. Today, a Canadian-Caribbean Commission is taking a fresh look at trade between the regions.

In terms of social and economic development, despite significant differences of a cultural and political nature, there is a certain commonality in the problems faced.

1. The sea is a common factor, raising issues of the management of marine resources as well as the development of off-shore seabed resources within the 200-mile limit.
2. The agricultural character of both regions is not dissimilar and each area faces the need to increase the production of food for local consumption.
3. Although the position of the Atlantic provinces within the Canadian federal system poses different problems to those faced by the island sovereignties of the Caribbean, there is in both cases the need to reconcile smaller and larger jurisdictions as well as the necessity of
effecting intergovernmental cooperation in regional unemployment.

4. The control of multinational corporation is a common concern.

5. Each region faces a high level of unemployment.

6. The multicultural problems of the Caribbean bear some resemblance to the bicultural and multicultural problems of Canada.

To the extent that these problems call for serious study and research they open up the possibility of cooperation. In this regard, Dr. Callaghan said: "Obviously, although problems are similar, they are not identical. Each will have to be solved according to local needs and opportunities. The probability of overlap in the independent search for solutions is high and I believe it is in the area of overlap that cooperative research can be carried out for the benefit of both Atlantic Canada and the Caribbean.... Local problems will be addressed by local researchers. However, in areas of overlapping research, a suitable linkage would permit each group to benefit from the other's work. In circumstances where the two regions face similar problems and share a number of conditions that are likely to generate similar research needs and expertise, cooperative research might be the answer."

The second question - What are the necessary conditions for effective cooperative research? - provoked lively discussion. To begin with, a broad base of research cooperation has been established in the hundreds of students from the Caribbean who have received their degrees from Atlantic institutions. Many of these have made and are making a significant contribution to the development of the Caribbean region. They represent a significant part of the academic and scientific community along with colleagues who have received their education at the University of the West Indies, with campuses in Jamaica, Barbados and Trinidad, or in the best universities of the United States, Europe, Asia and Africa.
The informal relationships that were developed between these university communities were further strengthened with the formation of the Association of Atlantic Universities and the inclusion of the University of the West Indies as a full member of the Association. The exchange of information in the workshop, however, revealed that this joint membership had not been developed into an active partnership and that, in fact, very few participants in the workshop - including the representative of UWI - knew that it existed. It was agreed, however, that the potential for institutional cooperation was there.

The form that the cooperative research might assume was discussed at some length. To begin with, it was assumed that the normal exchange of information on projects or programs of research would take place in a variety of disciplines through learned journals accessible to scholars in both regions. It was felt, however, that much more might be done through initiative on both sides in areas of study and research where a commonality of interest was perceived. One of the participants said: "While it is true that the researchers of both regions are linked through international technical journals, there remain gaps in the flow of information and the speed with which information is exchanged. There is, for example, a need for a concerted effort to identify problems in each area and publish this information in a fashion that will allow research groups in Atlantic Canada and the Caribbean to become aware of their existence in real-time mode."

Some time was spent on the meaning of "cooperative research." Should the stress be laid on pure or applied research? And if the latter, should the research be "mission oriented" with some public policy objectives as the end goal? There was also the question of whether the research should be project oriented or part of an ongoing program of joint study and exchange.

What model of research would be most useful to each region if a program of cooperation was embarked on? It appeared that there were three options:

1. Researchers from the Atlantic region would proceed in their work independently of researchers in the Caribbean. They would then meet to discuss and compare results and then return home where, presumably, the relevant research might be applied in the solution of local problems.
2. Each group of researchers would work independently with contact maintained through correspondence.
3. The program of research would be planned jointly from the beginning and genuine cooperation maintained throughout. Both groups would be fully aware of the direction being taken.

Most participants preferred the last option since it carried a more explicit expression of commitment. The program concept is preferable to the project concept. Personal contact was a key factor in research and this could be effected through faculty exchange, scholarships, and exchange of reports. Some emphasis was placed on complementarity of the research carried out at the Canadian end if the priority in the effort was to further economic and social development in the Caribbean region. Under no circumstances, should the research partnership involving sister universities or research institutions be regarded as a form of "aid."

The third question regarding existing linkages between the Atlantic provinces and the Caribbean institutions produced some interesting data.

It was generally agreed that the longest running involvement of Atlantic institutions in the Caribbean has been through the Coady International Institute. Coady's Social Development and Cooperative Development diploma and seminar programs are highly respected, not only in the Caribbean but also throughout the world. The graduates of these programs have identified many areas in need of research.

The Technical University of Nova Scotia has had five projects in the Caribbean, ranging from an agricultural survey in Bermuda to the design of a beach-clearing machine to remove oil pollution from their beaches. In Barbados, assistance was given to a small enterprise engaged in the manufacture of solar heaters. A joint project in industrial engineering was entered into with the University of the West Indies in Trinidad. Seven new projects in the Caribbean are now under investigation.
Nova Scotia Agricultural College carried out an agricultural project with the government of Cuba.

Mount St. Vincent University has acquired a great deal of knowledge and experience in the field of tropical foods and nutrition through two projects in the Dominican Republic.

Memorial University has made use of its expertise in rural studies to carry out a special project with the University of Guyana.

Acadia University has been involved in some studies on the future of the tourist industry in the Caribbean.

The final question concerning the special qualification of certain Atlantic universities to develop cooperative research in specific fields did not seem to be pertinent at this time. Sufficient information had been evolved in the consideration of the other questions to indicate a broad common base of interest, a potential framework for common programs of exchange of information and research, and evidence of effective linkages between institutions in the two regions. What was called for was the will to take advantage of these promising factors to launch programs of cooperative research that will bring mutual benefit to the institutions involved and, in particular, strengthen the research capabilities of the countries of the Caribbean.

The workshop gave its attention to certain initiatives that should now be taken:

1. To identify and explore in some detail priority areas of development research, a workshop should be held to bring together specialists from the Atlantic region and the Caribbean. This proposal has been under discussion among the Atlantic universities for some time. Steps should be taken to bring it to realization. The IDRC representatives participating in the workshop indicated that their organization would probably give favourable considerable to supporting such a workshop.
2. The institutional framework for planning and implementing programs of cooperative research should now be strengthened. The Association of Atlantic Universities and the University of the West Indies should take this as their responsibility. Consultations should begin on ways to improve communications among the various component parts of these institutions on research matters of common concern and on new mechanisms that might be needed to encourage and facilitate programs of cooperative research.
My purpose here is to review briefly the objectives of this seminar on Research for Development and to examine the actual outcomes of the workshop deliberations.

The objectives of the seminar were:

1. to familiarize Atlantic region educational and research institutions with the research role of IDRC in Third World development;
2. to identify Atlantic region research capacity and findings along with experience in planning change which are transferable to Third World problem situations.

Outcomes from the six workshops established to achieve these objectives can only be highlighted here. Moreover, these highlights will be restricted to those outcomes referring to knowledge, capacity and experience considered by the workshops as transferable to Third World situations.

The Small-Scale Fisheries workshop concentrated on knowledge and experience related basically to the harvesting, processing and cultivation of fish stocks. In the areas of harvesting and processing, the workshop concluded that Atlantic technology could be transferred with benefit to the Third World. However, the marginalizing effect on traditional fishing communities or populations remains as a serious obstacle. In the case of marketing, the workshop considered primarily
the problems of storage of fish products and noted the implications of the energy crisis for the economics of modern storage. In the workshop report, relatively little emphasis is placed on social infrastructure or institutional mechanism adopted in the Atlantic region to regulate and improve the cultivation, harvesting and marketing of primary products. Licensing, quota systems, marketing boards, cooperatives and capital formation schemes have been employed successfully in the agriculture industry of the Atlantic region. The fisheries industry of the region has also benefitted, although to a lesser extent, from use of these institutional mechanisms. Finally, the economics of alternative fisheries technologies was identified in the workshops' plenary session as an area of future research in the Atlantic region. The findings of such research could be very useful in the Third World situation.

The Education workshop focused on the following three broad areas of educational research and experience: (1) teaching effectiveness in the North American school system; (2) the academic-occupational training dilemma of postschool institutions; and (3) the adult education/extension systems of Atlantic university institutions. With respect to transferability, cautionary notes were expressed regarding the findings on teaching effectiveness and the research designs employed. Canadian experiments in work-study education were considered to possess some potential adaptability. In the case of extension education, the workshop recommended the compilation and synthesis of the Atlantic experience in this field, the probability is high that the findings would be appropriate to Third World situations. Unfortunately, the workshop report did not provide specific indications of extension education components that have been tested or proven in the Atlantic region. At a minimum, some indication of the alternative delivery systems and organizational strategies employed would have been instructive.

The Research Administration workshop focused primarily on the administrative requirements for conducting and coordinating international research projects. Basically its findings referred to the needs of the research delivery system rather than to the transfer of any
particular knowledge or technology to Third World situations.

The Rural Health workshop began by examining the bureaucratic structure of the Atlantic health care system in relation to the health need situation in Third World countries. Its conclusion was that the Atlantic system would be inappropriate for transfer. However, the workshop did identify several health care innovations administered by Atlantic institutions which possess transfer potential. Included among these innovations were outpost nursing programs, community health worker projects and community sponsored health information projects, e.g., prenatal and family planning. Although systems of communication, transportation and support services in the Atlantic region differ from those in the Third World, findings from these innovations could be appropriate to Third World needs. Two case studies of the nutrition component of health care administered by Atlantic institutions provided further findings that could have implications for Third World situations. One of these case studies involved a Third World situation. This latter case study brought to the fore the important dimension of knowledge sharing and transfer performed by Atlantic institutions as a result of their program activities in Third World situations. These findings tended to be overlooked in the other workshops.

The workshop on Training of Third World Students dealt primarily with the problems associated with Third World students studying in Canada. Academic programs tend to be overly rigid and often inappropriate to the students' learning needs. Yet the prestige attached to degree programs attracts candidates who are ill-prepared, at least immediately, to undertake such studies. Finally, because of the duration of degree programs, students tend to become attached to the culture of the host country and alienated from that of their own. Nondegree programs in the Atlantic region face fewer of these problems. These programs are generally flexible and adaptable to the training needs of particular categories of candidates from the Third World. Moreover, these certificate and diploma level courses provide a testing ground
for candidates who possess the potential to proceed for higher professional or academic studies. This could help to reduce the failure rate of Third World candidates attempting academic programs. Although, Atlantic region institutions have had significant experience in the mounting of nonacademic programs, the workshop did not elucidate methods of recruitment and selection, the procedures for designing nonformal programs and the basis of evaluating training impact on Third World situations. Treatment of these dimensions would have provided increased insight into the appropriateness of Canadian training programs as vehicles for the transfer of knowledge and expertise to Third World situations.

The workshop on Atlantic-Caribbean Cooperative Research began by establishing a multidimensional basis for cooperation between the two regions. It observed that Canada's experience in the areas of fisheries, establishment of international sea boundaries, and mining technology is appropriate to Caribbean conditions. Moreover, Canada's successes and failures in coping with cultural pluralism, federalism and the control of multinationals could provide the Caribbean countries with useful insights into the formulation and implementation of public policies at the national and international levels. However, for the realization of such benefits, there is need for greater Atlantic-Caribbean collaboration on the formulation of research questions and the implementation of research programs (as opposed to projects). The chief recommendation of the workshop was directed at developing collaboration between the Atlantic Association of Universities and the University of West Indies with assistance from IDRC.

The preceding reviews highlights the direct outcomes of the six workshops. To these can be added the increased awareness among participants of the multidimensional research role of IDRC and the increased mutual awareness of the developmental activities of Atlantic region institutions in Third World countries.

In concluding this review of findings produced by Atlantic region research and planning experience, and its transferability to Third World
countries, it might be well to heed this cautionary note offered by a Report to the Club of Rome - *No Limits to Learning* (p.59)\(^1\):

"In the final analysis, the obstacles and opportunities for learning (or effective transfer) derives less from the technology (involved) than from the structure and purposes of the organizational system that supports it."

There can be little doubt that science and technology have progressed well beyond the capacity of Third World social institutions to utilize them effectively for the greater good of the largest number. Without a restructuring of these social institutions, each technological advance will be accompanied by an equally or more significant marginalization effect. The Club of Rome Report goes on (p.61)\(^2\) to observe that:

"Initiatives to restructure institutions are immediately confronted by norms of elitism and technocracy. The widespread belief that all problems are best left to experts, particularly when 'expertise' implies narrow technocratic specialization, has led to social systems marked by imbalance, inequity, rigidity and inflexibility."

Because the Canadian experience has historically included frontier options, such as the exploitation of new resource areas and the opportunities offered by expanding industrial areas, its science and technology directions have been largely predicated on the assumption that marginalized populations could be absorbed by these frontiers. It is becoming increasingly evident that this assumption is no longer valid. The response of Canada's scientific community to this new situation should produce findings that will be much more relevant to the needs of most Third World countries.

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\(^{2}\) Ibid.
Appendix A

Introduction to the IDRC Cooperative Programs

What are the Cooperative Programs?

At the United Nations Conference on Science and Technology for Development (UNCSSTD), one of the proposals made by the developing nations was for "the application by industrialized countries of a portion of their domestic research and development capacity to the solution of developing country problems." In the context of that proposal, developing countries urged that "direct linkage should be established between the research and development systems of developed and developing countries through cooperative arrangements."

Canada's response was to pledge additional funds - on top of the existing official development assistance budget - to such a program of linked research. Because of its unique structure, experience, and credibility in the field, IDRC was invited by the Government of Canada to serve as the "focal point" for this new activity. It was stressed that this was to be an additional responsibility that would in no way divert the Centre from its primary emphasis of supporting developing country research.

IDRC's Board of Governors accepted the invitation, and in doing so laid down some basic ground rules: the new activity should be identifiably separate from the Centre's established activities; the principle of responsiveness to the needs of developing countries should be preserved; and the areas of inquiry covered by cooperative research should not be limited to those covered by existing programs.

A Cooperative Programs Unit was set up within IDRC, and $1 million was allocated for the financial year 1981-82 by the Government of Canada. This amount is expected to rise progressively in future years.

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1 Extracts from a recent brochure published by IDRC.
The Centre has from time to time funded at Canadian institutions research projects for which no suitable facilities have been available in a developing country. These have included research on the extraction of salmon gonadotropin for fish breeding at the University of British Columbia; development of a technical information service for small industries in Asia at the National Research Council of Canada; and pioneering work on the hybrid grain triticale at the University of Manitoba, to mention only a few.

The Cooperative Programs Unit will permit an increase in this kind of collaborative activity, complementary to the on-going work of the Program Divisions, as well as support for cooperative research in any subject area whose importance to developing countries is established, and in which Canadian expertise is recognized.

The Centre's role in such projects will be that of a catalyst of new relationships, placing Canadian research institutions in direct partnership with developing countries on a systematic basis, and evaluating the results.

How will they work?

An initial proposal for a cooperative project need not be detailed. A letter describing the activity to be undertaken, and indicating the support of the institutions to be linked in development-oriented research, will suffice.

Proposals may be submitted to the Director of the appropriate IDRC Program Division, to the Director of IDRC's Cooperative Programs Unit, or to the Regional Director at any one of the Centre's five regional offices.
Appendix B

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