REPORT OF THE AD HOC BOARD COMMITTEE
ON INFORMATION SCIENCES

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Science

Old evaluation report number was 2.3.2

GLOSSARY OF ACRONYMS

AGRIS : International Information System for
Agricultural Sciences & Technology

DEVSIS : Development Sciences Information System

DOCPAL : Documentacion sobre Poblacion en America Latina

IERS : International Educational Reporting Service

ISIS : Integrated Set of Information Systems

LANDSAT : Land Satellite

POPINS : Population Information System

TECHNONET : Network for Industrial Technology Information
and Extension, Southeast Asia

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

Report of the Ad Hoc Board Committee
on Information Sciences

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At the meeting of the IDRC Board of Governors on June 10, 1978, it was
decided to establish an ad hoc committee on Information Sciences. The
membership of the committee was named by the Chairman of the Board as
follows: Dr. Roger A. Blais, Mr. Rex Nettleford, Dr. John B. Stewart,
Dr. Victor L. Urquidi, and Dr. William C. Winegard, Chairman. The
specific terms of reference were to be formulated by the committee
itself,but the instructions from the Board were that the committee was
to review and report on appropriate objectives for the Division of
Information Sciences.

The specific terms of reference adopted by the committee were:
(1) to review the program of the Division; and (2) to recommend the
objectives of the Division and the methods of achieving the objectives.

The Committee met for two full days,on July 17 and September 11,
1978,with Mr. John Woolston, Director of the Information Sciences
Division, to review the program of the Division. The early discussions
were general in nature,but it was determined relatively quickly that an
appropriate method of proceeding was to set down the functions of an
Information Sciences Division operating without restrictions on funding
or manpower, i.e., a Division that could do everything. The IDRC program
was then reviewed in the context of the fictional all-encompassing
program.

Information Science by Function

With help from Mr. Woolston, the Committee identified three major
functions which might be found in a Division of Information Sciences:-

1.   Organization and retrieval of information -- for example,
     scientific data in the literature, census and other
     statistical data, maps.

2. Technological aspects of information transfer -- for example, research on the use of computers, the use of satellites, the development of telecommunications networks.

3. Communications and communications research -- for example, research on the effectiveness of various techniques in reaching large audiences.

While other functions could perhaps be listed, the Committee felt that most of the subjects raised for discussion could be included under the three main headings. By looking at each function in relation to the IDRC program, the overall program of IDRC may be set in perspective:

I. ORGANIZATION AND RETRIEVAL OF INFORMATION

The organization and retrieval of information has been the main thrust of the Division of Information Sciences of IDRC. It is the <u>raison d'être</u> of the Division, and IDRC has been very active in promoting not only the concept of retrieval but the ways of doing it.

For the sake of simplicity, the Committee divided this large area into five components and reviewed the work of IDRC in each:-

a) Documentation Systems (mission oriented)
b) Operations necessary for the work of the Centre
c) Infrastructure Development - Institution Building
d) Cartography
e) Statistical and Administrative Data

a) <u>Documentation Systems - Mission Oriented</u>

"Mission oriented" is used in the sense that the systems are designed to serve a purpose (<u>e.g.</u>, producing more food or providing more effective health care), rather than to serve a discipline (chemistry, sociology).

This is the area in which the largest percentage of IDRC's funds has been spent to date. In general, the retrieval and/or organization is related to documents; and two types of projects have been funded: (1) projects directly related to a main interest of IDRC; and (2) projects peripherally related to IDRC's main interests, but where IDRC has the capacity to respond to a need. The AGRIS projects are good examples of (1), and the establishment of the Packaging Information Centre is an example of (2). The projects that could be listed under (2) have all been related to development, have been on the fringe of IDRC's main interests, have had enthusiastic people proposing them, and have involved no new technology and no long-term training. Their acceptance or rejection has been a matter of individual decision, not policy. Included, in addition to the Packaging Information Centre, would be the Ferrocement Centre and the Geotechnical Engineering Information Centre in Asia. The latter is clearly associated with some of IDRC's interests, but IDRC has no major program in either Engineering as such, or Geotechnical Engineering in particular.

Examples of projects classified under (1) can be named in many areas and under many sub-headings. AGRIS, the Agricultural Information System, has been supported by IDRC at the international, regional, and national levels. At the international level, IDRC helped FAO to design the system and made a grant to FAO to allow the conversion of developing country input from typed worksheets to magnetic tape. Projects have been approved to support regional centres in Latin America and Asia for the production of AGRIS information. On the national level, grants have been made to Egypt and Madagascar to allow them to participate in AGRIS.

The specialized agricultural information centres (cassava, tropical grain legumes, irrigation technology, sorghum and millets, African soils, coconuts) are perhaps the best examples of information projects closely tied with IDRC's main priorities; most of these have been developed in response to needs identified by the Agriculture, Food and Nutrition Sciences Division.

POPINS is another system that has been supported by IDRC. Population is a main subject or program area of the Centre and IDRC has been involved in the attempt to develop the system on an international front without much success. On the regional level, Latin America has responded, and interest is also being shown in Africa. POPINS may be developed through the combination of regional networks rather than from the top down.

DEVSIS has not been as successful as the two systems mentioned above. The reasons are many and range from U.N. problems to the definition of subject areas included in the system. At present, DEVSIS includes development programs, evaluation of programs, feasibility studies, planning, policy, academic papers, etc. It is a real grab-bag. Nevertheless, the Federal Republic of Germany is already collaborating with IDRC in DEVSIS experiments. Offers to participate in these experiments have come from Argentina, Bangladesh, Pakistan, the Philippines, Sri Lanka, Tunisia, and the Soviet Union. Experiments are also now beginning in the United Nations, and the Ministers of Planning of Latin America have requested that the United Nations establish a DEVSIS-like system for their region.

The performance of the other global system of interest to IDRC, namely the one in education, IERS, has also been disappointing. Some of the problems may have arisen because the UNESCO regional offices are used as the gathering points, rather than national government offices. The fact remains that little has been gathered and there is no real integration of the several international activities dealing with educational information.

b)   Operations in Ottawa Necessary for the Work of the Centre

The Library

The work of the Centre Library has been well-documented in the report of the Division Director given to the Board in June; consequently, it will not be reviewed here. The Library must support the work of the other Divisions of IDRC as effectively as possible.

The Mini-Computer Project

As outlined in the Director's report to the Board, the
mini-computer project grew out of ISIS. At first, IDRC bought
time on a rental computer but the cost factor was influential
in the Division developing a software system for use on mini-
computers. The present system is owned and operated by IDRC.
It can be transferred easily to developing countries at small
cost. Since IDRC controls it, the Centre can ensure that it is
maintained as a common system. Improvements made by any user
would be available for incorporation in the common system.

c)   Infrastructure Development - Institution Building

Although IDRC has not been very active in the area of institution
building, it has supported projects that could be described as such;
for example, grants have been made to institutions at Cartago and
Islamabad to enable them to participate as resource centres for the
exploitation of the ISIS software. The Bolivian National Information
System as originally conceived is a good example of infrastructure
development. The Government of Bolivia promoted a coordinated system
whereby various institutions would be responsible for information in
selected subject areas. The projects in this category have been small
and limited in scope.

Perhaps the Committee is stretching things a little to place
TECHNONET in the infrastructure development category, but it does
provide resources for the development of, and cooperation among,
national services which carry technical advice to small industries.
TECHNONET is unusual, however, in that it is operated by IDRC. There
is a Council of participating organizations to direct the work, but
the ultimate control and funding is with IDRC.

d)   Cartography

IDRC is committed to nine projects in this field, including
five which relate to the application of satellite (LANDSAT) data for

map-making. The projects involve producing maps for development purposes, and the uses to be made of the maps are clearly aligned with IDRC's overall priorities. There is an element of training in each of the projects and one of the objectives has been to develop a national capacity in this field.

e)   Statistical and Administrative Data

IDRC has been approached to do work in this area. The simplest way to describe the area is to outline the two approaches. The first project would have involved the modification of Statistics Canada computer programs for use elsewhere in the processing of data obtained from censuses. The second project was proposed by the Data for Development Association and involved the establishment of the necessary procedures and machinery at the national level for gaining access to data acquired in the process of administering the country and applying these data for development planning. IDRC did not respond positively to these approaches despite the fact that it would have been a "good thing" for the planners in various countries to have the data available. The Division felt that much of the requirement could have been met by technical assistance from various agencies. In any case, the Division has lacked the detailed professional expertise to evaluate such proposals.

II. TECHNOLOGICAL ASPECTS OF INFORMATION TRANSFER

IDRC has supported a few projects in this general area in the past, but has had no major program. In general, its role has been passive, although in some instances the Division has promoted a project.

Projects financed include: (a) the Arabic Script Processor; (b) the Optical Character Recognition project;(c)the Microfiche project; and (d)the University of Nairobi Computer Applications project. All are individual projects with no commitment on the part of IDRC for subsequent funding or interest. Some projects (b and c) have supported priority programs of IDRC; others (a and d) have seemed more like "good things to do".

III. <u>COMMUNICATIONS AND COMMUNICATIONS RESEARCH</u>

IDRC has had some involvement in this field, but in terms of funding it has not been a priority. Examples of projects are: (a) Famille et Développement; and (b) Management of Radiophonic Schools. Famille et Développement is designed to communicate with people; it is not a research project in communications. The Radiophonic Schools project may best be described as research into a communication tool rather than as research on communications.

IDRC's participation in this whole area has been more passive than active, EXCEPT for Famille et Développement. It should be remembered that IDRC has the operating responsibility for the magazine and as yet has not been able completely to extricate itself.

<u>SUMMARY OF IDRC'S ACTIVITIES IN INFORMATION SCIENCES</u>

The Division of Information Sciences is involved in many aspects of information; and it could be involved in others if the Board so desired. <u>Figure 1</u> is a summary of the Division's activities in relation to the many possibilities that exist.

<u>PRIORITIES AND COMMENTS</u>

Each of the functions shown in <u>Figure 1</u> was assigned a priority rating by the Committee. At the same time, it was decided to comment on each function in terms of IDRC's future involvement. The priority letters assigned are not absolute, but they indicate the desired order if all other things are equal. A very good, low-cost project in a "D" priority might displace a mediocre "C" project.

<u>Priority A</u>

Priority A projects are those that would be placed on <u>Figure 1</u> as 1 (a) 1 -- documentation systems related to IDRC's main programs.

While AGRIS and POPINS are the main examples of success by IDRC in this category, it must be recognized that IDRC may move into other fields (energy, groundwater, etc.)which will have to be supported by the Informa- tion Sciences Division. The Division will have to be ready and able to participate in any major new initiatives undertaken by the other program divisions. The priorities of the Information Sciences Division cannot be separated from the priorities of IDRC as a whole.

The Committee had long discussions about DEVSIS and IERS, and makes the following suggestions. With respect to DEVSIS, the Committee favours a regional rather than a global approach and concurs with Mr. Woolston's opinion that IDRC must use its influence to restrict greatly the range of informa- tion collected. Unless the subject matter is restricted in scope, DEVSIS will not be useful to officials involved in planning. The Committee believes that IDRC should continue the experiments it has already started with a view to obtaining a better definition of the subject scope and methodology; these experiments should remain at a modest level and involve a limited number of countries that wish to participate voluntarily.

IERS is in trouble and likely to remain there unless significant changes are made. The Committee was concerned not only about the opera- tion of IERS,but also about IDRC's role in "education". The Centre needs a more clearly defined program in education before it can determine what information on education it wishes to see collected. Is the Centre focusing on innovation? If so, it is that kind of information that is needed. The Committee believes that a regional approach to education information systems should replace the global approach, because education is culture-related. Counting both the contributions of CIDA and IDRC, Canada supports 20% of the cost of IERS. The Committee proposes that IDRC's contribution should be greatly reduced, and the same could be said for CIDA's contribution.

Priority B

Priority B projects are those that would be placed on Figure 1 as 1 (b) -- internal functions necessary for the work of the Centre.

As mentioned earlier in the report, the maintenance of a good working library at headquarters is essential. However, the Committee expresses its concern that there are two "development libraries in the Ottawa region (IDRC and CIDA). As a matter of policy, the two libraries should be under one administration. There would need to be two branches because each organization requires certain reference texts on site, but a single administration would ensure cost savings in purchases, cataloguing and administration. As well, greater aggregate use would probably be made of the joint library than of the two separate libraries.

With respect to the Mini-Computer Project, the IDRC faces a policy decision. Does IDRC operate an in-house business? In principle, the Committee is opposed to IDRC being the combined funding, operating and controlling agency for any project. In this instance, however, special circumstances must be considered. IDRC needs an in-house capacity to search the literature both for its own staff and for others. Also, there is a need to ensure that the system currently used is upgraded as necessary. In addition, since others use the IDRC system, there must be some control to ensure compatibility.

On balance, the Committee is of the opinion that IDRC should maintain control of the system and establish tight procedures to allow others to buy into the network. When the network is extensive and has been under control for a period of years, IDRC should look to joining others in an operating consortium. Until then, IDRC must retain complete control or the developments to date will be lost. The in-house capacity at IDRC allows for rigid testing of new proposals and ensures that new developments of software and hardware are widely disseminated.

Priority C

Priority C projects are those that would be placed on Figure 1 as either 1 (c) -- infrastructure development/institution building, or as 3 -- communications and communications research.

With respect to projects listed under 1 (c), the Committee supports the present role of IDRC, but suggests that on occasion, IDRC might consider core support for an institution. In such cases, the institution should already be in existence and the funding should be limited. The institution should have a particular value with respect to IDRC's objectives, i.e., IDRC may already be supporting projects in the region and limited core support to an institution would enhance the value of IDRC's work. Any core support should be for a limited period only, with declining support in the later years. No capital funds should be provided by IDRC, but CIDA could well be a partner in joint ventures.

TECHNONET is a special subject in the classification (c). TECHNONET was a good thing to do, and IDRC did it. However, IDRC is still operating the project and is having trouble finding someone to run the operation. The Centre must find a way to transfer its responsibilities to an Asian institution. IDRC has shown that TECHNONET can be useful, but it cannot allow a continuation of the present situation in which the Information Sciences Division accepts full operating responsibilities for an off-shore project.

Turning now to projects that would be placed in position 3 on Figure 1, the Committee is of the opinion that IDRC could become more active in this area if suitable projects are available. It is possible that good projects in communications or communications research, directly related to IDRC's main interests, could be developed -- for example, as part of a project in agriculture or health. There are always questions about the best means of transferring information to special-interest groups or to the general public, but research in this area is difficult. Any project should be carefully defined and should satisfy strict criteria, such as:-

      1- in an area of high priority for IDRC
          (agriculture, health, etc.)

      2- rigorous methodology

Leaving aside the research question, IDRC promoted communication by funding Famille et Développement. It is possible that similar projects could be developed but great care should be exercised before the Centre funds, operates and controls another project as is the case for Famille et Développement. IDRC should extricate itself from operating F&D as quickly as possible.

Priority D

Priority D projects are those that would be placed on Figure 1 as either 1 (d) -- cartography, or as 2 -- technological aspects of information transfer.

The Committee has no concern about continued IDRC involvement in cartography. IDRC has a capacity in this subject;and where that capacity can be used constructively in line with the clearly-defined overall priorities of IDRC, it should be used. IDRC should not support map-making for the sake of making maps; the maps must have an end use of importance to development.

With respect to technological aspects of information transfer, the Committee agrees that there will always be small projects in this area that will be worth doing, particularly if they are in IDRC's main subject areas. However, a major thrust into this field would be expensive and the benefits for the LDCs would not be as clear as those from IDRC's current major program.

Priority E

Priority E projects are those that would be placed on Figure 1 as 1 (a) 2 -- documentation system projects not related to IDRC's main programs.

The projects under this heading on Figure 1 have all been useful and they have brought credit to IDRC. However, they have not been related to IDRC's main subject interests.

The Committee is of the opinion that future "documentation" projects of this type cannot be given a high priority when funds are limited.

Priority F

Priority F projects are those that would be placed on Figure 1 as 1 (e) -- statistical data.

The Committee felt that IDRC should not move into the statistical field. The additional resources required by the Division to respond to simple requests such as the proposals already advanced would not be large, but the resources required to manage an integrated program relating to statistics and administrative data would be significant. The required resources would be out of line with the usefulness of the end product.

PRIORITY OF INFORMATION SCIENCES WITHIN IDRC

After reviewing the current program of the Division of Information Sciences and setting forth the priorities for the future, the Committee is of the opinion that, in terms of the present resources available for all projects at IDRC, the funds going to Information Sciences are at an appropriate level.