

PN-ABI-050
71773

Contract AID/csd-3642
Iowa State University

A.I.D. Study
Reference Center
Room 1656 NS

An Application of Methodological and Theoretical Criteria
for Indicators of Social Development in the Analysis of
Selected A.I.D. Operational Indicators, Concepts, and Data

by

Leslie D. Wilcox
Task Leader

Wm. Alex McIntosh
Research Associate

Kerry J. Byrnes
Senior Research
Assistant

James Malia
Research Assistant

Son-Ung Kim
Research Assistant

Sociological Studies in Social Indicators. . . . Project Co-Directors: Leslie D.
Wilcox, Gerald E. Klonglan and
George M. Beal

Project Assistants: Alex McIntosh,
K. William Wasson, Kerry J. Byrnes,
James Malia, Anan Chiamcharoen,
and Son-Ung Kim

Department of Sociology and Anthropology Iowa State University of Science
and Technology. . . . April, 1973

TABLE OF CONTENTS

PREFACE

A. Objective of I.S.U. Project 1
B. Where Present Report Fits Into Larger Project 2

PART ONE: Summary of the Report 1-1

PART TWO: Theoretical and Methodological Considerations 2-1

Overview of Part Two 2-1

A. Two Basic Concepts Defined: Social Development and Sectoral Development 2-2
B. Implication of "Social Development" and "Sectoral Development" for the I.S.U. Project 2-4
C. Indicators of Social Development 2-6
D. Level of Analytical Concern in Reviewing the PCI Report 2-17
E. Intersectoral or Societal Models of Social Development 2-22

PART THREE: Analysis 3-1

A. Findings Relative to the Content of the PCI Report 3-2
B. A Review of the Scope of the PCI Report 3-20
C. Some General Observations, Conclusions, and Recommendations 3-24

BIBLIOGRAPHY

APPENDIX A-1

Application of Methodological and Theoretical Criteria...
A120
001.42 Iowa State Univ. Dept. of Sociology and
W664 Anthropology. NTIS
Application of Methodological and Theoretical
Criteria for Indicators of Social Development in
the Analysis of Selected A.I.D. Operational In-
dicators, Concepts, and Data. Leslie D. Wilcox
and William Alex McIntosh. Apr. 1973.
1 v.
Contract AID/csd-3642.

1. Research methodology. 2. Social indicators. 3.
A.I.D. - Research projects. 4. Social change. I.
Contract. II. Title. III. Wilcox, Leslie D. IV.
McIntosh, William Alex.

PREFACE

A. Objective of I.S.U. Project on "Indicators of Social Development" and Purpose of the Present Report

The 3-year contract (AID/csd-3642) between A.I.D. and Iowa State University has as its major objective to develop a methodology which may be used by developing countries to construct indicators of social development. This report presents the results of one phase of the work designed to develop this methodology. This phase of work is concerned with an inventory of existing indicators and time-series data, currently in use by A.I.D., that may assist the construction of indicators of social development. The focal concern of this phase is to identify operational indicators and data that may be of use in developing the desired methodology. The specific purpose of this report, as one part of this inventory process, is to analyze the degree to which current project achievement indicators, concepts, and data of A.I.D. meet the criteria of indicators of social development. The analysis of this report is based primarily on a formal report by Practical Concepts, Inc. (PCI) which presents the results of their inventory of the state-of-the-art of social indicator usage in A.I.D.

B. Where The Present Report Fits Into the Larger I.S.U. Project on Indicators of Social Development

To provide a better understanding of the intent and purpose of this report, the second in a series of reports to be prepared by I.S.U., it is useful to view the present phase of work in the context of the larger study of which it is a part. The design and scope of the work contracted between A.I.D. and I.S.U. is based on the document, "A.I.D.'s Concern for Indicators of Social Development" (TA/PM/M. 4/21/72). A.I.D.'s concern for social indicators, according to the aforementioned document, evolved from the Agency's recognition of the need to develop measures of the human dimensions of social change and the distributional problems of development, with emphasis being especially placed on the need to develop social indicators capable of monitoring social changes that accompany development activities and influence the social and human dimensions of national progress. Additionally, there is a concern that such social indicators should parallel and complement the already existing economic indicators of development. As described in this document, the ultimate purpose of A.I.D.'s social indicator efforts is to evolve a methodology for assisting LDCs to devise and apply a set of social indicators.

Four general prerequisites were proposed as steps toward realization of this ultimate purpose (A.I.D.'s Concern for Indicators of Social Development, TA/PM/M. 4/21/72):

1. The inventory of operational indicators of social development: An analysis needs to be made of managerial, planning, and evaluative concepts and methods of measurement of progress currently used by A.I.D. as indicators of social development;
2. The availability of time-series data: An analysis needs to be made of types of time-series data now received by A.I.D. and the countries to which it gives assistance;
3. Analysis of sector specific indicators: A.I.D. is gradually moving away from country-level and project-level analysis, and moving toward emphasis on the sector as the primary level on which collaborative problem-solving takes place. The development of sectors implies appropriate tools for evaluation, distinct if not inherently different from evaluative

tools appropriate to country-level analysis on the one hand and project-level analysis on the other;

4. Social System Model: A more ambitious effort contemplated is the devising of a sociological model of a social system which would include both independent and dependent variables of social change and development. It would be constructed in such a way that each parameter or variable in the system would be a social indicator, either of an input or output type.

The contract eventually signed between A.I.D. and I.S.U. is based on A.I.D.'s statement of concern for indicators of social development and includes each of the steps listed above as an integral part of the overall I.S.U. project on "Indicators of Social Development." Consistent with both A.I.D.'s statement of concern and the project contract, the primary goal of the I.S.U. study is the specification of a methodology that could be utilized by a developing country both to devise and apply a set of social indicators to monitor its own progress of social development as defined by that developing country. And, consistent with A.I.D.'s interests, as stated in the contract, a secondary goal of the I.S.U. study is to specify, from a systems perspective, a social systems model which incorporates social indicators as the model's components or parameters.

To insure progress toward these goals, the I.S.U. contract outlines a plan of study that is designed so that work on each of the prerequisite steps serves as a foundation for the work that follows. By contract, the results of each phase of study are to be presented in a series of preliminary reports, culminating in a report detailing the final presentation of the methodology. A brief review of these contracted outputs provides an overview not only of the scope and purpose of each substudy, but also, and more importantly, the relationship of this report to the overall objectives or goals of the larger project.

The first report, submitted to A.I.D. in December, 1972, laid out the research framework in terms of which Iowa State plans to approach the eventual development of indicators, social systems models, and a methodology. An

update of this document, containing the beginnings of a social systems model, will be submitted in June, 1973.

The present report, the second in the series of outputs (i.e., reports), is to analyze the social indicator capabilities of A.I.D.'s "managerial, planning, and evaluative concepts and methods of measurement of progress" (Green-Hirsch, 1973, p. 3). At the same time, this analysis (see Part Three of the present report) is part of the larger I.S.U. attempt to isolate those concepts, models, data, and indicators available in the operational world of development. By utilizing those elements of operational development that have relevance for indicators of social development, it is hoped not only that Iowa State will move more quickly toward specification of the desired methodology, but also that the utility of the methodology to the developing country will be considerably enhanced. The assessment of the relevance of current operational tools (i.e., indicators, concepts, and data) was begun by PCI, a management consultant firm, contracted by A.I.D. to analyze the "state-of-the-art" of "indicator usage" expressed in A.I.D. documents; this contractual arrangement and its relation to the I.S.U. Project on "Indicators of Social Development" is discussed in greater detail in the following Section C of this Preface.

It should be emphasized that the present report is only one part of A.I.D.'s effort to inventory its current state-of-the-art of social indicator usage. To accomplish the overall inventory, three substudies were initially planned:

1. Practical Concepts Incorporated contracted with A.I.D. to analyze the "state-of-the-art" of "indicator usage" expressed in A.I.D. documents, and to present a formal report of indicator concepts and data of project achievement indicators currently used by A.I.D. in its project and sector evaluation program. Completed November 15, 1972.
2. Iowa State University, as part of its contract with A.I.D., is charged with the task of analyzing, on the basis of information provided in the formal report prepared by Practical Concepts Incorporated, the degree to which current project achievement indicators, concepts and data of A.I.D. meet the criteria of indicators of social development. The present report presents the results of this study.

3. Iowa State University is also charged with the task of making on-site observations in one or more LDCs: (a) to inventory the operational indicators of social development currently used by the host country, and (b) to assess the availability of time-series data. This third study is planned for the second year of I.S.U. Social Indicator Project activity. Report due January 31, 1974. (Part Three is further discussed in the following paragraph).

Following completion of the present report, the next step in the research process is to determine to what extent the LDCs deal with indicators of social development as they collect social statistics concerning life in their societies. Through field observation in one or more LDCs, an analysis will be made of the state-of-the-art of indicator usage and the availability of data necessary for the generation of indicators of social development. Again the function of this step is to further aid the Iowa State effort to develop an operational methodology. Specifically, I.S.U. will be reporting on the availability of (1) operational indicators of social development and (2) time-series data found in the LDCs observed. This report will be submitted January 31, 1974.

Along with I.S.U.'s attempt to build upon the operational experience of both A.I.D. and the LDCs, a second sequence of studies will be undertaken to develop sector specific social indicator models for societal sectors of direct interest to A.I.D. The first sector model will be reported in June, 1973, followed by other sector models in March, 1974.

At the end of the second year of the contract (June, 1974), a general model of indicators of social development will be reported based on the criteria assigned by those involved with development on both an operational and an academic basis. This report will be based not only on the operational experience of development workers in both A.I.D. and the LDCs, but also on the experience of other social scientists doing similar work for the U.N. and other international agencies. Again, the expectation is that this model will be a social systems model consisting of indicators of social development as the model's components. This aspect of the research is the most challenging

and problematic of all the outputs required by A.I.D. As yet, no one has developed a systems model for society; among the many sectors of society, only the economic has been successfully specified as a system. Iowa State University hopes, however, to specify, at the very least, the beginnings of a systems model. Despite the risks involved in the present undertaking, A.I.D. and I.S.U. have both recognized that this is a necessary step in order to determine exactly which, of an infinite amount and variety of data that might be collected and analyzed, are the social indicators that would best assist the LDCs in monitoring and furthering their own social development.

Finally, a proposed methodology by which LDCs can generate their own models of indicators of social development will evolve out of the third year's empirical evaluation. This evaluation will include refinement of the sector and systems models proposed, and the preliminary testing of these models on the basis of relevant statistical, mathematical and operational criteria. A report on the resulting methodology will be presented to A.I.D. in June, 1975.

While progress toward the desired methodology will greatly depend on the results of each step outlined above, it is also clear that several other factors will similarly influence the degree to which an operational set of indicators of social development can be constructed and implemented. Two factors are especially critical.

The first is the current state-of-the-art of scientific research on social indicators. It should be noted that the very thought of generating so-called "social indicators" was proposed only less than a decade ago; thus, the scientific development of social indicators is yet in its infancy. Systematic attempts to develop social indicators have been only recently undertaken even in the more developed countries. Thus, many difficult theoretical and methodological issues still remain to be overcome before operational indicators will be realized either for the more developed countries or the LDCs. While

the I.S.U. Social Indicator Project will attempt to improve its own work and outputs in light of the contributions of ongoing social indicator research presently being conducted by others, it should be emphasized that those working elsewhere on social indicator research are also struggling with the same theoretical and methodological issues presently confronted by the I.S.U. Project.

The development of social systems models requires a level of scientific rigor that may not be totally possible in many areas of social life of concern in social development. Research on social indicators is now just beginning to gain the capacity to specify discrete sets of relationships in many social sectors, an effort that is, nevertheless, a prerequisite to the delineation of larger explanatory networks. Much remains to be done on experimenting with models at the level of health, work, education, and the like, prior to developing the linkages among them necessary for modeling. The work underway within the broad activities of social indicator research should prove especially helpful in demonstrating linkages between elements of a social systems model.

The second factor of critical importance to the development of social indicators is the quantity (i.e., the problem of inavailability) and/or quality (i.e., the problem of inadequacy) of data. Lack of adequate social data has limited social indicator research even in the United States where, ironically, the collection of data has been one of the conspicuous features of the U.S.'s development. It is expected that social data will be even more limited in most LDCs, thereby limiting the extent to which models can be developed and refined. Nevertheless, data is of critical importance if the systems perspective of social indicator research is to progress beyond hypothetical constructs, since the empirical interrelationships between social phenomena can only be demonstrated through systematic research and data analysis.

C. The Practical Concepts Incorporated Report

The PCI report provides the primary data base on which the analysis (see Part Three) of the present report was made. To provide an understanding of the strengths and weaknesses of the material reported by PCI and analyzed by I.S.U., a brief description of the scope of the PCI report is helpful.

To facilitate the inventory of A.I.D. indicators, concepts, and data, A.I.D. contracted PCI to analyze the state-of-the-art of A.I.D. indicator usage. Three factors made PCI potentially well-equipped for this initial inventory of A.I.D. indicators, concepts, and data: 1) PCI's Washington-based firm provides more convenient access to A.I.D. offices, documents, and personnel than is possible for I.S.U. personnel; 2) PCI's long-term contractual relationship with A.I.D., and their active involvement in A.I.D. project evaluation efforts, provide PCI personnel with special insights and understanding of the Agency's operation; 3) PCI's extensive field experience with A.I.D. operational missions provides an unusually strong background to the range of indicators, concepts, and data currently in use in A.I.D. field activities.

To accomplish this inventory, PCI undertook a four man-month study during the fall of 1972. The extent to which their report constitutes an inventory of A.I.D. indicators, concepts, and data is defined in their statement of the scope of study:

This study. . .examines the usage by the Agency of these indicators in the context of A.I.D.'s project evaluation system. We believe that it is important to recognize that all of the indicators included in our study were taken from basic Agency working documents--PROPs and PARs. (Section Two, page 2-1)

PCI's study of indicators included the Agricultural, Education, Health and Family Planning, and Public Administration sectors of A.I.D.'s noncapital project assistance program. . . .Although the study was not confined to indicators of social development, its major focus is social rather than economic or technological. In total, the study included examination of 204 PROPs and PARs which provided a data base of 494 Goal and Purpose level objectives, and 1,154 indicators. (Section Two, page 2-1)

Analysis of the output level indicators in one of the four sectors. . . suggested that little value would be added to the Agency's understanding of indicators by an extensive listing and analysis of the output. . . Thus, for the most part, project outputs have not yielded any important development indicators, and they have been excluded from the study. (Section Two, pp. 2-1, 2-2)

It is clear from these statements of scope of study that PCI's analysis is generally limited to the A.I.D. evaluation system and to project Goals and Purposes indicators drawn from a limited set of Agency working documents--PROPs and PARs. Notably, the PCI report largely excludes project Output level indicators, as well as the bulk of A.I.D. noncapital assistance projects, and indicators of an economic and technical nature. Apparently, Input level indicators were also generally excluded. The PCI study of indicators does, however, embrace most of the sectors of direct concern to the I.S.U. project, and includes the agricultural, education, health and family planning, and public administration sectors of A.I.D. noncapital assistance programs. While the 204 working documents apparently cover all geographical regions and most countries in which A.I.D. is working, apparently no attempt was made to develop a fully representative geographical sample.

D. The Scope of Iowa State University Activities in Preparing This Report

The intent of the inventory of A.I.D. indicators, concepts, and data is to overcome, in part, the various limitations discussed above. By drawing upon A.I.D. activities and experience, it is hoped that operational indicators currently in use in development planning can be identified and the appropriate data made available to assist the construction of experimental indicator models as a more empirically-based approach to the development of a methodology that would be of assistance to LDCs in devising and implementing a set of social indicators. Therefore, the purpose of this report, the identification of indicators and data currently in use in the operational world of development,

is an important step toward the ultimate goal of the I.S.U. Project on "Indicators of Social Development."

Though the actual work of the primary inventory was done by PCI, I.S.U. personnel, having engaged in a number of activities designed to provide additional understanding of both the scope of the A.I.D. development effort and the research and reporting processes currently in use in the Agency, felt that some first-hand observations and insights were relevant to the purposes of this report. This additional background was gained through the following activities:

- 1) Direct interviews and correspondence with A.I.D. sector and country-desk personnel;
- 2) Visits to and use of the A.I.D. document center and the State Department Library;
- 3) Consultations with Abraham Hirsch, Methodology Division, and Robert Hubbell, Chief, the A.I.D. Evaluation Section (July 26-27, 1972 and November 22, 1972, respectively);
- 4) Information communicated by I.S.U. Project and non-project personnel who participated directly in A.I.D. data collection and evaluation studies in the field;
- 5) Review of reports of A.I.D. sectoral analyses and project activities of A.I.D. contractors, (e.g., the Adelman-Morris studies, the Michigan State Agricultural Sectoral Analysis, etc.);
- 6) One staff member, Dr. Leslie Wilcox, participated in the A.I.D. training seminar on A.I.D. evaluation system in Washington, D. C., September, 1972;
- 7) Interviews and correspondence with PCI personnel during the period of their study;
- 8) Review of several hundred A.I.D. working documents, including both PROPs and PARs.

It is recognized that these contacts with A.I.D. yet provide only a limited perspective of the overall program of this large, complex and dynamic Agency. Nevertheless, the survey did help identify a number of additional indicators and indicator concepts currently in use in A.I.D. that did not appear in the inventory conducted by PCI.

E. Acknowledgments

The Social Indicator Project wishes to express its appreciation to the various A.I.D. personnel with whom the Project staff have had opportunity to interact along the way in preparing this report. Without the opportunity to become better acquainted with A.I.D. afforded through meetings in A.I.D./ Washington and at I.S.U. between Agency and Project personnel, this report could not have begun to develop a framework which spells out the distinction between social indicators and program evaluation data and the appropriate role and limitations of each in the development process.

Especially appropriate is a note of thanks to James Green, Methodology Division, Abraham Hirsch, Technical Assistance Bureau, Robert Hubbell, Chief of Evaluation Section, and to various A.I.D. sectoral personnel, as well as to several individuals working at the various country-desks, for their suggestions, critiques, and, in general, guidance in helping the Social Indicator Project staff better appreciate the potentialities and limitations afforded in the data to which A.I.D. has access either in Washington or in host countries.

Last, but not least, the Practical Concepts Incorporated personnel who participated in the preparation of the PCI report are to be especially commended for their ingenuity in developing a framework in terms of which the concepts and data alluded to in A.I.D. PROPs and PARs might be better utilized in future program evaluation efforts. The PCI report has proved to be a valuable document to the Social Indicator Project in helping to get a better feel for the kinds of approaches to social indicators which A.I.D. has taken in the past and in helping the Project staff to incorporate the concepts and data contained in PROPs and PARs into an overall perspective of where social indicators of social development, as well as program evaluation data, fit into development process.

PART ONE: SUMMARY OF THE REPORT

A. Introduction

This report is the second of twelve research reports called for in the three year contract between A.I.D. and Iowa State University, the purpose of which is to develop a methodology which may be used by the developing countries to construct indicators of social development. This report reflects Iowa State's progress towards this goal, especially in that it summarizes the results of initial attempts to identify operational indicators and data currently being employed by action oriented development agencies. Specifically, this report deals with the concepts, data, and indicators employed by the Agency for International Development, as reported by Practical Concepts Incorporated in their document (Indicators of Social and Economic Development: Assessment of Practice in the Agency for International Development. November 1972). The present report was written with two objectives in mind: first, to determine whether P.C.I. adequately sampled and assessed A.I.D.'s vast pool of concepts, data and indicators; second, and most important, to determine the overall utility of the material reported by PCI for the development of a general methodology for construction of social indicators.

The possibility of specifying the desired methodology depends to a great extent on the experience generated and recorded by those involved in the operational world of development. It is upon the basis of their experience that the methodology will be constructed, not on the basis of empty theorizing by scholars distantly removed from the realities confronted daily by those working in the field. In order to take advantage of their experience, however, the written record, consisting of the widely scattered documents in which their experience is recorded, must be brought together and organized in a meaningfully useful fashion. The contract between Iowa State and A.I.D. was written in such a way as to permit Iowa State to utilize A.I.D.'s development experience in the construction of the

desired methodology. Practical Concepts Incorporated was hired to collate and organize information recorded by A.I.D. in a manner such that I.S.U. could determine whether this information provides a useful means for reaching the desired methodology more quickly and effectively. Most simply put, PCI's potential contribution to I.S.U.'s effort is extremely critical.

B. Overview of Report

This report is divided into three parts, plus a Preface and an Appendix. The Preface outlines the 3 year contract between Iowa State University and A.I.D., and relates this report to the larger I.S.U. study, and outlines the scope of activities by PCI and I.S.U. which were instrumental in the preparation of this report.

Part One, the part of this report now being examined by the reader, briefly summarizes the entire report. Part Two deals with the theoretical and methodological criteria that were basic to I.S.U.'s analysis of the material reported by PCI. Part Three is an analysis on the PCI report based on the criteria discussed in Part Two. Finally, the Appendix presents a draft of a list of potential indicators of social development. This list is neither definitive nor absolute in its content; the list, drawn from various sources, is presented in order to further illustrate I.S.U.'s discussion of indicators of social development.

C. Summary of Part Two

Part Two discusses various theoretical and methodological considerations relative to the construction of indicators of social development. The concept of social development is defined and sectoral development is discussed in relation to social development as a preface to what might be referred to as the main event of Part Two: (1) a listing of the criteria a statistic must meet if it is to qualify as an indicator; and (2) a specification of six types of social indicators that a social systems model of social development would require. Both of these are summarized below.

(1) Basically, an indicator, as used by I.S.U., is a statistic that means a number of qualifications, i.e., a statistic that is characterized by a number of criteria. The qualifications or criteria are as follows:

- a. An indicator is an indirect measure (e.g., the statistic "mortality rate") of (i.e., which provides information about) some concept or generalized condition (e.g., "mortality" or "the human condition of being mortal or subject to death") which itself is not directly measurable.
- b. An indicator, even though it provides information about some generalized condition which is not directly measurable, is itself quantifiable and measurable. (e.g., mortality rate = $\frac{\text{total deaths}}{\text{midyear population}} \times 1,000$).
- c. An indicator, in most cases, is a statistic or index aggregated from individual data.
- d. An indicator, to enhance its utility, is disaggregatable (i.e., can be broken down) by relevant attributes and/or contextual characteristics of the phenomena measured.
- e. An indicator, as a basis for monitoring change in the phenomena measured, can be measured at successive points in time (e.g., at regular intervals) and is, thereby, amenable to time-series analysis of the measured phenomena over an extended period.

It shall be assumed in the subsequent discussion that the reader will understand I.S.U.'s usage of the term indicator as defined by the five criteria listed above.

(2) The six types of social indicators that were specified, plus a brief definition of each type, are listed below:

- a. Goal Output Indicator: measures the actual performance of a society relative to a social goal defined as desirable by the society.
- b. Policy Instrument Descriptive Indicator: measures exogenous variables that are amenable to manipulation by decision makers (e.g., number of schools per capita).
- c. Non-manipulatable Exogenous Descriptive Indicator: measures variables that are less manipulatable or not all manipulatable by decision makers (e.g., age, sex, etc.). ^{at}
- d. Output Distribution Indicator: measures goal output as distributed among a society's members and across population sub-groups.

- e. Impact Indicator: sometimes referred to as a side-effects Indicator; an impact indicator is a goal output indicator from a particular sector that is monitored as a basis for determining the side-effects in that sector which the manipulation of policy instruments in other sectors may have caused.
- f. Response Indicator: measures the reaction of human beings to their social conditions and to social change.

Having specified these six types of social indicators, the remainder of Part Two turns to a clarification of the level of analytical concern at which I.S.U. is operating in reviewing the PCI report, with particular emphasis on the concepts of intersectoral analysis and societal models as I.S.U.'s principal concerns in meeting the Project's major objective of delineating a methodology which may be used by developing countries to construct indicators of social development.

Finally, Section E presents a tentative framework for organizing the six types of indicators presented by I.S.U. into an intersectoral model of social development. This model is basically an extension of Leontieff's input-output analysis, substituting societal institutions into the model in place of economic sectors. These societal institutions are seen as those organizations that have arisen in every society to meet man's economic, biological, social, and psychological needs. The economic transfers between sectors are seen from an intersectoral point of view as exchanges between institutions in order to maintain these institutions so that they may continue to serve man. These institutions are perceived of as the interrelated parts of a intersectoral system whose final outputs feed into a second system made up of human needs. The input-output relations between sectors for their maintenance are called interchanges which are analogous to what economists call "transfers". The outputs from the intersectoral system to the human needs system are, thus, in a sense, the final products of the interrelated sectors. These final products

are to be measured by output indicators and distribution indicators while the interrelations among the sectors are dealt with by policy instrument descriptive indicators and non-manipulatable descriptive indicators.

Part Three is an analysis of the scope and content of the PCI report from the standpoint of the criteria listed in Part Two of this report. The primary value of the PCI study for the purposes of I.S.U.'s "Indicators of Social Development" project lies in the operational indicators, concepts, and data currently used by A.I.D. which could be used as inputs in the eventual construction of the methodology specified by the contract. A review of the PCI report, however, indicates that instead of a systematic inventory of A.I.D.'s operational experience, PCI chose to evaluate A.I.D.'s use of PCI's GPDI system. Because PCI side-tracked the emphasis of their report from indicators of Social Development to project evaluation, PCI's results are far less of a contribution to I.S.U.'s efforts to develop the methodology than was originally anticipated. What follows is a list of weaknesses and shortcomings that should more fully demonstrate the PCI report's lack of utility for indicators of social development.

A. Concerns with the Content of the PCI Report.

1. P.C.I. identified 1,154 "indicators" of social development. These indicators generally fail to meet both the criteria of indicators in general, and more specifically, of the types of indicators of social development specified by I.S.U. in a number of ways:
 - a. PCI's definition of social indicator generally confuses the issue of independent measurement with the target a programmer wishes to achieve. Thus, "what is" is confused with "what ought" to be, making independent verification that an action resulted in a desired outcome impossible.

- b. To PCI, social indicators are project specific. Thus, each project would require its own unique set of indicators, many of which would be non-transferrable to other projects. Thus, an infinite number of indicators would be required to deal with all ongoing and proposed projects. Furthermore, by limiting indicators to the project level makes the construction of "multiple use indicators" potentially disaggregatable over relevant groupings, such as age categories, the sexes, ethnic grouping, etc., impossible.
- c. The PCI definition does not take into account the need for "systems" of social indicators. Social indicators must not only reveal the positive consequences of a particular program within its relevant sector, but they must also deal with the consequences both positive and negative, for the other sectors of society and for the distribution of the benefit of society to its members.
- d. A social indicator, as defined by many working in this field, is a quantitative, indirect measure of some generalized concept or condition of human interest. Generally, a social indicator is of interest because it represents indirectly a conceptually significant concept of a theoretical system. Thus, a quantified indicator such as a mortality rate is of little significance by itself. However, as mortality rates are related to theoretical interests such as "change in health conditions" or a "change in the distribution of life chances," these sorts of rates become indicators. Thus, those rates that PCI has initially identified cannot truly be called social indicators until they are linked to some broader theoretical scheme.
- e. A social indicator must be quantifiable. In order to be able to quantify a particular concern, objective measurement of some phenomena must take place. However, before measurement can begin, a researcher or program evaluator must know what it is he needs to measure. Thus, the concept to be represented via measurement must be clearly and precisely defined. Concepts such as professionalization, rapport, effectiveness, adequacy, etc. by themselves are too abstract to be measured. They must either be precisely

1-1

defined or broken up into sub-concepts of less abstraction; PCI, in its report, often presents abstract concepts as if they were indicators without specifying the means of measurement or indicators of these concepts.

f. PCI's "indicators" are project level indicators while A.I.D. has called for indicators of social development at the sectoral level and beyond. As sectoral and inter-sectoral models require differing types of indicators, different measurement techniques, and differing analysis, PCI's project level indicators are of little value for models of indicators of social development.

2. An analysis and classification of PCI's lists of indicators shows that most of these are of the policy instrument descriptive type. Almost none of the PCI list are of the other 5 types of crucial indicators specified by Iowa State.

B. Concerns with the Scope of the PCI Report.

1. Since measurement potentiality is the critical distinction between concepts and indicators, an assessment of the availability and utility of existing measurement techniques statistical procedures, or standardized indexes within A.I.D. was not made. As a concern of the I.S.U. project is for the development of valid measures of social phenomena, this exclusion is a serious weakness.
2. According to I.S.U.'s interpretation of PCI's contract, an identification and presentation of data sources within A.I.D. should have been included in the PCI report. However, there was a conspicuous absence of such an inventory in the PCI report.
3. PCI's major contribution to the Iowa State effort is conceptual in nature. PCI's list of "indicators" has provided a review of at least some of the ways in which A.I.D. project managers conceptualize the concept of development; many development-related concepts are reported which could be quantified into social indicators.

The remainder of Part Three includes general observations, conclusions, and recommendations. Summarizing these, it can be stated that A.I.D. is actively engaged a wide range of operational, research and evaluation activities that are perceived as generally relevant to social development in nature. Despite all these efforts, A.I.D. has not organized this information into a centralized memory system. PCI's

Inventory, in light of the potential, is only of marginal value. What is required to make a more comprehensive inventory of A.I.D.'s data, concepts, and indicators is a major research effort carried out by some Washington based institution.

The report terminates with an Appendix which contains a list of currently operational indicators pulled from a variety of sources in the literature. These indicators are not necessarily those that will ultimately make up a set of indicators suggested by I.S.U., but they are representative of the kinds of indicators I.S.U. believes to be potential elements in a system of social indicators.

PART TWO

THEORETICAL AND METHODOLOGICAL CONSIDERATIONS

Overview of Part Two

Part two, consisting of Sections A, B, C, and D, comprises both a review and extension of some of the criteria for indicators of social development earlier discussed in the first I.S.U. report.* Since the specification of criteria for indicators of social development is precisely one of the basic methodological objectives which A.I.D. has contracted the I.S.U. Project on "Indicators of Social Development" to achieve, it should be noted that I.S.U. continues to consider these criteria as tentative, subjective to revision and refinement. As the I.S.U. Project is yet only in the 10th of a 36 month period of research, it would be premature to conclude at this point that no better set of criteria for indicators of social development could be developed than those currently employed by I.S.U. in its research.

Both the formal report prepared by PCI, containing PCI's assessment of A.I.D.'s project achievement indicators, concepts, and data, and the other indicators and concepts gathered through the limited inventory by I.S.U. were analyzed by I.S.U. in light of the criteria for indicators of social development proposed by I.S.U. As indicated above, some of these criteria are reviewed in the various sections of Part Two. Section A examines the concepts of "social development" and "sectoral development" as understood by the I.S.U. Project. Section B discusses the implications of these concepts for the I.S.U. Project. Section C examines in depth such concepts as "indicator", "social indicators", and "indicators of social development", with special emphasis being placed in Sub-section C.3 on a discussion of six types of social indicators considered by I.S.U.

*See Social Systems Models of Indicators of Social Development: A Preliminary Methodological Framework, November 30, 1972.

as relevant both to the specification of a methodology which could be used by developing countries to construct their own indicators of social development and to the construction of social systems¹ models of social development. Section D specifies the level of analytical concern at which I.S.U. is operating in reviewing the PCI report in Part Three. Finally, Section E suggests a type of model that may prove to be useful for developing social systems models of social development.

The objectives of Section A is to review the concepts of "social development" and "sectoral development" as a basis for the subsequent discussion (in Section B) of the implications of these concepts for the I.S.U. Project on "Indicators of Social Development".

A. Two Basic Concepts Defined: Social Development and Sectoral Development

1. Social Development

The concept of "social development" includes not only the quantitative aspect, but also the qualitative dimension of development, this latter dimension involves what is often referred to as "the quality of life" or "the social welfare" of a society's membership. Viewed from "the quality of life" perspective, social development is seen as both a process and a product. As a process, social development involves the upgrading of the capacity of society² to sustain the social processes necessary to fulfill the physical needs and social values of its membership; and, as a product, social development minimally involves improvement through a more equitable distribution of the costs and benefits (e.g., income) of the quality of the lives of persons who occupy disadvantaged positions in society. It is clear, in light of the above, that social development, viewed as both process and product, includes both: (a) the dimension of upgrading the capacity of society

-
1. A system is a set of objects or elements and the interrelations among the objects. A social system is a system consisting both of human organizations (the system's elements) and the relationships among these organizations.
 2. A society is a type of social system which has attained the highest level of self-sufficiency in relation both to its physical environment and other social systems.

to sustain the social processes necessary to fulfill the physical needs and social values of its membership; and (b) the dimension of upgrading the quality of life that accrues to society's members, especially to those who occupy disadvantaged positions in society.

2. Sector Development and Its Relation to Social Development

The perspective on social development discussed above assumes that societies (i.e., social systems, social organizations, etc.) exist primarily for the purpose of serving their memberships through social processes and mechanisms designed to produce those goods and services necessary to meet physical needs and to fulfill social values. It is also assumed that a society which fails to function in this way can be sufficiently changed such that the society more effectively operates to meet physical needs and fulfill social values. Human beings, however, are multidimensional creatures characterized by a wide range of needs and values. Societies, in turn, are comprised of a complex set of specialized subsystems, referred to as institutional sectors, each consisting of a unique set of activities designed to transform inputs of various kinds into desired social outcomes (outputs)

It should be emphasized that the development of each of the institutional sectors: e.g., the economic, political, health, educational, legal, family, and other institutional sectors of society is not simply the development of isolated subsystems (or parts) of a much larger entity, society itself. To the contrary, social development involves not only the parts (i.e., the institutional subsystems or sectors), but also the society as a whole and the interrelationships between institutional subsystems (sectors). While sector development (i.e. the development of a particular institutional subsystem) focuses on sector specific needs and values, social development must be concerned not only with the broader set of physical needs and social values, but also with interrelationships between the institutional subsystems of society with their respective needs, values, demands

on scarce resources, and impact on one another. More specifically, analysis of social development must be concerned (i.e., take into account) the potential side effects or unintended consequences of development efforts in one institutional sector on desired outcomes in other institutional sectors of society.

B. Implications of "Social Development" and "Sectoral Development" for the I.S.U. Project on "Indicators of Social Development"

It was noted in the Preface that A.I.D.'s interest in social indicator research is that of developing social indicators for a perspective of a social systems model of social development. It is clear, however, in light of the above discussion of social development, that if development programs are to operate on the basis of a social systems model, then such a model must specify the social processes: (1) that transform inputs into desired social outcomes (e.g., fulfillment of both physical needs--i.e., human viability needs--and social values); and (2) that distribute these outcomes more equitably to society's membership. In short, a social systems model of social development must be constructed so that it specifies the social processes that transform inputs into desired social outcomes; the model must also be concerned not only with the extent to which these outcomes fulfill physical need and social values, but also with the distribution of these outcomes among members of the community or society.

Summarizing the above discussion of sector development, it is clear that a social systems model of social development must take into account the interrelationships between the subsystems or institutional sectors of society. Also, a social systems model of social development must be formulated in a way that permits analysis of social data to determine whether society as a whole is moving in socially-desired directions (e.g., more equitable distribution of costs and benefits). The planner who fails to deal with society as a complex whole runs the risk of committing what one economist has referred to as "social

thalidomide" (Berliner 1972:XIII). Thalidomide is a sedative widely used a few years ago by expectant mothers to ease the travails of pregnancy. As a sedative, thalidomide proved to be quite successful. Thalidomide, however, was eventually banned for human use because it had the unfortunate, but previously unforeseen, side effect of increasing the birth rate of babies with serious congenital deformations.

There is, of course, an important lesson to be learned from this disastrous experience. The scientific and operational construction of sector models over the years has resulted in considerable capacity to affect the course of specific sectors, the most notable example of this being the development of economic models to deal with the economy as an institutional sector of society. The application of such institutional- or sector-specific knowledge to the development of a particular sector, however, without a cautious awareness of the side effects of this development on other institutional sectors, presents a danger parallel to that experienced in the case of thalidomide; it could produce "social thalidomide" or malformed societies incapable of sustaining or achieving for its membership the desired level of social development.

In the short run, development activities will, no doubt, continue to be pursued on a sectoral level. Nevertheless, the primary purpose of the I.S.U. Project on "Indicators of Social Development" is to specify indicators that will help to strengthen and broaden sectoral models to include a wider range and consideration of human (physical) needs and social values. One area of special importance, in which much work is yet to be done, is that of bringing about a greater integration of indicators of the economic institutional sector with indicators of a wider range of social phenomena occurring in other societal subsystems (i.e., institutional sectors). To be sure, economic factors have proven to be of critical importance to national development. However, recalling the

"social thalidomide" analogy, there is a danger in becoming too preoccupied with economic values at the expense of failing to meet other human needs and social values.

Clearly, social development is concerned with the quality of life experienced by society's membership and with the development of society as a whole. The analysis of social development is more macro in its concern than is the case with project, program or sectoral analyses. Research on social development deals not only with "quality of life" and "society as a whole", but also with specification of the interrelations among institutional sectors (i.e., societal subsystems). Of course, macro-models of total social systems which specify such interrelations among institutional subsystems are, at present, not available, nor can they be expected for some time. Until such models are available, efforts to develop indicators of social development must focus on more modest efforts that hold promise for the eventual development of more extensive models of society as an integrated system of institutional subsystems (sectors).

In the following (Section C), the concept of "indicator" will be discussed more fully than it has been to this point. While fully operational social systems models of social development, as discussed above, are not yet available, this does not mean that research efforts to develop the kinds of social indicators that such models might require cannot be undertaken. Indeed, it is precisely one of the objectives of the I.S.U. Project on "Indicators of Social Development" to develop a methodology that would assist developing countries to construct a set (or system) of social indicators that would measure societal progress in those basic areas defined by the concepts of "social development" and "sectoral development".

C. Indicators of Social Development

1. The Definition of the term "Indicator"

Webster's Collegiate Dictionary defines the term "indicator" as "One that

shows or points out;" and, in a more scientific sense, as "any device or apparatus for indicating something;" such as for example, a pointer, a gauge (which, e.g., shows pressure), or a dial (which, e.g., registers the movement of an elevator). Kamrany and Christakis (1969:208) have noted that in economics the term "indicator" is often used synonymously with the term "index", where an index is normally understood to be constructed by aggregation of individual economic data. "It represents some value, mathematically or otherwise, derived from some accepted standard or series of observation and is used as a measure of certain conditions." They also note that an economic indicator or index should be sensitive to change in general economic activities and should lend itself to empirical observation. Correspondingly, Webster's Collegiate Dictionary not only defines the term "indicate" as an "index, sign, or token of", but also notes that this term carries the connotations "to imitate or show indirectly" and "to manifest by symptoms". Sheldon and Freeman also note these characteristics when they argue that "if you have a direct measure of a phenomenon it is no longer aptly described by the term indicator" (1970:98). The term "reflector" is suggested by them as an acceptable synonym for "indicator".

Dictionary-type definitions, such as those above, are basically one way of answering the question: "What does the word 'indicator' mean?" There is a basic fallacy, however, in attempting to define what an "indicator" is on the basis of a dictionary-type definition. The fallacy consists in the erroneous assumption that the meaning of the word "indicator" can be found in a dictionary. Such an assumption fails to recognize that words in themselves do not have any meaning; indeed, meaning is found only in people! This point is humorously illustrated by Lewis Carroll's conversation between Alice and Humpty Dumpty:

"I don't know what you mean by 'glory'," Alice said.
 Humpty Dumpty smiled contemptuously. "Of course you don't--
 till I tell you. I mean 'there's a nice knockdown argument for you!'"
 "But 'glory' doesn't mean 'a nice knockdown argument'," Alice objected.

"When I use a word," Humpty Dumpty said, in rather a scornful tone, "it means just what I choose it to mean--neither more nor less."

"The question is," said Alice, "whether you can make words mean so many different things."

"The question is," said Humpty Dumpty, "which is to be master--that's all."

While Humpty Dumpty's singlemindedness is perhaps, in one sense, admirable, it is clear that social indicator research would be seriously handicapped if each researcher defined the term "indicator" solely on the basis of what he chooses it to mean, while completely ignoring the contributions which other researchers have made toward solution of this definitional problem. At the same time, if researchers working on the same problems (e.g., social indicators) cannot come to some common understanding and usage of their concepts (e.g., indicator), it is not likely that their results will be comparable. Consequently, it is crucially important that the researcher not only take into account the contributions of other researchers working in the same field, but also that he define his concepts sufficiently clearly that their usage facilitates rather than hinders scientific communication.

These considerations highlight the necessity that the I.S.U. Project clearly define its usage of the term "indicator". It should be emphasized, however, that I.S.U.'s definition of the term "indicator" presented below, while perhaps unique in its form of presentation, is largely based upon a compilation or blending of characteristics attributed to the concept of an "indicator" by many other scholars.

Basically, an indicator, as used by I.S.U., is a statistic that meets a number of qualifications, i.e., a statistic that is characterized by a number of criteria.

These qualifications or criteria are as follows:

- a. An indicator is an indirect measure (e.g., the statistic "mortality rate") of (i.e., which provides information about) some concept or generalized condition (e.g., "mortality" or "the human condition of being mortal or subject to death") which itself is not directly measurable

* Lewis Carroll (Charles Dodgson), Alice's Adventures in Wonderland, Through the Looking Glass, and the Hunting of the Sanrk. The Modern Library, 1925, pp. 246-247.

- b. An indicator, even though it provides information about some generalized condition which is not directly measurable, is itself quantifiable and measurable. (e.g., mortality rate = $\frac{\text{total deaths}}{\text{midyear population}} \times 1000$).
- c. An indicator, in most cases, is a statistic or index aggregated from individual data.
- d. An indicator, to enhance its utility, is disaggregatable (i.e., can be broken down) by relevant attributes and/or contextual characteristics of the phenomena measured.
- e. An indicator, as a basis for monitoring change in the phenomena measured, can be measured at successive points in time (e.g., at regular intervals) and is thereby amenable to time-series analysis of the measured phenomena over an extended period.

It shall be assumed in the subsequent discussion that the reader will understand I.S.U.'s usage of the term indicator as defined by the five criteria listed above. Having defined the term "indicator," the following subsection (C.2) turns to the problem of defining the term social indicator and proposes as a solution that a social systems model of social development minimally must incorporate six types of social indicators, the rationale for each being examined more fully in subsection C.3.

2. Social Indicators and the Problem of Specification

On consideration of the five criteria reviewed above that qualify a statistic as an indicator, few would seriously disagree with the general proposition that an indicator is basically a measurement of some phenomena about which man was sufficiently curious to have created the "indicator" in the first place. Disagreement immediately arises, however, when the term "social" is introduced into the discussion. The fact that the term "social indicator" has not yet been clearly defined arises largely from the seemingly never-ending debate among those engaged in social indicator research as to what really constitutes a social indicator. Commenting on this debate, Andrews (1972:2) has argued that the ideal or objective of social indicator research is basically that of specifying "a limited, yet comprehensive, set of coherent and significant indicators, which can be monitored over

time and which can be disaggregated down to the level of the relevant social unit." (emphasis added) With this objective in mind, Andrews (1972:4-5) lists several characteristics of an ideal set of social indicators:

- a) "It is a limited set for at least two reasons. We could not possibly understand what the indicators were indicating if we tried to measure all possible aspects of society. And, second, we probably do not need to measure everything."
- b) "The set is comprehensive in the sense that it includes indications of all the most salient or critical aspects of society."
- c) "That the set is a coherent one implies that the indicators have some relevance to each other and 'hang together'."
- d) "As for the significance of the indicator, there is a question as to what constitutes 'significance.' It may be significant if it has a 'direct normative interest,'...or it may have been shown to 'lead' (i.e., predict) other indicators."
- e) "The notion of monitoring overtime is also central. Virtually nobody who is talking about social indicators is terribly interested in getting a measure at a point in time."
- f) "A final key characteristic of social indicators is that they can be disaggregated down to the level of some relevant social unit."

The attempt by Andrews to specify the characteristics of an ideal set of social indicators is illustrative of the complexities dealt with by social indicator research in trying to develop measures of social change which are both theoretically and methodologically relevant. The last two characteristics (e and f, listed by Andrews), for example, are basically methodological concerns: the one relating to the

measurement problem of obtaining (longitudinal time-series) data; the other relating to the measurement problem of obtaining data which can be aggregated and disaggregated. On the other hand, the first four characteristics are basically theoretical concerns to which social indicator research is increasingly directing its attention. Of these, perhaps the most basic theoretical problem is that of significance (see d above.)

The problem which the characteristic of significance poses for the research is that of establishing a perspective of man and society that specifies a limited, yet comprehensive set of coherent (interrelated), disaggregatable indicators that could monitor over time social phenomena that are of both scientific and human significance. This problem of specification, of course, is a rather complex one. Though there is much work yet to be done, a general solution to the specification problem is beginning to emerge. Though not a complete solution, it is increasingly apparent that a social systems model of indicators of social development minimally must incorporate the following six types of social indicators, each of which is more fully discussed in subsection 3 below:

- a. Goal Output Indicator
- b. Policy Instrument Descriptive Indicator*
- c. Non-Manipulatable Exogenous Descriptive Indicator*
- d. Output Distribution Indicator
- e. Impact Indicator
- f. Response Indicators

3. The Six Types of Social Indicators

The necessity of minimally including the six types of social indicators introduced above is clarified on consideration of the rationale underlying each of them.

a. Goal Output Indicator

Inevitably, a society must choose among various desired outcomes that the

*Land. "Social Indicator Models: An Overview". 1972. I.S.U. has substituted Land's terminology for the terms it originally used in its November, 1972 report.

society is capable of generating, a choice which necessarily entails the setting of priorities among various desired social outcomes or goals by a weighting of needs against values. For example, societies produce goods and services necessary to meet biological needs. They also produce social conditions designed to meet religious, psychological, and social needs. If a society should choose to place a high priority on the meeting of interpersonal, interactive needs by strengthening its extended family system at the expense of a degree of occupational specialization needed for industrial or economic growth, it could be assumed that the society had assigned a greater weight or priority to these social needs than to other needs. In view of the varying weights or priorities assigned to desired social outcomes, a social systems model of social development must include a social indicator to measure actual societal progress toward each of the desired social outcomes. Indicators of this type are referred to as goal output indicators. A goal output indicator measures the actual performance of a society relative to a social goal defined as desirable by the society.

- b. Policy Instrument Descriptive Indicator and
- c. Non-Manipulatable Exogenous Descriptive Indicator

There are usually many different strategies and techniques available to a society that can be implemented in pursuit of desired social goals. These, however, may differ rather dramatically when assessed by criteria of efficiency. In part, a systems analysis seeks to identify the most efficient means to transform inputs into the desired outcomes that are possible, given the range of constraints within which the system must operate. It should be noted, however, that various strategies and techniques vary not only in their degree of efficiency, but also by other qualitative value standards. The education of a society's membership, for example, has often been regarded as a process of human resource

development in which human beings are transformed into human capital for input into the process of economic production. The most efficient technique for developing human capital for specific occupations would be specialized training designed to achieve the greatest skill level in the shortest time possible. Many exponents of liberal arts education, however, are critical of this approach because of the qualitative loss incurred. They argue that a less efficient system combining vocational training with more generalized education is more desirable because of the qualitative upgrading of the general manpower pool.

The choice among means (strategies and techniques), therefore, takes place within the context of a number of constraints that arise both from a scarcity of resources and the qualitative standards that are defined by the values of a society. Considerable development effort in recent history has been directed toward easing some of these constraints by increasing the national resource base via development of physical and human capital and by attempting to change values believed to have an especially constraining effect on efforts to reach development goals. Not only can these constraints be viewed as exogenous variables or inputs to the system, they can also be measured by sets of descriptive indicators. For analytical purposes, exogenous variables and their indicators can be classified into one of two subtypes, according to the degree to which the exogenous variable is itself manipulatable.

Variables that are amenable to manipulation by decision-makers can be classified as policy instrument descriptive indicators. Indicators of such manipulatable exogenous variables include, for example, numbers of schools per capita, number of teachers trained, expendable resources, etc. Those exogenous variables that are less manipulatable or not at all manipulatable by decision-makers are referred to as non-manipulatable exogenous descriptive indicators. Indicators of such non-manipulatable or less manipulatable exogenous variables include, for

example, age, sex, race, and deeply entrenched attitudes and values that are highly resistant to change.

d. Output Distribution Indicator

The quality of life in society depends not only on the quantity of social outcomes produced, but also on the ways in which the benefits of those outcomes are distributed among the population. In all known societies there is a tendency for the welfare (e.g., income) that is produced to be unequally shared by its membership. To account for the distribution of the costs and benefits of development, goal output indicators must be constructed in a way that permits that they can easily be disaggregated (i.e., broken down) by relevant population characteristics and geographical subunits of a social system to reveal the relative degree to which desired social outcomes (e.g., goods and services) are shared by population subgroups of a social system. The particular criteria for disaggregation will vary from one social system to another but should include disaggregation by relevant population characteristics such as age, sex, ethnicity, etc.; by relevant political subsocieties such as community, province, region; and by place of residence such as defined by rural-urban criteria. Disaggregated goal output indicators that measure the distribution of desired social outcomes among a society's members and across population subgroups will be referred to as output distribution indicators.

e. Impact Indicator

Very often the output of one institutional sector is an input to another sector. In many cases, such interinstitutional transfers are not only desirable but planned. For instance, improvements may be undertaken in the educational sector for the expressed purpose of improving the quality of human capital invested in certain economic or political activities. On the other hand, while a particular interinstitutional transfer from sector x to sector y may be altogether desirable and

planned, this same transfer may have an undesirable and, perhaps, unforeseen side-effects on other institutional sectors A,B,C, etc. Indeed, the combined desirable results in certain institutional sectors of planned interinstitutional transfers may be outweighed or undermined by the negative side-effects of these same transfers on other institution sectors.

In order to specify indicators of potential side effects, one strategy is to focus initially on the values and needs met by important institutional sectors. A set of output indicators for each sector could be specified in this way. Goal output indicators from various sectors that may be influenced by development efforts in a specific sector would serve as side-effect indicators in a model for that sector. For instance, output indicators of the health sector may be important side-effect indicators in a model of industrial expansion. These side-effect indicators will be referred to as impact indicators and will include both intended and unintended side-effects. Thus, an impact indicator is a goal output indicator from a particular sector that is monitored as a basis for determining the (side-) effects in that sector which the manipulation of policy instruments in other sectors may have caused.

f. Response Indicator

The perspective of social development discussed in Section A is based on an assumption that the effectiveness of a development program must be measured in terms of human satisfaction. To a great extent, however, human satisfaction is a subjective phenomenon and difficult to measure. Indeed, work on developing measures of human satisfaction is only in its initial stages in advanced countries. Thus, there is little reason to believe that meaningful subjective indicators of human satisfaction will be available for developing countries in the near future. There are, however, certain objective symptoms of the reaction of human beings to their social conditions and to social change which may serve as indicators of human

satisfaction will be available for developing countries in the near future. There are, however, certain objective symptoms which may be used as response indicators to measure the reaction of human beings to their social conditions and to social change. Thus, a response indicator is a measure of the reaction of human beings to their social conditions and to social change.

Response indicators can be subdivided into two types: overt and covert. Overt response indicators refer to the direct and open responses of human beings to programs or social changes that accompany development and include such factors as cooperation, participation or lack of participation; confrontations; demonstrations; riots and other forms of collective behavior such as social movements; involvement in voluntary associations, etc. Covert symptoms of human response to change are concerned with such factors as crime rates, suicide rates, rates of human aggression or violence, etc.

The interpretation of covert response indicators must be done with care, however for many of these symptoms of human reaction or satisfaction may not be a direct or indirect reaction to development activities per se. Normally, social change itself produces some degree of social disorganization which may be accompanied by some degree of unrest that is more a function of the temporary disorganizing effects of change than of the direction of change.

The six types of social indicators discussed above are relevant to the I.S.U. Project on "Indicators of Social Development" in two important respects: the theoretical and the methodological. First, these six types are theoretically appropriate in that they deal with the kinds of social phenomena specified as relevant by the concepts of social development and sectoral development discussed in Section A. In other words, in light of these concepts the six types of social indicators are generally the types of social indicators which a social systems model of social development would in all likelihood require.

It is in regard to the methodological respect, however, that the types of social indicators are especially valuable. Though lacking at this time a fully operational social systems model of social development, the six types of social indicators are especially heuristic, from a methodological standpoint, in that they provide a logical framework in terms of which social indicator data, once collected, can be analyzed to empirically determine the actual relationships among the various phenomena measured by the social indicators. Following this approach, a social model of social development can be built from the ground up, based on empirical data and measures of social phenomena collected in the developing countries, rather than on presupposed models of social development which may bear no resemblance to the social development processes which actually operate in the developing countries.

In short, the six types of social indicators provide some methodological tools by means of which the I.S.U. project on "Indicators of Social Development" can henceforth take a more inductive approach to its research than previously has been the case. At the same time, by becoming more concerned with the manifold methodological problems involved in constructing measures of the kinds of social phenomena implied by the six types of social indicators and in actually gathering in a developing country the data required by these measures, the I.S.U. Project is now beginning to tackle more directly the task of specifying a methodology by means of which developing countries would be able to construct not only their own indicators of social development, but also their own social systems model of social development.

D. Level of Analytical Concern in Reviewing the PCI Report

The discussion of social systems models presented thus far has generally been limited to delineation of theoretical and methodological criteria for the types of social indicators that social systems models of social development would likely require. An additional criteria for social indicators must now be added to the

list of criteria already specified, namely: the level of organized social activity of analytical concern. In any developing country, for example, organized social activity occurs not only at various levels of social organization: e.g., community, province, region, nation-state, etc.; but also between and among these levels. In turn, programs of social action designed to further development operate at several levels of decision-making: e.g., project, program, sector and national levels.

The six types of social indicators previously specified are analytically relevant both to the various levels of social organization and to the various levels at which decision-making takes place in programs of social action. Consider, for example, the community or village level of organization. Communities themselves are societies or social systems of interrelated and interdependent human activities designed to produce the goods and services necessary to satisfy the needs and values of the community's membership. Thus, communities indeed are societies, since they serve the broadest range of human needs and social values, and are composed of a complex network of interrelated and interdependent activities occurring simultaneously in a variety of institutional sectors.

While communities, provinces, and nation-states may vary significantly in terms of the specific social indicators that might be used to measure phenomena of interest to the developing country, it is clear in light of the phenomena specified as relevant by the concepts of social development discussed in Section A, that, at a minimum, social indicators are needed which provide the developing country not only information relevant to the six types of social indicators discussed above, namely: output, distribution, impact, response, policy instrument, and non-manipulatable indicators; but also information which can be disaggregated to the appropriate level of organized social activity at which the decision-making process is attempting to administer programs of social action. This continues to hold no matter how broadly the social system (e.g., the region, the nation-state) is defined. Therefore, an additional criteria that must be specified if

the six types of social indicators are to be fully meaningful from a social systems perspective is that of the level(s) of organized social activity of analytical concern.

This criteria is especially important when considering the levels of decision-making involved in development planning. The process discussed in Section C by means of which social systems models of social development could be inductively built grew, with considerable modification, out of operation research which is primarily concerned with the management problems of a fairly specific (micro-) level of activity. Policy science, as an outgrowth of management science, however, is concerned with more macro problems of policy making. While the specific indicators of interest may vary significantly depending on the level (e.g., project, sectoral, or national) of analysis involved, social indicators are minimally needed to provide information about the performance of development activities relative to the broad human concerns implied by the six types of social indicators discussed above.

Needless to say, the goals of a specific project may vary considerably in scope from the goals of national development planning; thus, the goal output indicators appropriate to each level of analytical concern may also vary. For instance, a project designed to aid family planning by distribution of contraceptives may require quite different indicators than will an assessment of national efforts to regulate population growth. It should be noted, however, especially in light of the above example, that the output of one level of development activity is often--sometimes desirably, at others times unavoidably an input to another level of activity. Thus, while the number of contraceptives distributed in a project designed to improve family planning could be a goal output indicator at the project level, this same indicator at the sectoral or national level would be more appropriately classified as a policy instrument descriptive indicator in a national plan to control population growth, with a social indicator of the popu-

lation growth rate itself being the goal output indicator at the national or sectoral level. Hence, specification of the level of analysis of concern to the developing country will determine to a large part the level(s) of organized social action for which social indicators are needed.

It should also be emphasized that from a social systems perspective there are yet no standard criteria available to determine whether or not a particular social indicator is indeed an indicator of social development. To the extent that specific physical needs and social values differ from one developing country to the next, so too will vary what each developing country defines as the goals of social development; in short, social development is a highly normative concept. Thus, social goals for each developing country are determined not by the assembly of data but rather as a function of each developing country's social values and (human) physical needs.

It is largely because the needs and values to be expressed in social development vary from one developing country to another that A.I.D. has elected to focus its efforts to construct indicators of social development on the specification of a methodology to assist LDC's to devise and implement their own set of indicators and models (A.I.D.'s concern for indicators of Social Development, TA/PM/M.4/21/72):

"Since every society's development and progress must meet goals of that society--goals which have been formulated by that society and which are consistent with its values--the goal formulation process is not something that can be done by competent scholars and officials of each country for that country. A.I.D. may be able to assist these efforts by (a) identifying methodological approaches and processes which, devised in the U.S. or elsewhere, can be applied to any developing country (i) to make explicit that country's goals and (ii) to measure progress towards the achievement of these goals..."

It is clear that the objective of A.I.D.'s indicator effort is to develop a methodology that will assist a developing nation to implement its own values in the planning of development. The I.S.U. project believes that the modeling process discussed in Section C provides a reasonable means of accomplishing the objects.

This strategy suggests that a desirable starting point in generating indicators of social development is to focus on the social and human needs filled by institutional sectors. The identification of these needs would help in specifying a range of goal output indicators representative of the various institutional sectors of analytical concern. In turn, these output indicators, once the data has been collected and analyzed, would provide the crucial starting point for inductively building a social systems model of social development, with the other components to be included in social model being chosen in terms of their relevance to the output to be explained.

E. Intersectoral or Societal Models of Social Development

The perspective on indicators of social development discussed to this point additionally implies that country specific models of social development are preferred rather than a general model for all nations. Nevertheless, in the exploratory phase of research, it is often useful to locate and consider existing models that might provide some clues or insight as to the direction the I.S.U. project might take; in this spirit, such a model is discussed below. It should be noted, however, that the model to be discussed does not represent a final model in any sense of the word; instead, this model is perceived as another tool to be utilized in tackling the difficult problem of constructing a social systems model of social development.

One of A.I.D.'s principal concerns, with respect to the objectives of the I.S.U. Project on "Indicators of Social Development", is that the I.S.U. Project delineate a social system model of social development at least at the sectoral, if not also at the nation-state level. I.S.U. has basically argued that a system analysis, at these levels of concern, is best approached via a societal or intersectoral analysis of those sectors whose operation is basic to the fulfillment of human needs and social values.

A highly tentative and general beginning of such a model has been suggested by Joseph Berliner¹, an economist, in the form of an integration of economic and sociological theories. Berliner takes Parsons' social system and Leontief's general equilibrium input-output model and forms what he calls a "socio-economic sectors such as agriculture, industry, transportation, and the family. The outputs from each sector serve as inputs into each of the other sectors, and each sector depends upon these inputs (i.e., the outputs of other sectors) in order to produce that sector's particular products or output. Economists often

¹ Economy, Society, and Welfare. 1972.

refer to these necessary outputs as "transfers" from one sector to another. Obviously, as the interdependence of each sector on one another varies directly with the number of transfers, a change in the output of one sector will have ramifications for the output the other sectors will be able to produce. Thus, a change in industry's output upon which transportation and agriculture must depend to produce their outputs could have a number of consequences for the efficiency, the output level, or the capacity to produce of these two sectors, with subsequent ramifications for other sectors.

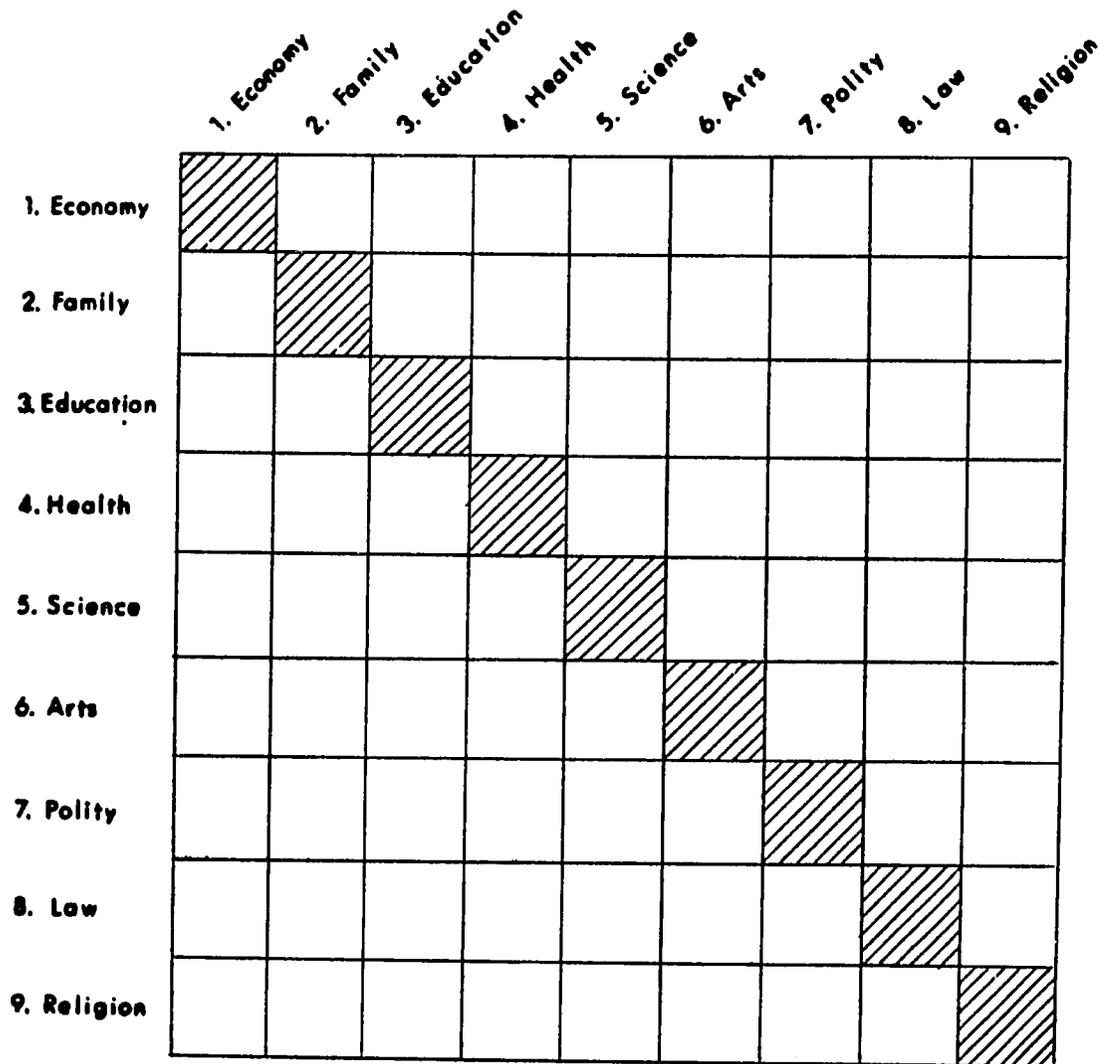
Berliner suggests that the same sort of analysis be utilized to examine the institutions of society identified by Parsons and others. These institutions are viewed as the subsystems of society which have specialized over time in order to more completely fulfill the complex dimensions of human needs and social values. Such institutions include the economy, the polity, law, religion, the family, and so on. These subsystems are designed to deal with the biological, social, psychological, economic, and religious needs of man. As previously indicated, these institutions are interrelated and interdependent, and it is this similarity to interdependent economic sectors that allows for an integration of the economic and the sociological at the societal level of analysis.

In the resultant socio-economic model, the interdependent sectors are now specified as the relevant institutions of society. Consequently, the study or analysis of the interdependence of institutions may be referred to as intersectoral analysis. These interdependent institutional sectors form a system in themselves. The "transfers" or interchanges among these subsystems are important for the maintenance of this system of sectors. Without the exchange of inputs and outputs, the sector and, ultimately, the system itself would not survive. Many of the institutions or sectors that could be included in the socio-economic model are specified, along with their interrelationships, in Figure 1.

(Figure 1 about here)

42

Figure 1. Multisector Socio-economic Input-Output Model
Based on Concrete Social Institutions



Source: Joseph S. Berliner, Economy, Society, and Welfare. 1972.

The objective of intersectoral analysis is not simply to analyze and specify all of the possible interchanges among the various institutional sectors, but also, and more importantly, to concentrate on those interrelationships that involve: (1) the processes necessary to fulfill basic human needs (or basic viability needs) and sustain the social values of a society's people; and (2) the distribution of the means (i.e., sector outputs) by which human needs are fulfilled.

In concentrating on these specialized relationships, it becomes necessary to redefine the kinds of input-output relations that will be dealt with.

To begin with, an output from an institutional sector should now be looked at in two ways. First, there are outputs that are strictly necessary for the maintenance of the productive capacity of the other institutional sectors; thus, such outputs are not final products. These outputs are analagous to transfers. These kinds of outputs will, henceforth, be referred to as either policy instrument descriptive indicators, when these "outputs" are manipulatable, or non-manipulatable descriptive indicators, when these "outputs" are non-manipulatable by policy makers. In essence, these kinds of "outputs" are now of an input nature for an intersectoral model at the societal level. Second, those "outputs" that contribute directly to human viability needs and to the fulfillment of social values are now the only legitimate outputs from the perspective of a social systems model of social development. In this case, the outputs are from the system of sectors into the system of human needs. It is these outputs that contribute to human needs and values as reflected by the social, biological, economic, religious, and psychological dimensions of man. These outputs are dealt with in two ways: output to meet viability needs and distribution of output among society's members. First, a set of output indicators are constructed that reflect the direct fulfillment of human needs. Such indicators

would include rates of food consumption, caloric intake, vitamin intake, innoculation against disease, shelter through adequate housing, clean water intake, clean air intake, physical rest intake, and so on. These same kinds of indicators would then be used to determine distribution of output by the disaggregation of these rates across relevant categories and groupings (e.g., sex categories, ethnic groupings, age categories, social class determinants, etc.). Using these types of indicators, the ability of a given set of interrelated institutional sectors to meet the needs of the populace can be determined and, furthermore, the knowledge of the input-output relationships inherent in these interrelated sectors will allow the development of policies consistent with social values in order to increase output and/or redirect distribution when the need for such alteration is perceived.

Since the relationships between these institutions have been specified only in a general sense in the literature, and since these relationships may take different forms within each society, the intersectoral model discussed above can only be specified hypothetically at this time. I.S.U. hopes to use this tentative model, however, as a basis upon which to further specify a social systems model. I.S.U.'s next report due at the end of June of this year will further elaborate this model of socio-economic integration. In the meantime, this model provides, along with the six types of indicators identified by I.S.U., a heuristic means for classifying the "indicators" listed by PCI in their report. This classification is a part of the analysis presented in Part Three of this report.

45

PART THREE

ANALYSIS

As previously discussed, this report represents one of the activities involved in the inventory of A.I.D.'s current state-of-the-art of social indicator usage. Iowa State has taken the PCI report as a basic data source and has supplemented this information with its study of the indicator literature and its contacts with A.I.D. The primary value of the PCI study for the purposes of A.I.D.'s project on indicators of social development lies with those indicators, concepts, and data, currently in use by A.I.D. which could be utilized in developing the indicators and models discussed earlier as inputs for the construction of a methodology which could be used by LDCs to construct their own indicators of social development. Review of the PCI report, however, revealed that the findings, conclusions and recommendations presented there center largely on an evaluation of A.I.D.'s use of the GPDI system developed by PCI, rather than on a systematic inventory of A.I.D.'s capacity to supply the indicators and data needed to evolve the methodology the I.S.U. project is contracted to produce.

It should be emphasized that, in contrast to the PCI study, the intent and scope of the I.S.U. project on "Indicators of Social Development" is not directly concerned with the A.I.D. project evaluation system, but rather focuses on the applicability of the indicators, concepts, and data included in the PCI report to the I.S.U. project on "Indicators of Social Development." In the case of the present report, it should be clearly understood that the purpose or intent of this document is not to analyze or comment upon either the evaluation system or upon PCI's analysis of use of the evaluation system in A.I.D. program design and operation. It must also be emphasized that the evaluation system has been developed over time, by trial and error, with con-

siderable investment of experience and effort; the PCI personnel who have had long term involvement in the development and implementation of this system are far more capable analysts of the system than are the personnel at I.S.U.

The major objectives in writing of the present I.S.U. report were two-fold: first, to assess the content of the summary of data, concepts, and indicators presented by PCI in their report; second, to analyze the scope of the PCI document. This two-fold assessment is presented here in Part Three, and is based on the criteria established for "indicators of social development" in Part Two of this report. Part Three of the present report is made up of three major sections A, B, and C, plus numerous subsections. Section A deals with I.S.U.'s findings in relation to the content found in the PCI report. Section B deals with a review of the scope of the PCI report; Section C pertains to I.S.U.'s observations, conclusions, and recommendations based on the analysis of the PCI report.

A. Findings Relative to the Content of the PCI Report

1. Concerns with Indicators

Despite the pronounced concern in the PCI report with assessment of the performance of A.I.D. in its project evaluation process, there are nevertheless certain aspects of the content of the PCI report that are relevant to the intent and scope of the I.S.U. project on "Indicators of Social Development."

As discussed in Part Two, there are a number of criteria that distinguish indicators from concepts and ordinary statistics, and there are a number of further criteria which differentiate social indicators from simple indicators. Utilizing these criteria, the "indicators" listed in the PCI report may be critically assessed.

The appendices of PCI's formal report present 1,154 indicators drawn from the Agriculture, Education, Health and Family Planning, and Public Administra-

tion sectors of A.I.D.'s noncapital project assistance program. Indicators from each sector were, in turn, grouped by PCI into the 12 major categories of economic status, health status, demographic, educational status, public safety, production/marketing, technology, consumption/utilization, land reform, institutional development, knowledge/attitude/behavior and project output.

At first glance, the identification of over one thousand indicators of social development seems to represent a major breakthrough in the methodological (both theoretical and measurement) problems confronting social indicator research noted early in this report. On closer examination, however, certain characteristics of the identified indicators reduce their overall value to the I.S.U. project on "Indicators of Social Development." As will be demonstrated, the term "indicator", as used by PCI, does not meet the criteria for social indicators established by Iowa State.

a. Definitional Characteristics. Most simply stated, the term "indicator", as used in PCI's formal report, is defined in terms of the logical framework of the GPOI system and, therefore, is logically interrelated with several other concepts relating to both the horizontal and vertical logic of this evaluation system. When used within these logical frameworks, the meaning and utility of PCI's use of the term "indicator" is relatively clear. It should be noted, however, that the meaning of "indicator", as used by PCI, differs significantly from the normal use of the term in most programming and scientific modeling processes. In short, the differences are: i) what PCI refers to as an indicator seems to connote what normally is referred to as a target; ii) what PCI calls the means of objective verification more closely approximates the normal meaning of the term "to indicate". Once these distinctions in usage of terminology are recognized, it becomes clear that most of the 1,154 "indicators" presented in the appendices are really not "indicators" in the scientific sense of measurement as means of objective verification,

but rather are statements of project targets, i.e., statements of what (how much) a project should ideally accomplish by a certain date and not measures or objective verification of what is actually accomplished.

The particular usage of PCI terminology arises largely because the evaluation system is primarily oriented toward the assessment of project achievement, rather than toward the monitoring of social trends. Thus, within the PCI system, a target is defined as "an indicator with a magnitude to be realized at a specific date. An explicit and objectively verifiable measure of results expected" (PCI, p. 2-15). In turn, one of the major criteria that must be satisfied by indicators, according to PCI, is that they "define both a magnitude and a timetable within which the desired change should be observed" (PCI, p. 2-16). On examination of these two statements, there seems to be no basis to assume that the terms "target" and "indicator" are not used synonymously by PCI. For example, a major criticism voiced throughout the PCI report of the current state-of-the-art of indicator usage in A.I.D. evaluation is the "absence of targets in so many of the indicators" (i.e., PCI, p. 3-11).

Additional illustrations of PCI's concern with "targeted indicators" can be found throughout their report. One example is adequate to demonstrate this point. PCI notes on page 3-9 of their report that the attitude of the general public would be a key indicator for a project focusing on maintenance of a secure climate in support of development; they note, however, a need for a more careful definition and offer "increased public activity at night" and "increased private investment in activities or business susceptible to crime" (emphasis added) as good indicators of the project goals. The crucial point to note in this illustration is the distinct tendency to transform indicators from statements or measures of 'what is' to statements or measures of 'what ought to be' or 'what is desired and intended'. It is this emphasis on "targeting" that gives the PCI definition of indicator a unique and distinct char-

49

acter when compared to the normal usage of the term which connotes a statement of measure of "what is".

On the other hand, the measurement of the "what is" seems to be precisely what PCI has in mind by their reference to objective verification. Normally, as in the present report, objective verification is discussed in connection with the measurement of phenomena and with presentation of factual data that shed light on changing conditions. In this sense, PCI's reference to objective verification comes closer to the normal meaning of the term "indicator" or "to indicate" as earlier discussed in Part II of the present report.

A second problem created by the simultaneous reference to both verification and target in usage of the term "indicator" is that it makes more difficult the construction of multiple use indicators. The use of "indicators" as designated by PCI calls for the development of a unique set of indicators for each project, since targets are always project specific and are generally non-transferable to other projects. This would be the case, according to PCI, even if the project goals and purposes were identical, since each project is instituted under varying social conditions.

To illustrate this point, consider the following targeted indicator presented in the PCI report:

"Annual output of 420 professionally prepared teachers of teachers, administrators, librarians, and supervisors by 1975" (c.f., PCI - Appendix; Education, p. 7).

Since this indicator meets both of PCI's criteria of magnitude and timetable, this should be, according to PCI's definition of "indicator", a good project indicator. The problem, however, is that the above "targeted indicator" is, at best, a project specific statement of a desired level of achievement that has little or no informative or analytical value beyond the project in question.

The overall impact of this tendency to define an "indicator" as a project

target is certainly not economical, since the net result is to specify separate indicators for different projects without consideration of the possibility that these various projects could be measured by one indicator. Observe the following list of indicators, listed by sector, presented in the PCI report:

Agriculture

1. Increased enrollment
2. Schools training sufficient number of students. . .
3. Schools training the planned number of students

Education

1. Fifty percent of girls enroll in vocational type courses
2. Increased primary school enrollment
3. Increased secondary school enrollment
4. A reasonable number of qualified students enrolled
5. Enrollment of 10,000 students

While each of these so-called "indicators" are at least partially targeted, they could, nonetheless, be easily (and more economically) represented by a single indicator constructed (with no target specified for the indicator) in such a way as to permit disaggregation by relevant criteria (sex, level of education, etc.) and, thereby, measurement of progress toward all of the targets specified by PCI. That single indicator, obviously, is a measure of school enrollment rates which has the potential for providing information at various levels of aggregation and disaggregation. When viewed from this perspective, the 1,154 indicators listed in the PCI report can be reduced to a considerably smaller number of measures or indicators with a potential of multiple use. In fact, the Composite Taxonomy of Indicators of Social and Economic Development presented on p. 2-17 of the PCI report represents a reduction of the 1,154 targeted indicators to 54 non-targeted indicator concepts that come closer to being universal or multiple use indicators. Indeed, school enrollment rates are one of the composite indicators identified by PCI. While more of the PCI report is yet to be examined here in Part Three,

it should be noted that PCI's composite taxonomy represents one of the major contributions of the PCI report to the I.S.U. project on "Indicators of Social Development", since the taxonomy reduces project specific indicators to their "common denominator", i.e., the social phenomenon which should be measured by an indicator.

A third problem inherent in the confining of "indicators" totally to the realm of targets for program achievement is the failure to include indicators (as defined by I.S.U.) that might reveal possible undesirable side effects of project activity. As will be seen, PCI's "Output" indicators are more in the nature of what I.S.U. refers to as policy instrument descriptive indicators for models at the sectoral and country level of analysis; almost none of these "Output" indicators specify sectoral or country level goal output indicators of social development, nor are they impact indicators that would measure the side effects of sector specific programs on other sectors and on the individuals of the particular society in question. These three types of critical indicators of social development are largely excluded by PCI's narrow usage of the term "indicators".

Ideally, a useful set of indicators should reveal both positive and negative trends through time. To illustrate this point, observe again the targeted indicator presented earlier. This "targeted indicator" calls for an "output" of 420 professionals per year. A social indicator, however, which monitored the actual output of professionals per year would have the capacity to indicate failure of the program (e.g., an actual decrease in the number of professionals trained per year) if such perchance were to occur. Additionally, several other social indicators, appropriately constructed (e.g., impact indicators), could provide information about the wider set of phenomena implied as relevant by the concept of social development as discussed in Part Two. For example, such additional social indicators could

. 52

measure not only how many professionals were actually generated by the program, but also provide an indication of the potential problems caused by the program. Thus, another social indicator might determine the effect on the job market of an influx of a large number of newly trained professionals per year; yet another social indicator might examine the on-the-job effectiveness of program graduates.

In summary, there is some evidence that PCI recognizes a distinction between an indicator as a "gauge" or "reflector" and a target which states the magnitude of change desired within a given time span. For instance, in discussing the process of objective verification, PCI states: "Good project design must include pre-establishing 'what' will be measured to demonstrate progress (indicator) and 'how much' (targets)." However, by insisting that targets must be included in the definition of the indicator, this distinction is blurred. The fact that the indicators presented in the PCI report are primarily statements of project targets is a clear illustration that a conceptual distinction has not been maintained between "a target" and "an indicator of progress toward that target". This lack of conceptual distinction considerably reduced the value of the initial PCI inventory for the purposes of the I.S.U. project on "Indicators of Social Development."

b. Characteristics of Measurability. A second major problem with the idea of "targeted indicator", as presented by PCI, is that of measurability. The problem of measurability becomes quite critical as the researcher attempts to quantitatively or statistically deal with indicators of inputs, outputs, impact, or response, for the possibility of measurement is the key factor that qualifies an indicator as more than merely a concept. In terms of PCI's usage of the term "indicator", the list they provide may be broken down into four distinct groups: (1) Some of the "indicators" listed in the PCI report contain statistical concepts that represent established or standardized

63

measurement techniques, e.g., enrollment rate, birth rate, crude death rate, crime index, mortality rate, etc.; (2) Many of the so-called "target indicators" are concepts that could be measured by direct observation, e.g., number of book stores, library facilities, number of staff, number of schools, contraceptives distributed, etc.; (3) Another set of "indicators" are actually concepts which, while difficult to measure, are of such a nature that scales, indices, and measurement techniques have been developed to quantify, through complex observational procedures, the phenomena referred to by the concept: e.g., participation of women in the democratic processes, quality of training, attitudes, quality of staff, etc.; (4) In contrast to the "indicators" falling into group No. 3, the PCI report presents many "target indicators" that are actually concepts that cannot be quantified or measured with any degree of precision at the present time, e.g., increased number of staff able to function professionally as a result of reduced teacher-pupil ratio; Improved rapport between civil population and police; increase in additional assessment as a result of audit procedure; effective development program; adequate physical plant; 24 Training Centers efficiently organized and operationally qualified (emphasis added).

The "targeted indicators" represented by types 3 and 4 are actually complex concepts and hypotheses that cannot be directly or indirectly measured by a single indicator. A phenomenon such as "quality of training" could easily require multiple measures based on some standard that defines what "quality of training" really is. A concept such as "increase in additional assessment as a result of audit procedures" is actually an hypothesis that must be tested through research. No single indicator could be used to test this statement. A meaningful assessment of an hypothesis of this type would require a controlled experiment designed to measure or demonstrate that additional assessment occurred because of the audit procedure and not because of other phenomena (i.e., uncontrolled conditions).

The list of "targeted indicators" presented in the PCI report is greatly reduced in value by failure to specify the means of verification (measurement technique or indicators) to be used in relationship to the various targets. A large proportion of the targets listed are not measurable without experimental research or the construction of scales, indices, or other measurement procedures. The overall scope and content of the PCI report would have been enhanced by a discussion or presentation of the means by which the social indicators proposed as measures of project targets could be objectively measured.

c. Characteristics Pertaining to the Level of Analysis. A third major drawback of the "indicators" identified by PCI pertains to the level of analysis for which these are "indicators". The study conducted by PCI included concepts drawn from four sectors of A.I.D. noncapital assistance programs. Even though the "target indicators" are grouped by sector, the actual indicator concepts presented were apparently drawn exclusively from project level activity. The authors of the PCI report note, at one point, that the working documents reflect the general absence of sectoral programs. Rather, "there are a number of independent projects" (p. 4-3). This has led I.S.U. to reason that the "target indicators" presented in the PCI report are primarily project achievement indicators rather than indicators drawn from A.I.D.'s attempts at sectoral analysis and evaluation.

The project emphasis of the PCI report is clearly revealed in the list of "indicators" presented. Most of the "indicators" are explicit statements of specific project goals. This further reduced the immediate benefit that could be drawn from the PCI report. One of the objectives of the I.S.U. project on "Indicators of Social Development" is to develop social indicator models at the sectoral and intersectoral or country level of analysis. In general, sectoral models require different types of indicators and demand different measurement and analytical techniques than is required by project evaluation analysis. The



fact that A.I.D. is aware of this difference is clearly indicated in the document "A.I.D.'s Concern for Indicators of Social Development." This document notes: "The development of sectors implies appropriate tools for evaluation, distinct, if not inherently different, from evaluation tools appropriate to country-level analysis on the one hand and project-level analysis on the other. (p. 4).

The difference in the level of analytical concern between i) developing models to analyze and evaluate sector and country-level development activities and ii) project evaluation is the most serious limiting factor in the scope and content of the PCI report. Many of the findings listed above are, no doubt largely a reflection of the difference between the levels of analysis at which I.S.U. and PCI are operating. Many of the "indicators" presented by PCI are potentially relevant as input indicators or policy instruments in sector models if such "indicators" are actually "measures" of phenomena and not statements of targets (i.e., desired progress). On the other hand, few, if any, of the "indicators" listed by PCI could be considered indicators of sector or institutional output phenomena, or of the side effects of project achievements on other institutional sectors.

2. Analysis and Classification of the PCI "Summary Indicators"

In order to determine the extent to which the indicators listed by PCI represent the types of social indicators required by a systems analysis at the societal or intersectoral level, I.S.U. conducted an extensive analysis and reclassification of the "indicators" listed by PCI. Also, this review was carried out to delineate those of PCI's "indicators" which are both none redundant or unique indicators and that are also potentially quantifiable. However, as the analysis unfortunately demonstrated, PCI's "indicators" tend to be highly redundant, are mostly policy instrument descriptive indicators at the sectoral and country level of analysis, and generally relate to the project

level of analysis rather than to the levels of analysis of concern to the I.S.U. project on "Indicators of Social Development."

Following this introduction, this section of the report contains: a) a brief review of relevant material drawn from Part Two of this report, b) an analysis of PCI's agriculture sector indicators, and c) a briefer analysis of PCI's other sectoral indicators.

a. Review of Modeling and Levels of Analysis Needs

As discussed earlier in this report, the degree to which project achievement "indicators" meet the criteria of indicators of social development depends upon the modeling process selected and the level at which the analysis is carried out. An experimental design carried out at the project level requires indicators that are project specific; a sectoral analysis requires rather generalized, macro indicators that deal with inputs to the sector and outputs from the sector. Societal or intersectoral analysis, on the other hand, deals with the interrelations among all of the relevant sectors. Like sectoral analysis, the focus is on output, but only output of a very specific kind. From a societal view, outputs are classified as those sectoral products that contribute directly to human viability or survival. Other sectoral products that contribute to the maintenance of the interrelations between sectors or that contribute indirectly to human viability are considered as inputs. Altogether, there are six types of social indicators of importance at the societal level; they are: policy instrument descriptive indicators, non-manipulatable descriptive indicators, goal output indicators, distribution indicators, impact indicators, and response indicators. These types of social indicators and their importance was discussed in Part Two of this report. Based on the six types of social indicators, a breakdown of the four sectors examined by PCI follows. The agriculture sector is examined in greater depth to demonstrate to the reader the process of analysis undertaken by I.S.U.

The remaining analysis of the other three sectors is summarized in Table 2 of this section.

b. Analysis of PCI's Agriculture Sector Indicators

The Agriculture Sector "indicator summary" organized by means of PCI's "composite taxonomy"* is reviewed here in terms of I.S.U.'s six types of "indicators of social development." As an illustrative device, the agricultural sector examined by PCI is reclassified into I.S.U.'s six indicator categories. This reclassification of PCI's 205 "indicators" resulted in the elimination of 155 "indicators", leaving the new list of 50 "indicators" presented in Table 1 of this report. This elimination was based on two criteria uniqueness (or non-repetition) and unmeasurability. Thus, those indicators that, in effect, designated the same phenomena were reduced to one representative indicator by eliminating the redundant indicators. For instance, all those indicators pertaining to the number of farmers obtaining credit were reduced to the "number of farmers using the credit program". Other indicators were eliminated because of their unmeasurability in their present form. Thus, "better quality farm products at lower prices", "self-sufficiency in planning and carrying out research and development and extension activities", and "influence of institutions" were not included in I.S.U.'s classification of indicators. The remaining 50 indicators were placed into the relevant columns of Table 1 of this report, according to the six social indicator types.

(Table 1 about here)

Of the 205 "indicators", 50 (or 24%) are non-repetitious, potentially measurable indicators of social development. Of these 50, 39 might be classified as inputs or policy instruments into the Agricultural Sector, while only

* (Refer to the first appendix of the PCI report, November, 1972).

Table 1. A Classification of PCI's Agriculture Sector Indicators by I.S.U.'s Six Indicator types. (Refer to the PCI Report, November, 1972: Appendix 1, pp. 1-12)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
1. No. of equipment-making establishments		1. Prices of farm products			1. No. of farmers using new techniques
2. Investment rates-crop specific		2. Per capita income			
3. No. of farmers using credit program		3. Net income rates			
4. Amount of credit extended across relevant groups		4. Malnutrition rates among animals			
5. No. of small farmers obtaining loans		5. Employment rates			
6. Prices of farm products		6. Employment needs being met			
7. Local interest rate		7. Import distribution to sectors			
8. Employment rates		8. Credit rates			
9. Employment opportunities		9. Livestock disease rates			
10. Manpower supply		10. Agricultural settlement			
Median growth rate					
12. Number employed as a percent of numbers graduated					

Table 1. (continued)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
13. Export rates					
14. Foreign exchange earning as a percent of total national income					
15. Import rates					
16. Malnutrition rates among animals					
17. Mortality and morbidity for livestock					
18. Disease rates for livestock					
19. Agricultural settlement					
20. Enrollment rates					
21. Production rates					
22. Input availability rates					
23. Cattle production rates					
24. No. of agricultural students trained					
25. Graduation rates					
26. Reproduction rates					
27. Crop diversification					

Table 1. (continued)

Policy Instruments (Input) or Activities	Non-Manipulatables	Output	Distribution	Impact	Responses
28. Productivity per hectare					
29. No. of farmer-owned fish production ponds					
30. Acreage planted					
31. Market information					
32. Production information dissemination					
33. Dissemination of new varieties					
34. Application of new techniques					
. No. of farmers receiving advice					
36. Animal protein consumption					
37. No. of vaccines administered					
38. Budgetary allocations					
39. No. of cooperatives organized					

ten might be called "output indicators". Many of the "indicators" (e.g., "foreign exchange earnings", "number of small farmers receiving loans" or "changes in farm animal disease rates") normally considered as inputs from a sectoral perspective are classified by I.S.U. as either outputs at the sectoral level or policy instruments (i.e., inputs) at the societal or intersectoral level.

In terms of the distribution of outputs critical to human survival, none of the PCI "indicators" could be considered as of the distribution indicator type. Had any of the ten "indicators" under the output column been disaggregated by such categories as rural-urban, male-female age levels, ethnicity, or social classes, then they could have been described as output distribution indicators. In this way, outputs from the agricultural sector important for human survival such as food production could be examined in terms of their distribution for consumption among the varying groups of society.

The PCI "indicators" designated as inputs by I.S.U. are potentially of two types. The first type, policy instrument descriptive indicators, are those inputs that may be manipulated through programs, projects and policies by policy makers. Thus, inputs from the education sector to the agricultural sector such as "number of trained agriculturists" is something that may be controlled by policy makers, depending on the needs for such personnel by the agriculture sector.

Another type of input neglected by PCI consists of those inputs which often act as constraints on the development process. Age differentials, sex ratios, strongly held values, etc. are all indicators of non-manipulatable factors that often impinge on efforts to direct the course of national and community development. Age factors are often cited as the reason why a particular program failed. Community development projects have often failed because of the pace-setting intransigence of the older elements of the popu-

lation in accepting a new organization in the village, the use of fertilizer, or the need to keep children in school for 6 or more years, to mention just a few examples. Other projects, directed at the upgrading of local leadership skills by the training of younger men to fill leadership roles, seem to have failed because the older leaders were ignored. Still other programs, directed at redistributing income by making new, high-yielding grain varieties available to the farmer, have failed in many areas because the social structure was such that the already more well-to-do farmers were the only ones who could afford to take the risk involved in switching to the new varieties. (Refer to Warriner, Land Reform in Principle and Practice for a documented study of such an occurrence in northern India); similar reports come from former International Voluntary Service workers who, while participating at the "grass-roots" level of the "green revolution" in Laos, found this same pattern of the already economically well-off benefiting more from the profits of IR-8 utilization than their less well-off neighbors.

Potential obstacles to programs can be partially anticipated and controlled for as empirical experience is utilized to generate input indicators of the non-manipulatable type. Unfortunately, as can be seen from Table 1, none of the "indicators" described by PCI can be called non-manipulatable descriptive indicators.

Other important types of indicators of social development neglected by PCI pertain to side-effects, both the positive and negative consequences of projects or programs in one institutional sector on other institutional sectors and on the survival capacity of the individual members of society. Two types of side effects indicators, those of impact and response, have previously been defined and described.

The kinds of impacts that programs, projects, and policies in the agriculture sector can have include negative effects on the family, on the environ-

ment, and on the urban sector. For instance, the mechanization of agriculture and the growth of size of land holdings by wealthy farmers in some LDCs has been a contributing cause to the influx of the poorer farmers into the cities, often into conditions even more undesirable than those from which they came. The negative side effects of a large migration of the rural populace into cities include overcrowding, increased unemployment, and increased crime rates. At the same time, rural areas of developing countries also have borne the ill-consequences of a large outmigration in that families are broken up and rural communities often disappear. (These consequences, and others, have also been observed in the more developed countries).

In terms of human response, actions pursued by policy makers often fail to adequately take into account the values held by the members of society in general or the values unique to varying sub-groups within a society. When these values are disregarded, there is often a discernible reaction by some individuals. Just as the Meo in Northern Thailand have reacted, and reacted in a violent manner, to governmental attempts to force them to grow corn instead of opium poppies, a number of whites in the United States have similarly responded in a violent manner to enforced bussing to achieve racial balance by boycotting the services of schools, picketing, petitioning, and in some cases, burning the buses. Furthermore, sizeable numbers of those driven to the cities by the modernization of agriculture have turned to drugs or crime as a reaction to the loss of their old way of life. Finally, where the ability of the agriculture sector to produce adequate quantities (outputs) of food has broken down, as has been the case, for example, in India and Cambodia, the urban areas have been observed to respond by engaging in "food riots". These, of course, are but of the illustrative examples that could be cited.

There are potentially hundreds of meaningful response and impact indicators since the institutional sectors of society are intricately interrelated. An

attempt to identify and include impact and response indicators into models, however, is a necessary step in the development of systems models of inter-sectoral analysis. As can be seen from Tables 1 and 2, PCI's contribution to these efforts has been relatively slight.

(Table 2 about here)

In fact, the results shown in Table 2 indicate that PCI has done little more than list input indicators that are mainly of the policy instrument type, to the general exclusion of non-manipulatables types. Little contribution has been made to a delineation of the other types of necessary indicators discussed in this report; in effect, this means that PCI's contribution to A.I.D.'s efforts, insofar as indicators of social development are concerned, did not meet the expectations of Iowa State. It should be noted, however, that PCI cannot be held entirely responsible for the disappointing results of their report, for the initial methodological framework, in terms of which the indicators and concepts contained in PROPs and PARs would have been more profitably classified, was not produced until the end of November, 1972, as specified by the contract between Iowa State and A.I.D. Since the initial methodological framework developed by I.S.U. was not available to PCI at the time PCI conducted its analysis, PCI understandably conducted its study on the basis of those terms which it knows best, namely, the GPOI system and GPOI generated documents. Had PCI been able, however, to carry out its analysis after the I.S.U. framework was developed, PCI might have been able to go beyond the PROPs and PARs to examine A.I.D. documents of a much wider scope and, thereby, compile a more comprehensive listing of relevant indicators of social development.

B. A Review of the Scope of the PCI Report

1. Introduction

As the reader should now be aware, the intent of the PCI effort was to analyze and report indicators, indicator concepts, and data compiled in PROPs

63

SECTOR	NO. OF INDICATORS IDENTIFIED BY PCI	NO. OF NON-REDUNDANT, MEASURABLE INDICATORS IDENTIFIED BY I.S.U.	ISU IDENTIFIED INDICATORS CLASSIFIED BY 5 TYPES:					
			Policy Instruments	Non-Manipulatable	Outputs	Distribution	Impact	Response
Agriculture	205	50	39	0	10	0	0	1
Education	69	31	31	0	0	2	1	0
Health	93	40	38	2	6	2	1	0
Public Administration	158	41	38	0	0	1	0	3

Table 2. A Summary View of PCI's "Indicators" from ISU's Perspective. (Refer to the PCI Report, November, 1972: Appendix 1)

and PARs as a by-product of A.I.D.'s operational experience. Thus, the scope of the PCI report should cover A.I.D.'s indicator concepts, indicators, data, and problems closely related to the formation of social indicators and the collection of data. PCI did deal with what they believed to be closely related problems, but these concerns centered around the use of the GP01 system, and not around those issues pertaining to the more general criteria for indicators of social development. A review of the scope of the PCI report, in light of what I.S.U. believes should have been the domain of PCI's concern, follows. In general, this section of Part III deals with the issue of scope from the standpoint of measurement, data, and concepts. The area of indicators has already received extensive attention in Part II and in section 2 of this part of the report.

2. Measurement

In order to operationally transform concepts into indicators, it must be possible for a quantification process to take place. Generally, this entails the ability to count (or enumerate) or, in some other way, quantify the phenomena of interest. Thus, to transform "hectares planted" into the "number of hectares planted as a ratio of all available hectares", the research or agent must be able to measure the number of hectares planted as well as the total number of available hectares. A ratio of these two counts can then be formed, and once this measurement potentiality is established, the creation of an indicator can then be said to have occurred.

As the phenomena of interest, to those involved either in the formation of indicators of social development or of objectively verifiable indicators for program evaluation, are often not directly measurable, the means by which indirect measures have been developed to isolate relevant phenomena becomes critical. Unfortunately, there is a conspicuous absence in the PCI report of any assessment or inventory of measurement techniques, statistical procedures,

or standardized indexes that might serve as social indicators if properly interpreted, though the problem of measurement is alluded to at various points. For instance, the authors of the PCI report note that they perceive a tendency for A.I.D. to treat indicators as abstract concepts. They further suggest that more research attention needs to be directed to the objective of developing measures of social phenomena. PCI, however, defines social indicators as measures of progress which must be objectively verifiable targets. While the indicator targets presented in the appendices to the PCI report often include some type of index or statistic, there is little evidence, if any, that the critical problem of measurement in generating usable indicators was any more than a marginal interest to the scope of the PCI inventory. Since the primary concern in current social indicator research focuses on the problem of developing valid measures of social phenomena and the generation of aggregate social data through appropriate data collection procedures, the value of the PCI report in furthering the study of indicators of social development is further reduced by this deficiency.

3. Data

Based on I.S.U.'s understanding of the PCI contract, PCI was to identify and present the data collected as a part of A.I.D.'s operational procedures. This data was to be utilized by I.S.U. to build and test models of indicators of social development. Further, it was understood that this data could be used to evaluate the utility of the indicators used in the collection of such data.

Again, however, there is a conspicuous absence of any assessment or inventory of available data in either A.I.D. or the host countries even though considerable discussion in the report is concerned with the need for objective verification of project achievement. There is, however, evidence that the authors of the report were aware of this deficiency. For instance, mention is made, at one point in the report, that PCI personnel have observed data gathering

processes in the field which are not evidenced in A.I.D. working documents. PCI also notes that one of the problems observed in defining appropriate Goal level indicators is the limited ability of host countries to define meaningful baseline data (PCI report, p. 4-3). Beyond a few scattered comments such as these, there is no evidence to suggest that an inventory of A.I.D. data capability was included in the scope of the PCI study. The failure to include this important factor in this baseline inventory greatly lessened its value to the I.S.U. project on "Indicators of Social Development."

4. Concepts

Finally, it appears that the major contribution of the PCI report to the I.S.U. project is conceptual in nature. The inventory of project targets and project objectives provides limited insight into the way in which A.I.D. project managers conceptualize the notion of development. Reviewing the PCI report has allowed I.S.U. personnel to attain increased insight into the interest and scope of A.I.D. assistance programs. Many of the "targeted indicators" listed do contain important development concepts that can be quantified into social indicators of value to the larger I.S.U. project on indicators of social development. Other statistical concepts can be utilized directly by removing the statement of desired magnitude and time span (targeting) that limit their utility to specific project purposes and goals.

In summary, it appears that the scope of the PCI report is far too narrow in terms of A.I.D.'s needs for the generation of indicators of social development. The PCI report would have proved much more useful had it covered the topics of data and measurement in greater depth.

C. Some General Observations, Conclusions and Recommendations

1. First General Observations

A.I.D. is actively engaged in a wide range of operational, research, and evaluation activities that fall under the general rubric of social development.

At the project level, A.I.D. is engaged in both capital and noncapital assistance programs that are social in nature. By limiting their inventory to noncapital assistance projects, PCI failed to include capital assistance concepts and data that may be important variables or policy instruments in a systems model of indicators of social development. In turn, A.I.D. hires many contractors to assist with project activities in the field. In many cases, detailed reports of work carried out by contractors have been prepared which may include important indicators, concepts, and data of relevance to the generation of indicators of social development.

At the sector level, A.I.D. is actively engaged, through the efforts of its own personnel and through contractors, in the collection of data and the construction of sector level indicators, models and evaluation techniques that involve highly sophisticated and advanced analytical techniques. Examples of these activities include the simulation models and linear programming models currently being developed through the Agriculture sector office; the extensive data bank and sector analysis underway in the Bureau of Latin America; the health indicators being developed by the Health Office; and, the extensive population analyses carried out in the Population Office. It becomes clear that the evaluation and analysis being carried out at the sector and country levels would be more valuable inputs to the I.S.U. Project on "Indicators of Social Development" due to the similarity in concepts and levels of analysis. A complete inventory of A.I.D.'s operational indicators, concepts, and data relevant to the generation of indicators of social development should include these sector and country-level efforts.

2. Second General Observations

Despite the widespread efforts of many offices, missions, and contractors to generate development information, A.I.D. itself does not appear to have generated a centralized memory system that brings together the vast knowledge

10

and experience that A.I.D. (and its predecessors) has gained over the past quarter of a century. From conversations with various workers, it appears that even the mission offices of A.I.D. are plagued with problems of information retrieval. A great amount of relevant data has been accumulated, but is stored throughout the various A.I.D. field missions, bureaus and offices, and in the thousands of documents that have appeared as a result of A.I.D.'s development efforts. The problem of inventorying this widely distributed but vast source of indicators, concepts, and data would constitute a major investment of time and resources by the Agency, and would be profitable only if the inventory was undertaken in such a way as to produce a central data bank.

3. Conclusion

In light of the above analysis of the PCI report and the limited survey of A.I.D.'s data capabilities undertaken by I.S.U., it is apparent that the basic inventory conducted by PCI has only marginal value to A.I.D. and to I.S.U. insofar as the project "Indicators of Social Development" is concerned. I.S.U. personnel are continuing to search research reports and to acquaint themselves with social indicator efforts within A.I.D. and other agencies, research institutes and universities in an effort to identify indicators, concepts, data, and measurement techniques that may assist the development of the desired methodology. Paralleling these efforts, I.S.U. is continuing its efforts to refine a set of criteria for indicators of social development and the development of hypothetical systems models. Initially, many of the indicator concepts to be utilized will derive from current theoretical and operational experience in development. A more refined inventory can be conducted as greater clarity is attained in terms of data need and indicator concepts to be included in the experimental models under development.

4. Recommendations

In light of the discrepancy between A.I.D. social indicator potential and

current knowledge concerning a small segment of A.I.D.'s data and indicator capabilities, A.I.D. should consider activating a research team to examine a greater number of A.I.D. documents, both in Washington, D.C. and the field. This project would give A.I.D. a better picture of whether the data and concepts currently being used and reported in documents other than PROPs and PARs meet the criteria of indicators of social development. The recommended research team could be composed of either agency personnel or independent researchers from a university or private agency, preferably with the team's base of operations in the Washington area.

APPENDIX

This Appendix has been included in the report in order to give A.I.D. a clear picture of what I.S.U. believes to be operational indicators. These indicators are currently operational and are thus capable of generating data. These indicators were selected on the basis of the criteria for indicators listed in Part Two, Section C of this report. These indicators were not, however, classified in terms of the minimum six types of indicators listed by I.S.U. These indicators are not necessarily those that will ultimately make a complete set of indicators of social development as suggested by I.S.U. This list is far from a complete elaboration of all of the available indicators in the literature, but the list is representative of the kinds of indicators I.S.U. believes to be potential elements in a system of social indicators.

BIBLIOGRAPHY

1. Andrews, Frank M.
1972 "Social indicators and socio-economic development." Unpublished paper prepared for the Anspach Conference on "International Social Development", 1972, Penn State University. Ann Arbor: University of Michigan.
2. Berliner, Joseph S.
1972 Economy, Society, and Welfare: A Study in Social Economics.
3. Carroll, Lewis
1925 Alice's Adventures in Wonderland, Through the Looking Glass, and the Hunting of the Snark. New York: The Modern Library.
4. Green, James and Abraham Hirsch
1972 "A.I.D.'s concern for indicators of social development." An unpublished mimeo. Washington, D.C.: The Agency for International Development.
5. Kamrany, Nake M. and Alexander N. Christakis
1969 "Social indicators in perspective." *Socio-Economic Planning Science* 4:207-216.
6. Land, Kenneth C.
1972 "Social indicators: An overview." An unpublished mimeo. New York: Russell Sage Foundation.
7. Practical Concepts Incorporated
1972 "Indicators of social and economic development: Assessment of practice in the Agency for International Development." An unpublished report. Washington, D.C.: Practical Concepts, Inc.
8. Sheldon, Eleanor Bernert and Howard E. Freeman
1970 "Note on social indicators: Promises and potential." *Policy Sciences* 1 (April):97-111.
9. Warriner, Doreen
1969 Land Reform in Principle and Practice. London: Oxford University Press.
10. Wilcox, Leslie D. and associate
1972 "Social systems models of indicators of social development." An unpublished report for the Agency of International Development. Ames: Iowa State University.

"Potential Indicators of Social Development by Sector"

I. Population Sector

A. Fertility Indicators

1. Crude birth rate = $\frac{\text{total births}}{(\text{total}) \text{ midyear population}} \times 1,000$
2. Age specific birth rate = $\frac{\text{births to women of age } x}{\text{midyear female population of age } x} \times 1,000$
3. General fertility rate = $\frac{\text{births to women 15-49 (all childbearing ages)}}{\text{midyear female population aged 15-49}} \times 1,000$
4. Marital fertility rate = $\frac{\text{legitimate births}}{\text{midyear married female population aged 15-49}} \times 1,000$
5. Cumulative fertility rate = Number of children a cohort of 1,000 would bear from the time they begin child bearing until they reach a specific age, if they were exposed to the schedule of ASFR in effect at a given time.
6. Completed family size = Number of children ever born to married women aged over 49.
7. Total fertility rate = (age specific birth rates of women aged 15-49) X5*
(*Five-year age)
(This rate is an estimate of the number of children a cohort of 1,000 women would bear if they all went through their reproductive years exposed to the age specific fertility rates in effect at a particular time).
8. Gross reproduction rate = Total fertility rate x .487+
(+.487 is the proportion of girl babies at birth)
9. Net reproduction rate = (age specific birth rate of females aged 15-49 x proportion surviving from birth to mid-point of age group**) X5* X .487+
(**Obtained from life table)
10. Intrinsic birth rate = The birth rate of a stable population (a population whose growth is at a constant rate be it negative, zero, or positive)
11. Fertility ratio (child-woman ratio) = $\frac{\text{Children under 5 years of age}}{\text{Women aged 15-49}} \times 1,000$

15

12. Standardized birth rate =
$$\frac{(\text{Age specific birth rate of women aged 15-49} \times \text{number of persons age group of standard population**})}{1,000,000} \times 1,000$$
13. Illegitimacy rate =
$$\frac{\text{Illegitimate live births}}{\text{Midyear unmarried women 15-49}} \times 1,000$$
14. Age specific illegitimacy rate =
$$\frac{\text{Illegitimate live births to women of age x}}{\text{Unmarried women of age x}} \times 1,000$$
15. Ratio of illegitimacy =
$$\frac{\text{Illegitimate live births}}{\text{Live births}} \times 1,000$$

B. Mortality

1. Crude death rate =
$$\frac{\text{Total deaths}}{\text{Midyear population}} \times 1,000$$
2. Age specific death rate =
$$\frac{\text{Deaths to persons of age x}}{\text{Midyear population of age x}} \times 1,000$$
3. Cause specific death rate =
$$\frac{\text{Death due to a particular cause}}{\text{Midyear total population}} \times$$
4. infant mortality rate =
$$\frac{\text{Deaths of infants before attaining first birthday}}{\text{Total live births}} \times 10$$
5. Neo-natal death rate =
$$\frac{\text{Infant deaths under 28 days after birth}}{\text{Live births}} \times 1,000$$
6. Perinatal death = mortality occurring between the 20th week of gestation and the first week after birth
7. Amanatal death = mortality occurring during the first week after birth
8. Standardized death rate =
$$\frac{(\text{Age specific death rate of all age groups of both sexes} \times \text{number of persons in each age group of standard population})}{1,000,000*} \times 1,000$$

(* standard million)

9. Intrinsic (true) death rate = the death rate of a stable population

10. Expectation of life at birth = The average number of years of life a newborn infant may be expected to live under the age specific mortality currently in effect. (This figure can be obtained from a life table).
11. Expectation of life = The average number of years of life a person of any age may be expected to live.
12. Life table death rate =
$$\frac{1,000,000*}{\text{Total number of years to be lived by cohort survivors}} \times 1,000$$

C. Migration

1. Crude In-migration rate =
$$\frac{\text{Total in-migrants}}{\text{Midyear population}} \times 1,000$$
2. Crude out-migration rate =
$$\frac{\text{Total out-migrants}}{\text{Midyear population}} \times 1,000$$
3. Net migration = In-migrants ----- Out migrants
4. Gross migration = In-migrants + Out-migrants
5. Net migration rate =
$$\frac{\text{In-migrants} \text{ ----- } \text{Out-migrants}}{\text{Midyear population}} \times 1,000$$
6. Gross migration rate =
$$\frac{\text{In-migrants} + \text{out-migrants}}{\text{Midyear population}} \times 1,000$$
7. Effectiveness of migration =
$$\frac{\text{Net migration}}{\text{Gross migration}}$$
8. Crude rate of emigration =
$$\frac{\text{Number of emigrants}}{\text{Midyear population of sending country}} \times 1,000$$
9. Crude rate of immigration =
$$\frac{\text{Number of immigrants}}{\text{Midyear population receiving country}} \times 1,000$$
10. Net International migration rate =
$$\frac{\text{Net international migration}}{\text{Midyear population}} \times 1,000$$

D. Others

1. Natural increase = Number of births -- Number of deaths

$$2. \text{ Rate of natural Increase} = \frac{\text{Total births} - \text{total deaths}}{\text{Midyear population}} \times 1,000$$

$$= \text{Crude birth rate} - \text{crude death rate}$$

$$3. \text{ Intrinsic (true) rate of natural increase} = \text{Intrinsic birth rate} - \text{Intrinsic death rate}$$

$$\text{Annual rate of population increase} = \text{Rate of natural increase} + \text{rate of net migration} + \text{net international migration rate.}$$

$$4. \text{ Sex ratio} = \frac{\text{Males}}{\text{Females}} \times 1,000$$

$$5. \text{ Youth dependency ratio} = \frac{\text{Persons under 15 years of age}}{\text{Persons 15-65}} \times 1,000$$

$$6. \text{ Aged dependency ratio} = \frac{\text{Persons over 65 years of age}}{\text{Persons 15-65}} \times 1,000$$

$$7. \text{ Total dependency ratio} = \frac{\text{Persons under 15} + \text{Persons over 65}}{\text{Persons 15-65}} \times 1,000$$

$$8. \text{ Crude marriage rate} = \frac{\text{Number of marriages within one year}}{\text{Midyear total population}} \times 1,000$$

$$9. \text{ Net marriage rate} = \frac{\text{Number of marriages within one year}}{\text{Number of single + widowed + divorced 15 years and over at midyear}} \times 1,000$$

(This rate should be computed separately for each sex and race)

$$10. \text{ First marriage rate} = \frac{\text{Number of first marriages to (Males) (Females) within one year}}{\text{Number of single (never married) (females) (Males) 15 years of age or over}} \times 1,000$$

$$11. \text{ Remarriage rate} = \frac{\text{Number of marriages of persons previously married}}{\text{Number of widowed + divorced}} \times 1,000$$

$$12. \text{ General marital dissolution rate} = \frac{\text{Number of marriages dissolved within one year}}{\text{Number of marriages spouse present, midyear}} \times 1,000$$

$$13. \text{ Crude divorce rate} = \frac{\text{Number of divorces during one year}}{\text{Midyear total population}} \times 1,000$$

$$14. \text{ General divorce rate (refined)} = \frac{\text{Number of divorces during the year}}{\text{Midyear number of married couples}} \times 1,000$$

18

15. General widowhood rate = $\frac{\text{Number of marriages dissolved by death of one spouse during the year}}{\text{Midyear number of married couples}} \times 1,000$
16. Index of aging = $\frac{\text{Number of persons 65 and over}}{\text{Number of persons under 15}} \times 1,000$
17. Inter-censal percent change = $\frac{\text{Later census count} - \text{earlier census count}}{\text{Earlier census count}} \times 1,000$
18. Effectiveness of contraceptives = $\frac{\text{Number of accidental pregnancies}}{\text{Total months used}} \times 1200^*$

(* 100 years, See Petersen p. 190)

Urban-Rural Sectors

Housing

1. Ratio of house units to households.
2. Measure of housing discrimination.
3. Absence of infestation (as rates).
4. Presence of adequate fire prevention materials (as rates).
5. Presence of urban renewal programs (as rates).
6. Average number of families per house (congestion).
7. Number of rooms per inhabitant.
8. Square meters of floor space per inhabitant.
9. Increase in low income housing.
10. Year of house build (age of housing).
11. Number of rooms in the house.
12. Cost of housing for a moderate income family of four.
13. Number of building permits for houses issued 1 year.
14. Characteristics of the housing inventory by tenure, value, rent, and substandard status, and race, income, and family size of occupants.
15. Net additions to the housing stock related to the change in consumer units.
16. Sales price of new one - family homes as a ratio to income.
17. Percentage of low income renters who pay 25% or more of their income for rent.
18. Rent/income ratios for white and negro renters.
19. Proportion of persons living in good neighborhoods, i.e., in areas not characterized by certain percentages of substandard dwellings.
20. Percentage of dwelling units sound, with all plumbing facilities.
21. Number of bathrooms per house and/or household.
22. Dwellings with piped water as percent of all dwellings.
23. Dwellings with electricity as percent of all dwellings.

Legal Justice

1. Delinquency index.
2. Crime index.
3. Number of divorces.
4. The average length of time between arrest and trial.
5. Time interval between arrest for serious crime and date of trial (excluding dismissals and guilty pleas), by race.

6. Proportion of arrestees for serious crime brought to trial with private or with court-assigned defender, by type of plea, by race.
7. Proportion of arrestees for serious crime accorded bail, by race.
8. Level of crime in prisons and other institutions.
9. Arrest and clearance rates.
10. Access to legal aid (as rates).

Urban Sector

Employment

1. Work injury rates in selected injuries.
2. Percentage of families and unrelated individuals who do not have a member in the labour force due to mental or physical disability by type of disability.
3. Degree of job satisfaction per 1,000 workers.
4. Percentage of people who feel that their job is important and vital and fits their talents and abilities per 1,000 workers.
5. Percentage distribution of labour force by status (i.e., employees, employers, etc.).
6. Ratio of male labour force in agriculture to total male labour force.
7. Minimum age eligibility for employment.
8. Ratio of females to males employed.
9. Proportion of total population in the labour force.
10. Employment status of non-institutionalized population 16 years and over
11. Labour force participation rate of married women under 35, by presence and age of children.
12. Number of men 20-64 working part year by major reason.
13. Number of mothers in the labour force with husband present and with children under 6 years per 1,000 mothers.
14. Unemployment rates of male high school dropouts and graduation for selected age groups.
15. Number of migratory workers per 1,000 workers and days worked at wage work per year by farm - non-farm.
16. Employment trends among major occupational categories.
17. Percentage of fulltime, year round workers who were heads of 4 person families with no other earners below BLS Budget.
18. Percentage of fulltime, year round workers with earnings below minimum wage - selected occupational groups and educational levels.
19. Estimated percentage of fulltime, year round workers with earnings below minimum wage - sex, race, family size.
20. Percentage of workers experiencing some unemployment, by longest job and by sex.
21. Percentage of families and unrelated individuals who have at least one member part-time in the labour force working less than 1575 hours/year.
22. Employment trends among major occupational categories 1950-1970 and 1980 (projected for a services economy with 3% unemployment).

82

23. Number of families who have 2 or more members employed fulltime in the labour force.
24. Percentage of families and unrelated individuals who have at least 1 member employed fulltime in the labour force: 35 hrs/week, 45 wks./year, 1575 hrs./year.
25. Ratio of females to males employed.
26. Minimum age ability for employed.
27. Average work week of families and individuals by occupation and industry.
28. Percentage of families and unrelated individuals receiving public assistance.
29. Ratio of male labour force in agriculture to total male labour force.
30. Percentage distribution of labour force by principal occupational categories.
31. Proportion of persons under 15 and over 65 in the labour force.
32. Percentage distribution of labour force by principal industrial categories.
33. Percentage distribution of labour force by status (i.e., employees, employers and workers).
34. Unemployment rates by race, age, sex, marital status, education, occupation, residential location and by industry last employed.
35. Number of people age 18-19, not high school graduate -- employed, unemployed, not in labour force.
36. Labour force participation by age, educational attainment, race, sex, occupation, marital status, income, head of household.
37. Percentage of labour force unemployed.
38. Number of manhours worked during reference period.
39. Income levels of families by intervals of \$500 who are receiving some form of public assistance.
40. Number of families who have 2 or more members employed fulltime in the labour force.
41. Percentage of families and unrelated individuals who have at least 1 member employed fulltime in the labour force but whose earnings are below the current poverty level.
42. Adult male labour force in agriculture as percentage of total male work force.

93

11. Education

1. Drop-out rates across educational institutions.
2. Measures of student alienation expressed as rates.
3. Scores on achievement tests.
4. Number of guidance counsellors per 1,000 students (disaggregatable across differing student classifications).
5. Enrollment rates over time, disaggregatable for groups, per 1,000.
6. Ratio teaching staff to school enrollment.
7. Number of people with at least 5 years of schooling per 1,000.
8. Ratio teachers with advanced degrees.
9. Adult literacy rates (over differing groups).
10. Illiteracy rates among currently enrolled students (over differing groups).
11. Participation rates in adult education activities (across differing programs; across differing groups).
12. Absenteeism/truancy index per 1,000.
13. Highest year of education attained by head of household per 1,000.
14. Student reading achievement scores per 1,000.
15. Percentage of students receiving Bachelor's degrees who were enrolled in degree credit programs (across differing groups).
16. Percentage of students receiving Master's degrees who were enrolled in degree credit programs (across differing groups).
17. Percentage of students receiving Ph.D. degrees who were enrolled in degree credit programs (across differing groups).
18. Percentage high school graduates attending college by educational ability and socio-economic status.
19. Ratio of number of students attending universities to those attending community college.
20. Percentage of persons 25-29 and 25 and over with 4 years of high school.
21. Percentage of persons 25-29 and 25 and over with less than 5 years of school.
22. Percentage of 18 year olds graduating from high school.
23. School retention rates from 5th grade on (for selected years).
24. Percentage of persons enrolled in school by age, sex, and race (and by other groups).
25. Number enrolled in elementary and secondary schools, public and private as a percentage of appropriate age range per 1,000.
26. Percentage of teachers possessing teaching certificates.

27. Number of schools with libraries per 1,000 schools.
28. Ratios of high school students in academic, vocational and technical programs (over groups).
29. Average number of persons per room (classroom); per 1,000 schools.
30. Potential earnings of graduates per 1,000 students.
31. Expenditures per pupil.
32. Hours of educational TV as a percentage of all television hours transmitted.
33. The percentage of total school expenditures that are used for instructional purposes (teachers' salaries, etc.) as compared to administration, maintenance and operation, interest on debt.
34. Percentage of qualified population taking advantage of educational opportunities.
35. Current expenditure on research in universities and colleges.
36. Number of college presidents, professors and instructors per 1,000 population.
37. Number of people in Post Graduate education.

85

Education cont.

Daily newspaper circulation per adult population
Radios and T.V.s per adult population

Communication

1. Telephones per adult population.
2. Passenger cars per total population.
3. Commercial vehicles per total population.
4. Circulation of written communications per adult population.

Urban Life

1. Percent population living in towns over 20,000 inhabitants.
2. Percent population living in towns over 40,000 inhabitants.

Impact Indicator

Environment

1. Percentage of people exposed to bothersome and hazardous pollution.
2. Park lands per capita - subjective feeling about adequacy of parks.
3. Subjective feeling about the beauty and character of the community.
4. Population in localities of 20,000 and over as percent of total population.
5. Percentage of population having facilities for proper disposal of excreta.
6. Public open space utility.
7. Miles of sidewalks
8. Data amount of litter: number of billboards and visible dumps and junkyards.
9. Amount of property damaged by pollution annually.
10. Garbage and solid waste disposal - pounds per capita per year.
11. No. of felled trees during the year in forests in use (per 1,000 acres of trees).
12. Nitrogen oxide emission rates from power plants, autos.
13. Sulfur oxide emission rates from combustions of power plants.
14. Aggregate measure of fuel used weighted by emission factors which express sulfur content of the fuel.
15. Number of petroleum, metal ore, non ferrous smelting refineries without pollution controls (per 100 refineries).
16. Air pollutants per set volume of air.
17. Measurements of sulfate and nitrate components of suspended particles taken by the National Air Sampling Network (as rates).
18. Air pollution - composite index of pollutants.
19. Air pollution - regional contamination index.
20. Air free of benzene soluble organic matter by geometric mean.
21. Air free of benzene soluble organic matter minimum concentration found 90% of time.
22. Air free of particular matter minimum concentration found 90% of time.
23. Percentage of population receiving protected water supply.
24. Fuel emission index.
25. Fuel emission density.
26. Estimated fuel emissions from power generation and industrial activity.
27. Nitrate concentration (average).
28. Average sulphate concentration.

29. Sulphur oxide and nitrogen oxide emissions from Industrial, Domestic and Commercial sources (as rates).
30. Energy output of various fuels (as rates).
31. Climatological records.
32. Significant changes in plant life - manmade deserts (as rates).
33. Sources of major pollutants.
34. Absolute levels of major pollutants; water, air, solid waste, noise.
35. The number and output during the year of fish hatcheries.
36. Composite index of pollutants.
37. Local pollution index and regional contamination index.
38. Biochemical oxygen demand (BOD) (pollution).
39. Amounts of solid wastes developed as by-products of society.
 1. inorganic chemical industry wastes
 2. organic chemical industry wastes
 3. non-ferrous metal industry wastes
 4. iron industry wastes
 5. power production industry wastes (fly ash)
 6. general public
 7. industries

