A METHODOLOGY FOR INDICATORS OF SOCIAL DEVELOPMENT

Report 3: Toward an Integrated Social Information System

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ABSTRACT

A preliminary outline of methodological considerations in the development of an integrated social information system is developed. A list of key areas of social concern for developing countries (LDCs) is outlined including the five areas of development with which the AID/ISU social indicator project will specifically deal: health, education, nutrition, agriculture, and population. The methodology is to be developed in such a way as to be useful for policy-makers and planners in LDCs. Indicators of social development are conceived as components in a feedback system designed to assist in decision making. A central theme of this project is that the methodology developed should be capable of monitoring access to and benefit from the goods, services, and values of society which different groups experience. The use of existing secondary data sources such as censuses, registers of vital events, institutional records and surveys, as well as the improvement of these in their coverage, content, and procedures of data assembly, collation, and dissemination of results is viewed as the most promising immediate departure. Relevant cross classifications and control variables (sex, age, community type, ethnicity and socioeconomic status) and the rates and ratios specific to them greatly increase the information value of many data series in use in allowing an assessment of distribution. Combining data from different sources also increases the information value over that of any one source. Gaps in existing data are likely to be filled most economically by use of survey techniques based on probability samples.

PREFACE

A. I.S.U.-A.I.D. PROJECT OBJECTIVE

The three-year contract (AID/csd-3642) between the Agency for International Development (A.I.D.) and Iowa State University (I.S.U.) has as its major objective the development of a methodology which may be used by developing countries to construct indicators of social development for monitoring the progress of social development as each country defines it.

B. Purpose of Report 3

This report (Report 3) presents the results of one phase of the work designed to develop this methodology, and is a revision of the initial methodological proposal specified in our first report (Wilcox, et al., Report 1, 1972). Our concern has been to expand upon and make more concrete the methods by which an integrated set of indicators of social development may be generated by LDCs to monitor and direct their progress. This phase of the work also includes the development of sectors of concern to A.I.D. and the LDCs. The first sectoral framework is a part of our current activities.

C. Scope of I.S.U. Project Staff Activities

Iowa State University personnel undertook several trips to confer with operational personnel in A.I.D., the United Nations Statistical Commission, the United Nations Educational, Science and Cultural Organization, and with Canadian social indicator proponents and several European social indicator groups.

The specific activities carried out appear in the Appendix.

D. Acknowledgements

The I.S.U. Project Staff expresses its appreciation to the various A.I.D. personnel with whom they had the opportunity to interact during the preparation of Report 3. We extend our gratitude also to our secretaries, Cathy Hendrick and Marcie Wassom, for their most enthusiastic contribution to these reports.

SUMMARY

A basic deficiency in discussions throughout the past decade on how to improve social information systems has been the lack of explicit attempts to confront the operational problems. This has been particularly characteristic of the advocacy by researchers of social indicators, disaggregated (or micro) data, social accounts, and national data banks.

Report 3 addresses some of the operational questions that developers of a methodology for use by LDCs must confront if they are to help in the construction of an integrated set of indicators of social development.

A. Substantive Focus of the Methodology

The focus of our methodology is on the development problems or barriers most LDCs face. In Part 2 we outline what we believe to represent the areas of social concern for LDCs. The list we develop is more extensive than A.I.D.'s list of "Key Problem Areas" and many of the areas we list may not apply to all LDCs. Our future research efforts will focus mainly on five of A.I.D.'s key problem areas of development: health, nutrition, agriculture, education, and population. However, this focus should not limit the development of indicators of social development, and it is hoped our work on the five areas of concern will provide the basis for an expansion to include other areas with which LDCs might be concerned, such as environmental conditions, housing, income, and social welfare.

B. Purposes the Methodology Will Serve

The methodology is for LDC usage; more specifically, for policymakers and development planners in the LDCs. Indicators of social development are conceived as components and parameters in a feedback system designed to assist the decision making involved in social development. The feedback system would,

in turn, provide the monitoring and predicting of social development over time; the assessing of current and proposed policies, the determination of the secondary consequences (both negative and positive) of social development; and the human response to the effects of social development. We do not elaborate greatly on this methodological question here, because Report 2 (Wilcox, et al. 1973) and Report 1 (Wilcox, et al., 1972) were primarily concerned with that question. We will, however, present in Part 3 the kinds of information policy-makers require for planning and assessing development within each area of social concern.

C. Types of Information

The information system devised should be capable of producing a wide variety of objective statistical data. In theory, an efficient statistical system will produce for an area of social concern regular and timely information representative of all six indicator types outlined by Wilcox, et al. (1973). These indicator types include: output components; output distribution components; policy instrument components; nonmanipulatable descriptive components; impact components; and response components.

Each sector with which social concerns are identified is considered separately. First, data relating to the inputs for a sector are outlined and identified. The sector itself is analyzed into its constituent parts and an attempt made to explicate how these components interact with each other to produce outputs. Measures of how such outputs are distributed to consumers or how they are made use of by other sectors and how the performance of the sector measures up to its implicit and explicit objectives is sought.

A central theme of our work is that of determining access to and benefit from the goods, services, and values of society. A comprehensive range of sociodemographic data is necessary in order to analyze such questions. In this report the educational sector for an LDC is used illustratively to outline these data requirements more fully.

D. Measurement Processes

Social indicator work in the U.S. and Europe suggests that sample surveys using subjective measures are an important data source for quality of life measures. However, since our focus of attention in LDCs is more on survival needs, objective measurements are more likely to prove useful and provide the bulk of required information in the immediate future.

A major source of social and economic data for most countries is the census of population. Generally speaking, this source produces a large body of basic socioeconomic data with good geographic detail and quality. However, in relation to the requirements for current information regarding social conditions and trends, the census is not generally directed by theoretical concerns. Therefore, the amount of information yielded on policy and research related areas is meager and the statistics, when assembled, are usually made available in a form that do not lend themselves to analysis or the development of explanatory models of social and economic behavior.

The use of existing secondary data sources such as censuses, registers of vital events, and surveys, as well as the improvement of these in their coverage, content, and procedures of data assembly, collation and dissemination of results, appears to provide the most promising immediate departure. Existing monitoring apparatuses can thus dictate the levels of planning to be attempted in the short run, but the capabilities of censuses, registers, and surveys will continue to be developed and refined in order to facilitate more comprehensive and timely planning.

To fill existing data gaps, we will emphasize most the use of probability sampling in conjunction with reliable statistical frames. From the policymaking perspective the relatively lower cost of surveys permits them to be conducted with greater frequency so their design, content, and results have high potential in matching information demand with policy priorities.

E. Information Collation and Dissemination

The manner of storage of social information and its accessibility is highly variable both within and across societies. Where a centralized statistical system exists, the process of information production from survey design to published or unpublished data will be more accessible to those who might need it and the data will be much more streamlined. The conservation of at least a sample of the raw data (something akin to the Public Use Sample in the U.S.) is much more important in its information contribution and analytical capability than data already tabulated or structured into categories which cannot afterwards be decomposed and reconstituted.

The publication of well-written, easily understood statistical compendia and reports is a minimum requirement of an information system.

F. Increasing the Usefulness of This Information

It is relatively easy to outline the qualities of an ideal information system but even in the more developed countries these qualities are rarely attained. The U.N. has developed a number of handbooks setting down principles and recommendations for the design of household surveys, censuses of population and housing, vital statistics records, and continuing population registers. The U.S. Bureau of the Census manuals have a guidance and evaluative function for data collecting procedures. Whenever such standards are not followed, the departures taken should be explained.

Our concern with the limitations of the usefulness of aggregate national statistics has led us to examine and explore the possibilities of systematic analysis of within-nation variations and trends, not just at the individual or household level but also at the level of geographic areas, communities, and groups identifiable by way of ethnicity, religion, sex, age, or other relevant characteristics.

Relevant cross classification and control variables (sex, age, community type, ethnicity, socioeconomic status) and the rates and ratios specific to them would increase greatly the information value of many of the data sources in use. For example, separate data on males and females are needed in the planning of community institutions and services. Similarly, age data are fundamental to the planning of education, teacher training, health services, housing, and the production and distribution of many other goods and services.

The value of data from any one source can be increased by combining them with data from other sources. For example, combining census data and vital statistics data produces vital rates, life tables, and population estimates and projections. Census-based data constitute a very important denominator in calculating rates and ratios, whether the numerator be data from vital statistics or such institutional records as those from the education or health sectors.

It may be possible also to match data on individuals, households, or groups and in so doing increase the number of characteristics to be considered simultaneously on these units of analysis. The sampling units provide a common denominator around which surveys might be grouped in order to increase information coverage while at the same time decreasing the number of studies required.

Other means of increasing the information value of data sets are the computation of rates and ratios and other simple descriptive indicators, composites, and synthetic indicators together with such modelling techniques as cohort analysis, life tables, path analysis, and dynamic programming.

PART 1: DEVELOPMENT OF METHODOLOGY

A. Methodological Concerns

Broadly speaking, a methodology consists of the methods by which we form concepts, hypotheses, indicators, and models; gather and analyze data; and provide explanations and predictions (Kaplan, 1964:23). Methodology is involved with both the conceptual-theoretical and the empirical-measurement aspects of research. If the methodology is to be complete in reference to the research problems of which it is a part, it must successfully deal with several representative strategic questions.

1. What is the substantive focus of a methodology capable of assisting LDCs to develop a set of integrated social indicators?
2. For whom and what purposes in the LDC will the methodology be designed to serve?
3. What types of information are the users likely to require in order to carry out their objectives?
4. Through what measurement processes can this information be most appropriately obtained?
5. How might the information be most usefully collated and disseminated?
6. What additional methods and procedures may be applied to available data in order to optimize its information value?

Furthermore, the introduction of a methodology into an applied setting, such as LDC planning and decision-making must take into account the political realities and the budgetory resources of the LDCs.

Report 3 is largely a response to these questions and is a statement of progress in the process of developing our proposed methodology.

B. A Rationale

1. Substantive Focus

Social indicators, by definition, deal with empirical social phenomena. Selection of phenomena is not a random process, but must be guided by a conceptual framework. Those responsible for measurement or data collection must

be given direction on what phenomena are important to measure. A considerable body of social indicator literature directs its concern toward ways of identifying those phenomena with which social indicators should deal.

2. Purpose

Applied scientists or policymakers have data requirements differing from those of pure scientists. In the former case, the interest is more in unstructured data sources which lend themselves to the analysis of questions of a more abstract and theoretical nature. The applied scientist, on the other hand, will tend to focus his concern on the concrete, substantive issues inherent in social indicator research. In the process he is likely to provide solutions to the social problems policymakers are facing.

3. Information Types

A taxonomy of six indicator types was developed by I.S.U. because we were cognizant of the need for a variety of information. To monitor trends, direct policy, determine primary and secondary consequences, as well as determine human responses to change, we have developed a broad conceptualization of societal monitoring. In many cases (cited in the literature on social development), the scope of the information need is limited to input-output models. Other models are concerned with more than simply input-output relations; they also attempt to include feedback relations.

4. Measurement

Measurement strategies vary to a high degree, and some techniques appear more useful in certain contexts than in others. The researcher must choose those techniques that will derive the kinds of data he needs within the technical and economic limitations imposed on him.

Once the researcher identifies the population he wishes to study and lays our his approach to the research problem, he must determine whether he wants to make measurements on the entire population or only a sample. He must then

decide whether to make objective measurements (observed behavior of persons) or subjective measurements (the feelings and opinions of persons). Finally he must decide whether to collect his own data or use data collected by other researchers, administrative bodies, or census data to carry out his analysis. He may choose also to select data from a variety of existing or secondary data sources, adding new material to the data pool through his own collection.

In deciding what procedures to adopt, the scientist must determine which techniques are the most economical and efficient, and furthermore, which are within his technical capabilities.

5. Collation and Dissemination

Stored data represent an information potential. The broader the scope of the data and the freer the access to them, the greater is their information potential. The ways in which data are collated or summarized and then stored may place great limitations on the information which may then be derived.

The more technical the means by which data are collated and stored, the more difficult it is for those without the proper technical background to make use of them. This could eliminate a large number of potential users, thus reducing the utility of the data. Beyond the aspect of technical accessibility, there is the question of political accessibility, or the availability of the data to representatives of opposition political parties, to academia, to the mass media, or to the general public. This is a question, however, beyond the scope of scientific inquiry, and it must be resolved by each LDC according to its values and political needs.

6. Increased Information Value

Data can be manipulated in many ways to derive many types of information. If an LDC were to base all of its policymaking, planning, and assessing of policy on an empirically grounded approach, its data or information requirement

would be quite large. As interest grows in using data as a part of the decision-making process, the need to draw from a given set of data its maximum information potential becomes critical.

C. An Operational, Feasible, and Society-Specific Methodology

Operational means usable by the persons for which the methodology is developed. The degree of scientific training of LDC policymakers varies widely. Often their training is in fields that deal little with information feedback systems. Therefore, the methodology, at least in its early stages of adoption, must be simple enough for both scientists and nonscientists to apply without the requirement of great additional technical training.

Feasible means acceptable in terms of the political process of which the policymaking and planning are a part and interms of the economic costs involved. Certain types of information are politically unacceptable in some countries. In some societies, personal privacy is a strong enough issue to prevent the collection of certain types of personal data, while in others, the data if made public would prove embarrassing to the political order.

The questions of feasibility and operationability cannot be addressed generally but instead must be answered by each country in terms of its needs and capabilities. Our methodology attempts generalizability under the recognition that each nation will want to work within the overall framework to determine a set of relevant social indicators that are both operational and feasible.

We look upon social development as "the continuing process whereby the people of a nation learn how to use effectively the available human and material resources in order to upgrade the capacity of the societies' institutions to more equitably fulfill the viability needs and social values of persons throughout the society" (Wilcox, et al., 1973:16). Social development is a normative

process in which the same persons responsible for initiating and implementing public policy set the goals of development. Planners determine both the kind of development (whether a strong emphasis on industrialization or a weighty concern for rural development), and the desirable level of achievement of these goals over specific time periods.

Society-specific means that as social development varies across nations, so must indicators if they are to generate useful knowledge for the feedback system. In terms of the methodological question, we wish to measure social development, but social development so varies across societies that the problems facing a given nation differ (if not in type then in degree), and further, the values and thus the goals of each society differ. Though we wish ultimately to monitor social development via a set of social indicators, the solution is not simply an enumeration of potential indicators into a long list to be presented to LDCs for immediate use. Our methodology must provide the breadth and the capability necessary to aid any LDC to put together its own set of indicators based on <u>its</u> values and goals and the problems <u>it</u> faces.

Insistence on the differences among LDCs does not ignore the fact that important commonalities also exist among them. These commonalities are more generalized than are the differences, allowing the methodology then to provide the LDCs with a more unified perspective on social development. The commonalities we speak of are those problems or barriers generally recognized by scientists and practitioners in recent years. These problems or "areas of social concern" are a unifying means around which the methodology can be organized. Thus the methodology will deal with such issues as health, agriculture, education, population, and nutrition.

D. A Set of Social Indicators

Underlying the creation of this project is the desire for a systems model of society in which indicators make up the components and parameters. We have

argued elsewhere that such a model is not attainable in the near future, but that our work may make some contribution towards its specification (Wilcox, et al., 1973:9). In the meantime, we have set our sights on the goal of an integrated set of indicators of social development or a group of indicators from various areas of social concern which fit together in a meaningful fashion. We can, however, only accomplish this goal through a recognition of the limited resources LDCs have to construct a set of indicators. What is required then is a methodological approach which is simple enough to be useful and understandable; is potentially capable of being made more accurate and sophisticated; and is economical to initiate and use, and is politically acceptable.

LDCs already collect, store, and use a wide variety of data in the course of indigenous governmental and university activities. These data cover most of the areas of concern to LDCs and generally are a resource whose full potential has yet to be tapped. In order to meet the requirements of economy and initial simplicity and to aid LDCs to more fully realize the potential of a resource they have in hand, our approach centers on the use of existing, or what are called secondary data sources within the LDCs themselves. In doing so, we will examine the way in which LDCs collect and assemble data into indicators.

PART 2: AREAS OF SOCIAL CONCERN

A. Theoretical Concerns

The discernment of a methodology requires a theoretical content, without which we cannot answer the questions of what and how to measure.

A major theoretical underpinning of Reports 1 and 2 is that the maintenance of human needs is the most fundamental function that society serves, and that social development is the increased capacity of society to meet those needs. Basic human needs continue to be of central concern, and we have further noted that other researchers and development practitioners have voiced a similar concern for human viability.

1. Social Development as Human Need Maintenance

A review of a number of publications by the Agency for International Development; United Nations Economic Council; Organization for Economic Co-operation and Development; The Development Academy of the Phillipines; allowed us to develop summary lists of development issues. The summary lists are lists of problems encountered either directly or indirectly in the meeting of human needs (see Table 2.1 for examples). A general concern can be noted for providing food (agriculture and nutrition); healthful conditions (health and environment); opportunities (employment, education, social mobility, and distribution); and for limiting the numbers of people that must compete for scarce resources witnin a society (population).

Obviously the majority of the needs are concerned with the basic, physical aspects of man's existence, although concerns for such other social aspects as "social mobility," "social opportunity," "individual development," "development of solidarity" or the psychological aspects of "civil rights and participation," "personal safety and justice" and "individual development through learning,"

are also undeniably important, albeit more difficult to deal with. Furthermore, we believe these lists are incomplete in that the "areas of social concern" should include the continued ability of society to reinforce the values held by its members. Thus we believe concerns ought to be included for "the quantity and quality of interaction," "the nature of primary group relations," or "the ability to exercise religious norms," and the like.

Unfortunately, such concerns are not only difficult to grasp as tangible problems, but many of the social, psychological, and cultural needs vary across societies. Thus the specification of a list of these broader concerns can only be elaborated for a specific society by those with intimate knowledge of its social structure and culture. As our familiarity with particular LDCs grows, we hope, with the help of indigenous scholars and officials, to draw up a broader list of concerns than is presented in this report. An expanded list in the final methodology will provide a hypothetical example for other LDCs. Each LDC will, however, have to add to our basic listing if it needs a fuller elaboration of concerns.

2. Basic Social Concerns of Less Developed Countries

Our review of the lists presented in Table 2.1, as well as the writings of various social scientists and biologists (e.g., Corning, 1971; Maslow, 1954; Malinowski, 1941; Cannon, 1939), resulted in a list which we believe directly or indirectly includes most of those concerns contained in the literature we reviewed. The criteria used in developing this list was to include all those concerns which contribute either directly or indirectly to human viability. Our listing is contained in Table 2.2 and is similar to Richard Stone's in his work for the United Nations Economic and Social Council. A major difference is our inclusion of agriculture as an area of social concern. Curiously, with the exception of the Agency for International Development list, the other lists we examined neglected food and nutrition as a critical human need. Agriculture appears to us to be basic

Table 2.1. Lists of Social Concerns as Identified by Various Agencies

The Social Indicator Project, Development Academy of the Philippines (1973) "Social Concerns"

1. Health: Morbidity and mortality.

2. Learning: Acquisition and maintenance, either formally or informally, of knowledge, skills, and values.

3. Income and Consumption: Individual command over goods and services. The quality and range of choice among goods and services. Existence of hazardous items.

4. Employment: Opportunities for work. Compensation broadly-defined, for work. The quality of working life: hazards; boredom; allowance for leisure.

5. Wealth and Productive Capital: Provision for future income, consumption and employment; includes natural resources.

6. Environment: Pollution; urban crowding; state of transportation; nature as an increasingly costly consumption item.

7. Public Safety and Justice: Legal and illegal violence, victimization, and harassment. The Bill of Rights. Fairness and the humanity of justice.

8. Political and Social Opportunity: Opportunities for public decision-making (community, institutions, government).

Social and Economic Projects Division National Economic and Social Development Board, Government of Thailand (1973) "Planning Concerns

1. Health
2. Family Planning
3. Nutrition
4. Public Utilities
5. Social Welfare
   a. Housing
   b. Public Welfare
   c. Minority Groups and Hill Tribes
   d. Labor
   e. Community Development
   f. Land Re-Settlement
   g. Art
   h. Religion

The Baralochi Foundation, Argentina (1972)

"Human Necessities"

Biological	I	Individual (food, clothing)
	II	Material Habitat (housing, services, etc.)
	III	Physical Exercise
Protective	IV	Medicine (preventive, mental, physical)
	V	Security (internal, external, etc.)
	VI	Communication and transportation
Intellectual	VII	Education (formal and informal)
	VIII	Mental Habitat (information, mass communication, etc.)
	IX	Mental Exercise

Table 2.1. (cont.)

Ecole Nationale D'Administration* (1970)

"Les Indicateurs Sociaux"

1. Life expectancy
2. Protection of health
3. Evolution of the family
4. Women's participation
5. Condition of the aged
6. Behavior towards marginals
7. Evolution of employment
8. Role of education
9. Cultural development
10. Adaptation to change
11. Social mobility
12. Openness of society to outside world
13. Distribution of natural resources
14. Utilization of income
15. Evolution of assets
16. Urban development
17. Housing
18. Organization of rural space
19. Development of solidarity
20. Time utilization

Council of Europe* (1971)

"Commission on Social Questions and Health Project on the Elaboration of a Social Report"

1. Health and demography
2. Distribution of resources and income
3. Civil rights and participation
4. Employment and education
5. Culture
6. Housing
7. Welfare
8. Criminality

The Agency for International Development

"Key Problem Area Coverage" (1971)

1. Agricultural and rural development
2. Population
3. Health
4. Education and manpower training
5. Industry, transportation, and urban development
6. Administration
7. Science and technology

The Social Indicator Development Program, Organization for Economic Co-operation and Development (1973)

"Lists of Social Concern Common to Most OECD Countries"

1. Health
2. Individual development through learning
3. Employment and quality of working life
4. Time and leisure
5. Command over goods and services
6. Physical environment
7. Personal safety and administration of justice
8. Social opportunity and inequality

* Source: Girardeau, Catherine, 1972(b): 190-191.

Table 2.2. Basic Social Concerns Confronting Nations

1. Population
   a. Size and growth of population
   b. Density and distribution of population (urbanization, de-population)
2. Environmental quality and natural resources
3. Agriculture
   a. Food
   b. Nutrition
4. Health and medical care
5. Occupation and employment
6. Education
7. Levels of consumption and its growth
8. Housing and shelter
9. Social security and welfare service
10. Public order and safety
11. Social mobility
12. Family and primary group relations
13. Time and leisure
14. Distribution of well-being
15. Other relevant concerns by particular society (including concerns for socio-cultural aspects).

to any list of concerns, even for those developed solely for the Western nations. We have included also a concern for the culture and social psychology that is a part of the environment in which efforts to survive must take place. Finally, a distribution of the outcomes from all other social concerns has been included in order to examine the well-being of people within a society.

It should be noted also that we have avoided the issue of ordering these concerns in terms of their importance for man's survival. This ordering could be carried out for portions of the list, but we were unsuccessful in our attempts to place in order "distribution of well-being," "family and primary groups relations," and "social mobility." It seems these concerns are all equally important.

B. Basic Social Concerns and Their Interrelationships

Each social concern listed is important as it stands but the criticality for human existence grows even more apparent as the interrelationships are examined.

These interrelationships can be demonstrated in several ways. Outputs from various sectors serve as inputs into others. Personnel trained in the educational sector serve as inputs into employment-occupation; "while the availability of gainful employment for those who desire it is a fundamental concern in itself, it is also an input into (or a source of) personal command over goods and services" (Organization for Economic Co-operation and Development, 1973:18). Also, the level of achievement in one sector area affects levels of achievement in others, and weaknesses or breakdowns in an area cause similar disturbances in the others.

1. Population. Population is now regarded as highly fundamental for the development of any nation. Human survival depends upon the ability of society to process and distribute scarce resources. The greater the number of people to

be provided for, the scarcer the resources become, and the more difficult it becomes, even with increases in technology, to provide for basic needs. The growth of population over time forces the diverting of resources from an expansion of capacity over to providing new members of the population with the current levels of resources enjoyed by the existing population (United Nations, Economic and Social Council, 1972:12-13). Thus the relationship between population size and growth to the environmental carry capacity (or amount of resources available from the environment) makes population problems exceedingly critical.

Population density and distribution affect the environment, the sociopsychological makeup of people, legal justice, and health. High concentrations of population tax the environmental carrying capacity, and cause social disruption as well (Wilcox, et al., 1973:53). High population densities are a factor in the ease by which certain communicable diseases are spread.

2. Environment Quality and Natural Resources. Aside from the environmental problems of industrialization, the LDCs are generally confronted by water pollution caused by human-animal waste materials. Such unsanitary conditions impinge on the general level of health.

The natural resources of a country represent in great part what that country must work with. However, "Growth in human members and in material living standards leads to increased production which, given the technologies that are nowadays employed, result in rapid depletion of many natural resources and to the production of numerous pollutants which are not only disagreeable and dangerous but also in some cases, on a scale which cannot be absorbed and dissipated by the natural world" (United Nations Economic and Social Council, 1972:15). Thus, population growth, rising expectations, and new technologies all strain the quality of the environment and reduce the resource base on which people depend.

3. Agriculture. Agriculture is the basic means by which raw materials are turned into the protein, vitamins, minerals, fats, and the other elements of

intake necessary to fuel and otherwise care for the human body. Agricultural production is tied to development because often it is the agricultural sector that not only provides for new and existing population member's needs, but also is expected to provide both the labor and capital for the creation of the industrial sector (Mellor, 1966:84-85; U.S. Agency for International Development, 1971:2).

The nutritional value of food in terms of the quantity of vitamins, proteins, carbohydrates, and other nutrients found in foods varies highly. Nutrition is tied to productivity in the agricultural and industrial sectors, and to classroom performance in the educational sector. Even in Western nations where the quantity of food is less of a problem, inadequate food quality continues to vex certain knowledgeable segments of the population.

4. Health and Medical Care. Health programs contribute greatly to the satisfaction of primary human needs (World Health Organization, 1973:9; The Agency for International Development, 1971:5). Most people are concerned with longevity and the quality of that longevity. Long life with freedom from illness and disability along with freedom from the fear of being ill ranks high among human concerns (Hall, 1971:44-45). Health has a high impact on a number of other sectors also. For instance, the level of health attained by a nation affects the family, the economy, agriculture, education, and the like. Illness reduces productivity in agriculture and industry, limits parents in their performance of parental duties, and reduces classroom attentiveness and attendance. Successful programs in health, such as antimalarial programs, have been shown to raise productivity and school attendance (World Health Organization, 1973:39-40).

5. Occupation and Employment. In most societies at least some portion of such vital necessities of life as food, shelter, and clothing are obtained through an exchange of labor. To subsist, some employment is required, and

movements beyond the subsistence level require either a greater quantity of labor in the same occupation or an occupation that permits a greater command over goods and services. Therefore, the concepts of availability of differing occupations and the number of persons the economy can gainfully employ are important where human need maintenance is a major concern.

The occupational structure and its related income structure affect agricultural productivity. Without the proper price incentives for crops, production ". . .levels are too low to satisfy the nutritional needs of growing populations, too low to allow the agricultural sector to contribute substantially to overall economic growth and too low to offer hope for an improved future to the millions of subsistence farmers saddled with present inequities" (Cox, 1972:2).

6. Education. Obtaining an education does not directly fulfill a survival need, but it greatly contributes to an individual's capability to meet such needs. Through education, people derive the skills, knowledge, and status by which occupational opportunities may become more readily available. Education is thus tied to occupation, as well as to potentialities for social mobility and participation. The status gained through educational attainment is widely recognized as a means of upward mobility, and broad political and social participation is thought to be possible only after a certain level of education has been reached (Lerner, 1958). Furthermore, knowledge, attitudes, and personal behavior can be shaped by classroom experiences, and thus health, nutritional, and agricultural practices are open to influence. Increasingly aware of this potentiality, lessons dealing with cleanliness, balanced diets, and the adoption of new farm techniques have been included in some LDC school curriculums.

7. Levels of Consumption. To survive, people require a certain level of physical inputs such as food, water, shelter, and clothing. Other material goods are desired for the status they bring. Thus, radios,

bicycles, motorbikes, more expensive clothing, and jewelry are often sought. Most of these goods are obtainable through transactions with a market. Therefore, the ability of an individual to attain the level of consumption he desires from the market is an important factor in human survival.

Levels of consumption depend upon the "quality, range of choice and accessibility of private and public goods and services" (Organization for Economic Co-operation and Development, 1973:16), which in turn depend upon the state of the economy and the openness of the social class structure.

8. Housing, Shelter, and Clothing. Man must be protected in clement and inclement weather conditions. The quality of the protective environment men have constructed for themselves, however, varies. The provision of adequate housing, shelter, and clothing therefore is an area of social concern.

In many nations the demand for housing has even outstripped the population growth rate, this demand being caused by earlier marriages and greater economic independence of both young and old persons (United Nations, Economic and Social Council, 1972:118). Housing conditions are also linked to other factors. Demand, as well as supply, or the ability of industry or government to produce housing also enter in.

9. Social Security and Welfare Service. Most societies have some means by which the elderly, disabled, and the unemployed are cared for during their period of need. In many societies, particularly the LDCs, the family has been the institution primarily responsible for provision of social security and welfare. As societies modernize, the family becomes less capable of providing this kind of aid, and furthermore people begin to expect greater quantities and varieties of help. Social scientists expect some new institution to appear as the family becomes increasingly less able to function and the demand for such help increases. In many societies the government creates specialized agencies to begin to cope with this need.

10. Public Order and Safety. Society must provide a stable, regularized environment in which people may function. Order and safety are seen as so vital by some that they are given the status of a basic human need (Mallmann, 1973). For society to continue as a going concern, it must protect its people from "violence, victimization, and harassment" (Organization for Economic Co-operation and Development, 1973:25). The stability of society is necessary for a stable economy as well as the continued harmonious functioning of the institutions that provide health, agricultural, and educational outputs (Hall, 1971:63).

11. Social Mobility. ". . .everyone has his place in a society and being able to identify one's place is important both to mental health and to the ability to function as an effective contributor tothe ongoing process of the society" (Hall, 1971:54-55). As societies develop, new positions in the social structure are created. Bureaucracy grows; the need for technicians grows; and skilled labor and professionals are in greater demand (Eisenstadt, 1966:4-6). Along with the appearance of new opportunities of higher status is an increasing awareness that individual social mobility is both desirable and possible.

Increased pressure for better development opportunities must be met by society in order to avoid stagnation and disruption. The desire for a better life is reflected in the migration of rural people to the cities, yet too great a migration puts excessive strain on the available services in the city while removing vital labor supplies from the agricultural sector. A developing society must be concerned with the provision of desirable occupations in all sectors of the economy. Some control must be placed also on the educational system in order to avoid an oversupply of highly educated graduates with no desirable jobs available. A pool of disgruntled elite often contributes to political instability (Kahin, 1964:193).

12. Family and Other Primary Group Relationships. Primary groups, families and friendships mediate between the individual and society. Such groups

provide individual protection as well as a context in which most of an individual's socialization occurs. Persons born into a society cannot become participating, contributing members until they have reached a certain level of physical and social maturity. Children are thus dependent upon their families to meet their physical needs until such time as they are capable of providing for themselves. Furthermore, membership in a society requires knowledge of the language as well as the rules and regulations concerning everyday behavior. Learning how to act, to "get along," and to subordinate individual interests to the interests of the group is derived from participation in primary groups (Cooley, 1909:23).

The functions of primary groups have evolved over time as a part of the general process of humans coping with their environment. While many of the family's original functions, such as serving as the primary economic unit of society, have been taken over by other institutions, primary groups continue to play an important role in the socialization of new members of society.

13. Time and Leisure. Time is the rhythmic organization of social life. People tend to divide up their day into regularized time blocks, expending greater amounts of time for those activities most necessary to meet their basic needs.

Further, an undefined "balance" between work activities and leisure has been linked to physical and mental health. Thus individual activities not only should reflect this balance, but society itself must provide the opportunities and social settings for leisure activities.

Time-budget studies have been proposed to look for changes in the way people allocate portions of time to activities. Such studies are useful in the determination of basic societal change. For instance, a reduction in activities directly related to sustenance and an increase in activities which are at best only indirectly related to basic needs is a mark of development, at least by Western standards.

14. Distribution of Well-Being. In Report 2 (Wilcox, et al., 1973) we stressed the need to monitor societal change. We defined society as a system of interrelated institutions and groups and, therefore, while we are interested in change in the system as a whole, it is more meaningful to look at change in the subsystems and subsystem interrelationships. The challenge is to be able to consider changes in subsystems, keeping in mind that a change in one subsystem usually brings about changes in the others. Therefore, the monitoring of change calls for a simultaneous consideration of all the subsystems together.

In the study of well-being, researchers tend to disregard the well-being of people as they make up the subsystems and instead measure well-being as an aggregate at county, province, state, and nation-state levels. These measures, while useful, tend to disguise what happens to relevant groups in society. Other less extreme aggregations are required also if we are to determine the distribution of life chances or well-being. For example, income, consumption, and savings are considered by many economists to be critical for development in the economic sector of society (Schultz, 1964). However, interest is growing in providing a greater equity in the distribution of goods and services and income. "Though concerned with the economic development of the LDCs as measured by GNP and other economic indicators, A.I.D. is even more concerned with the human dimension--the distribution of the economic benefits of development, the quality of life enjoyed by the people, their social and political development, etc., none of which GNP itself measures" (Green and Hirsch, 1972:1). Rapid economic growth is not synonymous with the elimination of poverty and in fact it may widen income differentials rather than narrow them.

Such distributional factors are related to social mobility--the greater the equity in distribution, the more open the social class structure. Also, the greater the equity, the greater the number of persons within a nation that

survives adequately--that is, they have some education, adequate amounts of food and nourishment, and are employed.

The relevant distributional categories are many and they will vary somewhat with the conditions found in each particular society. Potential categories are:

1. Distribution by community;
2. Distribution by rural-urban distinctions;
3. Distribution by household;
4. Distribution by ethnicity;
5. Distribution by religious affiliation;
6. Distribution by social class
   - income group;
   - occupational category;
   - educational attainment;
7. Distribution by age category;
8. Distribution by sex;
9. Distribution over time.

Other obvious breakdowns by region, class, and family and marital status are worthy of consideration also. Those categories most meaningful in the determination of the distribution of human welfare will be best determined by the LDCs themselves as they attempt to implement the methodology.

15. Other Relevant Concerns by Particular Societies. This concern actually is envisioned to include potentially a large number of social concerns. The actual listing of such concerns (which may prove to be many) will have to be carried out by each LDC and the length of the list will depend upon the interest of the LDC in determining what other social needs and values, in addition to basic vital needs, are worth monitoring.

PART 3: WHAT SOCIAL PHENOMENA SHOULD BE MEASURED?

A. Information for Whom and for What Purposes?

The prime users of an integrated set of social indicators for LDCs are policymakers and planners. Therefore, the information which the methodology seeks to generate should be of a kind thought most useful for monitoring and planning. Such areas are subsumed under various goal-setting sectors through which resources are allocated and from which developmental outputs coinciding with explicit or implicit sector goals are sought. The diagnostic and prognostic value of quantitative data about social conditions rests ultimately on how well we are able to fit individual pieces of information into a comprehensive system representing society and its functioning.

1. From Data to Information for Policymaking and Planning

Data become information as a result of a process whereby they are transformed into a condition that meets the requirements of various categories of consumers. Vickers (1970:19), for example, points out that "information implies a recipient who is informed and thus directs inquiry to the recipients' means of interpretation which alone gives the information meaning and determines what meaning it should have."

A sector information system is made up of many interrelated structures and operations. Each contribute to the transformation of data into information for use by different consumers. The structures which perform key functions in the overall sectoral system are joined principally by information inputs and outputs. The processed information at one stage becomes an information input into the next stage and so data eventually become useful in making operational decisions (Nieto-Ostolaza, 1973:459). At each stage are feedback mechanisms in operation as well as individual perceptions.

Data collection by a country's social statistics systems consists in part of reducing the vast amount of directly and indirectly observable social phenomena to a manageable amount of useful information. This information can then be communicated and used for other sets of functions of the system; for example, research, advising, and decision making. Such reduction may be in terms of quantity, summary statistics, or subjecting various complex social structures and processes to empirical measurement or representation.

Inputs of data into research are mainly statistical. These become transformed into outputs in the form of simple, composite, and complex indicators and models which through the media of reports and proposals become inputs for the advisory structures. Research provides guidelines also on the more useful observations which should be subjected to measurement. In addition, quantitative and qualitative observation and description are planned processes guided by some existing theory, however rudimentary.

Advisory structures in turn feed back to the research subsystem their need for more adequate explanations and models. The advisory subsystem, then, backed by data collection and research, services the needs of planners. In planning decisions the strategy is worked out for operational decisions. Key policy decisions may be made by both public and private sectors. Both need the backing of analytical procedures as a foundation for rational decision making and seek information and advice from specialized services which have processed available information into a useful form.

In many developing societies the census expends the greater share of resources available for provision of social and economic information. In effect the greater the expenditures on the census, the fewer resources that will be available to meet the more immediate needs for information oriented towards current social concerns. Where current data are not available in a useful form

(and generally they are not), policymakers are forced to make educated guesses about both the state and the trends of ongoing social conditions. Reliable current information does not provide the policy answers but at least it may help policymakers avoid misplaced emphasis and unwarranted priorities. Statistical data do, however, exist for many social phenomena and many others are capable of being measured.

2. Statistics for Knowledge and for Action

Neither administrators nor researchers are always able to find appropriate statistical information even in the midst of a plentiful supply of data. In LDCs where the availability of data is appreciably less than in developed countries, the information pool is exceedingly restricted. In this context the development of social indicators requires an intensive search for those measures which are more suited to action and analysis.

Social indicators are developed from descriptive statistics in such a way as to gain a comprehensive and comprehendable representation of the state of society. Such representation cannot be directly constructed; some simple indicators may be, but many will result from systematic analysis and model building. The explanatory schemata of the phenomena studied will indicate what should be quantified, what are the explained variables, and what are the explanatory variables.

A complete set of indicators would enable the exhaustive description of social reality or it would contain the elements of information necessary to meet all the requirements of knowledge for the actions of the policymaker.

The representation of social reality requires an information set which includes description, comparison, explanation, and prediction.

a) description: entails making an inventory of statistical data which describes the general characteristics of areas of social concern

b) comparison: the indicators developed should make it possible to establish a typology of situations so that comparisons can be made over time between groups on the basis of a broad spectrum of social demographic characteristics

c) explanation: various different theoretical models may be tested in order to identify those variables most likely to be causally associated and in particular to identify those manipulable variables which are causally related to some desired outcome

d) prediction: prediction involves taking into consideration the dynamics specific to the sector under study or as Girardeau (1972a:231) identifies them for the educational sector:

> to locate future tensions and the distant affects of present day decisions, to integrate the consequences at the educational level of social, economic, and technological changes and inversely to evaluate the effects of the development of education (the sector of concern) on the dynamics of the economy, the division of labor and social mobility.

B. Outlining Information for the Sectoral Areas of Concern

The development of an outline of what should be measured in any particular goal area or sector within which social concerns are identified requires a thorough elaboration of how that sector works, what its constituent parts are, how these components interact with each other in order to produce outputs, how these outputs affect and are utilized by other sectors and, above all, what are the goals of the sector. If we do not thoroughly understand the sector or system of concern or if we are unable to estimate adequately the sensitivity of the system to specific changes in any of its parts, it is likely that we will end up with a miscellaneous collection of more or less independent pieces of information, each of which is valuable; but which as a whole may not add up to anything approximating an integrated set. When policies are based on these, objectives of the sector are less likely to be achieved because the impediments in the overall system have not been identified. It is necessary then to work out some form of system model so the whole dynamic entity can be viewed at once and the interrelations of a large number of variables can be

considered as they might operate together. "By such a system, bottlenecks can be more readily identified, knowledge and action gaps surfaced, interactions estimated, institutional or organizational deficiencies pinpointed and alternate pathways considered" (Cox, 1972, Annex B_1).

A simplified schematic representation (Figure 3.1) of the educational sector as it fits into the larger societal matrix will be used for illustrative purposes in this chapter. This representation constitutes a sensitizing device that might aid in the identification of those points of the system at which monitoring might be most useful. It emphasizes, in addition, that not only do sector subparts interlink with each other but also that the different sectors are closely interdependent in the overall fabric of society.

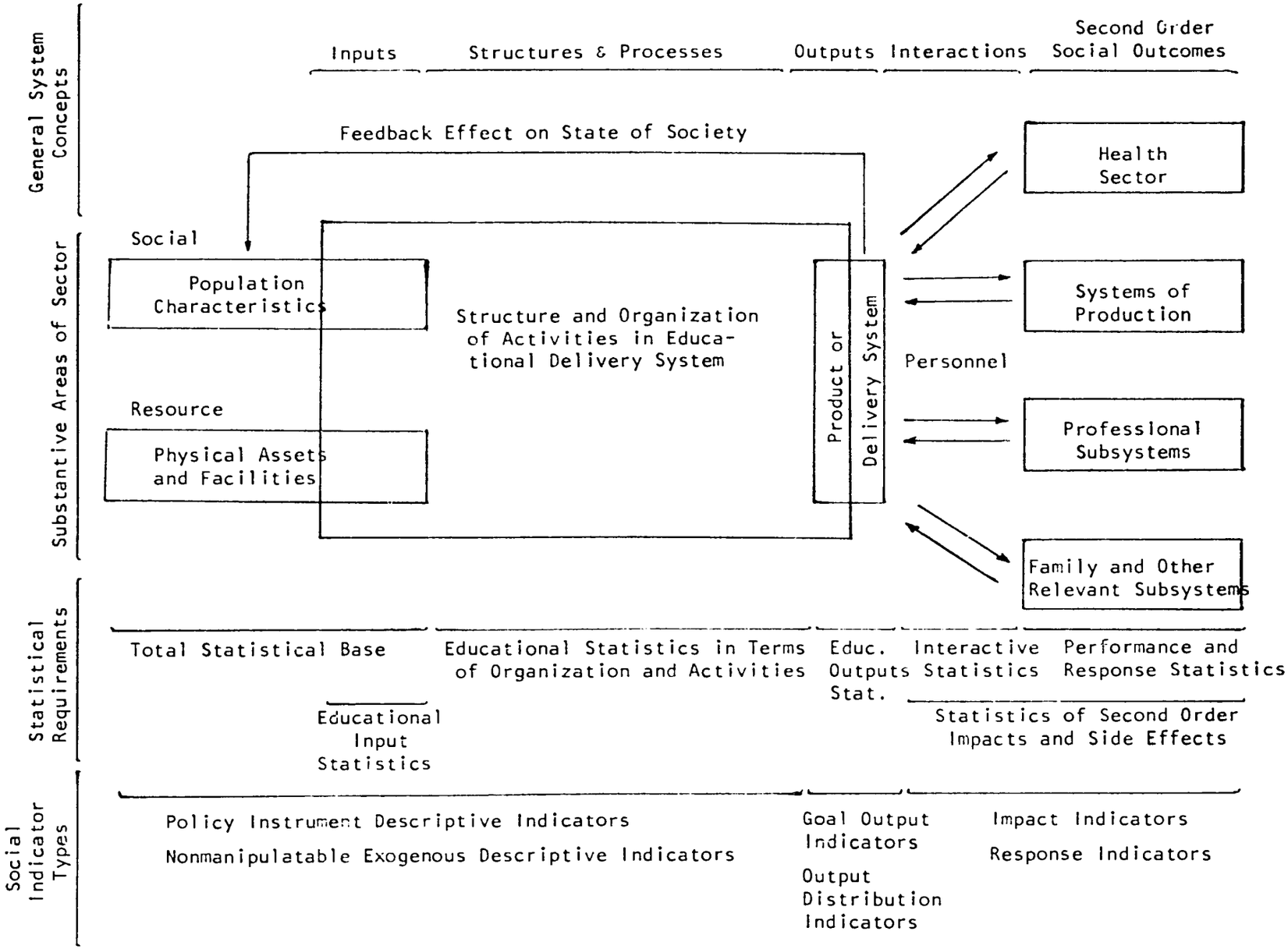
1. Organizing Perspective

We realize we must delineate the elements and relationships within the educational sector as well as their combined and concommitant relationships and interactions with other sectors. Attainment of educational objectives is predicated on the production of outputs by the educational delivery system, most of which become inputs into other sectors. As Hanson (1972:374) points out, "the receiver system is ultimately the one which signals the degree of goal attainment achieved by the producer system." The delineation of the educational sector's information system will serve as a model for the development of information systems for other sectors.

The schematic diagram, presented in Figure 3.1, outlines four levels for study:

1. Concepts relating to a general system model;
2. Substantive areas of the general model as they relate to a specific sector (in this case, education);
3. Information requirements for the development of an integrated set of social indicators;
4. Types of social indicators.

Figure 3.1. Schematic Diagram of Information Needs in Social Development Pertaining to the Educational Sector.



Adapted from Girardeau, 1972b and Zapf, 1972.

The emergence of a solution to the difficult problem of specifying what exactly to include in a set of social indicators was outlined by Wilcox, et al. (1973), where a minimum set of six indicator types was identified. These were:

1. Policy instrument descriptive indicators: input indicators of a descriptive nature which are amenable to manipulation by decision makers.

2. Nonmanipulatable exogenous descriptive indicators: input variables which decision makers are unable to manipulate. Examples would include community of origin, family background, race, sex, age, and deep-seated beliefs, attitudes, and values.

3. Goal output indicators: measures of performance in relation to objectives set. Inclusion of these indicators in the typology underlines the need to identify and clarify sectoral goals and then to measure how well these goals are being accomplished.

4. Output distribution indicators: those primary output indicators capable of measuring valued or desired outcomes across all relevant socioeconomic and sociodemographic categories of the population.

5. Impact indicators: intended and unintended secondary outcomes; for example, social mobility or higher work productivity. Whereas outputs tend to refer to the products of the sector as those relate to sectoral goals; impact indicators are viewed in the context of linkages and interrelationships among sectors.

6. Response indicators: measures of the reactions of human beings attributable to particular factors of social conditions or social change.

A rationale was presented by Wilcox, et al. (1973:24-30) to substantiate inclusion of representative indicators of all six types.

2. Population Growth and Educational Needs

The dramatic increase in school enrollment that has occurred in many LDCs over the past decade has come about as a result of a strong social and political demand for education as well as an increasing growth in population. The relatively recent expansion in population growth in LDCs has given rise to very young populations. In 1970 the U.N. estimated that advanced countries had an average of approximately 27 percent of their population below the age of 15 years, while LDCs had approximately 41 percent falling in this age category.

It is evident that a marked increase in enrollment is needed to keep pace with population growth.

The education emphasis in LDCs continues to be placed on the narrow outlook of developing those human resources needed for the modern economic sector with relatively little attention given to the rural population. Course content is irrelevant to the experiences of the peasant child so in order to pass examinations the child learns by rote.

From the point of view of social and economic development the enrollment composition in LDCs is rather unfavorable. For example, the World Bank (1972: 259) reports that the median percentage of total students studying vocational courses is 11 percent, and in higher education the median enrolled in courses of engineering, medicine, science, and agriculture is 21 percent.

Fast expansion in overall enrollment has been accompanied by poorer facilities and a decline in the quality of teachers. In addition, little effort has been made to upgrade the management capabilities of school administrators.

As a result of these negative factors, dropout and repeater rates are high. The inefficiencies which result are exemplified by the case of El Salvador in Central America where 15 pupil years are required to produce one graduate of the six-year primary cycle and 37 percent of the total primary school budget is spent on students who drop out in grades 1-3.

3. Goal Areas of Social Development

The areas of social concern being addressed in development literature are goal areas of social development. It may be useful then to endeavor to keep the institutionalized systems (or official delivery systems) as the central components of any formal development schema, which we may use as a basis for outlining the requirements of an information system. At the same time it must be kept in mind that both planners and researchers tend to become preoccupied with their own immediate sector of concern and fail to realize the wider

ramifications of one sector's operations in the operations of other sectors.

The separate setting of goals by each sector is a common occurrence even in more developed societies; on the other hand in those societies which are centrally planned, attempts are made to integrate sectoral concerns and goals. However, as Wolfe (1965, p. 20) points out ". . .many of the plans thus elaborated have served no purpose other than the adornment of ministerial bookshelves."

The educational sector as used here refers to the official education delivery system which in a general sense may be viewed as ". . .a set of stable social relations, deliberately created, with the explicit intention of continously accomplishing some specific goals or purposes" (Stinchcombe, 1965:142). As such, the educational sector may be analyzed in terms of its goal-seeking activity which involves its subsystems and their interrelationships with each other as well as the linkages which these subparts formally or informally develop and maintain with the other sectoral systems of which society is composed.

4. The Sociodemographic Base

A comprehensive range of socioeconomic and sociodemographic variables must be used to elaborate such questions as the benefits and the important correlates of participation and access to the services delivered or made available by the different societal sectors. The variables chosen in these categories will be those considered most relevant by the particular society being studied. The primary concerns of formal demography are size, distribution, structure, and change in populations. Distribution refers to the geographic sense; structure refers to sex and age categories.

The various definitions of demography range from the narrow sense of formal demography to a much broader conceptualization. The broader definition of demography incorporates ethnic, social, and economic characteristics. Ethnic

characteristics include race, nationality, and language. Examples of social characteristics are marital and family status, place of birth, literacy, and educational attainment. Economic characteristics include employment status, occupation, industry, and income. According to Shryock (1971:2), "the widest sense of demography extends to applications of its data and findings in a number of fields including the study of problems that are related to demographic processes." Hauser and Duncan (1959:2-3) refer to the wider scope of demography as population studies concerned with population variables and the relationship between population changes and variables of a social, economic, political, biological, genetic, geographic, and ethnic nature.

As will be elaborated in the chapter to follow, demographic data on individuals and households are usually obtained from censuses, surveys, or population registers. Data on events may sometimes be gathered through censuses or surveys, but generally they will be obtained from registers of vital events.

Various descriptive statistics can be directly calculated from these data once they are summarized. Examples include ratios, averages, and rates. The amount of descriptive detail will depend on the amount of classification detail used in registering the data, as well as how much of this is retained in the summary.

The statistics thus produced have many applications and are basic to descriptive and analytical studies in the areas of education, nutrition, health, personnel, family planning, and land reform among others. Population forecasts are a necessary input for the construction of national plans for social and economic development, but the ability to make such forecasts is predicated on the ability to analyze current demographic levels and trends.

Most descriptive statistics yield a cursory understanding only of socio-demographic phenomena. However, through cross classification, the information yielded can be greatly increased. It may be found through cross classification, for example, that certain ethnic or racial groups or certain geographic local-

ities are highly deficient in health, education, nutrition, income, or some combination of these.

Generally sociodemographic factors constitute the independent variables used in the study of variations in a wide array of social topics. They may be used as control or moderator variables in analytical studies involving such procedures as cross classification, correlation, and regression.

Socioeconomic characteristics in the case of a school population will generally refer to income, education, or occupation of parents. The categories, for example, of occupations chosen for a particular LDC might be geared heavily toward differentiation of statuses relating to agriculture. In other words, being a farmer could entail a great variety of statuses depending on whether owner, part owner or renter of land; whether engaged in producing commercial crops or in subsistence activities; or whether all or little of the land owned is arable.

Sociodemographic characteristics as used in this report refer to (a) social and ethnic categories, such as marital and family status, age, sex, nationality, language, educational attainment, and religion, as well as (b) geographic categories, such as place of residence by such relevant classifications as rural-urban size of community, province or region; (c) in addition, sociodemographic characteristics include a temporal component which refers to long- and short-term changes in those of the social geographic categories where change is possible. Henceforth, in this chapter "sociodemographic characteristics" will be inclusive of socioeconomic characteristics.

5. Inputs

In defining the educational sector we take account of physical resources, including classrooms, libraries, school transportation, classroom equipment and teaching aids, and teaching personnel. In addition the educational system

will overlap with the sociodemographic system so as to delimit the sociodemographic characteristics of the student population.

Thus a detailed set of sociodemographic data together with inventories of resources and facilities available to the educational sector forms the information base from which educational inputs are drawn. (Sociodemographic data will also constitute the core data base for first order and second order output statistics). The information or statistical data collected on inputs should make it possible to evaluate the accessibility of education for different societal groups as well as the availability of the required range of physical resources for the schools that they attend. In Figure 3.1 the educational system is depicted as overlapping with the total sociodemographic system and with the total societal physical resource base. This area of overlap delineates the inputs and fixed assets of the educational system.

6. Use of Educational Facilities and Organization of Activities

Facilities in the educational sector might be defined as those physical, cultural, and social objects which facilitate the performance of the teaching and learning roles. Not only is the quantity and quality of these facilities--for example, the number and quality of classrooms, classroom space, books, teaching aids, teachers, and specialists--of interest but also the balance of such facilities between different educational levels. For example, it is quite conceivable that secondary vocational and higher levels of education have more than their requirements of classrooms and other physical facilities, but they lack teachers in some areas of specialization. On the other hand, grade levels above primary level might be well cared for in all manner of facilities but the number of students might be curtailed because of bottlenecks at the primary level.

Educational planners should match enrollment applications with availability of space; equipment, teaching, administrative and maintenance personnel; the

availability of jobs relating to specific educational tracks; and the demographic growth patterns and changes in skill requirements.

7. Structures and Processes

The curriculum, the integrating mechanism for teacher-student relationships, is ideally a plan for learning which is guided by tested learning theories and oriented towards equipping the individual to cope with particular aspects of his environment. The importance of curriculum continuity through the levels and specialities of education is emphasized by Hanson (1972:385). In other words, each unit of curriculum should contribute to the overall plan which becomes a flexible entity always sensitive and receptive to the dynamics of other sectors. Information requirements in this regard entail examination of the linkages and relationships between curriculum units as these relate to education levels and specialties.

Measures are needed of how much primary school teachers and administrators know of the academic expectations and curricula further along the line in the educational process. It might be possible to identify formal or informal structures which operate to keep teachers and administrators informed. Measures of the type currently in use in interorganizational relations research should prove useful in determining the degree to which separate academic units (whether levels or specialities) are coordinated to contribute to some continuity in curriculum.

Hanson (1972:386) found that where schools maintained a high degree of functional autonomy within a subsystem administratively, the amount of continuity in curricula was negligible. Where interdependence between subsystems was mediated by administrative roles which transcended subsystem boundaries, then administrators and teachers from all levels were involved in attempting to cope with curriculum continuity.

8. Goals and Outputs

Citizenship, health and physical fitness, skills, and intellectual competence or, in other words, goals and objectives as they relate to the individual as a member of society, the person as an individual, the person as a potential worker and the person as an intellectual being (Newbry and Martin, 1972:158) all are educational goals and objectives. Thus regarding the number of graduates produced or the placement of graduates as the sole measures of educational output and performance is somewhat restrictive.

In a limited sense, the direct outputs or products of the educational system are the students who graduate. In a more general sense, outputs include also school dropouts. In addition, Girardeau (1972:237) classifies indirect effects of education on other sectors as outputs or results. The latter are considered here as second order social outcomes, impacts, or side effects.

9. Sector Linkages and Interactions

Generally no formal linkages exist between sectors. For example, the coordination between education and the different employment systems may be negligible and largely a matter of chance. The result is that the content of formal education may be quite irrelevant to the work situation. The matching of educational excellence and personnel needs is growing more complex. Unemployment today among those persons who have had a higher education underlines the need for continued re-evaluation of economic development, personnel demands, wage incentives for key sectors, coordinating mechanisms between the educational sector and the job markets, and the development of a more flexible and responsive educational structure.

Unemployment among the well educated is often found to be accompanied by shortages of personnel in occupations where incentives are less attractive--such as industrial technicians, agricultural extension workers, and teachers. For

example, if the public sector offers low renumeration when compared with the private sector, civil service becomes staffed with less qualified personnel.

The need for more emphasis on vocational education and nonformal education for agriculture and industry has not been met because vocational programs are in many cases out of touch with employers' personnel needs. Moreover, on-the-job training or in-service training are of limited applicability in LDCs since most business and industrial units tend to be too small to warrant the personnel and facilities that such a service would require.

We are cognizant of the urgent need for cooperation in the planning of personnel training and cognizant of the many restrictions which conditions in LDCs impose. One viable partial solution to establishing cooperation between employers and public education institutions appears to be apprenticeship training schemes. Such programs have met with considerable success in Latin America (World Bank Operations, 1972:262).

Studies have shown that where the educational system provides very specific training such training is less likely to be relevant to the job-related needs in other sectors. It has been found also that after only short periods of on-the-job experience in various areas of production, workers with no formal vocational school training are comparable in efficiency with workers who have been channeled through formal vocational programs (Al-Burkeri, 1968).

C. Educational Statistics

The following lists are examples of measures required for an information system to be used in constructing a set of social indicators for the education sector. (The notation RSC refers to Relevant Sociodemographic Categories and RC refers to Representative Communities).

1. Inputs

a. Enrollment in primary schools (RSC).

b. Percent of population 5-14 years of age enrolled in primary schools (RSC).

c. Percent of population 5-14 years of age not enrolled in primary schools (RSC).

d. Teacher-student ratio in primary schools (by RC).

e. Classroom space available (number of students) (by RC).

f. New classrooms constructed (by RC).

g. Percent of schools using radio, television, or programmed instruction (by RC).

h. Percent of schools with libraries (by RC).

i. Enrollment in all secondary schools (RSC).

j. Percent of primary school graduates who enroll in all secondary schools (RSC).

k. Percent of prescribed secondary school age population enrolled in all secondary schools (by area of study and RSC).

l. Teacher-student ratio in secondary school (by curriculum and RC).

m. Classroom space available (number of students) for all secondary education (by special area and RC).

n. Percent of all secondary schools with libraries (by RC).

o. Enrollment in higher schools by academic, vocational, technical or professional specialty (RSC).

p. Enrollments in teacher training institutions (RSC).

q. Proportion of teachers (by level and curriculum representative community fulfilling official training requirements).

r. Hours per official school year for teachers and students (by level and curriculum).

This selection of information requirements measuring inputs includes both manipulatable and nonmanipulatable variables. For example, the variables of hours spent in school for year, use made of available assets and equipment,

actual enrollment and class size, teachers hired who have fulfilled training requirements, all can be manipulated within and by the educational system. Non-manipulatable exogenous inputs are those inputs determined outside the system. These include values and attitudes, age, sex, and those factors making up socioeconomic background. Also included in the nonmanipulatable category would be the value of teacher time and the opportunity cost of education for different categories of students.

2. Outputs

a. First Order, or Products

1) Graduates of primary schools (RSC).

2) Graduates of primary schools, who terminate their education at that stage (RSC).

3) Dropouts of primary schools (RSC).

4) Graduates of all secondary school categories by area of specialization (general, technical, vocational, clerical, etc.) who terminate their formal education at that stage (RSC).

5) Dropouts of secondary schools (by area of specialization RSC).

6) Graduates of teacher training institutions (RSC).

b. Second Order, or Impacts

1) Employment status of graduates of primary education (by type of occupation and RSC).

2) Employment status of graduates of general secondary education (by type of occupation and RSC).

3) Employment status of graduates of technical and vocational secondary schools (by type of occupation and RSC).

4) Employment status of graduates of other special curriculum secondary education (by type of occupation and RSC).

5) Employment status of graduates of higher education (by area of educational specialization) (by type of occupation and RSC).

6) Employment status of dropouts from different levels of education, (by occupation and RSC).

7) Measures of performance on the job (by occupation and RSC).

3. Measures of Impact and Response

Impact indicators are an attempt to monitor the effects of outputs in respect to all other sectors of society. These in a sense constitute second order outcomes. The impact indicator does not measure the product of a sector's activity but represents complex phenomena resulting from the activity of several sectors.

Indicators of impact and of response (which might be regarded as third order outcomes of the activities of the focal sector) can only be developed when explanatory factors are identified and some of these will be elements or activities in other sectors.

4. From Statistics to Social Indicators

Often the construction of social indicators may be nothing more than a process of choosing from existing statistics. As Girardeau points out, to summarize existing information will initially assume greater importance than to interpret or explain their social significance.

Initially the procedure will be an inductive one to determine what basic data are available and evaluate their capabilities or utility against the requirements of an integrated set of social indicators. However, in the long run, the construction of indicators will be an end-product of analysis and research in particular areas of social concern.

Some researchers believe the procedure of summary of information will ultimately result in the construction of a few general indicators of social development, such as quality of life. On the other hand, it may be more reasonable to assume that the information yielded by a set of indicators which can be put together into a theoretically sound explanatory system will be accepted as less arbitrary and more useful with regard to both academic and applied interests.

PART 4: HOW TO FILL THE INFORMATION NEED FOR LDCs

Having increased our understanding of what we want to measure and for whom, and we need now to determine how we will measure the things we desire knowledge of.

A. Characteristics of the Information Needed.

LDCs need information that will serve as inputs into policymaking. The first characteristics of the information need are therefore those of relevance and utility. The information must deal with outputs, inputs, throughputs, impacts, and goals if it is to serve the purposes of guided development.

A second characteristic is the need for the information to be economical. Each information unit must come at a relatively low cost to the LDC in order for that information to be worthwhile.

Third, the information must be understandable to the nonscientist. The indicators must be simple enough that persons with minimal scientific training can understand their impact. Exotic indicators dealing with the personal feelings of the populace are likely to mean very little to LDC policymakers and, therefore, they will be unable to use the information generated by such indicators.

Fourth, the indicators must deal with subjects that are both politically and culturally acceptable. Indicators of "political freedom" may likely be unacceptable in some societies while in others, they will be irrelevant culturally. Southeast Asian societies that value highly the quality of primary group interaction will need indicators to monitor changes in primary group opportunities, while South American societies which place a higher value on individualism will need indicators not only relevant to group opportunities, but also to individualism.

Finally, policymakers and planners need continuing information. The process of making the decisions to allocate resources and efforts to develop a nation

are ongoing activities that cannnot wait for the information process to catch up with it. Rather than wait for ideal information, less than "perfect" information must be used to carry out development.

B. Data Sources for LDC Social Indicators

LDCs can employ several alternative means to obtain enough information to monitor change and to develop more realistic plans.

One method is to follow the example of the research organizations developing social indicators in the United States and of those in Europe such as the Organization for Economic Co-operation and Development (OECD). The works of such groups can be divided into two camps. The first camp is preoccupied with defining social indicators and delineating their purpose (e.g., Land, 1972; Andrews, 1972; Sheldon and Moore, 1968; Bauer, 1966; The Annals of American Political Science, 1967; Smith, 1973; and Newbrough, 1972; etc.). Almost none of these works provides much insight into the measurement process involved in their conception of indicators or the types of data necessary to operationalize the indicators they suggest.

The other camp has proposed rather elaborate conceptualizations of the notion "quality of life" with proposals as to how such conceptions might be measured (Shanks, 1971; Johnson and Ward, 1973; The Environmental Protection Agency, 1973; Andrews et al., 1973; etc.). Most of these approaches have suggested that the quality of life be measured subjectively through sample surveys, attempting to measure how people "feel" about the "goodness," "adequacy," "hopes and fears for," or the "improvement or deterioration of" their life situation. Only a few of these indicators are currently being used in research studies.

As information inputs to policymakers, the utility of feelings concerning life is tenuous. Like public opinion, such feelings are likely to fluctuate greatly thus making such information confusing at best. Furthermore, in order

to make such an approach viable, data would have to be collected by interviewers frequently over sizeable segments of the populace. This procedure renders the subjective approach too expensive for LDCs with limited budgets and more pressing priorities. Finally, most of the studies that deal with individual perceptions center in the United States. Furthermore, several authors have even gone so far as to suggest that opinion research in peasant societies is meaningless, because peasants either do not hold opinions or will not express opinions on many of the topics raised during the interview (Lerner, 1958). Generally, objective assessment of the peasant's life situation is more trustworthy. Finally, the perceptual approach to life quality often leads into examination of asthetics rather than the basic vital needs that are the most urgent concern of the LDCs.

A second method towards an information system is that of concentrated efforts at improving existing, or what are referred to as secondary, data sources in the LDCs before any of these sources are used as information inputs into the policymaking process. It is evident that many of the measures currently in use are grossly inadequate in that they do not lend themselves to the rigorous and unambiguous interpretive requirements of sound policy formation (Campbell and Converse, 1972). It is also noteworthy that where measurement techniques and procedures of data collection are altered over time, a situation may arise where trends being monitored may be as much an artifact of the measurement change as an account of developments in the real world. Hence standardization in measures and measurement techniques, as well as usage of these techniques over time to develop a data base unincumbered by artifacts, is thought to be necessary.

The U.N. Statistical Commission--presenting the statisticians' view--advocates such a concentration on the upgrading of economic, demographic, and

social statistical series to the stage where sufficient reliability and validity is attained to compile an accurate national accounting system. Waterston (1971: 180), however, points out that improvement in the quality of statistics used for monitoring national development may not be a top priority matter in view of the resources and time required to effect significant improvement. The dilemma facing the policymaker ". . .is whether the available data, although inadequate, should be used to start to plan immediately or whether planning should be postponed until improved information in sufficient quantity is obtained" (Waterston, 1971:183). In support of this position, it should be kept in mind that attempts at serious planning are far in the future for many nations if the compiling of highly accurate statistics is given top priority status. It is evident then that while good statistical data are important they must not become an end in themselves. In the practical sense the test of a system of indicators is whether or not they are amenable to use by the policymaker and whether they help give development policy decisions more direction than would have been possible had they not been available. While existing statistics have numerous faults (a topic we will fully explore later in this chapter), the empirical information provided is far more useful than reliance on guesses or speculation or prejudice.

The third and most sensible route to an integrated information system is thus one of using existing data sources in less grandiose and more imaginative ways, while improving and implementing existing collection and analysis procedures over time. In the initial stages of usage, we expect that the existing monitoring apparatus will dictate the levels of planning to be attempted; however, in the long run, we expect that the capabilities of the apparatus will be continually developed and refined in order to facilitate more comprehensive and advanced planning.

C. Pragmatics of Immediate Secondary Data Usage

As indicated, usage of existing data sources in their present form will provide immediate information payoffs. Usage of this data also meets a number of other criteria associated with the information needs of LDCs. The use of data already collected by agencies and institutes economizes on money, time, and personnel (Hyman, 1972:6). Designing special surveys to generate data on all the areas of social concern for the planning and monitoring of change in all of the areas of social concern would be highly expensive. Collecting all the relevant information required for a societal monitoring schema would entail 8-10 new surveys carried out periodically to generate time-series data of adequate breadth in scope. The use of secondary sources, even with the aid of supplementary surveying will cut down drastically the number of extra research designs that would have to be carried out. The amount of money that would be saved in some cases would be "astronomical" (Hyman, 1972:7). Additional saving would come from the elimination of the need for extensive fieldwork, coding, and storage of the new data.

The secondary data in LDCs are usually generated either by government officials or scholars working in concert with officials. Thus the data are generally understandable and useful to policymaking bodies. A slow, purposeful movement toward the development of a more integrated set of social indicators could be accomplished easily if carried out with the cooperation of the policymakers.

Finally, the information collected in LDCs is likely to be relevant politically and, to some degree, culturally. Obviously, the political order will not allow the collection of the kinds of data which are considered politically unacceptable. (There is, of course, a question as to the kind and value of the information loss). There is also a question, however, as to the cultural

relevance of some data generated by LDCs in that many of the surveys used are adaptation of Western techniques rather than indigenous devices that might get at more relevant cultural issues.

D. Information Potentials of LDC Secondary Sources

The data collected by LDCs represent an untapped resource. These data are multifluous and, in fact, some observers have noted that LDCs collect too much data. The reason this resource is untapped is because of the tendancy to take individual or household data and aggregate it immediately, usually to the province level, and then either ignore or discard the raw, disaggregated data. The raw data itself, however, still holds potentially a variety of information. If these raw data were to be aggregated separately across such categories as age group, ethnic background, social status, or regional grouping such as community size, a wealth of information concerning what is happening to various significant segments of the population is within the policymaker's grasp. The potential of such information is hardly trivial. As Keyserling points out, the relatively low rates of unemployment in the U.S. mask a more serious situation. The aggregate rate of unemployment was about 4 percent, yet the disaggregated rate for blacks was 7.5 percent more than 10 percent for persons between 16-21 years of age, 25 percent among young black females, and close to 40 percent for others living in some sections of some cities (1967:105-106). To limit the scope of statistical measurement procedures through selective reporting or summary reporting of aggregate figures is to obscure the details of the overall picture, and thus the pertinent questions of distribution and impact cannot be addressed. The use of such simple statistics currently being collected by LDCs would be a modest start towards an integrated set of indicators of social development. With such statistics, a clearer picture of output and distribution as well as impact and response can be obtained.

The secondary sources we have in mind are data available from the national census and other national and regional surveys. Most of these data are collected in a disaggregated form on individuals and households. Such data are collected for many different purposes. More developed societies, for example, are characterized by a heavy reliance by the individual person, household or family on the state and its institutions for a great range of services. Thus a considerable range of data are required as the information based used in public administration for the planning and provision of goods and services.

In seeking to achieve their own objectives various social institutions such as schools, churches, and businesses record information on individuals, families, households and other units of social organization. In addition, many basic scientific studies are conducted involving samples and segments of society, and these are a source of a great variety of methodological contributions like scaling and measurement, testing simple relationships, and building and testing complex models. It is worthy of note that data also result as a by-product in the recording of such everyday processes as school attendance.

The following list is an outline of different sources of data on individuals and households (Thompson, 1971, and Müller and Kuhlman, 1972):

1. Censuses of population
2. Research surveys
3. National registrations for births, marriages, deaths
   - passport office records
   - register of electors
4. Postal directories
5. Social security records for pensions, unemployment, and illness or disablement
6. Welfare institution records
7. Health service records of doctors, hospitals, clinics, and other medical records
8. School and educational services records including enrollment, dropouts, performance, library usage, classroom space, teachers, and other educational facilities

9. Employment records, including those at labor offices and those at place of work such as earnings records, job history, occupational training and unemployment

10. Records for services-gas, electricity, telephone, water supplies, or refuse disposal

11. Tax records of occupation, income, and tax category

12. Bank and insurance records including account holders, borrowers and insured persons and properties

13. Communication and media records such as those for telephone, radio, television, newspapers, and periodicals

14. Records of membership and officeholders associations, clubs, and societies, including cooperatives

15. Church records of membership and in some cases records of births, marriages, and deaths

16. Defense records such as conscription and recruiting records, as well as membership in armed forces

17. Police and courts of law records such as arrests by types of crime, records of crimes reported

18. Transportation records such as registrations of motor vehicles and records of driving licenses

Not all of the LDCs collect such a tremendous variety of statistics as is reflected in the above listing. However, as we have pointed out, they collect more than enough of certain types of information to begin the process of developing integrated sets.

E. Problems Encountered in Using Secondary Data

While useful, a number of serious problems are presented in the use of existing data sources that will have to be addressed largely by the LDCs themselves before the data can be put to use.

Some potential flaws in LDC secondary data (data already collected by others) are:

1. Reliability

Reliability deals with the issue of the errors involved in collecting data on indicators: the more errors made, the less reliable the data. A number of error-types seem to particularly affect secondary data.

Much of the data which would ordinarily provide useful information when used within an indicator-set framework have been collected for politically motivated purposes, rather than for scientific ones. Often these data are linked to organizational performance rather than a neutral attempt to determine what change has actually occurred (Lehman, 1971:150). Some such data have been observed to be either falsified or misrepresented in order to show the organization responsible for the actions in a good light (Merritt and Rokkan, 1966: 528). In some LDCs, it has been observed that villagers tend to underreport the number of livestock they possess to protect themselves from dishonest officials while provincial governors tend to overreport livestock holdings by farmers in order to make it appear to higher government echelons that the governors are doing a good job. Information contained in these data are either misleading or totally false; thus indicators utilizing data subject to political manipulation should be included in the integrated set only with great caution and care.

2. Sampling Errors

Other errors result from sampling misrepresentation in the data collection. Often for reasons of practicality data are collected on a sample of the population rather than the total. In attempting to cut corners, however, the sampling units are frequently biased towards more easily accessible units. Generally, the effect of such a bias is to overrepresent urban areas at the expense of the rural (for examples see Shryock, Siegal, et al., 1971:158, 168).

3. Validity Problems

Other indicators for particular areas may be highly limited in number, thus seriously underrepresenting the particular concept the indicators are to represent. For instance, under the general area of health are included many subdimensions of high relevance to health, mental health, and physical well-being, two of which are of great importance. As these two dimensions do not have

a set of well-developed indicators associated with them as yet, the burden for representing health often falls on "mortality rates" (Wilcox, et al., 1973:46). It therefore becomes very important to measure mortality carefully, but it also indicates that "health" is underrepresented. Also, the problem area of protection from weather and temperature maintenance includes the subdimension of "housing" and "clothing" but while there exists a few standardized statistics on housing in census data, apparently no "clothing" indicators are derivable from secondary data sources.

Another question that must be raised has also to do with the validity of the indicators. Secondary data sources are collected for particular purposes which are generally at variance with the reasons behind the establishment of a set of integrated indicators of social development (Lehman, 1971:159). In general, economic statistics are the "by-products" of business and governmental work and thus the data have to do with phenomena different from that of interest to an economist (Morganstern, 1963:14). Many of our measures and statistics are tailored to the needs of business and government so that these can be made more efficient. A result is that inequities, deficiencies, and negative impacts occurring throughout the social system are given less prominence. It is not so much that statistics in and of themselves are of any consequence but they can be an enabling medium to probe the realities to which they refer. Unless we are able to collect, compile, and analyze data concerning illness, hunger, poverty, or unemployment we cannot hope to understand their human and social reality.

4. Problems of Comparable Units

A final, yet perhaps the most important, problem is that of comparability of units of analysis and units of measurement. The intent of indicators of social development is the bringing together as an integrated set, diversified data on politics, the economy, the quality of life of citizens, and on the society

in general. As was previously stated, an integrated set is held together by some common element, whether a unit of analysis, a unit of measure, strong intercorrelations among the variables, or a taxonomy classification scheme like the WROCLW method used by UNESCO. Integration is the assurance that the data brought together by a set of indicators can be meaningfully compared without violating logical assumptions that relate individuals to social structures, or simple social structures to complex social structures.

The issue of developing a common ground for meaningful organization and comparison is particularly crucial because our indicator taxonomy implies at least three levels of analysis: the individual, the group, and the society. Consequently, our indicators will reflect these levels of analysis. The units of measurement will reflect the concern of each level. Thus indicators dealing with persons might appropriately take the form of individual rates or frequencies of individuals within certain categories (Stone, 1971:11).

Finally, the data of interest for an integrated set may be collected infrequently or at varying time intervals, making comparisons within the integrated set a difficult, if not an impossible, task.

5. Storage for Usage

The storage and availability of the data in its raw state, however, is of itself not particularly illuminating. Statistical data are quite inert unless the concepts on which they are based are made explicit and their interpretation and elaboration is verbalized in a way that will be accessible not only to those who can articulate technical information, but also to those who are in need of and likely to use information; for example, educators, students, writers, legislators, planners, and decision makers.

Keller (1973) points out that the absence of easily understood statistical compendia may be equated in its effect with the absence of a free and informative daily news medium since a vital source of knowledge is inaccessible and a

fuller participation in public life impeded. Most social statistics collected are generated in response to the planning and research requirements of new and existing programs. The statistical data base can be addressed to a much broader set of concerns than that for which it was specifically designed. However, a broadening in application and utility is curtailed when the data are not presented in a comprehendable form through use of analytical tables, indexes, and explanatory essays, and when they are not readily disseminated through media and relevant compendia. "The data may exist but become nonfacts." The social conditions they portray persist "but consciousness of them recedes" (Keller, 1973: 145).

F. Approaches to an Integrated Set of Social Indicators Based on Secondary Data

We are essentially arguing that the excesses of overaggregation and poor presentation may be present because we have had no regard for the information that might be obtained through lower levels of aggregation. Data are normally collected on individual and household and are summarized by means of totalling or aggregating, and then averaging. Because sample sizes are generally quite large when dealing with a nation-state, some aggregation must occur if any information is to be derived. The distinction between data and information is generally one of organization. Data represent disorganized facts; information is the organization of facts brought about by statistical manipulation of data. Raw data on individuals by themselves, therefore, are almost meaningless. Averaging of totals at relevant levels summarize or organize these raw materials into information. Data are potentially laden with information-value which may be drawn upon by aggregating to differing levels (e.g., ethnic group, community, occupational category, etc.), and also by cross-classifying the data by these same categories and others. By aggregating by differing groups and territories the critical question of distribution may be addressed.

In essence then, in order for data to be useful for LDC policymakers, it must be in some aggregate form. However, by looking at varying levels of aggregation and cross-classifications, then the information value of data is increased ten-fold over that yielded through simple province-level totals and averages.

As much as we would like to look at each person and determine how his well-being varies over time, we know this is not possible when dealing with a nation-state whose population is likely to range in the millions. A closely related unit is the household since it can be considered as a primary economic and social unit in most LDCs. Also, the household would be a useful unit to look at in terms of the distribution of well-being. However, without a major means of cross-classification of households, the data would still be too numerous to yield organization or information. Several viable approaches might be the classification of households by ethnicity or socioeconomic class. If viable definitions of ethnicity and class could be developed in a way culturally meaningful and politically acceptable, such classifications of households might provide a common unit around which to aggregate and compare data of various types. Thus the level of health, economic well-being, education, employment opportunities, and so on, could be determined for ethnically and economically classified households thus giving planners a feel for the level of well-being in society.

Another meaningful distinction might be to examine well-being at the village level. Villages could be cross-classified by ethnicity, religious affiliation, or rural-urban lines (as there are such entities as "urban villages"). The average level of nutrition, consumer goods consumption, and amounts of time expended for leisure could be compared, and again the policymaker would have extremely useful information to aid in the formation of relevant development plans.

Cohort groupings also provide a meaningful unit of analysis to study as the cohort (a group of individuals born in the same year) move through time and situations. Changes in the well-being of cohorts would be very meaningful information. Cohort analysis requires that various data be linked to each cohort, which may be difficult to manage if data are incomplete.

The appropriate level of analysis, whether cohort, community, or household, will vary by nation-state. In some, villages may be fairly homogeneous in terms of occupational and religious factors, and the data available may deal mainly with villages. For others, perhaps the household will provide the best means of determining levels and changes in well-being. Our entrance into the empirical arena of a specific LDC will undoubtedly answer some of the questions just raised. However, as the conditions of data and data potentialities will likely vary by LDC, the results of our empirical work will only provide an exemplary basis for others.

PART 5: INCREASING THE INFORMATION VALUE OF DATA FOR LDCs

The development methods described herein are those we believe LDC technicians and scholars can use to manipulate data so that they yield a greater amount of information on output, the distribution of output, the impacts of policy, and the human response to social development. As we obtain LDC data, we will experiment, using these methods to determine their informative utility.

A. Information Assembly, Storage, and Access

The assembly and storage of data places limitations on how data may be used and who may use them. Data may be assembled in a variety of ways but once these data are placed in a computer for storage, the original raw data (code sheets and questionnaires) are often discarded because they take up storage space. Relying on assembled data stored in computers is no real drawback if those data have been assembled in a manner amenable to different forms of manipulation and application. If the data have been stored in the form of large units of aggregation such as nation or province, however, much of the information potential is irretrievably lost.

The advocacy of assembly and storage of data at relatively disaggregated levels of analysis remains a recurrent theme, since it is a fundamental requirement in explicating differentials in access to goods, services, and values as well as the distributional aspects of social well-being. In terms of accessibility to the investigator the data need to be stored, utilizing simple programs that do not require high levels of technical skill in order to extract the data for usage.

The development of our methodology will evolve not only recommendations as to the most feasible yet meaningful levels of analysis, but will also by necessity suggest more simplified means of data storage so that data on various

indicators will be accessible to decision makers at many levels as well as to students and scholars. We will include these recommendations in the final presentation of our methodology (to be completed by June, 1975) on the basis of our experimentation with data assembly and manipulation, using LDC data as a base.

B. Simple Means of Increasing Information Value of Data

1. Using Additional Secondary Surveys in Conjunction with the National Census

Surveys can be used to complement the census. They offer a range of information which the census lacks or is unable to provide. A main advantage of surveys over the census is the speed with which they can be done. The results of many surveys are published a relatively short time after final field work. In addition to a time differential, the vast number of schedules and hence the magnitude of the task involved in checking, editing, and processing census returns, even with the aid of modern data processing equipment, is likely to give rise to inaccuracies.

A survey such as the Household Survey conducted quarterly in England can examine a much wider range of topics than the census because fewer respondents are involved. In addition the employment of skilled interviewers and field workers minimizes the risk of refusals, inaccuracy, or incompleteness. Censuses of necessity use large numbers of temporary interviewers who are generally poorly trained and unskilled in eliciting responses, especially on socially delicate matters.

The questionnaire items or questions which surveys include may be predominantly directed towards public policy across such relevant areas of social concern as race, health, housing, employment, education, etc. Unlike the census, questions pertaining to attitudes, values, and opinions of respondents can be included.

Generally speaking, national censuses are conducted decennially. The rapidity of social changes taking place in developing countries render even the most comprehensive of decennial censuses inadequate in the provision of up-to-date information needed in many key areas of society.

Scarce resources limit the scope and frequency of current surveys. Yet the provision of useful descriptive information and the monitoring of change, together with the formulation and implementation of various different policies and the evaluation of their effects, calls for a great variety of statistical data. Procedures adopted in sectoral planning, especially in their early stages, are crucially dependent on the availability of basic information.

For that matter, the large quantity and diversity of data required in any one sector for planning and other purposes cannot be collected in one study or in any limited time period. Some information will not be needed very frequently but that may depend on the specific situation. For example, in monitoring of the agricultural sector, information concerning the structure of holdings would not be needed recurrently over short periods of time since in the normal course of events little change is likely to take place. However, if land reform programs are in operation and being actively implemented, information on trends in structure change by region may be required more frequently.

2. Integrating Surveys and Survey Data

The ad hoc nature of many surveys carried out in countries at various stages of development has given rise to speculation as to the possibility of integrating these data gathering procedures in order to optimize and economize and avoid overlap. Some current surveys could be expanded to cover a wider spectrum of data with subsamples used in order to obtain greater detail on some topics of interest. This might prove to be a potential means of developing an integrated set of indicators of social development.

In some surveys similar sampling units may provide a common denominator around which data might be grouped with the view to increasing the information coverage and decreasing the number of surveys. A common geographic universe in survey focus should also potentially be a basis for economy. The integration of survey planning and the possibility of placing all field surveys under one specific agency yields the advantages of a steadier demand on agency time and resources and a greater likelihood of recruiting field workers who can be trained to much higher levels of skill.

It is well to remember, however, that even where surveys share geographic area of interest or similar sampling units, the survey design required for one study may be quite inadequate for another study on the basis of representativeness or some other design characteristic. Therefore, we may need to suggest the redesign of certain surveys so that they may be integrated into a more unified whole.

3. Data Processing

The information value to be derived from surveys and total census enumerations is dependent to some considerable degree on the speed with which information becomes available. Data processing machinery should be capable of making preliminary estimates available as soon as they come to hand. This point is emphasized by Novak (1973:13) who states that ". . .the release of preliminary estimates at an early date is essential for the more effective use of data. Moreover, the comments of users on preliminary results help to avoid gross errors in the final estimates. The preliminary data could be derived by a probability subsample of returns, by partial projection of missing elements, and by other estimating techniques for closing information gaps." The speed of the data processing, however, is dependent upon the availability of centrally located and easily accessible electronic data processing equipment.

Such systems are limited to those LDCs who have achieved a level of development sophisticated enough to include data processing equipment.

4. Simple, Composite, and Complex Indicators

Simple indicators are rates and ratios that normally are constructed as a part of raw data summaries. For instance, data are collected on deaths; a crude death indicator can be constructed for a geographical region by forming a ratio of the total deaths for that region over a one year period to the mid-year population of the region and then multiplying by 1,000. Or:

$$\text{Crude death rate} = \frac{\text{Total deaths}}{\text{Midyear population}} \times 1{,}000$$

Such simple indicators are useful in themselves, particularly if they are constructed at lower levels of aggregation so that the distributive consequences of social development can be better determined. Then, for example, a crude death rate indicator broken out by ethnic group, by age group, by rural-urban classification, or by occupational category would provide highly useful information. One of our first tasks, upon collection of LDC data, is to attempt to build such disaggregated, simple indicators.

Composite indicators are made up of combinations of meaningfully related simple indicators. Simple indicators may be added or multiplied together forming a new composite ratio. Examples of composites are the adding together of various simple crime rates by type of crime in order to get an overall crime rate for a particular geographical area. The compilation may obscure the relative importance of some of the simple components, however. Petty theft rates may not be equated with murder and rape rates. A way around this dilemma is to weight the simple indicators. Determining adequate weights to attach to a set of different types of crime rates, illness rates, or educational outputs, however, has not proved easy. The weights used thus far in developing

components have either been developed by factor analysis or by arbitrary guesses.

> "Complex indicators are developed through the statistical manipulation of simple indicators to develop new indicators which can be related to probabilities. Actuarial calculations of life expectancies already yield a number of important social indicators and it is not difficult to show that they could be made to yield a great deal more. The expectation of life at a given age is the number of years that individuals of that age can, on the average, expect to live. Thus for a particular population, we might find that for males the expectation of life at birth was 68.5 years and that this expectation had dropped to 11.8 years at age 65. These calculations can be made from a knowledge of age-specific death rates, since from these we can calculate age-specific survival rates and therefore the probability of surviving from any initial age to any later age. From this information we can determine the age at which the probability of survival from any given age is one-half" (United Nations, Economic and Social Council, 1972:52).

Other complex indicator techniques are also available. A technique in which the I.S.U. team has a particularly strong interest is the development of composite indicators by weighted factors based on policy priorities.

5. Life Tables

Thompson (1971) proposes that there should be special concern paid to the sequence (or coincidence) of various events in the life cycle of a person, thus making time an intrinsic part of the indicator system. She suggests extending the use of the life table in order to estimate the chances of other vital events (besides survivorship and death) such as marriage, the birth of children, illness and disability, labor force participation, and retirement. The combination of the length of time spent in any given state and the age at which it occurs is proposed as a very powerful measure of the relative importance of events in a unified structure of social statistics (Thompson, 1971:9).

The commonest interpretation of a life table is to depict "the lifetime mortality experience of a single cohort of newborn babies, who are subject to

the age-specific mortality rates on which the table is based" (Shryock, Siegal, et al., 1971:431). Such a table can be used to calculate survival rates for estimating net migration, fertility, and reproduction.

Using the same format based on current rates of graduations, dropouts, repeated grade levels, and so on, forecasts of the number of graduates and dropouts can be projected for a given sized cohort.

Educational data on attendance, graduation, achievement, and class size are quite good in some LDCs as such data are a part of administrative records. These data could be fitted into life table formats to make projections for the educational sector; we will experiment with life tables using various sectoral and intersectoral data to determine their broad utility for LDCs.

C. More Complex Means of Increasing Information Value

A number of more complex means of increasing data information value are currently being used in the so-called "social indicator movement", and we are currently considering them as possible tools.

1. Social Accounts

An attempt at developing a system of social accounts has been undertaken by OECD and has its direct spokesman in the person of Richard Stone. In the procedure proposed, the human individual is used as the basic unit around which social statistics can be organized and integrated and various input-output matrices for stocks and flows of people from one situation or activity to another can be constructed. The initial work in this regard has concentrated on learning and earning activities and on demographic characteristics of the population. Much of the information needed to set up such a system is not available even in the more developed countries but the proponents of the Stone approach argue that if the procedure is conceptually sound, the gaps in data can be filled in on the basis of perceived priority. It is additionally argued

that a consistent framework outlining the important variables to be studied can be expanded and elaborated as information and experience accumulate.

Any accounting system balances inflows with outflows over a period of time. Demographic accounting balances inflows and outflows of people over time. The first classification of the population is on the basis of age categories. Age categories may be then further analyzed to reflect socio-economic position, residency, education, ethnicity, health, and so on. The system of classification chosen must be consistent as a set. The categories of classification used will be institutional (school attended, industry, employed in); familial (social class, income level, size of family); and personal (age, sex, occupation, etc.).

Composite categories or states are produced by the interaction and superimposition of different classifications with the result that a great variety of differentiated group is possible.

The data are organized and entered into the account at which stage they display a certain formation or profile. It is then possible to examine how different age groups redistribute themselves among categories before the end of the period or time sequence under study.

Stone suggests a series of life sequences in order to avoid very complicated cross-classifications. The active sequence incorporates education and employment including learning, earning, and retirement. The passive sequence covers a succession of socioeconomic classifications through which people pass as they act out their active life.

A matrix connecting the outflows of a given period with the inflows into a succeeding period is proposed by Stone as a procedure likely to be most useful. It is possible to elaborate such a classification system in great detail by dividing the population according to the household, family, or

personal characteristics. The "active" sequence and "passive" sequence could be developed in much greater detail to cover activities other than school or work. Education itself, for example, could be recorded in greater detail to take account of field of study and on leaving the educational system the occupational and industrial categories into which individuals pass could be accounted for.

The major advantage claimed for a system of demographic accounts as outlined above is that specific issues of interest can be explicated by linking together life sequences that were developed independently. It is also claimed that demographic accounts can be linked to a system of economic accounts in certain key instances. For example, if the demographic matrix supplies information on the number of individuals participating in a particular educational category and if the national accounts provide the expenditure on this category, it is possible to calculate the average cost of this service per participant (United Nations Social and Economic Council, 1972:40).

It is generally agreed that development of detailed stocks and flows would constitute a major advance in the areas of demography, personnel, and social statistics. However, in addition to the individual as the unit of observation, data must also be gathered on the family, the household, and various societal institutions.

It appears that a procedure such as that proposed by Stone would require what amounts to compiling an elaborate dossier on each person so that his passage through the various life stages and activities can be monitored and linked. In compiling such personalized and detailed information we are faced with coping with an immense amount of data on one hand and political legal questions of a serious nature on the other.

Considerable concern has been generated, especially in some European

countries, with regard to the dangers to personal privacy which population registers and comprehensive information systems are perceived to threaten. In preindustrial societies an information balance exists, at least at the local level, but in so-called developed societies, the balance between institution and individual becomes heavily weighted against the individual. The fears about loss of privacy may, according to Gwyn (1972:3), ". . .find their origin less in the fact of privacy being invaded than of fears by individuals of powerlessness, of being manipulated, of being compelled to conform."

For a time we considered Stone's system as being a general method we should use as a part of our methodology to help LDCs develop an integrated set of social indicators. We abandoned the Stone system, however, as neither feasible economically nor technically appropriate for the LDCs. We do intend to attempt to make use of Stone's idea of monitoring inflows and outflows of people through various official delivery systems such as education, health, and agriculture.

2. OECD's Work on Social Indicators

The first phase in an attempt to develop a set of social indicators has been recently approved by OECD's Council. In this first stage a working party had the task of ascertaining the major social concerns in member countries. Twenty-four such concerns have been identified in eight goal areas: health; individual development through learning; employment and quality of working life; time and leisure; command over goods and services; physical environment; personal safety and administration of justice; and social opportunity and inequality.

OECD's program, now entering its second phase, will attempt to develop indicators capable of measuring levels and changes in the twenty-four concerns already identified. The indicators sought will (a) concentrate on outputs or results rather than inputs; (b) be kept to a minimum and, if possible, one

single indicator will be sought for each concern; (c) investigated in order to increase its analytical utility by breaking it down by relevant sociodemographic characteristics of the population like age, sex, socioeconomic status, etc.

OECD is currently devoting special attention to developing educational indicators which, if proved to be valuable, will be included in our methodology as examples for LDCs.

3. UNRISD's Social Development Research

Work by the United Nations Research Institute for Social Development (UNRISD) attempts to investigate the interrelations between social and economic development. In defining socioeconomic development, McGranahan (1971) initially considers two approaches:

> 1) an empirical approach which defines development as that which distinguishes developed from developing countries at different periods of development; and
>
> 2) a valuative approach which defines it in terms of some collection of values and purposes which are embraced by contemporary nations, but which may not necessarily distinguish between developed and developing countries or have any objective relationship to each other.

Neither is considered as satisfactory and a third approach is proposed by McGranahan where development is considered to be made up of those valuative and structural factors which change as a group over time, and are found to be empirically associated with each other cross-sectionally.

Using available aggregate data, 115 countries were included in a cross-national study which incorporated 73 social and economic variables. Principally on the basis of intervariable correlations, this variable list was reduced eventually to eighteen core indicators.

It should be emphasized that the objective of the UNRISD work was not to specify causal relations, not to set up an input-output system among the variables nor to establish an ideal system of interrelations among the variables

by specifying levels of each variable that should go with levels of the other variables in a balanced developmental process. Rather the objective of the effort was to ascertain the quantities of the different variables that tended to go together at different levels--without saying why these quantities go together or whether they should go together--and thereby determine normal patterns of development. In pursuit of this end, the UNRISD group developed an analytical procedure termed "correspondence analysis." The net result is a type of standardized profile against which a particular country's actual socioeconomic profile can be compared.

Using the core indicators, a general index of socioeconomic development was then developed through scale transformation and combining indicators.

a. A Trend Toward Disaggregation

A more recent development at UNRISD is its initiation of a research project on "the measurement of real progress at the local level." This departure is in response to the shortcomings of present information systems:

1. Aggregate measures cannot be used to study distributions.
2. Interrelated factors of development cannot be dealt with by "national abstractions."
3. Developmental studies often disregard the needs of large segments of population in rural areas as well as the benefits and deprivations which different groups are experiencing.
4. Development in technology may be quite dysfunctional for various segments of the population.

This program proposes (a) promotion of improvement in existing statistical services; (b) collection of additional information where gaps exist; and (c) concentration "on selected information (indicators) that will show how development is progressing at the local level in the different parts of the country and will give a picture of the pattern of this development, the interrelations of factors and the extent of societal participation" (U.N., 1973:3).

It is this phase of UNRISD's work that appears the most promising as inputs into our general methodology. UNRISD is currently collecting data at the local level including:

> "indicators of distribution; second, indicators of qualitative factors (e.g., the quality of education or indicators) filling other gaps in coverage of components of development already represented by some indicators (for instance, in respect of the health component, indicators of morbidity as well as mortality); third, additional components may be added, such as the environmental component, if reliable and comparable indicators are found" (U.N. Research Institute for Social Development, 1973:4).

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APPENDIX

Scope of ISU Staff Activities

1) Leslie D. Wilcox and Gerald E. Klonglan traveled to Europe in July to meet with persons in the Food and Agricultural Organization; the World Health Organization; the United Nations Research Institute for Social Development; the Institute of Social Studies at the Hague; the Economic Commission of Europe, the social indicator section; the Organization for Economic Cooperation and Development; the Institute of Development Studies, Sussex University; the Agricultural Institute, Dublin, Ireland; and other organizations. This trip was made to determine the direction and progress of European social indicator work and to determine its applicability for indicators of social development for LDCs.

2) H. C. Chang, Wm. Alex McIntosh, and John Callaghan visited with Sidney Goldstein, Department of Sociology, Brown University and Visid Prachuabmoh, the Population Institute, Chulalongkorn University, Bangkok, Thailand in July. This consultation resulted in a better understanding of LDC data needs and the problems to be encountered in attempting to meet these needs.

3) Wilcox and Klonglan held a briefing for A.I.D.'s Social Indicator Committee on August 23. A.I.D. personnel attending the briefing were Walter C. Furst, Program Methods and Evaluation, Office of Development Program Review, Bureau for Program and Policy Coordination; Richard Greene, Social and Civic Development Division, Office of Multilateral Coordination and Regional Social Development Programs; Gerald Schwab, Evaluation Staff, Office of Development Programs; and Lawrence Hausman, Office of Development Resources, Bureau for Latin America; Gerald Patrick, Population Policies Development Division, Office of Population, Bureau for Population and Humanitarian Assistance; Robert Meehan, Office of Regional Development, Bureau for Supporting Assistance; James J. Dalton, Office of Technical Support, Bureau for Asia; William Worcester, Office of Health; James W. Green, Methodology Division Chief; and Abraham M. Hirsch, Methodology Division, Office of Program and Methodology, Bureau for Technical Assistance. During this briefing, A.I.D.'s social indicator interests were discussed.

4) H. C. Chang, John Callaghan, Saundra M. Hunter, and Wm. Alex McIntosh visited A.I.D. personnel in several of the sector offices in August. Specifically, they met with Steven Sinding, Population Politics Development Division, Office of Population, Bureau for Population and Humanitarian Assistance; Martin Gilbert, Manpower and Institutions Division, Office of Population, Bureau for Population and Humanitarian Assistance; Robert Smeding, Deputy Director; and Clifford Block, Office of Education and Human Resources, Bureau for Technical Assistance; Abraham M. Hirsch, Methodology Division, Office of Program and Methodology, Bureau for Technical Assistance; Milo Cox, Douglas Caton, and William Anderson, Office of Agriculture,

Bureau for Technical Assistance; and Duff Gillespie, Demographic and Economic Analysis Division, Office of Population, Bureau for Population and Humanitarian Assistance. In these meetings the various sectoral needs for indicators of social development were dealt with.

5) Saundra M. Hunter, John Callaghan, and Wm. Alex McIntosh met with Selma M. Mushkin, Public Services Laboratory, Georgetown University, on August 24 to discuss the relevance of educational assessment processes for the building of educational indicators.

6) A number of the project members met with Sergio Sismondo, Director, New Brunswick NewStart, Inc., New Brunswick, Canada, on August 25 to discuss his program of combining data sources and developing indicators in conjunction with community action programs.

7) Bill Wasson, Saundra M. Hunter, Wm. Alex McIntosh, and John Callaghan met with Abraham Aidenoff, United Nations Statistical Office, on August 27 to discuss data sources and data quality in LDCs.

8) Wm. Alex McIntosh, Saundra M. Hunter, and John Callaghan met with Tarlor Singh, Deputy Executive Director, Planning and Claudette Y. Smith, Office of the Executive Director, United Nations Children's Fund, on August 28 to compare their mutual efforts toward social indicator development.