DOCUMENT RESUME

ED 113 232 SO 008 604

AUTHOR Mangone, Gerard J.; And Others
TITLE Transnational Research Collaboration. A Report Submitted by the Task Force on Transnational Collaborative Research to the Government/Academic Interface Committee, International Education Project, American Council on Education. Occasional Paper No. 2.
INSTITUTION American Council on Education, Washington, D.C. International Education Project.
PUB DATE Jul 75
NOTE 78p.
AVAILABLE FROM International Education Project, American Council on Education, One Dupont Circle, Washington, D. C. 20036 ($3.00)

EDRS PRICE MF-$0.76 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS Cross Cultural Studies; Economic Research; Educational Research; Environmental Research; *Global Approach; *International Organizations; *International Programs; Regional Cooperation; *Research Projects; Scientific Research; Social Science Research; *World Affairs; World Problems
IDENTIFIERS *International Cooperation

ABSTRACT

A descriptive overview of international, cooperative research efforts is provided. Transnational collaborative research consists of those activities that bring scholars of different countries together to work on the same or common research problems that cannot be addressed as effectively by an individual nation. This report offers a sampling of programs and projects in progress during 1973 and 1974. Topic areas under examination include agriculture, development, atomic energy, commerce, environment, health, education, space, and the humanities. Six major advantages and six limitations to current transnational collaborative research are listed. To improve further research it is recommended that all interested public and private agencies be informed of the potential values of this research; flexibility be provided in programs and budgets to encourage sound proposals; and case studies of allegedly successful and unsuccessful projects be accumulated, analyzed, and shared with the relevant research community. (Author/DE)

Transnational Research Collaboration

A Report Submitted by the
Task Force on Transnational Collaborative Research

to the

Government/Academic Interface Committee
International Education Project
American Council on Education

Occasional Paper No. 2

Transnational Research Collaboration

A Report Submitted by the
Task Force on Transnational Collaborative Research

to the

Government/Academic Interface Committee
International Education Project
American Council on Education

Published by: International Education Project
American Council on Education
One Dupont Circle
Washington, D. C. 20036

Price: $3.00

July, 1975

TABLE OF CONTENTS

TABLE OF CONTENTS - continued

FOREWORD

In May of 1972, the Assistant Secretary of Educational and Cultural Affairs of the Department of State called together a group of scholars and government officials with major interests in international education. The purpose of that meeting was to explore the possibilities of improving the interaction between the academic community and government agencies on a variety of issues in the international field and to determine a suitable forum or mechanism for such interaction in the future.

Representatives of approximately a dozen Federal executive agencies, in addition to representatives of the major area, international, and professional studies associations, attended that session. A small follow-up committee conceived the notion of government/academic task forces to explore various aspects of international education.

When the International Education Project of the American Council on Education was established in 1973, it assumed responsibility for the logistical support and overall direction of the task force endeavor. With the financial assistance of the Bureau of Educational and Cultural Affairs of the Department of State, the Ford Foundation, the Council on Library Resources, the National Science Foundation and the Longview Foundation, five task forces were created in late 1973 and

early 1974: (1) Diffusion; (2) Overseas Professional Skills Reinforcement; (3) Transnational Collaborative Research; (4) Language Competencies; and (5) Library Resources. A Government/Academic Interface Committee was established as a general coordinating and policy council.

This report, Transnational Research Collaboration, is the second of a series of occasional papers which is being issued by the International Education Project. It provides a descriptive overview of what has been and is being accomplished in this particular area of international educational activity. To date, very little has been written about transnational research collaboration. We expect that this study will stimulate others to focus on this very timely topic.

The purpose of the series of occasional papers is to share the reports of the task forces, as well as other critical studies, with the wide variety of institutions, associations, and persons involved in and interested in international education. It is our hope that these reports will contribute to the improvement of international education by combining information of an historical and descriptive nature with analyses and recommendations of specific policy relevance.

STEPHEN K. BAILEY
Director, International
Education Project and
Vice President, American
Council on Education

PREFACE

"Transnational collaborative research" is a curious, almost pompous phrase. Yet it is a short way of describing a kind of international education that requires a unique effort by people of different nationalities or cultures to achieve common research goals by working together.

This report of the Task Force on Transnational Collaborative Research created by the American Council on Education was fashioned by a group of people who have had extended, personal experience with international education in both natural and social sciences. The members of the Task Force were drawn from academic and government positions. Each of them has recently been engaged in programs that include some form of transnational collaborative research and some of them have had experience in this field reaching back over a score of years to almost every country in the world.

Although I wrote the entire report, the central ideas, organization, illustrations, and conclusions were a composite of the very generous contributions of my colleagues. They gave me direction, provided valuable data and insights based upon their professional experience, and always helped to correct my omissions or errors. It must be understood, of course, that the Report is a collective work of individuals acting in their personal capacity and that none of its observations or conclusions is to be attributed to any of the agencies or institutions with which the members of the Task Force are or have been affiliated.

An acknowledgment of the assistance by many individuals outside the Task Force would be lengthy, but I would like to thank Joanne Lasher, now at the Duke University Law School, Carol Lingling at Ohio State University, and Dorothy W. Knapp at the International Research and Exchanges Board for their special help with facts, figures, and bibliographies.

GERARD J. MANGONE
Professor, University of Delaware, and Task Force Coordinator

TRANSNATIONAL COLLABORATIVE
RESEARCH TASK FORCE

Chadwick Alger
Professor of Political Science
Ohio State University
199 West 10th Avenue
Columbus, Ohio 43210

Gordon Adams
Social Science Research Council
110 East 59th Street
New York, New York 10022

Joseph Grunwald
Coordinator, ECIEL Program
The Brookings Institution
1775 Massachusetts Avenue, N.W.
Washington, D. C. 20036

Gerard J. Mangone, Professor
International Law and Organization
College of Marine Studies
University of Delaware
Newark, Delaware 19711

Curt Barker, Special Assistant
AID/TA/RUR
Department of State
Washington, D. C. 20520

Bodo Bartocha, Director
Office of International Programs
National Science Foundation
1800 G Street
Washington, D. C. 20550

William Emerson, Director
Division of Research Grants
National Endowment for
the Humanities
806 15th Street, N.W.
Washington, D. C. 20506

Donald M. Pitcairn, M.D.
Special Assistant to the Director
Fogarty International Center
National Institute of Health
Building 31, Room 2002
Bethesda, Maryland 20014

William Spady
Senior Research Associate
Office of Research and
Exploratory Studies
National Institute of Education
Washington, D. C. 20208

William J. Trainor, Jr.
Deputy Director
Office of External Research
Department of State
Washington, D. C. 20520

Introduction

International education includes a large variety of learning experiences that involve two or more countries or cultures. The report of this Task Force examines "Transnational Collaborative Research" as one important aspect or function of international education. After wrestling with the problem of definition, the Task Force explored some of the many public and private programs in international education that include elements of transnational collaborative research. It then tried to sort out both the benefits and the problems associated with such research. Finally, the Task Force recommended the facilitation of transnational collaborative research by a better understanding of its purpose, effect, and difficulties and made some suggestions for institutional changes and appropriate funding.

Definition

In his message on international education delivered to the U.S. Congress on 2 February 1966, President Lyndon B. Johnson said, "Education lies at the heart of every nation's hopes and purposes...International education cannot be the work of one country...It calls for free exchange and collaboration. We expect to receive as much as we give, to learn as well as to teach."

The Task Force found that transnational collaborative research is a special way in which the hopes and purposes of all

nations through international education may be realized, for it requires cooperative effort, an equality of participation, and an integration of findings, results, or discoveries by scholars from different countries. For the United States, moreover, transnational collaborative research seems to have a unique value, perhaps illustrated best in the 1973 testimony of Dr. Thomas B. Owen, Assistant Director for National and International Programs of the National Science Foundation, as he cited the benefits of the international cooperative activities of his agency in the field of science. Before a U.S. House of Representatives Science and Astronautics subcommittee, Dr. Owen observed, "The overall objective is to maximize the effectiveness of cooperative science efforts that support our Nation's foreign policy and the advancement of U.S. national research efforts." He added that such activities abet a maximum exchange of information and the production of new scientific knowledge while gaining access to unique scientific facilities abroad. Furthermore, they encourage foreign participation in and support of major research programs and thus assist U.S. foreign policy.

Some of the same objectives of transnational collaborative research can also be seen in international programs under private control. The International Research and Exchanges Board (IREX), for example, which has facilitated for several years scholarly exchanges between the United States and the Eastern European countries, reported in 1973 that conditions for cooperation

between scholars "long separated by political and bureaucratic barriers" have become increasingly favorable. Such cooperation was absolutely necessary if future international relations were to be based upon informed perceptions and sympathetic familiarity. At the same time, in the view of IREX, the world community will immeasurably benefit from the effective pooling of scholarly and scientific resources.

For the purposes of this report, "transnational collaborative research" consists of those activities, wherever located, that bring scholars of different countries together, either physically or in a communications system, to work on the same or a common research problem that cannot be addressed as effectively in any other way. The scholars may come from any academic discipline, but they should relate to each other, more or less, as peers while combining and comparing their efforts in the solution of a problem of mutual interest.

In such a definition of transnational collaborative research, the Task Force recognized the value of all other forms of international education, but it omitted from consideration, as beyond its purview, scholars simply traveling, lecturing, or studying abroad; it also eliminated from its study "centers," whether in the United States or abroad, which although including a number of people who are dedicated to some aspect of "international" study,

do not carry out research projects involving the joint and equal efforts of two or more scholars from different countries. Because the Task Force felt that transnational collaborative research was not only a special approach to international education, but that it also performed a unique function for international education, a restrictive definition of the phrase was required.

Transnational collaborative research can take many forms. The large variety of disciplines in international education and the necessity of formulating programs to fit the differing interests, abilities, and capacities of the countries involved will obviously admit no single pattern for transnational collaborative research. The overriding considerations, however, should be shared research and shared results. Such a partnership need not be based upon an equality of financial contributions, facilities, tools, or talents. But it must rest upon the joint endeavor of scholars from different countries or cultures who are willing to participate in a common research effort that leads to a free exchange of information and objective conclusions.

Illustrations

A few years ago the Department of Health, Education, and Welfare, responding to a provision of its appropriations act of 1968, inventoried all authorized Federal programs for fiscal years

1966, 1967, and 1968 that included "educational activities aimed at improved international understanding and cooperation." The result was a report on 159 programs in progress through 31 different agencies of the Federal government, ranging from the Agency for International Development through the Veterans Administration. The HEW inventory categorized international education activities as technical assistance programs, educational exchange and cooperation programs directed primarily to foreign nationals and countries, cultural exchange and presentation programs, information services directed to foreign nationals, programs to strengthen U.S. international educational resources and to increase manpower with international competence, and, finally, cooperative international activities. The last category was illustrated by official government participation in international organizations, information exchanges by the Library of Congress, and so forth. In none of the six descriptions of programs in international education did the word "collaborative" appear, let alone "transnational."

Certainly some of the programs in some of the Federal agencies reported by HEW in 1969 included transnational collaborative research as defined in this report. But the Task Force found that genuine illustrations of transnational collaborative research, in comparison to the host of other ways in which international education has been realized, tended to be few, although significant. In any case, the

following pages offer a sampling of programs and projects in progress during 1973 and 1974 through both U.S. Federal agencies and private organizations that illustrate some of the objectives, merits, and problems of transnational collaborative research. It is by no means an exhaustive list, but the Task Force believes the examples capture the essence of transnational collaborative research.

Agriculture

From 31 March 1961 through 30 June 1973 the U.S. Department of Agriculture had completed or terminated 1,049 research grants in 31 different countries. Some 353 grants were active in 1973 in 13 different countries, a large number of them in India, Pakistan, Poland, and Yugoslavia under the special foreign currencies program. Research on animals and animal products, cereals and forage crops, fruits and vegetables, insects, and so forth were in progress. Each grant was made to one or two principal foreign investigators and a cooperating American scientist.

In addition to the special foreign currency program funding, a number of bilateral science and technology agreements have been signed between the United States and other countries that provide for cooperative agricultural research. Some of these have been funded by the National Science Foundation. The Agriculture

Research Service (ARS) has for many years also accepted foreign agricultural researchers, who provide for their own expenses, into ARS laboratories to work on projects of mutual interest. Lewis P. McCann, Assistant to the Director of the International Programs Division of ARS wrote, "Research interests in the United States have encouraged and maintained transnational interests in agriculture since early colonial times for the reason that all our major crops and farm animals were domesticated in areas outside the Western Hemisphere before the Western Hemisphere was settled. The agriculture of the United States was borrowed from other parts of the world."

Through Participating Agency Service Agreements, moreover, the Agency for International Development (AID) contracts with ARS to carry out research in various foreign countries. Illustrative of this large research effort is a contract funded in part by AID that clearly involved transnational collaborative research at the University of Nebraska. Beginning in 1969 an international Winter Wheat Performance network was established, which in 1974 involved collaborative research at 55 different locations in 35 countries. Seeking an early identification of superior winter wheat geno-types and the improvement of nutritional quality in various wheat production areas of the world, the nursery research network involved at least 60 agricultural scientists in genetics,

plant breeding, plant physiology, agronomy, and plant pathology. According to V.A. Johnson, a Research Agronomist on the project:

> It has been my experience that the establishment of effective communication between scientists of many countries is difficult because of differing philosophies, language problems, etc. unless there is a meaningful vehicle for such communication. Our nursery network has provided this. It has led to the exchange of wheat germplasm between the scientists in these countries which might not have occurred without the communication established by the nursery network.

Although the nursery network has achieved its first objective, funds have been lacking to tap its excellent resources and identify further the interrelationships of soil, environmental, and managerial factors that would achieve high productivity in wheat varieties.

Development

Between January 1962 and September 1973 the Agency for International Development (AID) Central Research Program, through its Technical Assistance Bureau, funded 194 projects in the sectors of health, agriculture, nutrition, education, institutional and social development, industrial and urban development, economics research, science and technology, and population. In the main the contractors were American universities, and several U.S. government agencies, like the Agricultural Research Institute, the National Bureau of Standards, and the U.S. Geological Survey. The centrally

funded research program of AID seeks answers to an array of problems that are transnational. This approach contrasts with AID mission efforts that are specifically designed for one country. Whenever feasible AID projects have been meshed with the research and development efforts of the less developed countries (LDCs) themselves as well as other national and international organizations. The program description reads:

> Frequently, AID helps to establish or strengthen network arrangements linking the work of developed and developing countries on LDC problems. In such cases the United States may finance only a small part of the overall effort, but may still provide the impetus and scientific skill essential for success...Although the fundamental purpose of AID research is to help solve LDC problems, it frequently results in rewards for the donors.

The Task Force, moreover, wrote directly to a dozen or more of the AID contractors in American universities in order to gain a first-hand report of some of the experiences and problems of transnational collaborative research in different fields of assistance. The following observations were taken from three perceptive letters dealing with (1) an irrigation engineering project, (2) an agricultural improvement project, and (3) an economic development research project.

(1) At Utah State University the Department of Agricultural and Irrigation Engineering for five years under AID contract has had eight long-term researchers stationed in five different countries

and twelve others rather constantly engaged in two weeks to six months of collaborative research on farm water management in Latin America. The American researchers are all on the faculty of Utah State University, but they have stationed themselves within the organizational framework of the indigenous research agencies, such as the São Francisco River Development Agency in Brazil, the Institute of Hydraulic Works in Ecuador, and the Colombian Agricultural Institute. Each of these agencies had a number of scholars working on problems of farm water management and each of the Utah State researchers had primary contact with an average of five foreign scholars on the scene. According to H. B. Peterson, the Project Director:

> Our staff have maintained over the years of this contract a very high level of enthusiasm, even though there have been a number of problems to be overcome. We feel that we have considerable expertise in the field of on-farm water management and that there has been a very significant transfer of this to young scholars and researchers in the field. This research activity is only one component of a fairly complex network of training, research, and demonstration which has taken place through various related contracts both with AID and other international agencies.

(2) The Department of Agronomy of Purdue University under AID contract has sent out more than 100 sets of seeds to twenty different foreign countries under a Sorghum Improvement Project. The seeds are subjected to field trials on their adaptability, their insect and

disease resistance, and data on their yields are thus collected from a variety of sites, different environments, and controls. According to Dallas S. Oswalt, the Assistant Director of the Project:

> One of the important values that has been received from this research has been the direct contact with people and their problems through the correspondence which has been conducted. We have been able to advise on problems that they have had and make suggestions which they have corrected and, therefore, advanced in their research work. The data that comes back shows the adaptability of the material and is a basis for our selections. The disadvantages are mainly that we have not visited the specific localities and identified conditions that would improve the overall performance of these varieties and to share in a more direct way with them in their research needs as to how our program here could be adapted to better fit the needs of a given locality or the wide variance in needs across the numerous locations. It is planned to visit selected locations in the conduction of this type of research. Without or with visits it requires periodic, prompt and regular correspondence in order to stay alert to the needs for the collection of the data, the type of data that should be collected and the timeliness of its procurement. This is necessary to insure the cooperator that we are concerned about the material he has in an experiment for us.

(3) The Development Advisory Service of Harvard University which, among other funding arrangements, had a contract from AID for comparative studies of resource allocation and development

policies in nineteen countries from 1967 to 1973. "Our experience in collaborative research, as defined by you, is limited," wrote Joseph J. Stern, the Associate Director for Research. However, he noted that their work, although chiefly advisory to foreign governments and institutions, stressed the involvement of counterparts. Moreover, three major instances of collaborative research have been (a) a study of economic policy in Argentina, conducted by an American and an Argentinian, (b) a project to assist and guide the research staff of the Korean Development Institute, which has involved 15 consultants over a three-year period, three specific research projects by American economists with Korean staff members, and (c) a study of public works programs, financed by the World Bank, that will ask a number of overseas research institutions to carry out intensive country studies to test a theoretical framework. Some of the commentary of Dr. Stern on transnational collaborative research was particularly helpful to the Task Force:

> As is to be expected, the most obvious drawback of long-distance collaborative research is the absence of continual communication and interaction which is only possible if all researchers are working out of a common physical location. A further problem is to ensure a common theoretical framework and methodology which will ensure that the pieces will mesh into a single final product. This becomes especially problematic

if the research design is worked out by one of the parties and collaborators are then sought to help in carrying out the project. Often a further problem is that the theoretical training or research procedures of foreign-trained professionals will differ from that of US or UK trained staff. This will often result in differences in emphasis or even inability to carry out certain aspects of the research design.

There are, of course, clearly perceived benefits as well. Use of indigenous research staff will often provide more ready access to data and mitigate, or eliminate, the charge that foreigners are merely interested in "mining" data. It will often, but by no means always, help to make the research output more relevant to the country or countries studied. And finally it is possible that indigenous researchers will provide new interpretations of data and events that might be overlooked by others.

Not surprisingly collaborative research has its drawbacks and benefits. On balance the increasing emphasis financing agencies tend to give to collaborative research is probably warranted. But an indiscriminate preference for collaborative research is only likely to erode the overall quality of research. Some problems are not amenable to such an approach and some countries are still so lacking in well-qualified professionals that a collaborative research effort might well doom an entire project. Finally, if transnational collaboration is to be a part of a research project, the foreign scholars need to be involved at the earliest stages of the project's formulation, and communication between research staff needs to be frequent. This in turn implies an increase in real cost and will often mean an increase in the time required to complete a specific study.

In sum, the AID Central Research Program encourages research projects to be planned with a view to conducting much of the research activity in the overseas setting and to gain foreign participation in the research activity as well in implementing its findings, but in practice these ideas are always difficult to implement.

Atomic Energy

Transnational collaborative research has also been carried out under the sponsorship of the U.S. Atomic Energy Agency (AEC). The Puerto Rico Nuclear Center, for example, is operated by the University of Puerto Rico under an AEC contract and although the emphasis of the Center is upon training, its research program involves collaboration between American and Latin American scientists on the problems in marine biology, terrestial ecology, agriculture, and medicine. The U.S. also provides substantial support to the International Atomic Energy Agency (IAEA) in Vienna. American scientists participate in the multinational research of the IAEA laboratories at Vienna, Seibersdorf, Monaco, and Trieste and they are involved in networks of research on selected problems carried out concurrently by a number of countries on such subjects as "Induced Mutations for Disease Resistance in Crops," "Computer Applications in Clinical Dosimetry," and "Studies in Iron Metabolism."

For more than a decade, moreover, the U.S. and the U.S.S.R. have collaborated in exchanges of information, visits, and personnel assignments to carry out high energy physics experiments in the laboratories of both countries. Neutrino experiments, controlled thermo-nuclear fission research, and fast breeder reactor technology studies are all part of an expanded program of collaboration agreed upon in 1973 by the two countries. Twenty-one countries, the United States and twenty other countries, also participate in an international food irradiation project under the joint auspices of the IAEA and the Nuclear Energy Agency of the Organization for Economic Cooperation and Development. The AEC has also supported Scandinavian countries and West Germany on reactor safety experiments in Sweden and collaborated with British and New Zealand scientists on rocket-borne barium injection experiments among serveral other projects.

Commerce

The National Bureau of Standards (NBS) of the Department of Commerce has been involved since 1969 in exchanges between its Center for Building Technology and the French Centre Scientifique et Technique de Bâtiment in Paris. By arrangement, valuable information transfers in environmental engineering, durability of materials, wind loads on structures, building acoustics, and so forth have occurred. But the NBS collaborative research program is clearly visible through the Special Foreign Currency Program that has enabled the NBS to give grants in Israel, Yugoslavia,

India, Pakistan, Poland, and Egypt for the study of physical measurement methods, the measurement of materials, properties of matter, nuclear and radiation technology, building technology, and other subjects of interest to the NBS. In all cases an NBS monitor has been strongly encouraged to communicate consistently with the principal foreign investigator and to visit the foreign country in order to broaden the base of interaction. All projects must be within the mainstream of the NBS interests or contribute to its effectiveness while benefiting both the foreign country and the United States...In reporting on these activities the NBS has noted:

> The files of the program contain a growing number of examples of collaborative work that has been of direct utility to either or both sides. Such collaborative efforts are extremely important in today's world. The unit for scientific research is seldom an individual scientist, but rather a team. The complex and interdisciplinary nature of modern scientific work makes the use of self-contained, local expertise of much less utility by itself than as a component in collaborative efforts which cross lines normally separating institutions, countries, and areas of research.

Environment

The Environmental Protection Agency (EPA) has also been engaged in a great many research projects in Egypt, Poland, Tunisia, and Yugoslavia under the Special Foreign Currency Program. Studies

of methods of waste disposal, effects of exposure to mineral contaminants, marine pollution, and other subjects of interest to the Agency have been funded with project officers selected from American national ecological research centers, water quality programs, or EPA headquarters itself. The principal investigators are all foreign nationals. In virtually every case the findings of the studies are expected to have broad applicability to environmental problems and assist the mission of EPA. To what extent the EPA research projects were collaborative could not be determined by the Task Force. In fact, many "international" research projects are not, according to the Task Force's definition, "collaborative."

Health

In November 1973 GEOMET, Inc. submitted a summary and final report of a comprehensive study of "The International Dimension of the Department of Health, Education, and Welfare" to the Office of the Secretary. It was estimated that more than seventy-eight million dollars a year was expended by the Department upon international activities. This amounted to about 1/10th of one percent of HEW's total expenditures, with the major part of these funds spent in the United States for international projects. One-third of the readily identifiable international activities, moreover,

were achieved through the Special Foreign Currency Programs with funds usable only in a limited number of countries. Administrative ceilings applied to the totals of the regular budget dollar expenditures for international activities in the Health Divsion, while ceilings for international travel applied to all divisions.

Although the study of HEW did not treat transnational collaborative research in any special way, it emphasized the importance of "knowledge-gaining" by going abroad (a) where special research capabilities and facilities were available, (b) where "natural experiments,"that is, other policy systems, were already in progress and could be observed, (c) where unique data might exist, and (d) where special sociopolitical circumstances might provide research "populations" not available in the United States. The study also suggested that although international cooperative programs would not cut the costs of research in half, some cost saving appeared possible through collaboration.

Some 70 current or recent international education activities of HEW were sketched by GEOMET, with at least one example from every major program, indicating that the real number of HEW international activities probably runs into the thousands. Some of those cited that seemed to reflect transnational collaborative components were:

> The U.S.-U.S.S.R. Cooperative Program in Medical Science and Public Health, through which several institutes of the National Institutes of Health, and other branches of DHEW's Health Division, design and undertake collaborative health research programs, with emphasis on heart disease and cancer problems.
>
> The United States-Japan Cooperative Medical Science Program, a major collaborative research effort largely directed towards study of the contagious diseases of Southeast Asia but now shifting toward more general concerns, managed by the National Institute of Allergy and Infectious Diseases.

and

> A current evaluation of medical education and training being conducted in parallel by four researchers, each studying the systems of their own countries, in Great Britain, Israel, Yugoslavia and Belgium, funded through the Bureau for Health Services Research and Evaluation.

Of these activities, the United States-Japan Collaborative Medical Science Program seems to have enjoyed particular success. Announced at the end of Prime Minister Sato's visit to Washington in 1965, it is an example of an intergovernmental scientific relationship intended primarily to benefit the people of Asia, but, in fact, providing data available and useful to the United States and other nations of the world. Only six disease categories were selected for research and within each of these the effort has been limited to objectives where progress can produce large effects. Furthermore:

> there is an equitable balance between the relative scientific contributions coming from investigators of the two nations involved. This is not an instance of one country scientifically assisting another; rather, there is an equality of input from both sides. The identification and further definition of research goals are mutual, a joint activity rather than unilateral scientific demonstration and direction.

Part of the success of the program has been due to the selection of people appropriate to the task of conceptualization, direction, and coordination of a multidisciplinary research effort and their identification of specific problems under the general guidance of an expert scientific panel. One of the unanticipated strengths of the program has been the different approaches of Americans and Japanese in their research, which have tended to give new insights to each participant and complementary results. There have been weaknesses, too. Some of the research has not been immediately relevant to United States or Japanese health problems, although of great importance to other parts of Asia; communication between and within various parts of the program has been somewhat haphazard; time limits have not been as clearly drawn for project termination as might be desired; and funds for foreign travel have required detailed justification with slow or negative response from an organization that is domestically oriented.

Education

Other illustrations of transnational collaborative research can be culled from the National Institutes of Health from special programs as well as from international awards for biomedical research, which in a single year amounted to 113 awards to investigators in 29 countries. Nevertheless, despite these grants and the long list of HEW international activities, transnational collaborative research in the Department has not been very common. In the field of education, for example, there have been few mechanisms or programs available for the promotion of transnational collaborative research, although individual scholars funded by the Office of Education or the National Institute of Education (NIE) have collaborated with foreign colleagues and NIE itself has contributed to a four-year collaborative project on the impact of introducing standardized testing procedures into the school system of Ireland. Through the standardized testing procedures project, funded by the Special Foreign Currency Program again, NIE has undertaken inter-institutional cooperative research abroad and it is interested in research on early childhood education and bilingual education as well as controlled experiments to determine to what extent cultural variables affect methodology and learning. As guidelines, proposals for such research "should represent a genuine joint effort between an American educational institution and an institution in another country on a subject of mutual concern and benefit." Furthermore,

the research plan must include appropriate evidence of joint planning and concurrence between the American institution and its partner abroad before funding. However, the funds actually available to NIE for this program in 1974-75 were scant.

Space

The National Aeronautics and Space Administration (NASA) is a prime example of an agency that has been engaged in cooperative international programs. In 1973 some 94 countries, including international organizations, were cooperating in some form with NASA through research, personnel exchange, surveys, tracking data acquisition, and other projects. Although it was not possible for the Task Force to separate in any way transnational collaborative research, as defined, from the host of international exchanges of data and research findings between foreign institutions and NASA, it was clear that foreign collaboration in space activities was absolutely essential to NASA's missions. NASA itself defined very well the objectives of its international activities as the stimulation of scientific interests and competence abroad, an enlarged potential for contribution to the art, access to foreign areas for measurements of a global character or having special geographic significance, enhancement of satellite experiments by foreign ground support programs, the development of cost-sharing and complementary space programs, and the extension of ties among scientific and national communities.

Humanities

The National Endowment for the Humanities has supported a number of international scholarly activities that might be categorized as (a) cooperative projects, in which transnational contacts and exchanges are both useful and desirable to the basic project, but not crucial; or where an American scholar, with permission and assistance from a foreign government, employs local research help; (b) collaborative projects, in which one or more foreign scholars play a major role, but the project itself operates under American control; and (c) joint projects where American and foreign scholars work together on an equal basis. In addition, the Endowment has supported international conferences and congresses, research centers and travel programs, and archeological projects that are directed by American scholars, at foreign sites, with varying kinds of inputs and assistance from the host government, foreign scholars, and local workers.

Illustrative of a joint project funded by the NEH would be a grant to the Institute for Social Research of the University of Michigan to convert major portions of the Statistique Générale de la France for the years 1500 to 1880 to general purpose, computer-readable forms for archival storage and general use by the international community of scholars. Two French and two American groups of scholars were involved: the Center for Western European

Studies of the University of Michigan with the Institute for Social Research at Ann Arbor in the United States and the Fourth and Sixth Sections of the École Pratique des Hautes Études and the Conseil National de la Recherche Scientifique in France. Such joint projects come closest to the definition of transnational collaborative research by the Task Force, but in the work of the Endowment such grants are only a fraction of the total number of projects with international or transnational attributes.

Science

The National Science Foundation (NSF) has three principal divisions of interest to the international studies community: The Division of Education, the International Programs Office, and the Division of Research Applied to National Needs. Of special import to transnational collaborative research is the budget of several million dollars a year, which does not include excess foreign currencies, approved for the Office of International Programs in order to facilitate binational and international cooperative science programs. An additional three million dollars in Fiscal Year 1974 went to encourage the formation of enduring cooperative relationships between American and foreign scientists and institutions as well as to strengthen U.S. science and science education.

State Department

Other agencies of the U.S. Federal government, of course, have been deeply involved in international education activities of one kind or another, but few of them have included transnational collaborative research. One of the most famous and appreciated programs for university lecturers and advanced scholars for more than a quarter of a century has been the Mutual Educational Exchange Program (Fulbright-Hays Act), which is administered through the Department of State and the Board of Foreign Scholarships, with the (private) Committee on International Exchange of Persons of the Conference Board of Associated Research Councils assisting in the administration of the program for senior scholars. By the Task Force's definition, no transnational collaborative research has been included in it. An extensive review of the program during the summer of 1972 came to an agreement that "the sharing of talent and resources through multinational and regional projects should be energetically pursued," but there was also conviction that "though thematic and team approaches can be valuable and are worth experimentation, opportunities for individual scholars should be retained." According to a study by the Bureau of Educational and Cultural Affairs, as the number of developing countries participating in the program has increased, the proportion of lecturing to research awards made to Americans going abroad has decreased, and in many countries there are no research grants at all.

Housing

The Department of Housing and Urban Development has entered into a number of cooperative projects that have included joint research designs, exchange of persons, participation in international organization studies, and the collection of comparative data. For illustration, as part of an analysis and evaluation of European experience in housing subsidies, the Department collaborated with the British Department of the Environment on research designs. A British consultant evaluated American practices in housing management while an American team identified transferable elements in the British system. A joint U.S.-France program was launched in 1970 through which an American from HUD has worked in Paris with a French team in the design of a management system and a research program to implement new town development and provide feedback to the United States for environmental monitoring. Most of these activities seem to be management studies as well as exchanges of data of considerable value in themselves and certainly provide for international collaboration. They have not been extended to the academic research community, although very useful exchanges between experts have taken place under bilateral programs with Canada, France, the Federal Republic of Germany, Japan, Sweden, and the United Kingdom.

Transportation

The Department of Transporation has had international co-operation arrangements with more than twenty countries. Exchanges of research information, short-term meetings of transportation specialists, and, in some cases, "the arrangement of shared-task research projects" occur. Such studies as road situations and driver's behavior in Poland, psychological and medical factors in the selection of train engineers in Romania, and an evaluation of diesel truck noise in Yugoslavia have been funded by the Department with foreign currencies, but no personnel from the Department have been assigned abroad on programs or projects that involved collaborative research. The list of transnational collaborative activities administered by U.S. Federal agencies indicated above is by no means complete. Nevertheless, many agencies like the Department of Interior, although they fund a number of bilateral arrangements for research with foreign countries, seem to have no transnational collaborative research projects as defined by the Task Force. This report of official programs hopefully begins to sketch the dimension of such activities and provides a sample of programs and projects that have recently been in operation.

Among the incalculable international activities administered by private institutions, whether funded negligibly, partly, or wholly by public monies, some transnational collaborative research can also be found--but apparently not very much. As with the government programs, most attention has been given to conferences, exchange of persons, the development of international centers and institutions, training, and individual research. Examples of transnational collaborative research, as defined by the Task Force, had to be selected from a rather few conscious efforts.

SSRC

Notable among the several international programs administered through the Social Science Research Council in New York has been the Latin American and Caribbean Program which, until 1 July 1973 was part of the separate Foreign Area Fellowship Program now merged into the Social Science Research Council itself. The Joint Committee on Latin American Studies, which both guides and allocates funds to the Latin American and Caribbean Program, is itself an international body. Three of its eight members in 1972-73 were Latin-Americans--a Peruvian, a Chilean, and a Brazilian. Various kinds of social science fellowships and grants have been awarded through this program, with support largely from the Ford Foundation, but of chief interest to the Task Force has been the Collaborative Research Training Fellowships and the new Post-doctoral Grants for Collaborative Research.

In the summer of 1972 fellowships in five projects under North American co-directors were offered for the first time as "collaborative research training fellowships." From a total of 103 applicants, 17 North American students were selected to work on either the expansion and impact of railroads upon the Peruvian economy, or Paraguayan political elites, or the role of the Chilean party system in the last twenty years, or developmental strategies of the Frente Nacional in Colombia, or case studies in the adaptations of the chemical industry in Mexico. Co-directors of the last project, for example, were a professor from the Universidad Nacional Autonoma de Mexico and Washington University. In commenting upon the first year's experience, the American Council of Learned Societies-Social Science Council Report said:

> The projects have provided a modest number of highly promising North American scholars an intellectually rewarding research training experience not otherwise available to them at their own universities. This experience allows them to be actively engaged in a research project under the co-direction of highly competent scholars with whom they might not otherwise have the opportunity to work. Moreover, through their participation in a collaborative research endeavor with Latin American students and junior faculty, they presumably acquired greater sensitivity and awareness of the intellectual orientations and perspectives of their colleagues in the region.

> One of the most useful elements of the collaborative research training projects and the inter-American research training seminars is that the topics for research and training are agreed upon through Latin and North American collaboration; the topics thus are "relevant" to the interests of scholars from both areas. This is a significant consideration, since North American scholars have been criticized in Latin America for carrying out projects alien to "contemporary reality" as viewed by the Latin American research community.

In 1973-74 the SSRC also decided to award individual grants for post-doctoral research in Latin America and the Caribbean to "non-North American" scholars as well as North Americans, which brought forth 43 applications from Latin Americans, one from the United Kingdom, and one from Australia, as well as 45 from North America. It was expected that the offering of individual grants to Latin Americans would reduce the number of requests for support of "post-doctoral grants for collaborative research," the second program of special interest to the Task Force. Instead there were 12 applications for support under this program, more than in 1971-72, of which only one was approved, on the politics of allocations and the Chilean budgetary process to be conducted by a Latin American on the faculty of Duke University and an American at the University of Wisconsin.

The Social Science Research Council has also promoted a number of groups and committees, such as the Transnational Social Psychology Committee and the Committee for the Comparative Study of Public Policy, which consider, encourage, and endeavor to facilitate transnational collaborative research. A remarkable illustration

of such research has been the SSRC Project Link. In 1968 the Council's Committee on Economic Stability decided that the time had come for an international effort to forge links between national econometric models and to establish the framework for a world model by integrating the research efforts of the various model-building groups. The planning conference at Stanford University in 1968 included four American economists as well as economists from Great Britain, Canada, Japan, the Netherlands, and Belgium. For more than five years, with headquarters at the University of Pennsylvania, Project Link has brought together dozens of economists in annual meetings from all over the world in various national centers in order to report, compare notes, and suggest improvements in econometric model building while the Project has continuously gathered, studied, and improved national models. Its recent results are best described this way:

> They include complete incorporation of the Bologna Model for Italy (improved during the past year), introduction of the new POMPOM Model for France, and introduction of the Reserve Bank of Australia Model. In addition, most of the other models have been updated and revised. The program has been considerably improved and streamlined. It has a capability for multi-year simulation, faster convergence to a world simulation solution, provision of results before and after international linkage, and correction for programming errors. It is now in a form that can be taped and distributed to various LINK centers throughout the world. At this time the LINK system is being used simultaneously in several different countries, and discussion at Stockholm facilitated further distribution of analytical materials.

In the fall of 1973 a group of scholars was convened by the SSRC and the ACLS to discuss new directions for inter-area research. The group suggested, among other things, (a) that bodies of theory might be selected for study in a series of parallel research efforts in a variety of areas and that the findings should be brought together for comparison; (b) that international collaboration in the development of models, as in Project Link, should be sought with tests and applications in different countries; (c) that there should be international collaboration to develop methodologies that could be applied on a world-wide scale; and (d) that all area studies committees should systemically assess the comparative work in their areas with a view toward developing Fellowship programs oriented toward comparative research problems.

ECIEL

Another privately-administered program of exceptional interest to this Task Force has been ECIEL. In 1963 several major economic research institutions in Latin America joined forces in a common research program, called the Program of Joint Studies on Latin American Economic Integration, and known as ECIEL, the acronym formed from its Spanish name, Estudios Conjuntos sobre Integracion Economica Latinoamericana. The program has been coordinated by staff members of the Brookings Institution. The major objective of the program has been to prepare professionally competent and useful studies. It has also strengthened the economics profession in Latin America through cooperative effort and support

for the development of the participating institutions. Since 1963, other research institutions have joined ECIEL, and twenty-one institutions from thirteen Latin American countries and the United States have recently participated in the program.

The program has been coordinated mainly through seminars held twice a year and attended by the principal researchers from the participating institutions as well as invited observers from other national and international organizations. Field work and data collection have been done by the individual ECIEL Institutes. They have also been responsible for the analysis of the data, which has largely been processed by the Brookings coordinator, who is also responsible for the international analyses and the editing of publications.

The ECIEL program focuses on comparative empirical research in economic integration and development. It has published one study on the costs and location of industrialization in a Latin American common market and there are four other studies under way, with some publications from them: (1) an inter-American comparison of the structure of wages and wage scales in manufacturing industries; (2) international comparisons of prices, purchasing power, and real incomes; (3) inter-American comparisons of consumption and income patterns; and (4) inter-American comparisons of labor force absorption and employment.

The coordinator of the ECIEL at the Brookings Institution, Dr. Joseph Grunwald, was also a member of the Task Force, so that the following evaluation, based upon his notes, provides an extremely useful insight into the merits and problems of transnational collaborative research. The most obvious benefits of transnational collaborative research, seen through the ECIEL program, have been access to data and unpublished materials; the acquisition of specialized knowledge about foreign countries provided by the indigenous scholars that might not otherwise be available to American researchers; the ability to make special investigations of population, household, and enterprise surveys in a foreign country that could not be easily done by a U.S. scholar; the widening of contacts to local research and educational institutions with their diverse resources; and the possibility of access to local financial resources. Experience with ECIEL has shown that to be successful, transnational collaborative research requires a true partnership of scholars and institutions, not collaboration based upon research assistants of one country serving the "senior" investigator of another country; and that such research should be based upon informal collaborative commitments, not formal contractual relationships. Scholars and institutions should work together because the research itself is important to them, not because money can be obtained by entering into a research contract.

There are real weaknesses in transnational collaborative research, too. Control over a research project is necessarily diluted and agreement upon methodologies and schedules cannot be enforced. If research in one country or one institution lags, the whole project will fall behind and although energetic coordination may avoid extreme problems, one must recognize that transnational collaborative research projects will progress more slowly than national non-collaborative projects. Finally, one of the most important lessons that emerged from the ECIEL experience was that substantial collaborative research is difficult, if not impossible, unless there are scholars who are dedicated to its coordination on a full-time basis. Local initiative and individual studies must not be subjected to centralized control, but if scholars agree to work together they must also be willing to accept strong and full-time coordination.

IREX

Another privately-administered international program with some elements of transnational collaborative research has been operated by the International Research and Exchange Board (IREX) in New York. Supported by funds from the Ford Foundation, the National Endowment for the Humanities, the State Department, and participating universities, IREX was established in 1968 and has since administered academic exchanges with the Soviet Union, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia in which some 83 American universities participate. Through its

programs IREX encourages the development of a scholarly interest among American university professors and their students in the contemporary and historical cultures of the exchange countries, promotes the interchange of ideas and experience between American scholars and their overseas colleagues, and provides opportunities for foreign scholars and students to receive training and to conduct research at academic institutions in the United States. The several IREX exchange programs operate under reciprocal agreements with the countries concerned.

IREX has awarded travel grants to recipients of visitor's invitations from the U.S.S.R. Academy of Sciences and fellowships for Soviet and East European studies in North America prior to participation in an exchange program. In addition to the formal exchanges, however, IREX offers opportunities, through short-term travel grants, to individual scholars and institutions to plan new forms of scholarly collaboration. More importantly, from the point of view of the Task Force, IREX will also accept applications to support a small number of collaborative projects in the social sciences or humanities that involve scholars from one or more of the exchange countries as well as from the German Democratic Republic, the People's Republic of Albania, and the Mongolian People's Republic. Such projects may take the form of joint research or publication, exchanges of data, and comparative surveys as well as bi-national or multi-national symposia

or institutional exchanges of professors and students. The funds for these grants, however, have been severely limited -- and projects that seek support either greater than $10,000 or longer than one year have been advised to approach other sources.

Of the nineteen grants awarded by IREX during 1972-73 under the heading of "collaborative projects," twelve went for conferences that brought American and Eastern European scholars together on different social science and humanistic themes. Seven of those conferences were held in the United States, one in the Rockefeller-owned Villa Serbelloni in Italy, one in Canada, and one each in Germany, Hungary, and Yugoslavia. There is evidence that some of these conferences lead to other meetings, symposia, and colloquia and may develop networks of communication for collaborative research efforts. Moreover, six grants were awarded by IREX for "collaborative" projects to individuals, all in the form of travel expenses, in order to facilitate (a) the photographing of two Russian cathedrals, (b) a systematic exchange of information on Russian linguistics and pedagogy, (c) a comparative study of Eastern European cities, (d) an analysis of the communication of international character to the national press of ten countries, and (e) a cooperative study of the letters of Joseph Conrad. All of these brought foreign and American scholars into

a common research effort indisputably reinforced by a better access to facilities and by the addition of special skills and insights to the projects. One grant under this heading brought two Soviet poets to the University of Kansas for a month to deliver lectures on 20th century Russian poetry.

Although not designed as "collaborative research," the large formal exchange programs conducted by IREX also produce continuing communication and cooperation between American and Eastern European scholars. There are positive outcomes in terms of correspondence, exchange of articles, joint research, receipts of grants for such research, and visits by the advisor to the advisee.

Finally, another thirty-eight grants, all in the form of travel expenses, were given during 1972-73 by IREX for special purposes, many of which were to consider, initiate, or arrange transnational collaborative research efforts.

The above illustrations of transnational collaborative research taken from the Social Science Research Council, the Brookings Institution, and IREX by no means convey the totality of efforts to promote international cooperative research endeavors through the scores of privately-administered or privately-funded foundations, research institutions, and universities in the United States. Nevertheless, the Task Force, after scanning the work of several international

centers and institutes, which exist independently or as part of a university, found that the proportion of transnational collaborative research to other kinds of international activities tended to be very small while the relative merits and problems of such research tended to be the same.

For social sciences the Task Force has also been made aware of such outstanding institutions as the European Coordination Centre for Research and Documentation in the Social Sciences in Vienna, which has long provided an institutional structure to facilitate international collaboration and has developed research programs on industrialization, delinquency, economic assistance and development, peace, social planning development, and so forth. In the first decade of its operation, a total of nineteen projects were carried out by the Centre involving some 238 institutes and 36 countries. Among its many achievements were a multinational comparative time-budget project that involved twelve countries, a European comparative research project on juvenile delinquency and economic development with four countries, an image of the world in the year 2000 project with 12 countries participating; a four-country study of values in politics, and a cross-national project in political participation and social change with seven countries involved. Another important collaborative structure in Europe has

been the Organization for Comparative Social Research in Oslo and the European Association of Experimental Psychology, which grew out of the initiatives of the Social Science Research Council.

There has been virtually no way, moreover, of including the many kinds of collaborative research projects subsumed under the activities of public international agencies whose work inescapably requires the pooling of knowledge and the sharing of evaluations. It was beyond the scope of this Task Force, for example, to examine the work of Organization for European Economic Development, the Organization of American States, or the United Nations system, including the UN Institute for Training and Research or the recently-founded UN University, which undoubtedly will emphasize international collaboration. It is probable, however, that many of the international cooperative research efforts under the aegis of these agencies upon examination would turn out to be the customary conferences, collection of data from several country sources, or individual papers on a similar theme from a national point of view rather than the more difficult and delicate transnational collaborative research that has been under consideration by this Task Force.

Perspectives on Transnational Collaborative Research

The Task Force has found that over the years many individuals and groups have advocated that greater attention be given to transnational collaborative research. For example, an advisory committee on government programs in the behavioral sciences in 1968 reported that from a practical point of view, international and comparative behavioral science research cannot be carried out by Americans without the cooperation of foreign scientists. From both the political and scientific perspectives, the committee said:

> Unilateralism will be resisted increasingly and opportunities for research in foreign countries progressively delimited unless research is made a matter of international cooperation.

The same report, moreover, went on to argue that the behavioral sciences had a special need for a free and healthy international exchange in research, for the important influence of culture upon social and human behavior makes it necessary to undertake observations on a cross-cultural basis in order to test hypotheses.

Yet even in the "harder" sciences, cultural influences play a great role in shaping outcomes of research. An excellent appreciation of this phenomenon can be seen in medical research in fertility regulation. Before 1960 family planning programs were not available in any areas in the Caribbean, Central, or South America--except

Puerto Rico, Barbados, Bermuda, and Jamaica. Since then the number of planning clinics throughout this area has proliferated, but research in fertility regulation has only begun. With assistance from the Ford and the Rockefeller Foundations in their support of research in reproductive biology, the Population Council, the Pathfinder Fund, the International Planned Parenthood Association, and the International Fertility Research Program (IFRP) have been engaged in field testing recent developments in fertility control. The IFRP reports that since its inception in 1971 it has created:

> ...a framework through which new developments in fertility control technology, as well as fertility control methods in general use, can be rapidly evaluated through a series of clinical field trials. The trials are conducted by an international network of collaborating Contributors representing a variety of different cultural and clinical settings and now include almost all the Latin American countries... In "straight" studies a specific method of fertility regulating is studied in a selected group of subjects, while in a comparative study two or more methods are compared and the study is more strictly controlled. Straight and comparative studies of the same methods are conducted by a number of different Contributors so that the efficacy, safety, and acceptability of a method of fertility regulation can be evaluated when used by different physicians, in different countries and cultural settings.

Transnational collaborative research also removes the limitations of an investigator in only being able to visit a few different cultural settings and never simultaneously. George A. Theodorson, writing in The Journal of Human Relations, as early as 1964 observed

that "International cooperation in cross-national research tends to multiply the value of each piece of data collected. The data grows in significance when compared with identical data from other cultural settings." Merely from a physical point of view, the opportunities for gaining additional data through transnational collaborative research seem obvious, but it is very likely that the very same data, or experiments, or observations collected by foreign observers would lack the content, quality, or exactitude that a highly motivated local collaborator could provide.

In addition to the merit of transnational collaborative research in multiplying data from various cultural settings, several commentators on the international development of social scientists have called attention to such research as "a school for social scientists--an educational institution, so to speak, for sophomores and post-graduates alike." It has been argued that one of the most effective ways of accelerating the emergence of groups of trained social scientists is by having them engage in joint research activities employing similar methods, theories, and research designs. The Task Force believes that these observations need not be confined to social scientists:

> In the process of conducting research together, that involves cooperative planning and use of common methodologies and cooperative examination of findings, it is possible to bring together senior scholars, young members of faculties beginning their research careers and advanced graduate students who can, over a period of one or two years or longer, acquire a common set of skills, research approaches and commitments to the development of social science programs.

After the joint research program has been completed, moreover, the scholars retain their professional status, their contacts, and very likely encourage new institutes and centers in which a carry-over from their collaborative research experiences can be nurtured.

Again and again the literature on transnational collaborative research has stressed the necessity of equal participation, of a respectful relationship between the research associates in a common enterprise and the avoidance of any hierarchichal cast in which the foreign collaborators are merely used for the exotic data that they can furnish to the principal American investigator. Thus, H. Tajfel wrote:

> No amount of benevolent paternalism exercised through cooperative research, predominately sponsored on one side of the fence, can replace this sort of organic growth. Cooperative efforts, such as we know them at present, however well-intentioned, are bound to remain off-course since by the very nature of the economic facts of life they consist mainly of "giving" on the one side and "helping" on the other. Thus, instead of contributing genuinely to the increase

> in the numbers and quality of indigenous specialists, they result in creating a long line of research "assistants" and "associates" whose perspective on the discipline is mainly determined by the "project" in the machinery of which they happen to be appropriate cogs...

But it has been the considered opinion of many authors and the view of this Task Force that "collaboration" need not imply an absolute equality of talent, of facilities, or of financial contributions from each partner in the collaborative research enterprise. The spirit of equality evidenced in the planning stage of the research, in the acquisition and comparison of data, and the sharing of all research findings will be far more important than any weighting of persons, places, or money to achieve a balance of inputs. Moreover, the value of transnational collaborative research should not be gauged too sharply by the success or failure of the project itself. Indeed, "failures," if they have been properly organized, directed, and analyzed can be excellent learning experiences, leading to healthy improvements in methodologies, more modest and experienced scientists, and revelations of what can be done rather than what cannot be done by transnational collaborative research.

Some of these views were also set forth in 1970 by F. Kenneth Berrien as he enumerated a set of "ideal" conditions for collaborative research efforts of two or more investigators in different countries. He maintained that each of the investigators should be

strongly encouraged and supported by institutions in their respective countries and that they ought to address common problems of a common concern not only to the researchers, but (in psychology) to social problems. Comparable methods of research should be employed. The pool of data would belong to the collaborators jointly, but each of them should be free to report his own interpretations to his own constituents, under the obligation to strive for acceptable interpretations to the world of scholars.

The question of "relevance" in transnational collaborative research has been raised many times, with some commentators concerned about the need to address, in Berrien's words, "social problems" and others concerned about the sacrifice of academic standards to political opportunism. Kalman Silvert, a long-time, wise observer of the Latin American scene has written that he suspects "much of the current faddishness about collaborative research...is a respectable political reaction to a real political problem, but that the reaction is little refined and often less than academic." Latin Americans frequently complain that the transnational collaborative research is of no earthly use to them while North Americans lament the investigation by Latin Americans of matters either so abstruse or so applied that comparative study and the scientific testing of data are impossible. Inevitably the conflict revolves

around an interpretation of what is "relevant," what is "meaningful," which in turn highlights the different academic roles played in different societies and makes the choice of the research subject absolutely critical.

For Silvert, research relevance, social commitment, and professionalism are inextricably linked. Political motivation and incompetent research will assure irrelevance and will deny social commitment. The irreducible component of transnational collaborative research should be professionalism, that is, not a "value-free" social science, but a scientific commitment to studies that are precise, analytical, objective, and empirical:

> In sum, then, my doubts about the efficacy of multidisciplinary and international collaboration stem from my belief that many of the proponents of these approaches suffer from misplaced hope. They confuse the instrument with the end. No matter the nationalities of the actors or their disciplinary identifications, in the beginning there must be competence and the understanding that professional and social integrity are goals to be simultaneously pursued, for to separate them is to kill both.

These and other problems of transnational collaborative research have been considered by the Task Force. No one can deny the pressing and practical needs of the developing countries who perceive benefits from cooperative research in a different light than social scientists from the developed world with their unhurried theoretical interests.

Yet even this conflict has sometimes produced benefits through the development of highly inventive research methodologies to reconcile the diverse interests and it has often induced a better analytical structure with some tolerance for different points of view. The very process of organizing a transnational collaborative research project that involves investigators with different motivations with different experiences in research techniques, and with different cultural biases, in itself begins to illuminate the substantive problem and will teach the receptive scholar the exercise of care and caution before evaluating data or reaching conclusions.

The Task Force has been aware, moreover, of the problems that arise in transnational collaborative research from the unequal education, unequal facilities, and inadequate linguistic preparation, both technical and cultural, among the members of the research teams. The pressure of political interests, frequently reflected through the national research institutions involved, and the lag in communications among collaborators, the paucity of financial resources for such extended research, and other factors, often lead to levels of frustration and wonder that any transnational collaborative research can succeed. Research that calls for international collaboration demands both a strong stomach and a strong mind.

With a recognition of the merits and problems of transnational collaborative research, moreover, there must be a balance sheet struck that will weigh any decision to enter agreements on such research. Some decisions may well depend upon objectives that go far beyond the immediate goals of the project, as indicated earlier, to achieve the development of trained scientists or to create bold methodologies or to nurture international respect and confidence in a research network, which can have long-run and world-wide benefits to knowledge. Alexander Szalai, in his 1972 paper on "The Organization and Evaluation of Cross-National Survey Research Projects, put the case succinctly and fairly:

> True, great differences between the various countries in the availability of suitably trained and experienced partners provides a formidable obstacle. But how can we hope for a change in this respect without including in spite of such difficulties countries on a lower level of "preparedness" in co-operative projects? Even political suspicions against international ventures of this kind, against illegitimate disclosures (or distortion) of information--another important obstacle--can best be overcome by trying and trying again to achieve bona fide cooperation and setting counterexamples against the suspicion.

Transnational collaborative research is not easy. Its problems are compounded because of three operational "boundaries" suggested by the foregoing evidence. Transnational collaborative research may be sought because the boundary of the problem - e.g. agricultural

development, contagious diseases, class structures and political elites, national economy models, etc. - seems to require pluralistic experience in a wide number of cultural settings. But the boundary of the pool of knowledge - e.g. the trained investigators, institutional supports, cooperative networks, etc. - may not be coterminous with the problem raised by the initiator of the research. To compound the difficulty of a lack of congruence between the "problem" boundary and the "knowledge" boundary, there are also organizational boundaries - private agencies, government programs, international organizations, etc. - whose motivations, interests, or capacities, whether legally, politically, or financially restricted, may not coincide with either the problem boundary or the knowledge boundary. If there is a mismatch of problem definition, knowledge pool, and organizational support, transnational collaborative research projects are very likely to founder. A determined effort to align the three boundaries, which often may not be possible, seems preliminary to any decision to undertake any kind of transnational collaborative research.

The experience of the Task Force also suggests that transnational collaborative research can be beneficial in both substance and in process. Gains from the multiplication of data and analysis

in diverse cultural settings can be the substantive outcome of a project. But it is conceivable, and not undesirable, that the greater gains will come from the encouragement of individuals of investigation and the development of institutions with increased research skills. Furthermore, a project, although yielding inadequate substantive returns itself, may start a web of international communications and vigorous future international collaboration on a number of better-conceived projects. More than the usual individual research, which, of course, also helps to train the individual investigator, transnational collaborative research reaches out at once to a group of collaborators in foreign cultures, where few or no skills may have been accumulated, or it reaches into the American research effort, where little experience or competence in an area of research has been acquired. The result in both instances will be to add to the foundations of the global scientific community and strengthen the intellectual associations that are the key to international collaboration.

Another gain from achieving a network of research, collaboration arises from a better dissemination and utilization of the research findings. Too often research projects have been completed, only to be dismantled and left to disappear without a trace. For

reasons ranging from the ineptitude of the investigator in publicizing his findings to the deliberate burial of research results by those who find them disturbing, a well-conceived and completed project may fail in its ultimate objective of sharing new knowledge with a larger community and gaining educational, technological, institutional, or other reforms as a consequence of the results. The involvement of a larger community of researchers, as partners across national and cultural frontiers in transnational collaborative research can go far not only in creating a climate of confidence in approaching the subject matter, but also provide better opportunities for disseminating the results across boundaries. It is not simply a matter of more people, more institutions, and more resources applied to one program or project, but rather the dynamics of interaction where an international effort can encourage an international release of the findings. In sensitive areas there will be a cautious advance and step-by-step agreement among the investigators as to what both feel can and should be presented as findings. As confidence mounts, suspicions diminish - and trust should ensure a far greater acceptance of results, a far wider dissemination of findings than comparable work by one national investigator or one national group.

An ancillary benefit in the "process" of transnational collaborative research, moreover, beyond the technical training or methodological improvements that accrue from the international experience, lies in the sharpening of cross-cultural perceptions. An American, for example, collaborating with a foreign researcher as a peer, begins to gain insight on the parochialism of his own approach to a problem, of his cultural biases, his national political predilections, or his economic fallacies in other societal contexts. Similar reactions will be felt by the foreign colleague. Both collaborators may then reexamine their value structures not only from the point of view of the research project immediately at hand, but also from the point of view of their personal commitment to life styles, the scientific method, political structures, or community needs. The Task Force realized that other forms of international education can provide some of these same aptitudes, but it believes that transnational collaborative research uniquely challenges two or more individuals who work together on the same project with a different set of philosophical-cultural premises, insofar as it forces comparisons of their efforts in an immediate, personal, and often fractious way. Once the American is convinced that the world is not "his" world for "his" research, in which other people and cultures are useful satellites to solve "his" problems, transnational collaborative research can go a long way in arriving at some universal truths.

Conclusions and Recommendations

From what has been read and said, the Task Force finds that "transnational collaborative research" is a method of enhancing international education. There are certain advantages, gains, or benefits in this approach to research and, indeed, it may be the only way to achieve certain kinds of data and analyses. At the same time, the Task Force finds that certain problems are associated with transnational collaborative research, which seem likely to restrict its widespread application in public and private research programs.

For the United States there seem to be at least six major advantages to encouraging transnational collaborative research as a method and function of international education: first, it provides access to field sites, data, and facilities in foreign countries that may not be possible in any other way; second, in simply quantitative terms, it can add to or multiply the pool of knowledge about a subject, phenomenon, or process; third, in qualitative terms, it provides invaluable comparative experience, either reinforcing or eliminating conclusions that might be biased by national culture; fourth, it helps to build an international network of skilled individuals and established institutions that are geared to collaborative research, a structure that can be mobilized for new projects; fifth, it

helps to create better cross-cultural perceptions in research associates that will strengthen over time their attitudes and evaluations; and, sixth, it ensures a better dissemination of the results, not merely in the multiplication of facilities for diffusion, but also in the winning of confidence across cultural frontiers that will guarantee acceptance of the results.

There is some evidence, finally, that transnational collaborative research could provide some economies in the use of personnel, facilities, locations, and so forth in obtaining access, collection, and analyses, perhaps more cheaply than other methods of research. But the Task Force believes such a consideration should weigh little in any decision to solve a problem through transnational collaborative research; indeed, sometimes the costs of that method may be greater than other means of research for the same ends.

The Task Force also finds some severe limitations upon transnational collaborative research as a method and function of international education: first, the problem to be solved, the available international pool of knowledge and skills, and the organizational "boundaries" for operations and funding may not be coterminous; second, the objectives of a project may not be clearly stated or clearly understood by the two

or more national-cultural groups involved, with misperceptions of both the purpose and the use of the findings; third, the principal investigators may simply not have the time, experience, or sensitivity to conduct transnational collaborative research; fourth, the administrative structure required to impose form, facilitate communication, and capture results may be lacking--whether by design or omission; fifth, there may be such an imbalance between the lush American contribution in manpower, money, and motive, even inadvertently, that the international "collaborative" elements are dwarfed, intimidated, and lost; and sixth, there may be a lack of perspective that fails to appreciate the need for a long-term investment in such research with pay-offs to be reckoned in viable research networks and global communities of scientists, rather than "solutions" to instant problems. Other narrower limitations on transnational collaborative research were also considered by the Task Force, such as international currency problems, the lack of individual emphathy for foreign views, and so forth. But the object of the above major caveats is not to discourage such research, only to caution its exponents.

Finally, the Task Force is cognizant of the fact that transnational collaborative research will take different forms for different problems of the humanities, the social sciences, and the natural sciences; that private programs and government programs have some things in common in utilizing such a method and yet in other ways must operate differently; and that transnational collaborative research should never be urgently programmed or forced within organizations, but allowed to grow "naturally" as the researchers themselves perceive the advantages of the method and can reasonably overcome its difficulties.

For all these reasons the Task Force recommends (a) that all interested public and private agencies be apprised of the potential values of transnational collaborative research; (b) that flexibility be provided in their programs and in their budgets to encourage or welcome soundly conceived transnational collaborative projects; and (c) that case studies of allegedly "successful"--or unsuccessful--case studies of transnational collaborative research be accumulated, analyzed, and shared with the relevant research community.

Transnational collaborative research is not a panacea for the incalculable problems that beset the world. Alone this approach

to international education cannot satisfy the myriad needs for new data, new insights, and new processes that would elevate human comprehension of the universe. But the Task Force is convinced that transnational collaborative research may be the only way to achieve solid and sound results in some areas of research and that the process has valuable spinoffs for international training, institutional development, and research methodology. The imaginative and patient scholar who can bear the burdens and frustrations of such inquiry should gain incomparable results that will greatly strengthen the role of international education in a civilized global society.

- SOURCES OF INFORMATION -

Academy of Sciences, National Research Council, Advisory Committee on Government Programs in the Behavioral Sciences, The Behavioral Sciences and the Federal Government, N.A.S. Publication 1680. Washington, D.C., National Academy of Sciences, 1968.

Adams, Gordon M., Personal Communication, February 27, 1974.

American Council on Education, Agency for International Development. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, Department of State/Bureau of Educational and Cultural Affairs. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, The Fund for the Improvement of Post-Secondary Education. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, Library of Congress. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, National Endowment for the Humanities. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, National Institute of Education. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, National Science Foundation. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, Smithsonian Institution. Washington, D. C., American Council on Education (mimeographed).

American Council on Education, Task Force on Reinforcement of Overseas Professional Skills. Washington, D. C., American Council on Education (mimeographed).

American Council of Learned Societies, Social Science Research Council, Joint Committee on Latin American Studies and Joint Committee on the Foreign Area Fellowship Program Report on Activities, 1959-70. New York, Social Science Research Council, August 1971.

American Council of Learned Societies, Social Science Research Council. Latin American and the Caribbean, Annual Report, 1972-73. New York City, Social Science Research Council Foreign Area Program.

Anderson, Oscar E., International Program Summary, 1973. Washington National Aeronautics and Space Administration, 1974 (mimeographed).

Austin Granville, Personal Interview, October 29-30, 1974.

Berrien, F. Kenneth, "A Super-Ego for Cross-Cultural Research," International Journal of Psychology, Vol. 5(1), 1970: 33-39.

Blitzer, Charles, and Wymberly Coerr. Meeting, Smithsonian Institution, October 29-30, 1974.

Borden, John S., List of Transnational Collaborative Projects Supported by Research Grants Division in FY 1973 and 1974. Washington, National Endowment for the Humanities, February 1974 (mimeographed).

Brademas, John, Address Before Council for Educational Development and Research, Inc., Washington, D. C., November 19, 1973.

Brookings Institution, The Program of Joint Studies on Latin American Economic Integration, A Brief Description. Washington, Brookings Institution, 1972.

Brown, Bertram S. and E. Fuller Torrey (Eds.), International Collaboration in Mental Health. D.H.E.W. Publication #(HSM)73-9120. Washington, D. C., Government Printing Office, 1973.

Cadenhead, Elizabeth, International Development of the Social Sciences, A Partial Inventory of the Literature, Ohio State University, Mershon Center, 1973 (mimeographed).

Campbell, Donald, "A Cooperative Multinational Opinion Sample Exchange," Journal of Social Issues, Vol. 24(2), 1968: 245-256.

Centre Européen de Coordination de Recherche et de Documentation en Science Sociales, Une Experience de Cooperation Européenne dans les Sciences Sociales. Vienna, Centre Européen de Coordination de Recherche et de Documentation en Sciences Sociales, 1973.

Committee on International Exchange of Persons, 1973-74 Directory of Visiting Lecturers and Research Scholars in the United States under the Mutual Educational Exchange Program (Fulbright-Hays Act). Washington, Committee on International Exchange of Persons.

Conference Board of Associated Research Councils, Committee on International Exchange of Persons. Annual Report to the Board of Foreign Scholarships, July 1, 1972-June 30, 1973 (mimeographed).

Crane, Diana, "Transnational Networks in Basic Science," in Keohane and Nye, Transnational Relations and World Politics. Cambridge, Massachusetts, Harvard University Press, 1973.

Díaz-Guerrero, Rogelio, "La Enseñanza de la Investigación en Psicología en Ibero-América: un Paradigma," Revista Latinoamericana de Psicología, Vol. 3(1) (PA, 46:839).

Environmental Protection Agency, Office of International Activities, Special Foreign Currency Program Cumulative Project Listing Through June, 1973. Washington, D. C., Environmental Protection Agency (mimeographed).

John E. Fogarty International Center, National Institutes of Health Annual Report of International Activities, Fiscal Year 1972. D.H.E.W. Publication #(N.I.H.)74-62. Washington, Government Printing Office.

John E. Fogarty International Center for Advanced Study in the Health Sciences. Washington, Government Printing Office, 1969.

Fishman, Joshua A., "Problems of Research Collaboration and Cooperation," Journal of Social Issues, Vol. 24(2), 1968: 235-41.

Foreign Area Fellowship Program, Special Announcement - Fellowships for Inter-American Research Training Seminars Offered in 1972-73. New York, Foreign Area Fellowship Program.

Friedman, A. S., "Transnational Collaborative Research Involving U.S.A.E.C. Sponsorship." Washington, D. C., United States Atomic Energy Commission, February, 1974 (mimeographed).

Glennan, Jr., Thomas K., "The National Institute of Education: A Progress Report on Its First Year." Address before the American Psychological Association, Montreal, Canada, August 28, 1973.

Goldsmith, Alfredo, David Edelman, and Elton Kessel, Excerpts From Medical Research in Fertility Regulation. International Fertility Research Program (mimeographed).

Grunwald, Joseph, Notes on Transnational Collaborative Research (TCR) Based on the Experience of the E.C.I.E.L. Program. March 1974 (mimeographed).

Grunwald, Joseph and Jorge Salazar-Carrillo, Economic Integration, Rates of Exchange, and Value Comparisons in Latin America. Washington, D. C., Brookings Institution, 1972.

Hathorne, Berkley C., Personal Communication, February 25, 1974.

International Center for Medical Research and Training, Tulane University - Universidad del Valle Annual Progress Report, March 1973. New Orleans, Tulane School of Public Health and Tropical Medicine, April 1973.

International Fertility Research Program, Carolina Population Center, Annual Report, January 1 - December 31, 1973. Chapel Hill, North Carolina, University of North Carolina.

International Research and Exchanges Board, Annual Report, 1970-71. New York, International Research and Exchanges Board.

International Research and Exchanges Board, Annual Report, 1972-73. New York, International Research and Exchanges Board.

International Research and Exchanges Board, Commentary on Eastern European Statistics. New York, International Research and Exchanges Board.

International Research and Exchanges Board, Exchange Programs with Eastern Europe and the Soviet Union, 1974-75. New York, International Research and Exchanges Board, August 1973.

Jacobson, E., "International Development of Social Science Research Resources," Background, Vol. 10(2), 1966.

Johnson, V.A., Personal Communication, February 27, 1974.

Kelman, Herbert C. and E. P. Hollander, "International Cooperation in Psychological Research," American Psychologist, Vol. 19(9), 1964: 779-82.

Kingston, Robert, Roger Rosenblatt, William Emerson, J. Blessing, and J. Kraft, Meeting, National Endowment for the Humanities, October 29-30, 1974.

Long, Ervin, Curtis Barker and J. Schmeedom, Meeting, Agency for International Development, October 29-30, 1974.

Mack, Joyce, J., "Precis of International Transportation Projects." Washington, Office of the Secretary of Transportation, March 19, 1974 (mimeographed).

MacLeod, Colin and Howard A. Minners, "International Cooperation in Science," Science, CLXIII (September 17, 1971), 1085.

Monaster, Guy J. and Robert J. Havighurst, Cross-National Research: Social-Psychological Methods and Problems. Boston, Houghton-Miffin, 1972.

McCann, Lewis P., Personal Communication, February 26, 1974.

National Academy of Sciences, Committee on Science and Public Policy and Social Science Research Council, Committee on Problems and Policy, The Behavioral and Social Sciences: Outlook and Needs. Englewood Cliffs, Prentice-Hall, 1969.

National Aeronautics and Space Administration, Office of International Affairs, N.A.S.A. International Program. Washington, National Aeronautics and Space Administration, January 1973.

National Institute of Education, Office of Research Grants, Fiscal Year 1973 Grants. Washington, National Institute of Education (mimeographed).

National Institute of Education, Grants for Research in Education. Washington, National Institute of Education, 1973.

Parker, Edwin B., David Lingwood, and William J. Paisley, Communication and Research Productivity in an Interdisciplinary Behavioral Science Research Area: Report of the Institute for Communication Research. Palo Alto, California, Stanford University, July 1968 (PA, 46: 752).

Peiser, H. Steffen, Samuel E. Chappell, Emanuel Horowitz, Harvey Yakowitz and Doris Bluebond, N.B.S. Special Foreign Currency Program in Yugoslavia, 1971-72. National Bureau of Standards Technical Note 753. Washington, Government Printing Office, 1973.

Peiser, H. Steffen and Max Klein, N.B.S. Special Foreign Currency Program in Israel, 1970-71. National Bureau of Standards Technical Note 721. Washington, Government Printing Office, 1972.

Peiser, H. Steffen, Michael B. McNeil, and Doris M. Bluebond (eds.), Collaborative Research Program Between N.B.S. and Indian Scientific Institutions: Special Foreign Currency Program 1973 Status, National Bureau of Standards Technical Note 798. Washington, Government Printing Office, 1973.

Petrullo, Luigi, "Government Sponsorship of Overseas Research," American Psychologist, Vol. 23(2), 1968: 108-111.

Pitcairn, Donald M., Personal Communication, April 17, 1974.

Pitcairn, Donald M., Resume of the Discussion of the Planning Committee: The Role of U.S. Biomedical Institutions in International Health. September 21, 1972 (mimeographed).

Potashnik, Michael, A Guide to Selected Fellowship and Grants for Research on Latin America and the Caribbean. New York, Social Science Research Council.

Purdue University, Department of Agronomy, Personal Communication, February 22, 1974.

Purdue-A.I.D. Sorghum Improvement Project, "International Protein Yield and Quality Trials, Summary, August 1973." West Lafayette, Ind., Department of Agronomy, Purdue University, February 1974.

Rokkan, Stein, Sidney Verba, Jean Viet, and Elina Almasy, Comparative Survey Analysis. Paris, Mouton, 1969.

Schulam, Sam., "Intercultural Collaboration Among Sociologists: North American and Latin American," Sociology and Social Research, Vol. 51(4), July 1967: 470-84.

Silvert, Kalman H., An Essay on Interdisciplinary and International Collaboration in Social Science Research in Latin America. p. 105-118.

Smith, M. Brewster, "International Collaboration in Social Psychology: Some Reflections on the Ibadan Conference," Journal of Social Issues, Vol. 24(2), 1968: 261-66.

Social Science Research Council, Foreign Area Fellowship Program, Special Announcement - Collaborative Research Training Fellowships in Latin America and the Caribbean Offered in 1972-73. New York, Social Science Research Council.

Social Science Research Council Foreign Area Program, Special Announcement - Collaborative Research Training Fellowships in Latin America and the Caribbean Offered in 1973-74. New York, Social Science Research Council.

Social Science Research Council Items, XXIII (4), December 1969.

Social Science Research Council Items, XXIV (4), December 1970.

Social Science Research Council Items, XXV (4), December 1971.

Social Science Research Council Items, XXVII (4), December 1973.

Social Science Research Council, Special Announcement - Fellowships for Inter-American Research Training Seminars Offered in 1973-74. New York, Social Science Research Council.

Spady, William G., Personal Communication, March 11, 1974.

Staff of National Science Foundation, Meeting, October 29-30, 1974.

Stern, Joseph J., Personal Communication, March 11, 1974.

Swift, John L., The International Dimension - Department of Health, Education, and Welfare, Summary and Final Report, Geomet Report #HF-284. Rockville, Maryland, Geomet, Inc., November 1973.

Szalai, Alexander, The Organization and Execution of Cross-National Survey Research Projects, Theme Report II, International Social Science Council Conference, Budapest, July 25-28, 1972.

Tajfel, H., "Second Thoughts About Cross-Cultural Research and International Relations," International Journal of Psychology, Vol. 3, 1968: 213-19.

Tanka, Yasumasa, and C. E. Osgood, "Cross-cultural, Cross-concept, and Cross-subject Generality of Affective Meaning Systems," Journal of Personality and Social Psychology, Vol. 2(2), August 1965: 143-53.

Taylor, Harold, The United Nations University, Washington and New York: Cooperative Publishing Venture of American Council on Education, Conference on World Affairs; Council for Intercultural Studies and Programs; Institute for World Order; and U.S. Committee for the United Nations University, October 1973.

Teune, Henry, Advantages and Problems of International Collaboration in Social Science Research. Paper presented at Seventh Annual National Convention of the International Studies Association, Wayne State University, May 5-6, 1966.

Theodorson, George A., "The Feasibility of International Cooperation in Conducting Cross-Cultural Research," Journal of Human Relations, Vol. 12(2), 1968: 309-311.

U.S. Department of Agriculture, Agricultural Research Service, International Programs Division, Agricultural Research Grants Completed Under the Special Foreign Currency Program, March 31, 1961 through June 30, 1973. Hyattsville, Maryland, U.S. Department of Agriculture, July 1, 1973.

U.S. Department of Agriculture, Agricultural Research Service, International Programs Division, Foreign Agricultural Research Grants Executed Under the Special Foreign Currency Program. Hyattsville, Maryland, U.S. Department of Agriculture, June 30, 1973.

U.S. Department of Agriculture, Agricultural Research Service, International Programs Division, Foreign Agricultural Research Grants Executed Under the Special Foreign Currency Program. Hyattsville, Maryland, U.S. Department of Agriculture, December 31, 1973.

U.S. Department of Agriculture, Agricultural Research Service, International Programs Division, Research Agreements Completed or Terminated, July 1 through December 31, 1973. Hyattsville, Maryland, U.S. Department of Agriculture, January 1, 1974.

U.S. Department of Commerce, National Bureau of Standards, Annual Status Report, 1973 - U.S. - France Cooperative Program Projects Involving the National Bureau of Standards. Washington, D. C., National Bureau of Standards, 1973 (mimeographed).

U.S. Department of Health, Education, and Welfare, National Institutes of Health, Fogarty International Center, 1974 I.C.M.R. Research Associate Program. Washington, National Institutes of Health, December 1973 (mimeographed).

U.S. Department of Health, Education, and Welfare. Inventory of Federal Programs Involving Educational Activities Concerned with Improving International Understanding and Cooperation. Washington, D. C., Government Printing Office, June 1969.

U.S. Department of Health, Education, and Welfare, National Institutes of Health, Fogarty International Center, International Cooperation and Geographic Studies Branch. National Institutes of Health International Awards for Biomedical Research and Research Training, Fiscal Year, 1972. D.H.E.W. Publication #(NIH)73-63. Bethesda, Maryland, National Institutes of Health Public Health Service.

U.S. Department of Health, Education, and Welfare, National Institutes of Health, Fogarty International Center. The National Institutes of Health Involvement in Bilateral Agreements for Cooperation in Biomedical Research. Bethesda, Maryland, National Institutes of Health, 1973 (mimeographed).

U.S. Department of Health, Education, and Welfare, National Institutes of Health, Fogarty International Center, Publications. Bethesda, Maryland, National Institutes of Health, July 1973 (mimeographed).

U.S. Department of Housing and Urban Development, "Note Regarding International Activities of the Department of Housing and Urban Development." Washington, D. C., U.S. Department of Housing and Urban Development, January 14, 1974 (mimeographed).

U.S. Department of State, Agency for International Development, A.I.D. Research 1971-1973. Washington, D. C., Agency for International Development, December 1973.

U.S. Department of State, Agency for International Development, The A.I.D. Research Program, 1962-1971: Project Objectives and Results. Washington, D. C., Agency for International Development, March 1971.

U.S. Department of State, Agency for International Development, Contract Program in Centrally Funded Research. Washington, D. C., U.S. Department of State, May 1972.

U.S. Department of State, Agency for International Development, Technical Assistance Bureau, Central Research Program, Summary of Funding by Project and Sector, January 1962 - August 30, 1973. Washington, D. C., Agency for International Development (mimeographed).

U.S. Department of State, Bureau of International Scientific and Technological Affairs, The United States - Japan Cooperative Medical Science Program, Five Year Report, 1965-1970. Department of State Publication 8598. Washington, D. C., Government Printing Office, July 1971.

Utah State University, Department of Agricultural and Irrigation Engineering, Personal Communication, March 27, 1974.