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9. ABSTRACT

An investigation of better ways of linking producers and potential users of educational planning knowledge. It sought to explore (1) the potential for establishing various forms of "knowledge networks" to achieve better utilization of existing knowledge; (2) cost-effective roles for universities in these networks; and (3) the sensitivity of such networks to the distinctive needs of "primary groups."

Several sets of variables affect the design of an effective knowledge network. First, there are very different meanings of knowledge "utilization," each making different demands on network design and the role of a participating university. Second, much depends on how one defines the "distinctive needs" of primary groups, particularly among rural poor. Third, the design of networks must take into account not only their functional educational mission but the more tacit, intrinsic goals of the organizations involved. It is not realistic or effective to define "effectiveness" with exclusive reference either to the single mission of knowledge utilization or the needs of primary groups alone. The study indicates a need to recognize situations where potential conflict may arise between the goals of primary groups, the goals of the university, and the goal of maximizing knowledge flows. Explicit attention must be given to the appropriateness of conflicting views. In short, it appears unlikely that there exists a single "optimal" strategy for improving the utilization of educational planning knowledge.

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KNOWLEDGE NETWORKS FOR EDUCATIONAL PLANNING
STRATEGIES FOR THE BETTER USE OF UNIVERSITY RESOURCES

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FOREWORD

SCOPE OF THE PROJECT

The broad purpose of this study has been to investigate better ways of linking the producers of educational planning knowledge to potential users.¹ More specifically, we have sought to explore: (1) the potential for establishing various forms of "knowledge networks" to achieve better "utilization of existing knowledge"; (2) cost-effective roles for universities in these networks; and (3) the sensitivity of such networks to the distinctive needs of "primary groups."

Our research has suggested several sets of variables affecting the design of an effective knowledge network. In the first place, there are very different meanings of knowledge "utilization," each making different demands on network design and the role of a university that would wish to take part. Secondly, much depends on how one defines the "distinctive needs" of primary groups, particularly among rural poor. This will affect the design of educational systems, the forms of planning required, and in turn the appropriateness of network strategies and university roles.

Third, the design of networks must take into account not only their functional educational mission, but the more tacit, intrinsic goals of the organizations involved. For example, if a university is to be engaged in a knowledge network, realistic expectations of its performance must take into account the goals and incentives that normally operate within academic organizations; they must also address the goals (explicit or

1. The Networks Project has been funded by the Agency for International Development for the period July 1974 to July 1976. Based in the Urban Planning Program at the University of California at Los Angeles, it draws upon cooperation from other universities involved in educational planning for lesser developed countries -- primarily Stanford, Michigan State University, Florida State University, and the University of California at Berkeley, and Harvard university, as well as a number of other agencies and individuals.

implicit) in the funding agency; and they must be sensitive to the cultural and professional interests of their counterparts and clients overseas. It is neither realistic nor appropriate to define "effectiveness" with exclusive reference either to the single mission of knowledge utilization or the needs of primary groups alone. Our research suggests a need to recognize situations where potential conflict may arise between the goals of primary groups, the goals of the university, and the goal of maximizing knowledge flows.

These differences go to the heart of the networking problem. There are several groups involved here, with quite different perspectives on the nature of knowledge utilization and the benefits it confers. Before these parties can be integrated into a single enterprise, explicit attention has to be given to their differences, the validity of their respective positions, and the appropriateness of conflicting views. Knowledge networking is therefore seen as a problem of working out creative tensions among members of the network, and not simply a matter of opening information channels between ready-made producers and consumers of knowledge.

In short, it appears unlikely that there exists a single "optimal" strategy for improving the utilization of educational planning knowledge. Appropriate policy depends on prior explicit choice among alternative definitions of knowledge "utilization," varying assumptions about the adaptability of universities to new roles, and differing views on the adequacy of traditional educational strategies to meet the distinctive needs of primary groups.

The thrust of this report is not to set priorities in any of these respects. Instead, our intention has been to draw on a range of past planning experience to illustrate some of the strategy options available for educational planning aimed at a similar diversity of priorities.

The Research conducted under this project has consisted of the following major types of activities:

1. a survey of theory relating to knowledge diffusion and the transfer of knowledge to action;

2. a review of case studies suggestive for prototypical strategies of knowledge utilization, and tactical variants on these major strategies;
3. a series of four conferences on knowledge networks, each progressively refining the conceptual basis and strategic options for knowledge network development (Berkeley in June 1974; Stanford November 1974; Harvard July 1976; UCLA September 1976);
4. commissioning of several papers on selected problems of knowledge utilization identified in the conferences;
5. on-going exchange of information with other universities and technical assistance agencies pursuing similar work;
6. organization of a seminar on network strategies among graduate students at UCLA connected with the project during the summer of 1975;
7. meetings with selected university and technical assistance groups in Europe (summer 1975) to exchange views and research findings on cost-effectiveness of alternative strategies for university involvement in technical assistance;
8. fielding of a questionnaire to selected Latin American educators, as means of assessing the felt needs for educational planning knowledge, the nature of that knowledge, and mechanisms for its transmittal. (This questionnaire complements an earlier questionnaire sent out by Florida State University, pursuing related lines of inquiry); and
9. site visit to Jamaica, to assess the validity of our findings within a particular context, and in light of the totality of educational planning needs.

We are grateful to the many people who have made substantive contributions to our work throughout this project. William Miller of the AID Mission in Jamaica and William Charleson of TA/EHR, USAID, Washington, D. C. have helped us in particularly vital ways. Nevertheless, the listed authors of this report accept sole responsibility for any errors and oversights.

CHAPTER 1

INTRODUCTION

1. Definitions

It will be useful to provide an initial clarification of principal concepts used in subsequent sections of the report. Definitions will be important because of the interdisciplinary nature of theory brought to bear the diversity of educational planning efforts to which we have alluded, and the differences among ideological perspectives that one encounters in any critical analysis of foreign assistance.

In offering these definitions, we have had to pick our way between widely differing views among authorities. We have also made an effort to define concepts broadly enough to capture some unorthodox cases of educational planning which have proved among the most successful we have encountered. Consequently, our choice of definitions has been dictated by a continual refinement of terms that allows us both to generalize about isolated experiences and also to make critical distinctions between divergent ends and means of educational planning.

For convenience of inspection, the box below provides highlights on the major issues of the Networks Project, containing principle concepts of the study which will be defined more extensively in subsequent paragraphs. The major concepts are numbered to correspond with the definitions that follow this summary.

THE NETWORKS PROJECT at UCLA is concerned with the cost-effectiveness of knowledge utilization networks in educational planning for lesser developed countries. Three focal issues are addressed:

- Design criteria¹ for knowledge networks² aiming at effective utilization³ of educational planning knowledge⁴;
- University roles⁵ in knowledge networks, and their cost-effectiveness⁶;
- Assessment of the distinctive needs of primary-groups⁷ as targets of educational planning.

1. Design criteria. This term is borrowed from the field of architecture; it refers to the initial selection of objectives or performance characteristics to be sought, and subsequent identification of design options to meet these objectives. The term "design criteria" denotes: (a) explicit attention to definition of client needs, revealed through active client participation in the design process; (b) avoidance of premature fix on a "one best" solution; (c) recognition that objectives are rarely fixed and a priori, but tend to evolve through exploration of concrete options, often into the project implementation stage itself. These views imply a bias toward evolutionary planning involving a strong learning component, or "planning from the bottom up" as opposed to one-shot, top down planning. (See Dunn, 1971; Friedmann, 1973; Waterston, 1965; Faber and Seers, 1972; Goulet, 1971, esp. pp. 161 ff; Caiden and Wildavsky, 1974.)

2. Knowledge networks. Network is a word that occurs frequently in the literature, seldom twice with the same shades of meaning. For purposes of this study, a "network" is formed by geographically separated institutions that span the production and utilization of knowledge and are linked through information transfer or collaborative action. Lesser Developed Countries (LDCs) are assumed to be the primary target for the use of knowledge produced in such networks, but is recognized that networks may also have the purpose of learning from LDCs as input to domestic policies on behalf of poor communities in the United States. Most of our research relates to educational planning institutions, but some relate to activity in other sectors, particularly agriculture, where this can provide suggestive experience in translating knowledge to action.

Components of a knowledge network include producers and users of knowledge. We are especially interested in the characteristics of the users, and the critical linkages between relevant actors. For purposes of this study, we find it useful to distinguish four major groups of actors: (a) universities; (b) sponsors, such as AID or the World Bank; (c) clients in LDCs; and (d) primary groups representing the "ultimate" target of educational policies. Each may be a knowledge resource for another, and consequently, linkages are not to be conceived as a

hierarchy, with universities and sponsors at the "top" and educators and target communities at the "bottom."

We have found it helpful to distinguish two broad categories of networks, loosely denoted "Top Down" and "Bottom Up" strategies. One can just as easily categorize networks by a number of other typologies, but we focus on this division for two reasons: first, it accords with a general split that we find in the literature and among our colleagues, who tend to view networks either from the standpoint of the knowledge delivery system (Top Down) or from the standpoint of primary groups (Bottom Up). (This greatly oversimplifies the underlying issues which are given more careful treatment in Chapter III.) Second, our research suggests that effective networks tend to combine features of both Top Down and Bottom Up strategies. Success would thus seem to depend on recognizing the differences between both views, and resolving the inherent conflicts between them. Keeping both views in balance does not come naturally for most organizations, but it appears to be an important facet of better knowledge utilization in the field of educational planning.

This project deals with networks primarily in terms of geographically separated sites for knowledge production and consumption. We recognize, however, that knowledge networks also apply to groups operating on the same site (for example in mounting a self-reliant program of integrated rural development), or even within the same building (for example a PERT chart used by a Ministry to coordinate the implementation of a comprehensive plan). We find the problems of networking on this scale to be fully analogous to the problems of international transfer, for in both cases, the main problem is not so much one of bridging distances as reconciling distinct perceptions of educational problems at hand.

3. Utilization of knowledge. We might simply speak of knowledge "use," but "utilization" denotes a deliberate program of putting knowledge to use in applications that are both feasible and appropriate. "Utilization" in this report specifically embraces four categories of knowledge consumption:

- a) knowledge diffusion among groups who work in the same media, sharing the same experiential base for interpreting data, and using it for similar purposes;
- b) knowledge exchange among groups or individuals who do not share similar roles, problem definitions, incentives to act, or epistemological foundations, and for whom knowledge must, in effect, be translated across professional, cultural, political, language, and personal barriers, often requiring face-to-face interchange;
- c) knowledge application involves a more stringent definition of utilization; it denotes concrete action traceable to knowledge diffusion or exchange, resulting in outcomes perceived by primary groups (target population), in this case, not only school children but groups affected by that schooling, such as parents, employers, and social action groups in the target community;
- d) knowledge validation refers to evaluation of knowledge outcomes (both deliberate and unintended), coupled with a capacity to learn from experience (a memory), and a capacity to modify actions on that basis.

Knowledge diffusion and exchange come easily. The real difficulty of knowledge networking arises in the realm of knowledge application and validation. This is where the transition must be made between theory and reality, and between ideas and action.

The distinction between knowledge diffusion, exchange, application, and validation is discussed at greater length in Appendix B. Each form of knowledge utilization makes its own demands on a knowledge network, and Appendix B reviews some of the network design implications that stem from this fact.

4. The knowledge base for educational planning. Educational planning is the exercise of foresight in charting a course of action that will enhance learning. When applied to teaching/learning activity that is organized into programs, institutions, and education and training systems, comprehensive and systematic educational planning covers the development and statement of goals; determination of policy and program alternatives; assessment of costs and resources and evaluation of outcomes or effects; and the monitoring of allocations decisions and implementation activity. Results of this last step are fed back into what is a continuous process. This is the rationalistic view of educational planning.

Critics of rational planning claim that the systematic approach forces rigidity and limits the analysis of real life social situations. To get around the limits of systematic planning new approaches to planning have been suggested under the names of transactive planning, incremental planning, creative planning, participatory planning and radical planning. These approaches are valuable as an antidote to systems rigidity and for orienting the planner to the importance of value, quality and social interaction as determinants of planning success.

These differences in style of planning are reflected most in the different knowledge bases which they draw upon respectively. The systematic form of planning activity can be codified to yield a body of knowledge for dissemination, exchange, application and validation. In contrast, the intuitions, feelings, and skills employed in social and political interaction, while critical to the success of planning as a process, are not easily codified into systematic knowledge that can be disseminated.

The first, more conventional style of planning denotes a codified knowledge base, because it applies to teaching/learning activities that are organized into programs, institutions, and formal education and training systems. These systematic forms of activity can yield knowledge in the form of written theories, methods, and data stores, which can be broadly disseminated, and applied to new practices in similar institutional settings elsewhere. They emphasize comprehensive and sequential analysis of educational goals, program alternatives, evaluation of options, and implementation -- the last step constituting feedback to continuously renewed planning cycles.

By comparison, contextual knowledge is characterized by greater recognition of learning processes that are not organized into educational institutions but take place within social processes at large. The knowledge base which is drawn upon cannot be easily codified, particularly in relation to issues of subject content, educational quality, questions of ideology, and to the planner's use of intuitions, political skills, and sensitivities in assessing local requisites for effective action. Less emphasis is given to the reduction of abstract goals to concrete actions,

and more to working outward from model instances of success, aiming at adaptation of such "intact experience" directly at the level of the target communities.

The codified and contextual knowledge bases are not substitutes for each other, but complementary, each supplying strengths where the other is weakest. Both are comprehensive, but one with regard to the range of goals and alternatives considered, the other with respect to the richness of local constraints or opportunities for action. Both may be applied to a comprehensive view of education or development objectives; equally, they might both apply to one aspect of education, such as curriculum development, or to one program or institution which is part of a larger system.

The knowledge context of these two planning styles is discussed further in Chapter II, along with their divergent implications for the design of knowledge networks.

5. University roles. These refer mainly to American higher education involvement in overseas development and technical assistance programs. We generally group foreign (LDC) universities together with their American counterparts, on grounds that universities everywhere tend to have more in common with other academic institutions than they do with other groups even within their own country (such as poor communities). For some purposes, we also group with universities other agencies (such as international institutes of agriculture) which carry out similar functions of research, training, and specialized technical assistance.

6. Cost-effectiveness. Cost-effectiveness is an issue of economics, and it therefore raises the three basic questions that every economic system must address: what shall be produced? how? and for whom? (Samuelson, 1961, p. 17; Haveman, 1970, pp. 27-29). For purposes of this report, what refers to the problem of defining knowledge utilization (Chapter II below); how and for whom refers to university involvement in alternative knowledge networks (Chapter III).

Chapter V gives more explicit attention to problems of cost-effectiveness analysis applied to technical assistance efforts. Issues

addressed there include: (a) multiplicity of objective, reflected in the multiplicity of agencies involved; (b) costs as well as benefits that cannot be reduced to monetary equivalents; (c) appropriateness of including secondary and tertiary impacts of education; (d) data availability; (e) indicators of effectiveness; (f) formats for comparison of costs and effectiveness that keep the "big picture" in view, including non-quantifiable costs and outcomes.

7. Primary Groups. This refers to the "ultimate" clients of educational planning -- principally school children or adult learners, but by extension their households, the communities they live in, their employers, and others affected by their education. Most knowledge networks do not reach down to touch primary groups directly, but instead terminate at a higher level group we have denoted the "client," usually meaning Ministry officials, teachers, and other decision-makers, and change agents. When knowledge utilization leads to visible actions on the part of these "official" clients, we denote this knowledge application. When we speak of knowledge validation, however, this denotes a more direct focus on primary groups, involving either their response to educational treatments, or more active participation in the evaluation and design of educational services. Sometimes this leads to recognition of their own capacity to generate knowledge, and engage in more active forms of planning "from the bottom up." Indeed many technical assistance programs explicitly identify this as a long-term goal of development.

Such roles for primary groups require a certain amount of organization on their part, and contact with primary groups often takes place through representatives rather than people at large. Sometimes these representatives become difficult to distinguish from the kind of official clients that we have classified separately, but the heuristic distinction remains useful. Most importantly, we find that knowledge networks look quite different depending on their respective orientations toward official clients on the one hand, or outreach to primary groups on the other (see Chapter III).

In this report, primary groups are identified mainly with the "poor majority." The term "poor" is used with respect to provision of

basic needs (health, housing, nutrition, literacy, democratic participation in social action on felt needs). "Poor" does not necessarily refer, then, to monetary level of income, which reflects consumption standards exported from more industrialized countries. The term "poor" also seems preferable to "underdeveloped," in the sense that the latter often suggests an inappropriate standard of "the modern sector" as a target and benchmark of progress. Modernization may in fact be a counter-productive standard for dealing with the specific problems of poor communities: modernization comes easiest to those who can already afford it, and pays best to those who can "deliver" modernization (planners included).

2. The Historical Context of the Networking Issue

Over a century ago the American Board sent missionary teachers to the poor countries, and in the history of technical assistance, some of the ways of the missionaries have come back into favor in recent times. Missionary activity was criticized for being narrow and sectarian, as isolated, fragmented and small-scale given the vastness of the need in poor countries; but it was performed close-up to the problems of the poor and needy, and sometimes by dedicated volunteers who acquired, through long tenure and often per-force, deep knowledge of the language and culture and the needs and aspirations of the people they served. The missionary experience is mentioned because it may have something to teach, as development efforts now seek to reach the so-called poor majority, not reached effectively through modern and large scale development and technical assistance activity. The utilization of knowledge to assist this poor majority will be a central concern of later sections.

Activity in technical assistance, under secular or government auspices, began on a sustained and systematic basis almost a century after missionaries first went forth. Technicians, usually specialists in their field and often individualists, took on some of the pressing and technically demanding tasks of development which generally missionaries could not perform. Important technical problems were solved, only to reveal that there were constraints imposed on development by economic and social structures, and these in turn were supported by deeper lying cultural

characteristics. It was at this point that U.S. universities came in, first to supply the technicians in the applied fields of health, education, agriculture and engineering, and later to provide specialists in the problem of development itself. University-based economists addressed the general problems of economic constraints, and other social scientists attempted to increase knowledge of the political, social and cultural causes of poverty and lagging development. The field agent of the university social scientists was the "change agent" who tried to apply what little reliable and general knowledge there was to the social problems at hand, often with very little effect. One truth had been grasped at about this point -- the process of poverty and underdevelopment was complex and not amenable to short-term solution through quick and heavy infusion of money, commodities, technicians and knowledge, especially knowledge from the sending countries. Still, there were scattered technical successes in the field, some with substantial development significance.

To pull together the fragments and to focus scattered effort to provide continuity over time, and to insure a reliable source of knowledge and men from the rich countries and a place on scene in the poor countries to deploy and use the knowledge and men, the "institution building" phase of development evolved. There were two sides to this, the institution in the sender country, in the form of a university or agency resource bases, and the institution in the recipient country. It was the latter that was conceived of as "the institution to be built." For that reason perhaps, institutions were built in the poor countries, and very few were ever built to survive in the rich countries.

In some situations there were effective institutional partnerships between institutions in the sender country and institutions in the recipient country, but the very use of the term "sender" or "donor" and "recipient" or "client" revealed one weakness of the arrangement -- the partnership was unequal and benefits were viewed as going one way, from donor to recipient. This truth was eventually perceived and a variety of measures, real and rhetorical, were conceived to redress balance and reduce the harmful consequences of dependency in development arrangements. At this point the received wisdom spoke for the need to provide aid with

no strings attached to host countries, their institutions, and their experts. The time seemed right -- the institutions were there in the countries, built, equipped, and supported with "strong staff," mostly trained in the institutions of the "more developed countries" ("MDC" and "LDC" now in use, one of the terminological changes supposed to take the sting out of poverty and underdevelopment and the feelings of inequality it engenders). The difficulty was that just about this time the need had passed from "institution building" to a stage that currently has no easy name. More precisely, the need for a new approach is clear, but a term for that approach is not easy to find. It is "extra-institutional," and the action is in the post-institution building stage.

When the unequalness of the partnership between MDCs and LDCs was perceived and chronicled, and when the evils of dependence as a destructive consequence of well meaning development effort was described, many in the MDCs were busily, though not always productively, engaged in self-flagellation. So engrossing and soothing was the utterance of "mea culpas" that it obscured the important fact that dependence was not alone an evil at trans-national level, but was even a more difficult problem within the poor countries. In fact the institutions so dear bought and well built had not even gotten to the problem of dependence in their own countries, because many of them did not have enough will or capacity for outreach to create dependency relationships in their own countries. Many of the scholars were locked up and busy within their own walls. But many were not.

Awareness of the need for institutional outreach and the dilemma of dependency which could result came as donor countries discovered the "poor majority," either untouched by much of the development and technical assistance that had gone on, or when touched, the contact was remote, sporadic and ineffective. When touched close-up, the result was often dependency, whether the donor was foreign or national, the inequality and harmful consequence were there. This then is where the situation is as this is written. There is a need for knowledge that is intimate and deep of the needs of poor and untouched people in remote areas of developing countries. There is a need for knowledge of how to work effectively but within the essential dilemma of providing technical and development

assistance without creating dependency. There is a need that this knowledge be valid and fresh, but that it also be comprehensive and systematic enough so that effort is not isolated, fragmented and small-scale, as it was when the missionaries first went into the field. How institutions in MDCs remote from the setting and the people, but uncomfortably aware of the symptoms of the problem, receive knowledge from the scene of the problem, and generate and transmit knowledge that can be utilized back on the scene, is the problem, at least for those institutions in developed and developing countries who want to participate.

The historical legacy which led us to this statement of the problem is summarized in Figure IA. This outline points to the fact that substantial progress has been made, and that we are perhaps in danger of neglecting real achievements from the past in the rush for new solutions. The problems encountered in recent attempts at networking may find valid answers in the much earlier work of missionaries. At the same time, the summary should make it clear that a return to the missionary model is a false solution if it fails to somehow re-integrate the lessons of more recent history. Otherwise, we may simply find ourselves repeating the last hundred-year cycle all over again. Indeed one of the major problems of technical assistance has been the rediscovery of problems and reinvention of solutions without adequate thought to the past.

The specific problems facing knowledge networks today are shown as points 8 through 10 in the historical table. Subsequent chapters of this report will take up these points in turn, as noted in the table. In each case, an attempt will be made to maintain this overall historical perspective, keeping in mind that solutions which seem very attractive at present can be the undoing of past solutions to problems that will then be unleashed upon the planner whose eye is only to the future.

Figure IA

Historical Context of Technical Assistance:Background on the Problems ConfrontingKnowledge Network Strategies

<u>Technical Assistance Strategies</u>	<u>Major Assets (Strengths) of the Strategy</u>	<u>New Problems Confronted Under the Strategy</u>
I. MISSIONARIES (19th Century and earlier)	a. Close-up picture of development problems b. Dedication to needs of poor majority	1. Small scale (limited mobilization of resources for mass change). 2. Little impact on techno-economic infrastructure.
II. POST-WAR EFFORTS - Change agents - Technicians - Government and foundation sponsorship - University backstopping	c. Deeper, more diverse expertise d. Political leverage for change; large scale social investment; dramatically raised expectations	3. Fragmentation of efforts (whole less than sum of parts). 4. Lack of continuity over time (no learning from failure or systematic building on success). 5. Naivete of technical solutions (over-generalized models; little reference to social/political context; problems of absorptive capacity for innovation).
III. INSTITUTION BUILDING - In LDCs - In MDCs	e. Coordination, continuity, memory f. Absorptive capacity	6. Institutionalization recreates earlier problems within new agencies. - lack of coordination, e.g., between universities - lack of responsiveness to needs of LDCs or MDC sponsors - expensive overhead.
IV. NETWORKING	g. Streamlined institutional approach to coordination, continuity and learning h. Stronger problem focus, more diverse resources and experience base i. more equal participation by LDCs and MDCs; knowledge flows both ways.	7. Unequal partnership (MDC dominance over LDCs). 8. Problem of keeping generalizable knowledge faithful to the complexities of action. (Discussed in Chapter III). 9. Problems of implementing planning knowledge (See Chapter IV). 10. Paradox of helping others to become more self-reliant (See Appendix C).

CHAPTER II
THE KNOWLEDGE BASE FOR EDUCATIONAL PLANNING

A first step in the design of effective knowledge networks is to identify the kinds of educational objectives that are being sought, as a framework for gauging the success of knowledge applications. In addition, it is important to identify the form and content of knowledge to be transmitted, as a guide to the design of an appropriate mechanism for its transfer. These matters are dealt with as follows.

Chapter Contents

1. Conventional information base for educational planning.
2. Unconventional information bases.
3. Educational planning and social indicators.
4. A format for evaluating selected indicators.
5. A knowledge base for determining technical assistance requirements.

1. Conventional Information Bases for Educational Planning

In the definitions given in Chapter I, we alluded to educational planning knowledge as occurring in two forms. In the more conventional rational and systematic approach to planning, knowledge is generally expressed in codified form, and as such it presents a traditional medium for information transmission in knowledge networks. It is scientific and replicable in character and designed for use in fairly aggregate and generalized forms of analysis.

The second form of knowledge applies to situations that call for greater judgment in the interpretation of needs and resources, greater reference to specific contexts of application, and more specific examples of action to interpret the meaning of information and plans.

Knowledge is related more explicitly to "intact experience" of primary groups in solving particular problems, and it draws on less conventional bases of information than codified knowledge. We refer to this as contextual knowledge, and we will return to it in a later section of this chapter. Here, we can describe more specifically the conventional information base for educational planning, as it affects the design of knowledge networks operating with codified knowledge.

This knowledge consists first of schemas and formats which specify the demographic, social, economic, and educational data necessary for educational planning. Statistics or indicators used in planning are derived from these data or from data gathered and analyzed by theories and methods of social science investigation and research. The results are incorporated into models and routines used in the major planning activities of goal development, policy analysis, program evaluation, and monitoring. Some of the major theories, models, and methods used in planning can be listed:

- 1) Models and methods of formal logic can be used for analyzing and systematizing goal statements and policy alternatives, e.g., propositional calculus including truth table arrangements, inference testing, and decision models and analysis. Decision analysis can be structured and quantified to an extent by introducing probability calculus. Decision analysis can be used to analyze and test policy and program alternatives and to array and test allocations decisions.
- 2) Curve fitting can be applied to derive trends and to project demographic, economic, social, and educational goals translated into target and target fulfillment paths.
- 3) Demographic models and methods using component analysis and cohort survival formats can be used to project populations and from this to derive economic, social, and educational targets and target fulfillment paths.
- 4) State space models, markovian process models, and control models can be used to trace educational systems flows in response to scale and targets of plans or to project supply in a manpower-requirements-planning exercise.
- 5) Systems analysis can be used to chart interaction among components of complex educational systems, and PERT charting and critical path analysis can be used to schedule plan development and implementation over time.

- 6) Manpower-requirements planning models can be used to project economic goals and education and training requirements and targets.
- 7) Since planning deals by definition with the future and not all is amenable to quantification, there are also methods for projecting future states through consensual formats such as Delphi, through logical tracing such as cross-impact matrices, or through scenarios written within the constraints of envelope curves.
- 8) Goals may also be derived from needs assessed through censal, survey research and sampling models and methods.
- 9) Programs can be evaluated and monitored through test/measurement and psychometric methods.
- 10) Production function analysis can be applied to derive the input-output relationships of education. The analysis is usually based on least squares and regression approaches. The resulting input coefficients are useful in evaluation and monitoring and as input to cost-benefits and cost-effectiveness analyses. Inferential statistics applied in survey research or in control-experimental studies can also be used for evaluation and monitoring.
- 11) Optimization models and mathematical programming technics can be used to plan allocations and, through sensitivity analysis, to simulate and test possible alternatives.

These and other similar models, methods, and techniques are the heart of systematic educational planning. Even with this vast repertoire of theory and method, there are some limitations in applying systematic models and methods to educational planning. Some of the major shortcomings are

- a tendency to exclude primary groups from the planning process;
- poor (some would argue impossible) calibration of aggregate models to local conditions;
- difficulty in adapting analytic derivations of input-output relationships to decision contexts ruled by multiple objectives; and
- failure to deal effectively with qualitative problems in education, ranging from value positions, political considerations, and contemporary historical circumstances that bear on social mobilization for change.

In reality, learning can^{be} result from education that is not formally organized, and educational planning is not always systematic. Planning may also be applied to one aspect of education, for example, to curriculum or to teacher training; or planning may be applied to one program or institution which is part of a larger system. Hence, planning is not always comprehensive or systematic.

Most planners who have operated in reality are aware of the limits of their methods, but the newer, less conventional planning styles force more explicit consideration of the limitations. They do not offer much systematic theory and method which can be codified as knowledge for dissemination or exchange, although they are critical for understanding the context in which educational knowledge is applied and validated. Planning knowledge is used and validated in social reality, and value, quality considerations, and social interaction are significant determinants of the outcome.

There is also the view that more socially oriented planning approaches, for example, participatory planning or transactive planning, are more effective when the planner must work with primary groups, especially poor people, minorities, and individuals and groups working in an unequal and dependent relationship with more expert technicians serving richer and more powerful interests. There is the claim that participatory, transactive, and advocacy planning reduces dependency and thereby better serves the interests of primary groups. The assertion is untested but plausible, and this issue is taken up again in later parts of the report (Chapters III and VI). In application there are always blends of the two approaches--the more conventional rational forms of planning and the newer ones based on a more contextual knowledge base.

2. Unconventional Information Bases: "Contextual" Knowledge

Intuitions, feelings, and skill in social and political interaction are critical to the success of planning as a process but are not easily codified into systematic knowledge that can be disseminated. Moreover, there are important forms of learning that result from

education which is not formally organized, and educational planning is not always systematic. Many planners began in close-up, participative planning and development at the village level, moved back from this and went into a phase of systematic and aggregate level analysis and abstraction, and have kept in touch with reality through the years by moving back out to where the action is. The reason such alternation and resulting tension is necessary is that otherwise the planner becomes abstract about the need to be concrete, authoritative about the need to be participative, remotely in favor of engagement, and precise in prescriptions for fuzziness. Only a fool believes that a number can represent a child or that a systems model reflects educational experience, but numbers and models are widely used and, when appropriately faced by reality, can serve a useful purpose.

When circumstances prevent direct and complete knowledge, as indeed they do even very far down in organizational echelons, then the planner remembers what he can from the real world, applies this recollection to the interpretations of the abstractions he has at hand and must deal with, and checks things out in reality as he goes along.

The major difference between conventional information bases and the unconventional ones is that the former provide a well-understood context of institutions, situations, and structure of assumptions, theory, and method which give information a shared significance and validity among its various users. Unconventional information bases are those which lack this structure and have to supply their own contexts; hence the term "contextual" knowledge. This form of knowledge comes to the fore in almost every planning situation in some degree, but it has a more prominent role where

- problems and solutions are not well defined,
- incongruent world views are superimposed upon the same situation,
- local events or conditions overwhelm recognition of shared realities that would aid more systematic comparison of experiences among different communities, or

- a human need emerges to create a unique world of one's own making, out of personal experience, aiming at a sense of identity, competence, control over personal destiny, or perhaps self-protection.

Each of these points can be elaborated, and others could be added, but here it is sufficient to say that we probably have a basis for predicting shifts in the appropriate balance between codified and contextual knowledge; and strategies for knowledge networking ought to take account of these shifts. Chapter IV looks at network design with this requirement in mind, but an example here might be helpful. Various writers have dealt with the question of "personal" or "tacit" knowledge (Polanyi, 1962; Friedmann, 1973), and the various cognitive levels of information processing (Dunn, 1974; Beer, 1972). There is fairly close agreement that some of the most advanced skills in problem solving call for reference to personally experienced, concrete, intact situations which allow imaging and creative exploration rather than rigorous mechanical thinking in abstractions.

This simply implies, as part of a design for knowledge networks, that funding should be provided for site visits as well as data banks, for jeeps as well as airplane tickets, and possibly for some consulting fees for local folks to educate the foreign experts.

Contextual knowledge displays some of its own weaknesses:

- limited exposure to programmatic alternatives derived from a broader range of experience elsewhere,
- goals tacitly embodied rather than explicitly stated, or brought to the surface only in cases of conflict, and
- difficulty in describing and transmitting past experience in codified forms that can be given broad dissemination.

It should be stressed again that while the two approaches are complementary, they also have distinct functions in planning. The challenge is to bring these two distinct types of knowledge to bear simultaneously on educational planning. The reality that educational planning needs to address does not lie somewhere "in between" codified and contextual knowledge. Instead, the truth lies at both extremes and reveals itself through a binocular vision from both vantages.

The problem of integrating these diverse images remains largely unsolved. Yet it presents a challenge to designing an approach to the issue of knowledge networking that may prove more fruitful in the long run than current alternatives--endless criticism among proponents of each school about the (generally accepted) limitations of the other, or historical oscillation between one and the other in vogue, or superficial integration of the two in ways that do justice to neither.

3. Educational Planning and Social Indicators

The problem of indicators has long plagued educational planners, just as the problem of developing adequate criterion measures has never been fully resolved in educational tests, measurement, and evaluation. There may be no perfect resolution to either problem, for there are many paradoxes and anomalies. Here the focus will be on the problem of planners in centralized offices attempting to deal with educational services for primary groups in isolated areas.

Indicators developed by central authorities, for assessing plan-goal attainment, or for policy outcome evaluation may be irrelevant or invalid for the situation of the primary group. More likely, the indicators are partially relevant but do not reflect the situational richness of the primary group and its problems. Planners could not collect sufficient detail to reflect the richness and differences which prevail among large numbers of primary groups in an extensive national or regional domain. Complete and detailed information could not feasibly be gathered, and if the data were collected and analyzed, the implications could not be comprehended by central planners or decision makers and encompassed in their plans, policies, and programs.

Yet plans are made and allocations decisions reached in central locations remote from the primary group and its local situation. The option chosen by systems planners is to develop aggregates and averages in the form of indicators which reflect the situation within reasonable limits. The difficulties and limits of this approach are obvious. The averages reflect no reality but may instead mask critical situational

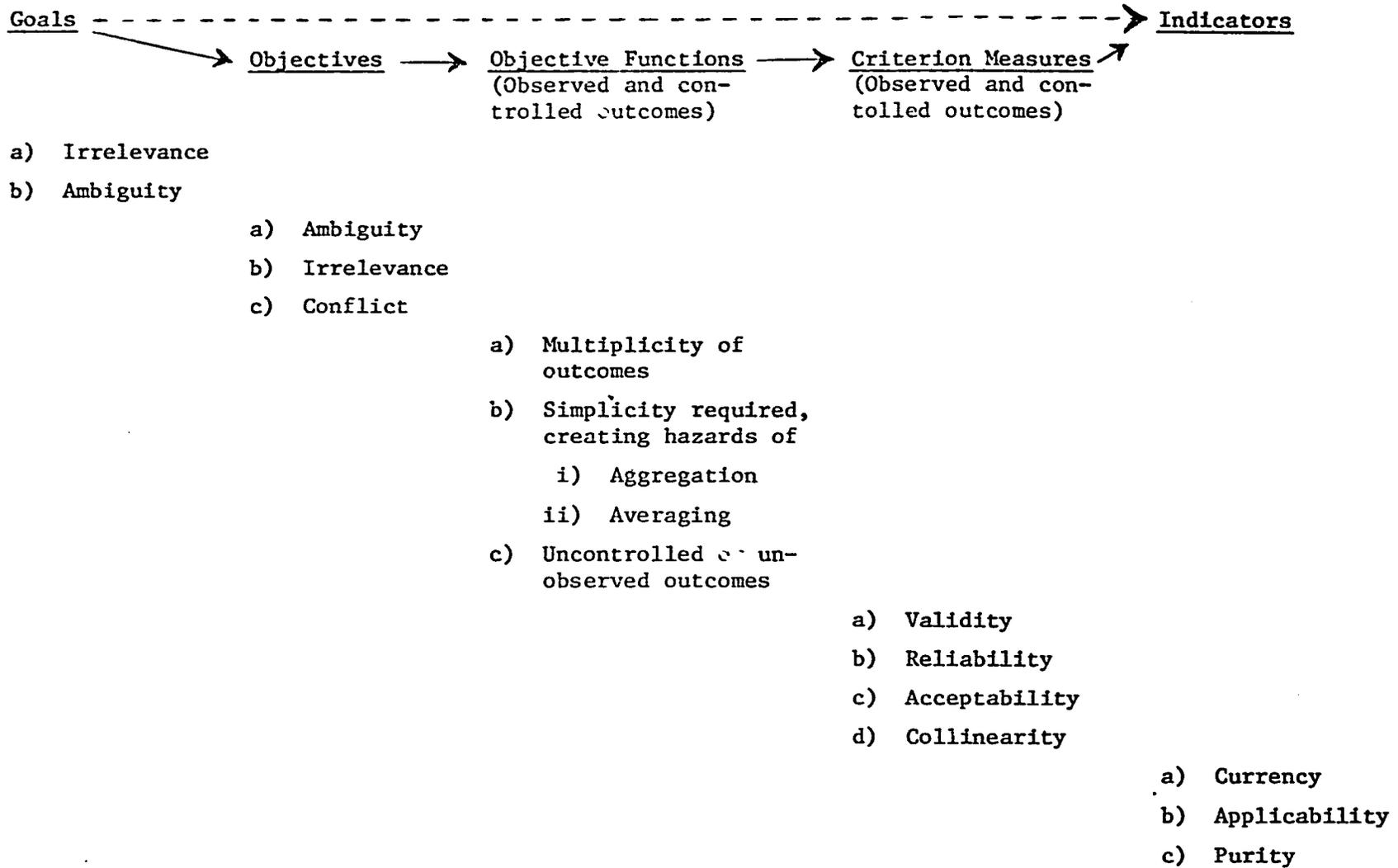
differences. In an attempt to get around this, planners disaggregate by "relevant categories," i.e., by regions and subregions, rural and urban, male and female, and by ethnic groups. There is a limit to this. Planners also group different indicators into patterns of cross-classification or develop multiplicative indicators into clusters or typologies. Again there may be error, additional errors, introduced through the grouping procedures.

In educational planning the problem is exacerbated by the nature of education itself. It may be straightforward to develop indicators to assess activity targets by measuring inputs. It is slightly more difficult to develop output measures to assess attainment of objectives--the measurement of educational output being complicated by the difficulty of observing learning when it occurs, measuring it as a resultant, and developing criteria levels that permit comparison across educational situations. An illustration of this is the difficulty of making inter-country comparisons of educational achievement, as measured, for example, in the International Study of Educational Achievement. Criteria and conditions vary to such an extent that units are simply noncomparable. This is equally a problem within a single country, across regions, or even among institutions.

If outputs are difficult to measure, then assessing the consequences of them, "the outcomes," in terms to be used later, are even more difficult. Yet it is these outcomes which signify attainment of social goals, and indicators should be able to reflect them.

For planners the long trace from Goals to Indicators and some of the complexity of that trace are sketched in Figure II-A. First, it is possible to jump from Goals to Indicators, and this, in fact, is generally done; but it is not possible to make this jump and still maintain anything but a pretence at system or rigor. The usual systematic route is from Goals to Objectives to Objective Functions to Criterion Measures to Indicators. The middle steps are often skipped because they are often so discouraging or difficult to carry out. Figure II-A also portrays reality by noting that there are uncontrolled

Figure II-A



outcomes which cannot be readily accommodated in an assessment model. Some of these outcomes may be known but uncontrollable, others unknown. Both kinds of outcomes affect the purity of indicators through collinearity, i.e., what may be influencing the variables in the indicators may be some other variable with unknown or uncontrolled effects. Because this is always so in reality, the most attractive cop-out is to make the great leaps which characterize so much of social planning rhetoric.

The first problem of Goals is that the goals of the central planners may be different from the goals of primary groups, as has been mentioned. More likely, the goals are ambiguous, perhaps irrelevant, or even conflicting, but so unclear that neither group can tell.

For this reason goals are usually translated into Objective Statements, which means nothing more here than goal statements worked over to reduce ambiguity. Once the ambiguity is reduced, the effect may be to highlight irrelevance or conflict. Resolution of these problems is not the forte of systems planners but may be within the skills and competencies of social planners, organizational analysts, or social psychologists. If the conflict cannot be reduced and the irrelevance remedied, the process stops and the remaining steps in the systematic exercises are only that--exercise. There is nothing harmful in exercise, as long as the mathematical Mittys of this world realize that they are not competing in the Olympics when they are jogging around the block. Ratiocination builds sturdy minds for another day, just as the empty rhetoric of fraudulent "social concern" builds sturdy mouths.

When the objectives are linked to criterion measures through objective functions, some agonizing problems appear for the analyst and planner. Here the analyst must face the trade-off between the multiplicity of outcomes relevant to any one goal and the need for simplicity in the statement of outcomes, enforced by problems of measurement, combinability, and expression of outcomes. First, there may not be any useful single measure of utility of outcomes to reflect the

objective and goal; second, different decision makers have different preferences for any particular outcome. Let us assume that a goal is stated: "To provide education to all citizens." One decision maker might prefer equal treatment for everyone; another might put greater value on extra attention to the disadvantaged; another might emphasize the development of top talent. Before an objective function is possible, these preferences must be reconciled into a single utility function--probably one with several twists and bends to roughly accommodate each position.

Clarifying alternative goals and objectives with objective functions has merit, but in reality it must be done by incorporating results into single or simple measures, and this leads to problems of aggregation and averaging, as first discussed. In any case, there are vast uncontrolled and unknown consequences emerging at the same time.

The problem of developing criterion measures of objectives is handled under standard theory and practice of tests and measurement. The objectives must be stated in behavioral terms, and the behavior must be observable. If observable, it is measurable, and the measurement must be valid and reliable. It is valid when it measures what it purports to measure, that is, the test situation is relevant to the objective. It is reliable when it measures consistently through repeated applications, i.e., to different subjects and in different circumstances. Validity and reliability have traditionally been the limit of concern of the test measurement man, but beyond that lies the problem of acceptability. If the test is unacceptable--and this is a mounting problem for objective testing--then it matters not how many demonstrations of validity and reliability are issued by the test man. The answer is, "I just don't accept it as a criterion measure." This rejection may apply either to the measurement procedure and instrument itself or to the incorporation of the results into norm tables for comparison among groups and individuals.

If the procedure can be run through the criterion-measurement stage, then the development of valid indicators has only a few remaining

problems. An indicator should be current, but often it is not. No indicator has validity through time and changed circumstances. The indicator also must be applicable, i.e., cannot be applied to different situations and groups without demonstration that it is applicable in such circumstances.

The problem that is never fully resolved for analysts or planners is the problem of Purity. The indicator effects are almost always confounded, the variable influenced by unknown and uncontrolled outcomes that were not controlled and not even observed or known. Collinearity is the great confounder of purity of relationships among variables. For planners, as for preachers, the lack of purity in the world is a terrible thing.

With current, applicable indicators that are pure and based on reliable and valid measures that are relevant to objectives, much can be done. Indicators can be added, subtracted, multiplied, combined in some manner with other indicators for planning, compared across groups and over time, or disaggregated for groups of special interest, e.g., ethnic or sex or age. Objective functions can be set for allocations models and changes in them assessed through simulation and sensitivity analysis. Long-term consequences of plans and policies can be simulated and tested. Input and output relationships can be assessed and expressed in input coefficients which reflect the use of certain proportions of actual and projected resources.

4. A Format for Evaluating Selected Indicators

As the preceding section suggests, we are stuck with making the best use we can of indicators that are likely to be far from perfect in any particular application. Experts who construct indicators may be aware of the pitfalls and apply them only on the basis of considered judgment. Others, however, rarely have access to the important background information on each criterion that allows for judgment of its validity or practical use.

We perceive a need for a kind of "consumer's report" that can give all participants in a knowledge network a better sense of the rationale and limitations of the criteria by which their efforts are evaluated. In this way criteria can be offered for discussion and adoption by mutual consent rather than imposed in the form of an inalterable blueprint. Broad discussion of indicators can also help enrich planners' vision of the processes that they might be affecting unintentionally or which they might control more effectively if they were conscious of the possibilities for doing so.

Figures II-B, II-C, and II-D illustrate a possible format for evaluating selected indicators. The three examples shown there represent a sample of what would presumably be a larger list of indicators that any particular project would draw upon selectively. The format directs attention to the following considerations:

- Examples of how a particular indicator has been actually used (or suggested for use) in practice.
- Specific measures which might be used to define the indicator operationally. (It is important to distinguish a sense of what the indicator really means from the ways that it is measured, insofar as performance is often biased away from ultimate intentions to satisfy surrogate measures.)
- A rough assessment of the cost of compiling data needed to provide operational measures of the indicator.
- A judgmental estimate of the potential for universities to play a significant role in the educational processes and outcomes addressed by the indicator.
- A brief statement of the rationale for the indicator, particularly in regard to its robustness (or validity under a range of field conditions), along with reference to further discussion in published literature.
- Brief consideration of the major limitations in use of the indicator.

Further Explanatory Notes on the Format

- DATA COST refers to on-going use of the criterion rather than initial investments to establish necessary procedures.

"Low" = virtually costless, e.g., routinely published data.

FIGURE II-B

CRITERION: "Design Contingencies Identified in the Field"	DATA COST			UNIV. ROLE				EXAMPLE OF USE
	Low	Med.	High	Trad.	New	Dep.	Ltd.	
Possibly measured by:								
(a) Knowledge and plans allow for contingencies.	x				x			UNESCO source books for science teaching in LDC's.
(b) Homely problem definitions and solutions are insisted upon.	x						x	ACPO use of radio "soap operas" to convey developmental material. Self-help architecture solves problems with vernacular forms and unorthodox materials (Turner, 1972; Fathy, 1973).
(c) Contract employees spend at least half of their time in the field.		x			x			Regional officers in Peace Corps administration.
<u>RATIONALE</u>								
<p>Even well-conceived and executed projects founder when they neglect to deal with the "micro-climates" of local conditions, values, motivations, constraints, and opportunities (see Milhaly, 1965; Allen, 1974; and Wade, 1974). In addition, the buildup of anomalies based on strictly local experiences can become the raw material from which better strategies can be formulated (Kuhn, 1972). Thus, by monitoring local conditions during problem definition, design, and implementation stages, both the short-run and long-run effectiveness of projects can be improved.</p>								
<u>LIMITATIONS</u>								
<p>Identifying design contingencies in the field is not a substitute for careful advance planning based on experience elsewhere. Perceptions in the field may be as heavily colored by prevailing methods and pre-conceptions as they are in LDC and MDC universities and development agencies.</p>								

FIGURE II-C

<u>CRITERION: Use of Multiple Media in Transfer</u>	<u>DATA COST</u>			<u>UNIV. ROLE</u>				<u>EXAMPLE OF USE</u>
	Low	Med.	High	Trad.	New	Dep.	Ltd.	
<u>Possibly measured by:</u>								
(a) Allocation of knowledge-transfer components of budget to multiple media.	x			x				APCO: Newspapers, books, radio, site visits.
(b) Retrospective studies of how knowledge was transferred in individual projects.			x	x				Rand follow up research on dissemination of innovative programs from the U.S. Office of Education (Berman and McLaughlin, 1974).
(c) Correspondence of media to be used and media known to reach target population.		x		x				Presentation of educational materials in comic book format to persons confident in reading this medium (development campaign literature, political materials in many countries).

RATIONALE

Target groups for knowledge transfer in LDC's may have access to and utilize media in diverse and poorly known ways. For example, a newspaper having a nominally low circulation may reach large numbers of people because of multiple readership. Use of multiple media can be a cost-effective strategy for knowledge transfer in that (1) better coverage of a target population with nonhomogeneous habits of media use can be achieved and (2) if the media-use habits of a target population are known poorly or not at all, the chances of achieving significant transfer of knowledge are increased. In addition, different kinds of messages may require different media because of (1) the nature of the media, e.g., detailed instructions should not be transferred by radio because they cannot be preserved by the target population for future reference, and (2) habitual use of channels to carry particular kinds of messages may make them poorly suited to other kinds of messages. For example, messages sent through visiting officials to schools by a ministry of education may be largely authoritarian requests for compliance with centrally created guidelines. If these channels were subsequently used for conveying information about nonauthoritarian teaching methods, such messages would probably either be attenuated before reaching the schools or lack credibility to the schools.

LIMITATIONS

Multiple use of media is probably superfluous in some situations, such as in formal or informal organizations of professionals, within LDC universities, and in other instances where the target population is small, known to one another, and highly motivated to utilize relevant information.

FIGURE II-D

<u>CRITERION:</u> Communities Become More Self-Sufficient	<u>DATA COST</u>			<u>UNIV. ROLE</u>				<u>EXAMPLE OF USE</u>
	Low	Med	High	Trad.	New	Dep.	Ltd.	
<u>Possibly measured by:</u>								
(a) Ability of community to create and store economic surplus for its collective use.		x	x					x
(b) Imports reduced through introduction of appropriate technologies.		x				x		
(c) Reduction in rural-urban migration.	x			x				
<p><u>RATIONALE</u></p> <p>Development strategies involving the singleminded pursuit of economic growth have historically resulted in considerable segments of the population becoming worse off. The penetration of rural markets by manufactured goods often brings an end to local cottage production which might profitably have been preserved through appropriate or intermediate technologies. The push of unemployment on the land or the pull of urban amenities often drains the countryside of youth and talent at the very time when the viability of the countryside depends on these qualities to compete with the cities. In an environment in which industrialization is unmodified, surpluses tend to gather in private hands and in the cities, thus endangering the ability of rural communities to respond to collective crises or opportunities. Since rural welfare is not necessarily served well by economic growth and industrialization, it must be considered as an individual dimension of development and perhaps as a constraint on economic growth in the conventional sense.</p> <p><u>LIMITATIONS</u></p> <p>(See discussion in Appendix C of the present report.)</p>								

- "Medium" = modest or variable costs, e.g., administrative by-product data on file and only requiring collation; use of unobtrusive measures (Webb et al., 1966), or nonquantified observations obtained through site visits.

"High" = expensive, ad hoc research.

- UNIVERSITY ROLE refers to the likely capacity of a university to affect outcomes measured by the criterion.

"Traditional" = standard academic practices.

"New" = unorthodox university role, but the only major constraint is university willingness to shift objectives and staff incentives.

"Dependent" = university role dependent on initiatives by host country organizations.

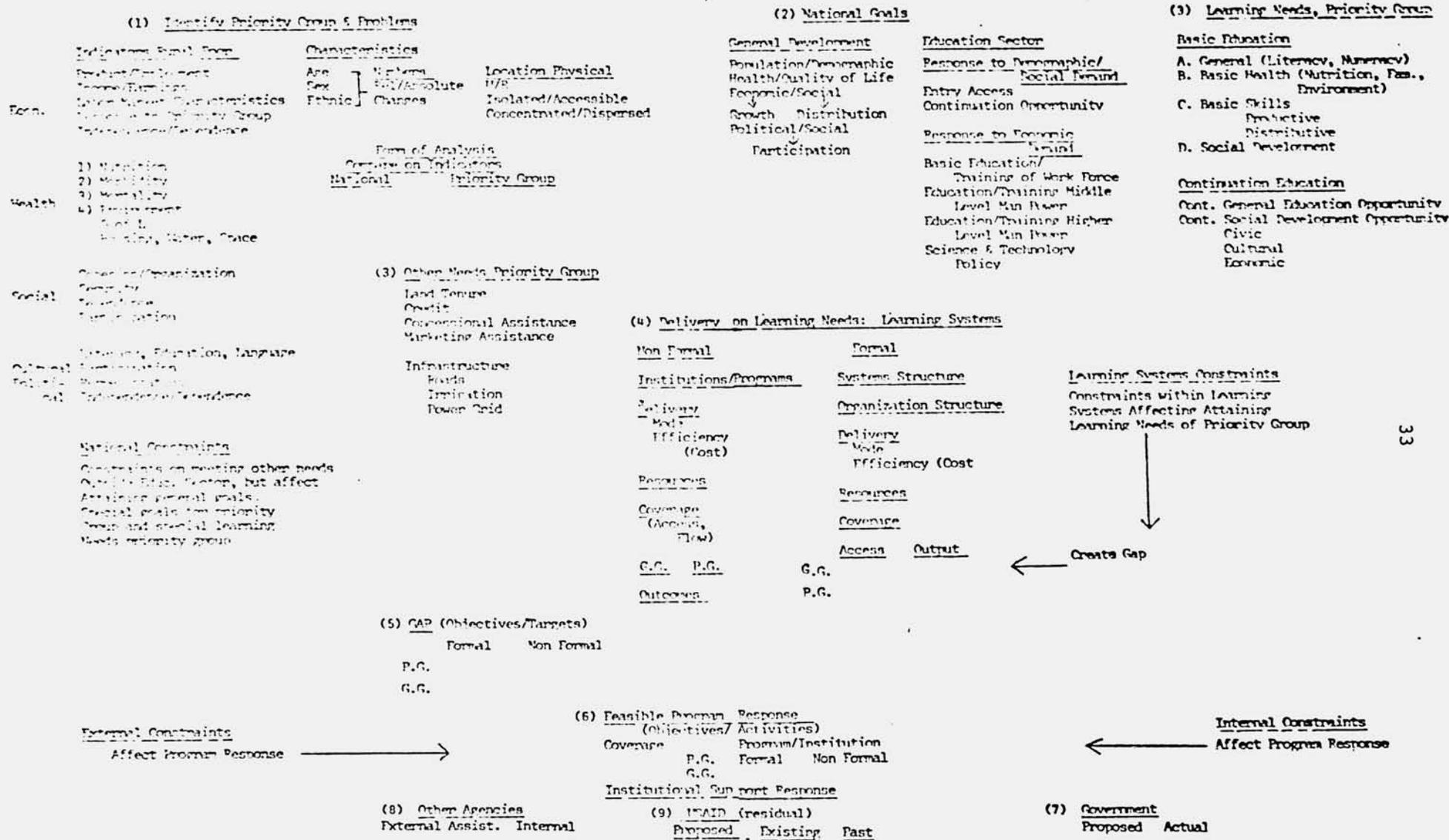
"Limited" = a role chiefly confined to specialized training, evaluation, and design components but not strategic planning.

5. Knowledge Base for Determining Technical Assistance Requirements

Another requirement of knowledge networks is the determination of an appropriate set of network participants based on an assessment of needs for the defined target groups. The Agency for International Development is concerned with this question because although it has large enough resources to warrant overall review of a country's entire educational sector, at the same time AID faces pressures from Congress to use these funds sparingly, as a complement to other agencies already on the scene. The Nine Question Assessment Schema shown in Figure II-E is used by AID, and it appears to serve as an intelligent basis for determining technical assistance requirements. As such, it shows how knowledge networks might best be plugged into the gaps unfilled by other forms of technical assistance or self-help solutions.

Each of the nine questions in the schema leads to a list of finer-grain information requirements, which run for several pages. Figure II-E simply describes the questions in general outline.

FIGURE III: NEED ASSESSMENT SYSTEMA Needs Based Response to P.G. (Priority Group = Portion, Poor Majority)



Overview of the "Nine Questions"

- 1) Indicate who comprise the poor majority in the host country and the characteristics of their deprivation and poverty that constrain their effective participation in the development process.
- 2) Explain how these factors link up both to overall development and to sectoral problems, goals, constraints, and priorities.
- 3) Describe the minimum learning needs (knowledge, skills, and attitudes) of major groups among the poor majority necessary for their effective contribution to and participation in the development process. Analysis may focus on a subgroup of the poor majority in a given country which has been selected for primary attention. In order to help decide what priority group(s) on which to focus, it is important to analyze the characteristics associated with the deprivation--and related development needs--of the poor majority as a whole, including subgroups such as women, which may tend to get excluded from participation in the benefits and task of development. Projects which affect only a limited part of the poor majority will be evaluated in part by how replicable (and how likely to be replicate.) they appear to be.
- 4) Provide a descriptive profile of the existing learning systems (formal and nonformal) relevant to the needs being addressed and the group needs being covered.
 - a) Whom do they reach?
 - b) How efficient are they?
 - c) How relevant are they?
- 5) Describe the coverage of the systems on the learning needs specified in no. 3 above.
- 6) In terms of identified gaps, explain the constraints to be overcome in meeting the learning needs, the alternatives considered, and priorities assigned to problems and solutions.
- 7) Assess how well the country's existing plans and priorities for action correspond to priority learning activities, as specified in no. 6 above, and what changes seem necessary/ desirable to address these problems.
- 8) Describe the activities of other donor agencies and how well they address the "gap" needs specified above.
- 9) Describe and assess the resultant strategy for overcoming remaining gaps in the learning needs of the poor majority. Explain how this strategy relates to the activities of the host country's efforts and other donor programs in terms of gaps and priorities noted above.

CHAPTER III

VARIABLES AFFECTING THE CONNECTION BETWEEN KNOWLEDGE PRODUCERS AND USERS

1. Choice of a Network Typology

A major purpose of the Networks Project has been to identify characteristics of the users and producers of educational planning knowledge. Toward this end:

(a) We identified four general groups of actors: universities, sponsors, clients and primary groups (see Definitions, Chapter I);

(b) We also looked at various geographical levels where users and producers are likely to be found: international, national, regional, district, and local. Each represents a locus where educational planning activities are going on, hence a potential element of a network.

(c) We also classified network systems according to typical clusters of actors: inter-university networks; university-sponsor networks; MDC-LDC networks; intra-LDC networks. Presumably each cluster presents a distinct set of purposes and distinct lessons of experience.

After much searching, however, none of these ways of categorizing users and producers seemed to tell us much about why knowledge transfers were successful in some cases, and failed in others. They did not tell us specifically what differentiated users from senders. For example, we found universities functioning both as senders and users; and it also became clearer that primary groups, far from being passive recipients of technical assistance, were producing a certain amount of knowledge on their own. Nor did any of our various classification schemes help us predict very well who were the successful users or producers of knowledge. Most producers have been standing with open doors and few customers; most potential users call out in vain for the right producers to answer their specific needs. What is the source of all this misconnection? And what makes the exceptional cases of good connections different?

We surmise that the failure to link users and producers is not to be found in the gross characteristics of actors, clusters of actors, or geographical sites. Networkers categorized in these ways have names and addresses that can be linked into a network easily enough, once congruent purposes are identified. But there precisely is the problem: knowledge producers and users have basically different purposes for being part of a knowledge network. To make a heuristic oversimplification, the user usually sees himself as part of a Bottom Up Network; the producer sees himself in a Top Down Network.

A Bottom Up Network operates on the philosophy of "knowledge pull." First comes a sense of felt need, then a sense that knowledge will help meet the need, and finally a recognition that the knowledge is cheaper and better to get from someone else than it is to produce locally. Then it is a simple matter of going to the yellow pages. In contrast, a Top Down Network operates on the basis of "knowledge push." The incentives for pushing are different than for pulling; they do not stem from a sense of special need in a community, but from other, less intrinsic functions -- fees, altruism, bureaucratic functions.

But the gap lies not just in the disparity of rewards and incentives. It carries over to different indicators of success, and beyond that to differences in development philosophy. Top Down and Bottom Up approaches also imply different organizational structures and different linkages across organizations that participate in the network. Another important connection that has to be made between knowledge producers and users is perception of knowledge content, for example, in the relative emphasis put on codified or contextual forms of knowledge (see Chapter II).

All this is still oversimplification, but we believe the idea of Top Down/Bottom Up disparities is worth pursuing, if only as a way of pointing to a set of residual variables which affect the successful link-up between knowledge producers and consumers, or alternatively, explain where misconnections can occur. For ease of reference, these variables are summarized in Figure III-A. The title Top Down and Bottom Up is merely for ease of reference. Other observers may wish to describe these variables under another heading, or without reference to a single embracing

Figure III-A

Descriptive Variables for Knowledge Networks

<u>Variable</u>	<u>Top Down Networks</u>	<u>Bottom Up Networks</u>
1. Structure	Focuses on division of labor within the network. Concentration on the institutional arrangements to coordinate the effort.	Focuses on the organization of the community to develop its own resources.
2. Knowledge Content	Deals primarily in codified knowledge which is linked to a scientific paradigm.	Deals primarily in contextual knowledge. Sends out embodied knowledge.
3. Linkages	Supply of knowledge organizes demand. Links begin with the knowledge provider and build toward the user. Long-term linkages to identified users is encouraged. Knowledge brokers are oriented to identification of knowledge users.	Demand organizes supply. Links begin with recognition of needs, and seek access to a variety of knowledge resources. Short-term links sought; dependency a salient issue. Knowledge brokers are oriented to identification of knowledge sources.
4. Reward	Rewards are for performance in communicating codified knowledge, stressing objective realities.	Rewards performance in communicating contextual knowledge.
5. Indicators	Requires quantitative estimates of impacts where possible. Emphasis on allocation of scarce resources.	Ad hoc and subjective measures of impact are acceptable. Emphasis on mobilization of undeveloped resources.
6. Development Philosophy	Problems among primary groups are defined for them by "experts," who then supply solutions.	Primary groups learn to define their own problems, and to reach out for resources for solving them. Primary groups are seen as having great amounts of unrecognized knowledge.

dichotomy. The ideal types represented in this dichotomy are largely heuristic. Actual users and producers of knowledge will typically be located somewhere along the spectrum represented by each of the variables. If knowledge producers are alike with respect to each variable, then the job of networking is that much easier. In each respect that they differ, however, steps have to be taken to recognize and reconcile the gaps. The fact that they differ is not always a liability -- on the contrary, it might make for the most fruitful form of knowledge exchange. But without both a recognition of differences and a commitment to building the necessary bridges of understanding, the linkages will never be made. Either that, or the knowledge transmitted will tend to be superficial, distorted, misused, or ignored when it comes to implementation.

The focus of this chapter on Top Down/Bottom Up differences should not let us forget or minimize the importance of other, more widely recognized variables that determine effective links between knowledge producers and users. Physical distances and cultural differences are important. The creation of a knowledge resource pool is vital. Establishment of knowledge directories to make these resources more accessible to potential users is a priority need. And there is no substitute for shared understanding of substantive educational problems and appropriate functions of educational planning (see Chapter II). To repeat, the Top Down/Bottom Up label applies to a set of residual variables that also govern an effective meeting of minds among knowledge users and producers.

The following section (2) describes the general differences between Top Down and Bottom Up networks. Section 3 identifies more specific differences, in the form of variables which describe whether an organization is congruent or incongruent with the purposes and structure of other participants in any given network. Section 4 illustrates the differences by case studies of networks. These include:

Top Down Strategies: (A) ECIEL, (B) AID-sponsored universities;

Bottom Up Strategies: (C) Community Service Vouchers, (D) IAF;

Mixed Strategies: (E) ACPO, (F) Ahmednagar College.

2. General Description of the Top Down and Bottom Up Approaches

Neither of these approaches is inherently superior, but they have different purposes, and different strengths and weaknesses. A good deal of effort that we see going into the improvement of networks amounts to a process of one approach rediscovering what the other already knows.

The Top Down (TD) and Bottom Up (BU) viewpoints have important specialized functions that might be badly compromised by their incorporation into a homogenized, all-purpose network approach. The networking problem might better be seen as one of spanning different viewpoints, but not trying to create new institutions that could hope to successfully take over the functions of each approach.

Top Down Networks. The dominant characteristic of a TD network is its emphasis, already noted, on "knowledge push." This may involve preparations at the grass roots level in the LDC, for example in preparing and motivating audiences, opening channels and disseminating back-up materials. However, the fact that a message is predetermined by people or policies external to the target group makes it a Top Down approach. The client in this networking strategy is frequently a national or regional policy maker who in turn acts on primary groups.

TD networks operate primarily in the language of the network's originator. Codified knowledge in the form of models and methodologies commonly make up the substance of the knowledge transferred via these networks. Similarly, such networks require codified knowledge for input, such as census data, or documentation of goals, needs resources and program options.

The TD network is most familiar to the developed world, because it is inspired in part by the objective of utilizing MDC knowledge resources in LDC settings. Frequently, however, the linkages into LDCs are less well developed than the MDC resource bases themselves, and effective use of the resource does not occur. Moreover, it is clear that LDCs can also be sources of knowledge push, as senders of data, images of problems, model programs and validations of solutions.

The strengths of TD networks also constitute their weaknesses. For instance, TD networks have a tendency toward natural selection of the better-off LDCs, which have a better absorptive capacity for knowledge being pushed. This is illustrated by the Latin American network ECIEL, which appears as a case study later in this chapter. ECIEL links economic researchers together and provides them with such services as access to colleagues, data, advice on methodology, and seminars to discuss topics of common interest. However ECIEL is not known either for addressing the needs of the poorest countries in Latin America, or for addressing the needs of poor communities within the LDCs it reaches.

Technical assistance deriving from TD knowledge push can contribute to a circular process of creating additional needs for technical assistance. "Planned change" can become an end in itself, an autonomous force acting without response to the recipient's own special context. The definitions of modernization and development used by Rogers and Shoemaker reflect this TD process almost in caricature.

Modernization is defined as the process by which individuals change from traditional way of life to a more complex technologically advanced, rapidly changing style of life.

(Rogers and Shoemaker, 1971, p. 10, footnote.)

Development is a type of social change in which new ideas are introduced into a social system in order to produce higher per capita incomes and levels of living through more modern production methods and improved social organization. Development is modernization at the social system level.

(Ibid., p. 11, footnote.)

As some aspects of the traditional life style in some communities are transformed, well-recognized tensions occur between the modern and traditional practices within one community and between affected and unaffected communities. Additional technical assistance is then required to deal with the newly created contradictions. Sometimes a TD perspective can be described as "superior" in its vision of what is at stake in development; sometimes it can appear grossly insensitive.

Bottom Up Networks. If there is one variable differentiating the TD and BU approaches around which the others tend to revolve, it may be the factor of development philosophy (see Figure III-A). As an example

of a BU approach, we can take Philip Coombs and Manzocr Ahmed's description of cooperative self-help development.

[It] starts with the assumption that the complex process of rural transformation must begin with changes in the rural people themselves -- in their attitudes toward change, in their aspirations for improvement, and above all in their perceptions of themselves and of their own inherent power, individually and collectively to better their condition. The chief motive power for rural development, this view holds, must come from within, though once the people are ready to move, outside help of various kinds in response to their expressed needs may be essential to sustain progress. (Coombs and Ahmed, 1974.)

The contrasts between this and the earlier quotes from Rogers and Shoemaker are striking and self-explanatory. Among the cases we examined, the BU approaches appear somewhat more successful in addressing the needs of poor communities than TD strategies, although this relationship deserves a more critical examination.

Problems also arise with Bottom Up networking, alongside its strengths. Solutions, when they are found, are not generalizable. Bottom Up networking may strain a poor community's own outreach capacity. Historically, BU approaches have failed to mobilize resources from outside the local system, sometimes because of an intentional bias toward self-reliance, which puts intrinsic limits on networking outreach (see Appendix D).

To summarize the contrast between the two network strategies: TD networks involve "knowledge push," which consists of finding problems for which knowledge producers have solutions. BU networks involve "knowledge pull," which is based on problems in search of solutions. In TD networks, supply organizes demand, while in the BU approach, demand can be assisted to organize supply, through improved access to knowledge resources.

3. Network Variables and Network Strategies

This section provides an explanation of the six variables which differentiate the TD and BU networks, elaborating on the briefer descriptions shown in Figure III-A.

(1) Structure. A conceptual model of Top Down networking emphasizes the structures of institutional forms of networks, particularly in relation to functional categories. In a university, for example, these categories might be divided according to academic disciplines or centers of specialized knowledge. In a ministry of education, educational problems may be compartmentalized into functional bureaus. Sponsoring agencies may define their business as problem-solving within circumscribed sectors, resisting the pursuit of causes and solutions that lie in other sectors (e.g., nutrition as it relates to education).

Bottom Up networking begins at the other end, starting with the problem-solving process within poor communities. In this approach institutional forms get much less attention. Institutional linkages are those which can contribute to the sensing and articulation of a problem, diagnosis and formulation of the need as a problem to be solved, identification and search for resources relevant to the problem, retrieval of potentially feasible solutions and pertinent ideas, and adaptation of retrieved knowledge into problem context. In this process, however, the marshalling of internal resources is at least as important as external ones. Structures must be geared not only to the satisfaction of particular needs but also the evolution of new internal capacities to solve future problems.

(2) Knowledge Content. Top Down networks deal in a language best described as rational or codified knowledge. Codified knowledge is addressed to recognized problems or ways of treating problems. It is produced through institutional bases and is therefore expressed through data, algorithms, and language meaningfully shared because of a shared context.

Bottom Up networks are characterized by contextual knowledge. Contextual knowledge applies to those situations where the conditions for codified knowledge do not apply -- specifically, where problems or solutions are not well defined or where incongruent world views are juxtaposed in a knowledge network. Contextual knowledge reflects the intact quality of social experience and must be transmitted through the "action" significance of knowledge. It must therefore denote or suggest the

congruence of information with felt need, personality, historical circumstance, moral commitment, pent up tensions, or resonance with personal experience (see Chapter II).

(3) Linkages. In the case of TD linkages, the supplier of knowledge seeks to exercise some control over the demand. Universities lobby sponsors to provide research contracts; ministries of education publicize the benefits of educational excellence; consultants cultivate clients; sponsors protect the interests of constituencies that provide their funding base.

In the case of BU linkages, those in need of knowledge are organized to control the supply. Instead of long-term contracts with foreign universities, host countries seek other channels for calling on individual experts of their own choosing. Instead of pure consulting arrangements, they put more emphasis on the simultaneous training of counterparts. Instead of long-term studies for LDC personnel in MDC universities, shorter-term study tours are sought in special programs such as those established through the World Bank, IIEP and LASPAU. The dangers of dependency are more constantly visible.

BU and TD networks place different demands on the role of "knowledge brokers." TD brokers focus on the identity of potential clients. Thus, universities establish libraries in area studies and keep tabs on foreign alumni; UNESCO and World Bank researchers compile information of LDC countries that might need assistance; AIE and the Ford Foundation do country papers. In contrast, BU brokers need information about suppliers. They need contacts in professional associations that can provide confidential recommendations on the quality of foreign advisors (e.g., MUCIA, AACTE); rosters of institutions carrying out work in a particular specialty; or compilations of evaluations on selected categories of demonstration programs (see Coombs and Ahmed, 1974).

Other BU knowledge brokers must be located close to the primary groups being served, or else local knowledge resources remain largely ignored and untapped. This perpetuates an image of the peasant as an ignorant and passive recipient of technical assistance. In exceptional

cases where universities or other knowledge brokers have worked closely with poor and rural communities, the myth of ignorance among the peasants has been sharply contradicted. This message has come out loud and clear from organizations like ACPO in Colombia and the Rural Development Academy in East Pakistan, the latter modeled after the land-grant-college idea from the United States. In contrast, TD networks based in LDCs can send out vast quantities of publications and reports which give the appearance of relative expertise, however far from the local scene this knowledge is generated.

(4) Rewards. Why people "push" knowledge in a TD network is a useful question to ask. Reasons may range from altruism to commercial motives. Whatever they are, the rewards are not likely to be as intrinsic to the nature of the problem addressed as they are in the case of knowledge "pull" from the Bottom Up. If a teacher needs information on how to obtain a new blackboard, the reason is usually transparent. When a foreign advisor comes around dispensing advice, recipients might well ask what the motivations are, not only for him but for the organization that sent him, and the sponsor, and the sponsor's own constituency.

Rewards in a Top Down network may be structured around completion of a project within budget, recognition by colleagues, personal satisfaction from positive client's feedback, and the prospect of having someone to work for again in the future. If the advisor comes from a university, he is faced with a reward environment which judges his work mainly by the contribution it makes to teaching and published research, and he may also be rewarded for bringing in overhead support funds. It is not clear that these will make him insensitive to client needs, but they are at least different from the incentives found in a Bottom Up, "knowledge-pull" situation.

(5) Indicators. Top Down networks require explicit indicators of network performance, in quantitative form wherever possible. First, the rational systematic planning tradition requires identifiable targets. Second, knowledge providers in a TD network must justify their involvement explicitly, in part to satisfy sponsors and in part to satisfy the client that the curious reward system of a "knowledge pusher" (just

discussed) will not compromise his performance from the standpoint of the client's own expectations.

From a Top Down perspective, the indicators focus on aspects of a process that can be controlled: one wants to know whether the operation was a success in its own terms. From the perspective of Bottom Up, it is more a matter of whether the patient lived or died. Or it may be a matter of whether the patient simply "feels better," in ways that cannot be well measured. Bottom Up networks can get away with indicators that are ad hoc and subjective. Comparative standards of improvement are not as stringent a requirement in a BU network simply because improvements are directly registered by those who initiate and control activities at the local level. Problems arise, of course, when others wish to learn from BU networks about what "success" consists of. How much better, they want to know, does it really "feel"?

(6) Development Philosophy. Top Down networks consider development problems as those identified by experts observing an LDC social system. Primary groups are assumed to be a large part of their own problem -- ignorant, incapable of self-mobilization, lacking resources, and morally backward. Modernization is synonymous with progress, and this involves introducing a faster rate of change, usually through a more intensive use of technology. Solutions to development problems are devised elsewhere and applied to the needy social system. Aggregate economic objectives are frequently the "bottom line," i.e., the final expression of what is at stake in development.

Bottom Up networks deal with a concept of "social development" which is not consistently defined among its various advocates, but it covers such areas as the following:

- greater distributional justice, including the development and reinvestment of economic surpluses within poor communities;
- application of "appropriate" or "intermediary" technologies, including energy-, capital-, and resource-conserving, labor-intensive methods;
- self-reliance, particularly in terms of local capability for policy evaluation and organization for social action;

- restructuring of work roles to provide for psychic well-being and personal growth as well as economic production, attention to work rewards apart from monetary remuneration alone, and enhancement of other social incentives that transcend pure self-interest as an objective; and
- de-emphasis of high consumption as a form of status.

The remainder of this chapter will describe the contradictions and complementarities between Top Down and Bottom Up networks by examining six case studies. Two of these represent TD networks (ECIEL and AID-sponsored universities); two represent BU networks (the Community Service Voucher Program and the Inter-American Foundation); and two represent Mixed approaches, which we find to be perhaps the most attractive model for an effective knowledge network (Accion Cultural Popular in Colombia and Ahmednagar College in India).

4. Case Studies

(A) ECIEL. ECIEL is the Spanish acronym for Joint Studies on Latin American Economic Integration (Estudios Conjuntos sobre Integración Económica Latinoamericana). The organization grew out of collaborative efforts by several Latin American economic research organizations which began in 1963. The proximate cause of this effort was a wave of interest in economic integration of Latin American countries, and ECIEL took on the role of an informal advocate of this policy, especially to national intellectual, political, and economic elites. After the first meeting in Rio de Janeiro, the Brookings Institute offered to sponsor this collaborative effort on a more permanent basis, a role in which Brookings has remained until the present.

In a sense Brookings and the participating Latin American institutions have had different, although complementary goals. Brookings has seemed primarily concerned with the quality of research in the light of traditional academic standards, while for the other participants the problem was how to benefit from the pooling of resources and knowledge without becoming embroiled in ideological disputes.

Brookings has heavily emphasized the publication of books conforming to standard academic patterns, and the collection of data that can later be compared with other ECIEL data.

For the Latin American members, although the emphasis has shifted somewhat from regional economic integration to comparative studies, the original emphasis on collaboration and sharing of resources has proven very sound. The original group of three Latin American institutions has by now expanded to twenty-one institutions, including several from the U.S. In order to accommodate the diversity of ideologies between member institutions, ECIEL adopted a strategy of (1) undertaking empirical research rather than political interpretation; (2) providing a common framework for collection of comparable data, with flexibility for departures in light of each country's circumstances; and (3) focusing on a central issue -- the costs of deviating from economic optima. Besides turning out reports and data, ECIEL has also produced a number of leading Latin American economists, many of whom have moved into important policy-making roles.

Much of ECIEL's work takes place at twice-yearly seminars hosted by the various member institutions in turn. At the seminars, participants meet and converse with potential collaborators, select and design studies, seek each other's advice on methodological and procedural problems, and review the progress of ongoing work. In addition to members, the seminars are also attended by invited observers from various national and international organizations.

Descriptive Variables

1. Structure. ECIEL gives major attention to the division of labor and other forms of specialization among its members, and fosters institutional arrangements for the coordination of these specializations. There is no systematic cultivation of potential users, except for research participants who may have present or future positions in policy making.

2. Knowledge Content. ECIEL emphasizes the production and dissemination of codified knowledge mainly via books and reports. This

knowledge is very heavily linked to economic paradigms. On the other hand, contextual knowledge dealing with the management of research is exchanged among ECIEL members.

3. Linkages. ECIEL is clearly concerned with building links among universities and other bases of economic expertise, as opposed to building "knowledge pull" linkages up from poor communities and other problem sites. Some "alumni" of ECIEL research programs are in policy positions that may draw on ECIEL-generated knowledge.

4. Rewards. Rewards in ECIEL are for communicating codified knowledge, especially in academically recognized publications. Although contextual knowledge about research and other topics may be communicated within ECIEL, it does not appear to be formally rewarded.

5. Indicators. Since it deals with links between economists, ECIEL is clearly concerned with standard quantitative indicators, and with the allocation of scarce resources, as opposed to seeking ad hoc indicators and stressing the identification and mobilization of new resources. Economics is primarily a science of known resources.

6. Development Philosophy. ECIEL's forte is supplying non-experts with problem definitions and solutions created by experts. Implicit in this is the view that the people who live most closely to the problems of development lack the intellectual tools or the institutional capacities to do this for themselves.

(B) AID-Sponsored Universities. Since 1941, the Agency for International Development has supported training in U.S. universities and colleges for over 165,000 persons from developing nations (Hannum, 1975, p. 1). In addition to training, AID has made large contributions to research and technical assistance efforts by American universities focused on problems of LDCs. In recent years, AID has supported universities not only in connection with particular projects, but through 211(d) funds and other arrangements designed to build up a sustained capacity to respond to LDC needs in several broad areas. One of these areas is educational planning. The major institutions involved are Stanford University and Florida State University in educational technology, U.S.P.

the University of California at Berkeley in education cost and finance, and Michigan State University and the University of Massachusetts in non-formal education. (In referring to these programs, we will use the abbreviations Stanford, FSU, UCB, MSU, U.Mass.)¹ The AID-sponsored universities are mainly working in the Top Down tradition, as seen in the following review of descriptive variables.

Descriptive Variables

1. Structure. The division of labor in 211(d) institutions appears to escape the usual fragmentation into academic disciplines. In some cases faculty have a shared exposure to project sites overseas (MSU was involved in the Comilla project, FSU is developing entree to ACPO as described in a later case study). In some instances, faculty share a concern for particular issues within their broader mandate (the theme of equity runs through much of the work at Berkeley).

Nevertheless, 211(d) universities operate within traditional academic structures, whose decisive influence on knowledge utilization strategies is not always very apparent. The fact that it is strongly biased toward a Top Down approach is easily lost in the rhetoric of academic freedom. Only when university faculty undertake a Bottom Up approach to development projects do the structures reveal themselves. Academic freedom reveals itself as the freedom to be academic and not much freedom for anything else. This is revealed less by looking at 211(d) universities than by looking at universities which tried to break out of the Top Down mold. (See case studies on the Community Service Voucher program at Northwestern University and on Ahmednagar College, later in this Chapter.) Judging by our other case studies, the choice that an organization makes between linking up with a Top Down or Bottom Up

1. The 211(d) grant is assigned to particular departments or institutes within each of the universities, but as a form of shorthand we refer to each grant holder in the name of the university and not the particular program. Furthermore, the 211(d) grant funds are not the sole source of financial support in the programs being networked. MSU is financed on a contractual basis rather than a 211(d) grant, but we will refer to all these institutions collectively as 211(d) universities.

network is dominated by the variable we call Development Philosophy. This is not so clearly the case for 211(d) universities, however. Because a university has no official philosophy (academic freedom again) it exerts its unstated philosophy through its structure. Structures, then, decisively affect the university's knowledge base, reward system and characteristic style of linkage with knowledge networks.

2. Knowledge Content. Universities are the archetypical purveyors of codified knowledge, but contextual elements usually enter in greater proportion as activity shifts from teaching and research to consulting in the field. Complaints are common among faculty that the investment of energy in learning contextual knowledge is not rewarded by the university, because it does not lend itself to publication. At best it increases the chances of being invited back for another visit. One observer of certain foreign consultants to Jamaica disgustedly pointed out that they were "reading us advice out of their lecture notes." Much depends on how each individual foreign advisor balances university incentives against other more intangible rewards of being useful to an overseas client. Again, this points to a strategy of giving the client greater control over the choice of individuals sent to advise them. Along with this, first trips by visiting experts might be kept very short for the purpose of testing mutual sensibilities.

3. Linkages. The nature of 211(d) links with other universities, sponsors, and clients is described at length in other parts of this report. Here it is simply worth noting the major categories of linkage tactics that are dealt with in Chapter VI: (a) paper networks and information banks such as reports, letters, and the ERIC system; (b) more active knowledge brokers who compile and evaluate information for selective purposes, examples being professional consortia and Britain's Inter-University Council for Higher Education Overseas; (c) face-to-face encounters such as found at the Bellagio Conference Center; (d) techniques for collaboration on specific projects, for example, the Jamaican model of sector assessment and follow-up, and (e) action research.

4. Reward. The problem of disparity between the reward system of a university and the needs of overseas clients has already been cited in several contexts. The point can be summarized in the following excerpt from a Peace Corps report:

...the university is an institution that is...uncommitted to social and political action, interested in research and publication, dedicated to long-term specialization...in many ways the antithesis of...the Peace Corps. The system of rewards and promotion places a premium on care and thoroughness in scholarly production, not on administrative accommodation or social service. If the university has accustomed itself to outside contract research, it has done so in large part on its own terms: those of scholarly significance, reasonable deadlines, and freedom to publish. (Peace Corps, 1969, pp. 26-27.)

It serves little to dwell on this gloomy side of a familiar reality. It is like the weather, much talked about but little affected by the discussion. We are dealing here with a vast institutional structure embedded in a long tradition of higher education that protects its members from having to be accountable to anything but the truth. For good reason, the university values the advancement of knowledge, and it rewards publication activities accordingly. If helping clients results in a gain of collective publishable knowledge, this does get rewarded; but if service is rendered without the university learning anything new and generalizable, a corresponding opportunity cost is imposed on engagement in these services.

5. Indicators. For a university, indicators are closely tied in with the reward system. In scanning the annual reports of 211(d) universities, one reads, for example, that FSU projects for the next year the publication of four to six research reports, eight monographs, eight to ten Ph.D. dissertations, and eight to ten journal articles. Similarly, UCLA notes that during the first three years of its program, ten books or monographs and fifteen papers were published. (About half the papers were originally published or translated into Spanish.)

The quantity of output is measurable, but not the quality, nor the readership, nor the impact on readers. For these reasons, networking within this strategy remains somewhat an article of faith. Its demonstrable

utility relates more to other producers of knowledge than to consumers.

However, publications have a plausible impact on general awareness among professionals regarding current conceptual developments. It may also affect on-going field experience via published case studies. Champion Ward, who has followed such things for many years in the Ford Foundation, believes that many effects of the university come about on the "second bounce," remote from the place where the first impact was noted. Cohen and Garet (1975) reached similar conclusions based on a systematic follow-up of HEW-sponsored programs. They found that the most important products of research tend to have their effect, not directly on policy decisions, but in creating "climates of belief" which have a broader and more profound effect on policy formation. There are no good indicators that can be brought to bear on this; in fact, the kind of effects to which Cohen and Garet allude are of a kind which change people's minds about what we should be looking for in sponsoring social programs. This implies that the 211(d) programs, if highly successful, will outgrow the indicators of success they started off with.

6. Development Philosophy. This may be the key to how far sponsors, universities, and clients are willing to push toward change in the other variables affecting the structure of knowledge networks. In both of the subsequent case studies describing university-fostered Bottom Up networks, philosophical struggle was an important prelude to breaking away from the more established Top Down tradition to a stronger outreach closer to primary groups.

If the "knowledge pull" approach seems a good way of getting knowledge out to where it does some good, it makes sense for an agency like AID to espouse a Bottom Up philosophy. However, there is a big difference between espoused theory and the theory that a person or an organization actually uses. (See Argyris and Schon, 1974.) There may be reasons why AID is constrained from change by outside pressures. Possibly it is willing and able to do so but meets resistance from the universities themselves or from clients abroad which would feel threatened by Bottom Up philosophies being unleashed among their own constituencies. Possibly everybody wants it but only a few know how to go about it. All of these factors are probably operative in some degree.

Let us assume a situation where everyone genuinely supported the idea of knowledge-pull and Bottom Up networking. There would still be the problem of how to be sensitive to needs expressed by primary groups and how to respond appropriately. As the two Bottom Up cases studies suggest, it is a very demanding task, based on considerable skill and tacit knowledge that cannot be easily transmitted. Out of all the discussion on this point in the course of our research, a simple truth seems to stand out: one of the only sure ways to be genuinely responsive is for planners and researchers and administrators to be in direct, everyday touch with the lives of the primary group targeted for improvement. There is nothing surefire about this prescription but there is growing evidence that not much else by way of replicable strategies has worked. This point is elaborated further in Chapter VI.

(C) Community Service Voucher Program. The Service Voucher Program was funded under Title I of the 1965 Higher Education Act, which emphasized the application of university resources to the amelioration of social inequality (Pitts, 1975, p. 4). The program provided communities with vouchers which they could use to "purchase" university services. The idea was originated at Northwestern University by staff of the Center for Urban Affairs and developed through a proposal to the Illinois State Board of Higher Education which had been seeking ways to apply Title I funds.

Community Service Vouchers were implemented in the U.S. where resources such as university-based expertise is quite plentiful, and the logistical problems of getting it in touch with poor communities are not overwhelming. Therefore, the lessons of this case study must be extrapolated to LDC contexts with some caution.

Descriptive Variables

1. Structure. The Service Voucher Program was located in the Center for Urban Affairs, giving it a somewhat different setting from the usual academic department. Nevertheless, the effects of university structures were felt, as university accounting bureaucracy proved a

major obstacle to smooth and trusting relations between university and community participants (Pitts, pp. 44-45).

Much of the work took place within the communities served. This closeness to primary groups also created certain problems. Staff of the Center perceived occasional laxness of community participation, and inconsistency in the mood and leadership of community counterparts (Pitts, pp. 39ff.). For similar reasons, problems were also foreseen in expanding the program. Some community groups that were considered especially deserving of help were not sophisticated enough or sufficiently organized to qualify for more conventional funding. Nevertheless, staff from the Center were described as more involved in building up the infrastructure of the client organizations than in building up their own -- one mark of a Bottom Up project.

2. Knowledge Content. This program required an integration of codified and contextual knowledge. Although university staff were clearly interested in drawing general lessons from their experience, the specific project required a great deal of contextual knowledge which presumably had little value for publication or even carry-over to other projects. Projects undertaken included rooftop greenhouses using solar energy to grow food for low-income Chicago residents; health care planning; improvement of a community newspaper; development of an auto repair shop aimed at training and employment opportunities for a confederation of ex-prison inmate groups; and other projects.

3. Linkages. The vouchers helped community groups to take the initiative in designing working relations and the content of advice. The client was given the option of redeeming vouchers at other organizations in cases where the university could not respond with appropriate categories of expertise.

Given that small amounts of money were provided for each grant, for a limited time frame (usually \$10,000 for 12 months), efforts were often made to secure follow-up links to other, more established sponsors.

4. Rewards. Vouchers provided payments to staff in addition to regular salaries.

It was recognized that consultants would not have accepted their assignment for the fee alone; nor did most of the faculty perceive their community activity would be rewarded by the university. Instead, most were motivated by personal concern for overcoming major inequalities in American life, based on ideological commitment, the philosophical orientation of the Center for Urban Affairs, and in some cases "personal need" to take action in support of professed belief (Pitts, p. 42).

Although the university-community dialectic proved painful on both sides, conflict was accepted and overcome because the perception of these gaps was seen to be at the heart of the problem of university-community relations, and worth the effort to confront directly and resolve.

5. Indicators. Since the community was able to set and enforce standards for the programs it sponsored, it can be assumed that ad hoc measures were mostly relied upon instead of the more formal and quantitative indicators typical of evaluation processes such as cost-effectiveness analysis.

The voucher arrangement insured that the community remained in control of the funds, lessening the chances for cooptation by the "experts" and avoiding the exploitation of community groups as passive research objects. Northwestern experience suggested, however, that community groups needed to insist on "step-by-step accountability from their university consultants and helpers" if they were to get services which fit their needs (Pitts, 1975, p. 43).

6. Development Philosophies. Vouchers in effect forced resource systems to collaborate with primary groups who were learning to define their own problems as they saw them. Auto repairs may have seemed a mundane focus of university assistance, but it forced Northwestern faculty and students to (a) focus on tangible achievements within the 12-month time frame of voucher projects, (b) consider priorities of the client above those of their academic peers, and (c) consider the importance of real jobs as a context for training disadvantaged people, rather than trusting the open market to take care of post-training employment.

These points are consistent with the philosophies of other Bottom Up institutions, such as found in ACPO, the Agricultural Resettlement Administration programs of the New Deal, the Community Development Corporations, Land Grant extension program, and rural development actions developed over many decades by Tuskegee Institute.

(D) Inter-American Foundation (IAF). The Inter-American Foundation (IAF) officially began operations in March 1971, wholly funded by the U.S. Government with a broad mandate to "find a new way to support development activities in the Western Hemisphere." IAF was said to be a new approach to development and an "experiment" in foreign assistance. Historically, at least one line of IAF development came out of the writings of George Lodge and his "Engines of Change" articles and later book.

The IAF operates totally within the western hemisphere. Its projects have included self-employment and marketing schemes, programs for increasing small business and other economic opportunities for blacks, especially in the Caribbean, credit unions, agricultural techniques useful to small cultivators, rural education, and housing.

Descriptive Variables

1. Structure. By design IAF was to have a small staff of about 60 professionals, all based in the U.S. but experienced overseas. Its purpose was to offer capital, but not technical assistance, in support of new approaches largely generated outside the host country government agencies. IAF provides small and medium-sized grants, intervenes little in the initiation and design of projects and the management of the grants. The budget is about 30 million a year.

The staff is housed near Washington. Chief officials of IAF are a President and Vice President, working with a Board of Trustees and answering ultimately to the Foreign Relations Committees of Congress.

2. Knowledge Content. IAF is not directly engaged in support of education, much less educational planning. It does support activities that are educational in outcome, but it identifies no formal sector of

"education" as such, and works primarily in support of what may be called "non-formal" education. In its early years IAF shied away from explicit attention to knowledge generation, exchange and transmission, but now seems to be concerned with more effective transmission or even exchange. It phrases this in the form of concern for some record or memory of learning from project experience, and does have staff members thinking, talking and writing about the matter. IAF also is attempting to systematically group certain kinds of projects, such as rural production cooperatives, worker managed enterprises, cooperative housing efforts, community development projects (not called by this name in IAF), and rural family schools. These groupings are established to encourage comparative assessment of experience in these projects and inter-site and inter-country exchange among those involved in project management.

3. Linkages. IAF does not directly sponsor U.S. university-based generation, exchange or transmission of knowledge, but it does work with some university people and, of course, uses knowledge that was originally generated in universities. Nor is it closely connected with other sponsors. It does link to private agencies, generally in the developing countries, but avoids where possible direct ties to government agencies in the countries.

It exchanges knowledge with LDC clients who work directly with primary groups. It does not work directly with primary groups, although IAF traveling agents do see and talk to primary group members (farmers, students, community people) and draw inferences from these contacts about underlying attitudinal changes. Thus, IAF might exchange information with the officials of a cooperative, or with the officials of a general agency supporting several cooperatives, but IAF staff do not work with the members of the cooperative directly.

With its emphasis on giving capital rather than advice, IAF embodies the Bottom Up philosophy of letting communities define their own needs. As IAF accumulates its own knowledge base derived from experience of their clients, some of this feedback will probably be put to use as a guide for working with future clients either embodied in direct advice or used as a

guideline for selecting groups to support. Given that the source of this knowledge derives from field experience, it is less tainted with the prospect of dependency on foreign aid. In an overview statement, "Feedback-Feedforward" (May 10, 1975), IAF describes its intention of supporting the clients' own knowledge, views and capabilities rather than imposing Foundation advice. To quote from the IAF statement:

It was decided that those directly involved could best understand their own phenomena and therefore were uniquely qualified to determine and implement their own theoretical and practical solutions. This became the assumption on which the Foundation's approach was and is based.

The fact that IAF acts as a sponsor of some projects and not others, however, suggests that it must have some criteria for judging what is worth supporting and what is not.

4. Rewards. IAF being a new institution, it can do without the incentives and extrinsic rewards needed by a more mature institution. Staff seem motivated by the prospect that they can make a significant contribution to the state of the art in the field of development practices. A portion of their energy goes into thinking and writing about this. It remains to be seen what will happen if and when their work gets to a stage of seeming to repeat itself. Unlike programs like ACPO and Ahmednagar (the next case studies) IAF has sidestepped the business of institution-building. Unlike ECIEL, it eschews carrying out a systematic research program aimed at influencing specific policies. It seems more like the Center for Urban Affairs at Northwestern University (previous case study), where staff were motivated by a search for "something different." Like the people at Northwestern, IAF does not foresee a sustained process of arriving at a formula for truth. Under these circumstances, one can imagine that the rewards of IAF work could become jaded as the institution matures -- a familiar pattern elsewhere.

Alternatively: (a) IAF may seek high turn-over in its own staff, renewing their sense of being involved in "something different," and also providing a channel for disseminating its highly contextual knowledge base into other organizations, through staff transfers; (b) it might begin to codify its knowledge and provide the long-term rewards of accumulating

validated truths, inspired by the same motives that operate in universities or projects like ACPO and Comilla; or (c) IAF staff may seek out (or perhaps already possess) a strong enough sense of identification with primary groups that they can find a sustained satisfaction in the intrinsic process of providing ad hoc services.

5. Indicators. IAF is reluctant to use specific indicators of project successes. Evaluation is felt to be demeaning once a project is started; objectives considered beforehand are treated as peculiar to each project; and the outcomes deemed most important are seen to be measured best in subjective ways, by the way people look, smile, frown, or stride purposefully around. Decisions on whether to fund a project refer to some forms of processed data (IAF emphasizes equity which can often be described by hard statistics), but pre-funding analysis is also based on opinions, hearsay, and observations from staff, project participants and others.

No set of indicators has been developed for IAF, and perhaps no general set should be developed. In discussions with IAF staff, there appeared to be some agreement on the kind of indicators that would serve in assessing IAF development activity. The following list emerging from the discussion is pretty vague, but perhaps it offers a first step for dealing coherently with the problem of systematically assessing how IAF affects development. Appropriate indicators for IAF would have these general characteristics.

- (a) Cover social as well as economic outcomes.
- (b) Be weighted slightly more toward social than economic.
- (c) Be expressed in both quantifiable and non-quantifiable terms.
- (d) Refer to a status that is observable; or
- (e) Refer to an underlying condition that is inferable (hence if not objective then at least inter-subjective, i.e., more than one person could reach the same inference, however it was reached).
- (f) Observed states or conditions could be quite simply indicated,

but stand as surrogates for profound underlying changes.

- (g) Indicators could reflect different things to different observers, and the requirement isn't for a single interpretation but merely that multiple interpretation possibilities be known.
- (h) Indicators could be sorted, ranked, or weighted according to IAF theory and philosophy, and the ranking might change for different settings and circumstances.
- (i) Indicators could weight process more heavily than outcome, i.e., suggest how far the enterprise has come from where it began, and where it might go, rather than stress where it is at some one time.
- (j) Indicators might also show where a project is within the context of where it could be, i.e., reflect realization of constrained opportunity.
- (k) Indicators should be indigenous where possible, come out of the project, be consistent with the values of the participants and be judged so by the participants. If possible the indicator statement should be expressed or expressible by the participants from the primary group, i.e., what they would look for as guideposts over the course of the project.
- (l) The indicators should always be understandable or intelligible to primary group members.
- (m) Indicators might turn out to be highly situational and particularistic and there should be no limit on the number and kind, i.e., there should always be a project-specific section of indicators.
- (n) Indicators can be behavioral, but this behavior does not have to be overt.

6. Development Philosophy. This is explicitly reflected in the list of indicators above. It is important to note that IAF came into being at the beginning of the seventies when there was general

disenchantment with conventional and large-scale development assistance. This dissatisfaction stimulated a number of assessments of past efforts and proposals for future change in foreign assistance. Project emphasis has consequently been on social as well as economic development, and especially social justice and equity. The overall aim of IAF is to encourage local self-help and cooperative endeavor, and to promote quiet revolutions in economic and social relationships. What this means operationally has been suggested in the previous discussion of rewards (item 4 above).

(E) Acción Cultural Popular (ACPO). ACPO is a network of radio schools in Colombia founded by a priest, José Salcedo, who was a young chaplain of the Andean town of Sutatenza and also an amateur radio operator. Since 1947 this network has expanded and now has eleven stations reaching some 250,000 students throughout the country. ACPO provides education in basic literacy and mathematics, health, agriculture, and religion, and also provides entertainment and news services. Radio instruction is complemented by textbooks and booklets (called The Peasant Library), a newspaper, records, and magnetic tapes. Letters from listeners are solicited, both as a means of providing ACPO with feedback and a way of providing a capacity to respond to direct requests for specific kinds of knowledge not handled through other channels. ACPO is mainly self-financed through limited advertising revenues and commercial use of its printing press. It gets additional support from the government of Colombia, and donations from Colombian and foreign institutions.

ACPO is directed toward isolated peasants, with the goal of enabling them to participate actively in the economic, social and cultural activities of the nation. At the present time, it is the most important institution in the field of popular education in Colombia and is a model for the promotion of rural development in all Latin America. The Institution comprises 250,000 registered students and nearly 20,000 radio schools throughout the country. It provides a fundamental and integrated educational system whose contents are found in its five core textbooks: "Alphabet," "Numbers," "Health," "Economy

and Work," and "I Believe in God." The overall purpose of this basic education is the "evolution of the person as an agent of development."

Contacts between headquarters and the primary groups are made through activities of the radio schools at the local level, the formation of peasant leaders and direct correspondence between the institution and the peasants.

The radio programs are transmitted through eleven broadcasting stations of between 10 and 25 kilowatts, installed in four regions of the country. Approximately 10 percent of the program consists of special transmissions for the radio schools; the remainder is composed of other educational transmissions, entertainment, radio theater commentaries, news and music. The weekly newspaper "El Campesino" is the most important periodic publication in the rural regions of Colombia, and has an average printing of 50,000 issues. The Peasant Library is in a continuous process of expansion. In a typical year (1968) it issued twelve volumes (370,000 copies) each one selling for the price of one egg. This library, coupled with the newspaper, offers peasants who learned to read and write in the radio schools the opportunity of practicing and improving their acquired knowledge.

The activity of the radio schools at the local level accomplishes both educational and administrative purposes. Regional and local representatives of ACPO supervise the work and the results obtained in the radio schools and try to encourage and give advice to the peasant families. The schools themselves are founded by peasant leaders trained in two special institutes located at Sutatenza and Caldas. By the end of 1968, these institutes had trained 6,222 men and women leaders. The average time of active collaboration of these leaders with ACPO is approximately two years.

ACPO receives around 60,000 letters a year, each of which is systematically answered, filed and evaluated in accordance with sociological criteria. The institution considers this correspondence an important medium for sounding out public opinion and evaluation of its programs.

ACPO has reached well over a million students. The growth of the program is shown in the table below.

Year	Towns	Radio Schools	Students
1948	1	3	45
1953	318	1,804	15,648
1958	792	17,162	145,248
1963	905	24,059	227,735
1968	1,000 (approx.)	20,000 (approx.)	179,685

It is estimated that approximately 30,000 persons annually learn to read and write in the radio schools. The annual number of students who finish the advanced course (studies of production techniques and rural economy) is between 20,000 and 50,000.

ACPO regularly organizes campaigns to encourage the adoption of innovations in the fields of health, social hygiene and production. For this purpose the institution programs all its elements of action in such a way that during a campaign, both the broadcasting stations and the newspaper as well as the peasant leaders actively participate in the dissemination of relevant information. The leaders inform ACPO's twenty regional offices of the results of the campaigns and of the work of the radio schools. The offices then transmit this information to the headquarters in Bogota for the purpose of quantitative and qualitative evaluation.

Descriptive Variables

1. Structure. In terms of Top Down/Bottom Up dichotomy, ACPO operates in both areas. At the local level there is an emphasis on organizing Top Down structures to get knowledge out to villages, and to get it received and implemented once it gets there; but there is also encouragement of requests for knowledge from the village level to which ACPO is asked to respond.

At the regional and international level ACPO acts in a Bottom Up format for the most part, essentially seeking out appropriate knowledge,

evaluation services, and sources of support, rather than becoming a channel for the implementation of development efforts originating outside.

2. Knowledge Content. ACPO appears to network both codified and contextual knowledge. Codified knowledge is spread via packaged media (newspapers, textbooks, magnetic tapes). Contextual knowledge exchange takes place in the form of letter correspondence, broadcasting of dramatic programs, and recruitment of leaders from among people from typical rural backgrounds.

3. Linkages. ACPO can best be described as a network at the regional level which encourages linkages at local and inter-community levels. It aims at giving both individuals and communities greater access to a range of knowledge resources (e.g., The Peasant Library), and in this sense it encourages a Bottom Up approach. It provides an alternative to the kind of capital-intensive solutions to rural problems that are found in other rural development programs such as IRRI. Nor does it monopolize education in that it works alongside regular formal education. On the other hand, it manifests Top Down linkages as well:

- (a) It maintains an explicit identity with the Catholic Church;
- (b) It is one of the strongest members of ALER (Latin American Association of Radio Schools);
- (c) It has recently made arrangements with the Center for Educational Technology at Florida State University for evaluation services both to help ACPO in assessing its operations in Colombia, and to make ACPO resources and experience more available to institutions wishing to establish similar systems elsewhere;
- (d) Its campaigns also reflect a Top Down strategy;
- (e) Because it finances its operations through radio and newspaper advertising revenue, it has the (probably unintended) effect of promoting commercial interests among its audience, though these interests may be well screened; and
- (f) The messages going out through the Library, records and tapes is, at least in the short run, based on a well defined view of community problems and ACPO's role in relation to them.

It should be noted, however, that ACPO also encourages and responds to community mobilization and requests for knowledge which

ACPO might not already provide. This is seen in the letter correspondence program, and in the recruitment of its own staff from client populations instead of from national or international elites.

4. Rewards. As in the case of IAF and the Service Voucher Program, ACPO relies on the intrinsic motivation of rendering service in close contact with the beneficiaries. Nevertheless, the significance of these intangible rewards is enhanced by several factors. First, the work is recognized as God's work in the eyes of the church. Second, ACPO has a more explicit ideology than most Bottom Up programs about the forces of oppression that need to be resisted. (Paolo Freire capitalized on the same motivation in his successful promotion of literacy as a way of liberating people from the oppression of ignorance and exploitation by others.) Third, ACPO confers a sense of tangible progress missing from the ad hoc achievements of the other Bottom Up cases reviewed. Its knowledge assets, in particular, are growing both in range and diversity of media; its staff have channels of upward mobility, all the way from first exposure to the program as learners up to leadership and management roles; its experience becomes increasingly rich both in degree of generalizations and detail; its international recognition grows. Finally, ACPO is blessed with a leader who chooses to keep a low profile and give credit and leadership experience to others.

5. Indicators. ACPO appears to have reservations about the imposition of a priori indicators of success, as these might distort sensitivity to the real needs of particular communities. The comments made with respect to IAF indications also apply here (see previous case study).

On the other hand, ACPO seems more willing to identify priority needs, as reflected in its five textbooks. Its knowledge is derived from many years on the scene and its growth has been evolutionary rather than a sudden imposition of imported ideas. It therefore has a superior basis for trusting its formulas.

Superimposed on top of ACPO's indicators for self-evaluation, one discerns a different set of indicators generated for the purpose of

securing outside funding. Florida State University is beginning to become involved in evaluation of ACPO, possibly in connection with this need for external reporting. "External-use" indicators at ACPO refer to such things as numbers of schools, publications, students, or hours of broadcasting. Certain indicators may serve both internal and external purposes, including rates of improvement in literacy, target achievements for specific campaigns, numbers of local development projects launched, and newspaper readership rates. Still other indicators may be much more subjective, in the manner of those used by IAF.

6. Development Philosophy. ACPO's views on this are extremely explicit. They are outlined, for example, on the inside cover of its booklets and described at length in the five textbooks. Its message refers to both the Christian spirit of its work and the substance of its development activities.

The content of this philosophy has already been indicated in the previous section on the rewards that motivate ACPO participants. ACPO shares with other Top Down philosophies a solid belief that technical know-how is important, along with a willingness to intervene against the physical manifestations of poverty, drawing on massive coordinated efforts and a comprehensive assessment of the underlying causes.

On the other hand, ACPO puts much stress on Bottom Up factors -- the intrinsic reward that accrues to helping others, and the intrinsic goals of competence and control over one's destiny. In this way, ACPO goes beyond most Top Down strategies in appealing to non-utilitarian forces of social action. Whether these are seen as religious or based on socialist principles or drawn from the dynamics of rural cultures lost to MDCs, ACPO can make use of them in ways that foreign technical assistance cannot. Whereas many technical assistance missions might ignore their very existence, ACPO might consider their preservation more valuable than all the rest of its tangible achievements. Whereas foreign aid might emphasize the functional aspects of a program, ACPO might be more concerned about what it does to the beneficiary's identity

and spirit of generosity. While foreign advisors might seek to create material incentives for rural development (hazard-duty pay for teachers, higher profits for investors, greater opportunities for social mobility), ACPO might ask what this might do to foster an attitude of "winners and losers," or "what's in it for me?" Attitudes of cooperative selflessness which foreign technical assistance rarely takes into consideration are seen by ACPO not only as resources for effective action, but one of the highest goals of development.

(F) Ahmednagar College, Center for Studies in Rural Development.

Ahmednagar College is located in Maharashtra State, India, in an initially backward district. In 1961, the college embarked on a rural development study and pilot project at Chand Bibi, six miles from the college. There were programs for soil conservation, use of improved seeds, fertilizer and insecticides, health and literacy programs, adult education, and family planning clinics. Farmers exchanged views in four conferences that highlighted typical problems of the district.

By 1969, students were involved in change processes in rural areas. Farmers had formed cooperatives for credit, growing, and processing. Students helped farmers start cooperatives for credit, farming, poultry raising and processing. The project eventually grew to embrace 29 villages with an impact on 100 villages and 15,000 people. Immunization programs were initiated and are now supported by the villagers. Thirteen years after project initiation, farm production has quadrupled.

India's Ministry of Education was impressed enough by the success of this project that the college was made an overseer for a national service scheme which included 100 colleges. Poona University has incorporated the program into its regional outreach and 41 colleges have adopted some or all of its aspects.

With the establishment of the Center for Studies in Rural Development at Ahmednagar came an interdisciplinary program of study and research combined with participation in community affairs. It offers one-year or two-year diplomas in rural studies. (M.A.'s and Ph.D.'s are given by Poona University.) The center accepts 20 graduate students and

100 undergraduate students each year. Eighty percent of the undergraduate are from rural areas and about 90 percent of these go back to rural areas.

In addition to graduate and undergraduate programs, the center offers courses in agriculture, family planning, and community development to professors in charge of the National Service Scheme. Professors from 140 colleges receive a two or three week orientation course designed to equip them to set up similar programs at their own colleges.

Descriptive Variables

1. Structure. As in the case of ACPO, Ahmednagar College focuses on both division of labor among knowledge resources and mobilization of communities to solve their own problems. Division of labor can be seen in the retention of a quasi-academic system, with instructors in various specialties and students receiving specialized training. At the same time, the coordination of different specialties seems to take place through the process of knowledge utilization and community mobilization. In other words, Ahmednagar seems to be using community organizations to integrate the relatively highly differentiated elements of Top Down network elements.

2. Knowledge Content. In terms of the distinction between codified and contextual knowledge, Ahmednagar College appears to have enriched its codified knowledge with contextual knowledge acquired in the course of delivering services and resources to surrounding communities. It teaches both theoretical and practical knowledge in its coursework, and uses both village projects and classrooms as learning sites.

The college is the only one in India having a program that specializes in social work in rural rather than urban areas.

3. Linkages. Although faculty and students spend considerable time in the field, the center is modest about claiming to provide technical expertise. They do know where to go to get it through other agencies. In giving their clients access to other resources, rather

than monopolizing its provision, the center illustrates a Bottom Up approach. In other respects, it has Top Down features as well. The college disseminates its approach to other colleges and universities. The expression of demand has also been influenced in the sense that the college initiated contacts with the villages, and the problems of participating villages were mostly defined by the college, rather than by the villagers themselves. On the other hand, Ahmednagar puts considerable faith in villagers' ability to implement and manage its problem solutions. Moreover, it stresses solutions which did not disrupt village social and economic interactions, and is cautious about pursuing modernization as a goal in itself.

4. Rewards. Ahmednagar does not see itself significantly involved in the business of research or technical assistance. This means it has no vested interest in selling preconceived solutions to development problems and can be more sensitive to Bottom Up views. As a teaching institution it runs on the same motivations that can be found among inspired teachers anywhere. They have taken unusual steps, however, to create an inspiring teaching setting out of previously depressed rural villages. This reflects the college's earlier struggles over the issue of an outreach philosophy, as noted below.

5. Indicators. The college can take credit for much of the villages' improvement in areas of health, basic education, agricultural production, and the marketing of agricultural products. Its role here was nevertheless that of a knowledge broker, providing villagers access to other agents of change. The most direct outputs from Ahmednagar can be counted by numbers of students graduated. Even more important is the outcome of the training, in the fact that fully 90 percent of the undergraduates go to work in rural areas. This hard indicator sums up a great deal about the subjective qualities of Ahmednagar: its identification with rural areas, and ability to motivate students to work there.

6. Development Philosophy. As a teaching institution, the college has been mainly concerned with gaining legitimacy for a style of learning from experiential realities and imbuing studies with a

sense of moral obligations. The pilot project launched in 1961 was a gesture to fulfill the "social mission" of the college through study of the problems and goals of rural community which embraced the college. Aims of that project were: (1) to create responsible citizens and leaders who could act as catalysts for rural progress; and (2) to sensitize the academic community to social needs and integrate education with socio-economic-political processes of the country.

Initially, the college faculty disapproved of the "muddy hands" approach and felt it detracted from the primary function of an educational institution. Academic credit was withheld, government officials were unenthusiastic, and the villagers were suspicious of this collegiate invasion. Eventually, however, the skeptics were won over, and today the Ahmednagar program is a model for numerous colleges and universities elsewhere in India.

CHAPTER IV

PERCEPTUAL DISTANCE AS A BARRIER TO KNOWLEDGE UTILIZATION PROPOSALS FOR INTEGRATION OF NETWORK PARTICIPANTS

1. Perceptual Distances Greater than Physical Ones

In the early stages of this project, we considered knowledge utilization as a problem of bridging physical distances (mainly between the more and less developed countries) and creating channels of information flow between organizations. In the course of talking with knowledge producers and users, however, it has become clearer that the gaps are not primarily (or at least exclusively) a matter of moving information over space. Modern media has shrunk the distances dramatically, and information flows have increased so rapidly that they already overtax the absorptive capacity of many users in LDC's.

The gap that remains is of another sort: it consists of differences in perspective that knowledge producers and users bring to bear on educational problems. The key lies in seeing a problem from the perspective of both users and senders of knowledge. It requires holding two or more very different and often contradictory images of reality at the same time. This does not come easily, either to university specialists or educational functionaries. It requires a "cubist" perspective on reality, which does not jibe with the ordinary way we see reality. Picasso's early cubist paintings were not well received or understood, because people were simply not used to seeing the same scene portrayed simultaneously from several angles. For those who do not make the effort to perceive multiple images of a situation, a cubist painting might simply seem to portray a woman with two eyes on the same side of her face. For Picasso, on the other hand, it was a revolutionary attempt to communicate a depth of understanding that comes only from multiple perspectives.

A knowledge network faces somewhat the same challenge: it is an attempt to transmit information that has simultaneously different meanings for the sender and user, each seeing it from his own perspective. The problem of networking is the problem of reconciling these perspectives in a single image that can span the perceptual gaps.

This chapter reviews some of these gaps. They involve recognized problems of bridging languages and cognitive disciplines. But they extend beyond that to emotional, experiential, and ideological differences. The mandate for the project directs us to identify variables that govern the process of knowledge utilization. In this context, the present chapter focuses on an important set of variables, not at the level of international and inter-organizational information flows, or flows across distances, but at the level of interpersonal transactions. The problem has two aspects: one is the recognition of vastly different perspectives on the operational significance of knowledge; the other is the bridging of these differences, through the controlled dynamics of small group behavior.

2. Historical Memory as a Source of Multiple Perspectives

One can identify various dichotomies in educational planning knowledge, representing different perspectives on educational problems. Planning can be described as Top Down or Bottom Up (See Chapter II); the knowledge base can consist of codified, generalized information or a narrow but richer base of isolated experience (Chapter I). One can debate educational strategies with industrialization in mind, or with top priority given to self-help subsistence for the poor majority.

Sometimes these debates are fruitful, and this is when networking begins to pay off. The challenge is how to make it pay off more consistently. More often than not, "progress" in technical assistance strategies consists of flaws being discovered in a particular approach with a consequent movement of opinion toward the polar opposite: instead of heavy industrialization, "appropriate technology" and "self-reliance"; instead of universal schooling, non-formal education or "de-schooling," as advocated by Illich; instead of centralized planning, total

self-reliance. But the new solutions reveal their own flaws, and old ways are rediscovered in turn. Two examples stand out from our research. One is the long-term historical trend in technical assistance strategies described in Chapter I. This comprises the movement from Nineteenth Century missionaries to post-war change agents, then "institution building," and more recently "networking." In confronting the problems raised in turn by networking, appropriate solutions begin to be found precisely back where it all started. Today, the rhetoric of international development (and it makes considerable sense) calls for a stronger ideological commitment to the poor majority, and a closer-up picture of life at the grass roots. Thus, we have come full circle, back to the missionary model.

Those who have made the clearest case for the "new style" of technical assistance, however, have rarely been motivated to reintegrate their insights with a simultaneous appreciation of lessons from the last 100 years. Each new (or rediscovered) strategy arises in reaction against the flaws of the preceding one, whose virtues are only apparent in contrast to still earlier strategies (see Figure IA in Chapter I).

Our own decade is perhaps unique in the history of technical assistance, in that we can begin to see "progress" as something that may not after all be entirely linear, but a process of coming full circle. The challenge of change then shifts from one of overcoming the past to one of retaining its presence and constantly reintegrating its lessons with those of more immediate events.¹

1. Western thought has been wedded to the notion of continuous progress since the Age of Enlightenment. Now, however, we may be coming closer to Eastern perceptions of historical processes: "One of the cardinal concepts of Oriental thought . . . has been the belief that alternating, diametrically opposed forces govern the universe, like day and night. Each prevails for a time, but within it, like a seed or germ, rests the other force, which will eventually emerge and rule." (Bleiler, in Okakura, 1964, pp. vi-vii). Just as our "new" appreciation of ecological ethics directs us to work within the context of larger social and natural processes, the history of technical assistance should give us a better sense of using our past rather than leaving it behind. Basic philosophical attitudes like these may have an important bearing on the degree of neglect or utilization of available knowledge.

Chapter II provides another example of oscillation between polar views, and the consequent failure to achieve both confrontation and resolution of views on the appropriate content of "useful" educational planning knowledge. In that chapter, we reviewed two forms of knowledge networking, noting the major strengths of each, and the design tactics that might help to overcome their respective weaknesses. In the exercise, a pattern emerged: tactical improvements on each approach tend to be in the direction of reinventing the ideal contained in the other alternative. In other words, networks that seem to be most effective in getting knowledge from producers to users are those which have managed to combine features of both Top Down and Bottom Up systems.

Thus, a working hypothesis emerges:

A major cause of failure in utilization of educational planning knowledge may be the tendency of networks to be highly specialized in a particular view of knowledge functions, without the mechanisms for bringing about a necessary integration with the opposite approach.

3. When is a One-Sided Perspective Warranted?

The hypothesis just stated can lead to precisely the wrong implications for designing networks, unless some important qualifications are made.

(a) Certain problems warrant "one-sided" knowledge. For particular, well-defined tasks of educational planning, there may be an exclusively best way of dealing with them, with prior recognition of an "optimal" solution. For example, in the distribution of well-tested educational materials, or promulgation of new regulations, or calculations of student flows, or census of student nutrition levels -- none of these procedures typically calls for much debate on how to proceed. Each of these actions has some basis in a legitimate form of "superior" knowledge for the problem at hand.

Similarly, an accurate survey of community attitudes toward education requires care to exclude official views, to avoid a contaminated record of the way things look from a local perspective. This is another form of information that is appropriately one-sided.

At another, later stage of policy formation, one-sided knowledge must be confronted with other perspectives. But a prerequisite for this is an earlier stage of highly differentiated deep probes into one or another facet of educational realities.

(b) Some versions of "knowledge utilization" may call for only one-way flows of knowledge. In this project we have chosen a somewhat stringent definition of knowledge utilization, taking this to mean application and validation of knowledge put to the test of practice. In this context, one-way flows of knowledge are rarely appropriate: feedback is needed both to validate expectations and to anticipate problems of future implementation.

On the other hand, knowledge utilization in the sense of application and validation may not be the goal of all knowledge producers or knowledge networks. Some organizations may simply be concerned with data gathering for use by an undefined audience (e.g., UNESCO compilations of educational statistics and other social indicators). Others may focus purely on knowledge production (universities) or dissemination (journals, professional meetings, clearinghouses). If one wishes to include these activities as versions of knowledge utilization, then "utilization" does not always call for a confrontation and reconciliation of different perspectives on educational planning tasks.

(c) Human nature. Confrontation of differing views may be impractical when one party has a positive aversion to using another's knowledge. There may be legitimate reasons for this. One is the "infant industries" argument: just as a developing nation needs to protect its trade against foreign manufacturers, it may need to protect its intellectual resources from foreign ideas that are out of step with local realities, or worse, contribute to an exodus of a country's best minds. (A case in point is Jamaica, where in recent years more post-secondary graduates have emigrated than the country has produced.)

Another reason for aversion to utilization of others' knowledge is quite simply that people like to find things out for themselves. Just as some academics feel despair at finding their own conclusions already published by others, ordinary people like to arrive at their own

understanding of reality. This may be inefficient from the standpoint of getting maximum mileage from available knowledge, but the knowledge user has a different basis for calculating efficiency. The ability to generalize from one's own experience, and the sense of making a personal contribution to others are recognized dimensions of personal competence that cannot be separated from the more "functional" roles of individuals in organization. This has long been recognized (Barnard, 1950), but the theme of personal competence has come to take a more central place in organizational development theory in recent years (White, 1959; Rogers, 1961, Argyris and Schon, 1974, Hampden-Turner, 1975, Cooper, 1975).

(d) Under some circumstances, overt confrontation between views may be too costly to outweigh the benefits. Facing up to differences in views may be recognized as desirable in theory, but educational planners may have other reasons to avoid confrontation with their colleagues. Reasons for avoiding confrontation may include a strong personal distaste for it, or cultural norms against overt criticism, or an atmosphere of delicacy in dealing with foreigners. Different views may also fail to surface because of imbalances between groups represented: one party may have more expertise, more control over resources, access to more powerful means for expressing and legitimizing a position, better organizational means to exert indirect pressure, or simply more polished skill in debate and political infighting. Despite rhetoric of "mature partnership," technical assistance agencies start off with a strong edge on some of these counts, by mere fact of their position as "donors."

If the choice is to avoid confrontation, the procedures for accomplishing this are many and diverse: differences can be smoothed over by reference to "higher level" goals held in common, or by minimizing the difference between different parties represented, or by treating problems as purely technical issues that can be deferred to expert opinion. Differences can also be submerged in analytical exercises that seek to define a wholistic overview of educational problems, which allows criticism to be treated as innocuous qualification of a "superior" paradigm of reality.

To sum up, the case for differentiating and then re-integrating different views in a knowledge network applies to a rather special set .

of circumstances, but it is a situation which probably characterizes much of the educational planning endeavor overseas. It applies (a) where the problem is less than fully defined, leaving room for conflicting perspectives on the interpretation of knowledge for appropriate action; (b) where there are grounds for a genuinely equal hearing for groups representing different views, or at least a strong political commitment toward that end; and (c) where there exists a capacity to tolerate explicit conflict, rather than smooth it over, rush to compromise, insulate one view from another, co-opt or suppress one view, subsume one as a mere component of the other, or simply refer matters to "higher authority."

4. A Practical Theory of Knowledge Application and Validation

Our working hypothesis states that knowledge utilization is often limited by the highly differentiated perspectives that knowledge producers and users bring to bear on educational problems. For some purposes, one or another perspective can be allowed to dominate, with knowledge flowing mainly in one direction. For many or most educational planning operations, however, effective knowledge utilization depends on managing explicit conflicts between different views of a problem in order to keep knowledge moving both ways.

There has been considerable writing on the problem of differentiating and integrating different problem perspectives. Much of it is nicely summarized and extended in the work of Lawrence and Lorsch (1967). Their theory is briefly as following:

1. There is no "one best" model for an effective organization. The more dynamic the "environment" (in respect to technical change, scientific development, and outside demands on the organization), the more highly differentiated must be the forms of thinking that go on in the organization, and the greater the need for dealing explicitly with the conflicts that subsequently arise. In other words, the organization must be able to foster and deal with creative tensions among its members, if it wishes to deal with the special problems of a constantly changing environment.¹

1. Lawrence and Lorsch's conclusions are based on research in private

2. Management of creative conflict is a special art that requires more than good will and rationality and traditional human engineering techniques. It takes special insight to see conflict as a potential form of collaboration, and special knowledge of group processes to make these conflicts fruitful." (See also Cooper, 1975, Hampden-Turner, 1975.)

3. Differentiation of perspectives takes place on both cognitive and emotional levels and may reflect divisions of labor, special interests affected by the outcome of decisions, differences in recognition of outcomes, or different assignments of responsibility.

4. As suggested earlier, there are many incentives to avoid overt conflict and many devices employed to avoid it, even when there is general recognition that a frank exchange of views would yield better results.

5. Conflict resolution is seen as "integration" of views that have appropriately attained a high degree of "differentiation" (appropriate, at least, for an organizational environment that is rapidly changing or otherwise uncertain -- a situation typical of educational planning). The more unpredictable the environment, the lower down in an organizational hierarchy the process of integration should be. Integration is also favored by: explicitness in the recognition of conflict; neutrality on the part of persons taking on special roles as "integrators"; real incentives for working toward shared, higher-level objectives; and genuine respect for the knowledgeability of persons expressing differentiated views.

6. Devices to achieve integration vary, depending on the degree of initial differentiation between viewpoints. For weakly differentiated views, greater reliance can be put on weaker devices, including paper systems (schedules, controls, organization charts) and the authority found in management hierarchies. Highly differentiated views need to be bridged by more imaginative devices: temporary cross-functional teams; permanent cross-functional teams operating at both high and low levels of management;

business organizations, but their work has received attention among educators, and was seen by the authors to have important implications for the organization of international technical assistance.

individuals charged with the specialized function of integration; and permanent integrative committees.

7. Integration requires more than managerial controls, however. Also important are interpersonal skills¹ and a general climate of trust. The theory emphasizes a style of informal collaboration at lower levels of management, free of "mechanistic supervision," and generally occurring outside of regular organizational channels and settings.

5. Application of the Theory to Educational Planning

The specific nature of differentiation in knowledge networks may lie along any of several dichotomies: Bottom Up versus Top Down perspectives on planning (see Chapter III); codified knowledge versus contextual knowledge (Chapter II); missionary outreach versus institutional bases (Chapter I); self-reliance versus higher-level mobilization for change (Chapter VI); long-run versus short-run priorities of helping the "worst first" versus imperatives for building on strengths. In more functional terms, it means dealing with specific educational tasks -- curriculum development, logistics, staffing, construction and maintenance, counseling, research, needs analysis, testing and evaluation, media development, cost and finance, non-formal programs -- all this, while somehow maintaining a picture of the whole. It may also include a sensitivity to missing ingredients in problem-solving puzzles. In one geographical area, the missing piece may be rural electrification; in another a problem of nutrition or impassable roads. In rural areas, creation of jobs might be a paramount task of the educational system itself, if this can be shown to motivate learning, and if it prevents out-migration that wipes out the intended effects of training.

1. There is recognized disagreement about the extent to which "interpersonal skills" can be taught, for example through sensitivity training. Cooper (1975) presents a good compilation of literature on this subject, generally supporting the case for training laboratories aimed at creative group processes. Lawrence and Lorsch acknowledge other arguments, however, that interpersonal skills are too deeply ingrained in personalities to be easily altered (1967, p. 223).

One of Lawrence and Lorsch's points deserves special emphasis in connection with knowledge networks. Drawing on work carried out by Walton and McKersie (1965), they note that open exchange of knowledge depends a great deal on whether both parties stand to gain from a shared outcome. If this is the case, the best interests of each will be served by maximum pooling of information, candid recognition of any differences in goals, and joint search for new solutions. If on the other hand, a "zero-sum" situation applies (such that gains for one occur at the expense of the other), it will be in the interests of each to withhold information that may help the other. In theory, technical assistance falls in the former category, based on motives of altruism, shared values, and shared exposure to outcomes. In practice, one often finds this kind of trustful relationship established at the level of individuals and their foreign counterparts. At higher organizational levels, there is a more prevalent sense of powerful forces acting behind the scenes, with less possibility of candor, trust, or resolution of differences through the informal channels that Lawrence and Lorsch prescribe for this purpose.

This and other features of the "differentiation and integration" theory suggest a model for knowledge networks which operates from solid bases of specialized knowledge, but which itself has very little institutional overhead -- i.e., very little hierarchy and very high reliance on interpersonal contacts. For this purpose, overhead might go for a highly streamlined central office ("A letterhead and a top secretary are almost all you need," Joseph Grunwald observed to us, describing his operations at ECIEL). Organizations that seem to follow this pattern include ITDG and SPRU in Britain, the IAF, and the so-called Sector Team mounted jointly by AID and the Government of Jamaica for that country's Rural Education Sector Loan.

6. The Jamaican Model

The work of this GOJ/AID team has already been alluded to in Chapter III, in reference to networking tactics that seem to have fostered effective knowledge utilization. It is worth noting again here some elements of that program which incorporate the principles of differentiation and integration just outlined. The first concerns collaboration with

universities. One hears from numerous quarters doubts about the general ability of either American universities or the University of the West Indies to respond quickly and usefully to specific needs of the Ministry. Yet in fact one finds many specific cases of collaboration built upon personal acquaintances.

In this and other ways, one finds an almost deliberate avoidance of organizational channels and settings to encourage exchange of knowledge in dealing with educational problems. The half-dozen project teams within the Rural Sector Loan program are thrown together in one large room, where they can work at individual desks, but wander over to exchange advice with other teams whose work touches on their own. The Ministry of Education itself holds periodic "retreats" to discuss selected problems, sidestepping hierarchical relationships for the sharing of views and information.

Some of the GOJ/AID methods for integrating views are traditional managerial control devices (PERT charts; reports; frequent reference to the Rural Education Sector Analysis document and Master Implementation Plan; scheduled review meetings). Others reflect a mixture of attitudes and skills variously described by observers and participants with phrases like "discipline," or "can-do attitudes," or "team work," "recognition that they are as good as foreign experts," "morale." To an observer on the scene, these qualities are very tangible and have a direct, practical bearing on the quality of interchange both within the project and in the network of information exchange with other Ministry groups, rural communities, and foreign collaborators. Yet to persons who have not experienced the process first-hand, these qualities of human relationships resist formulation in such a way that could facilitate their transfer to networking elsewhere. This is an extremely vital point to keep in mind for networking strategies, and we need to examine why it is so.

In the first place, it reflects Lawrence and Lorsch's findings that the integration of diverse views takes place best outside of established channels. The existence of an a priori organized framework for resolving different problem perspectives inhibits the kind of flexible give-and-take, moments of detachment, and sense of shared purpose that are necessary

for resolution of conflict between problem elements. Formulas do have a place in theories of organizational development, but they generally aim at a "tightening up" of procedures, to yield greater order, control, systematization, routine and predictability. This can work at cross-purposes to the other requirements of networking which call for a loosening up of organizational structures, toward greater openness, sharing, creativity and individual initiative. (See Lawrence and Lorsch, 1967, p. 161.)

Second, conflicts do not arise in the abstract, but in the context of specific educational problems. The resolution of these problems must also refer to substantive realities, and not abstract principles. As Russell Davis expressed in the Networks seminar at Harvard, "Out in the field you have to duck and twist and jump all the time. Everybody has those skills in some degree, but how do you teach that, except by being out there and doing it? You can think about it with a hundred different theories, but when you've got to do it, the intellection will only get in your way."

One of the Sector Loan team members in Jamaica had similar thoughts: "A kid here can fail his exams because the truck that was supposed to bring his work books got commandeered to deliver teachers' paychecks when the regular truck broke down. How do you sit in Washington or UCLA and model those relationships in a way that will help Jamaicans?" From another member of the team comes another example: in trying to develop curriculum material reflecting needs and realities at the local level, one town will need to get experts in fishing; another will find that the expert is right there -- a highly successful poultry farmer. For another, it might be a project that will fail, leaving no tangible result, but a greater sense of identity and purpose and self-reliance. For another place the best thing they might do is say, Leave us alone; education can do more to harm this community than it might do good. Reflecting on this the team member asks, "How do you run that kind of curriculum program? There's no way you can run it. The real experts are out there; the action is out there. Schools can facilitate what they want to do in many ways, but the community people are the ones who have to put it together.

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And they are doing it already."

There are, of course, some formulas. For example, the Jamaican Sector analysis team has been insistent that training be part of all its activities, and that Jamaicans take full part in the Sector study itself. (These principles are given credit for the fact that the Jamaicans have adopted the Sector Analysis as "their own" document, and have vigorously followed it up with implementation projects of their own design.) There are sufficient guidelines for "leadership training" that AID has sponsored courses in the subject in Latin America, reportedly successful. Many ways have been described to manage group processes in general and the process of differentiation and integration in particular.

On the other hand, while the D & I theory is to be found in Jamaica in spirit, there is no evidence that the theory was ever explicitly applied. Knowing the theory may therefore not only be insufficient to make it work, but unnecessary. The theory works where people have grounds in their own experience to appreciate its validity. Otherwise, it appears a meaningless abstraction, a foreign language without an equivalent in the local reality. As in the Calvinist theory of salvation, when the spirit is there, good works will take care of themselves. But without the spirit -- without the conviction arising from one's personal reality -- good works and good theories will never get you to heaven.

This has a direct bearing on the role that universities can play in knowledge networks. In Jamaica, practice is at least up with the theory, and well ahead of it in some respects. There are gaps, but very selective ones: rarely are they in broad, exciting project areas that warrant major programs of collaboration with a foreign university. Nor are the gaps nicely clustered in a way that any one university could immediately respond to needs.

In short, the kind of knowledge most useful to Jamaica these days is not the sort of broad expertise that can be found in particular universities, no matter how specialized or broad their resources. The need is rather (a) an occasional need, (b) a need for the one or two people to be found among all universities who are most appropriate for the job, and (c) a need for individuals who Jamaicans can trust and can make their own choice in selecting.

These elements of flexibility, refined need, and trust are all features of differentiation and integration that bear on the welcome use of foreign expertise in a situation like Jamaica's. Not every country is like Jamaica, of course, and the D & I theory is clear about the contingencies of the setting that bear on choice of appropriate strategies. Looking at knowledge networks from a Jamaican viewpoint, however, the value of linking LDC organizations with particular universities seems to fade somewhat, yielding to a more sharply defined need for knowledge networks that can tap particular individuals on an occasional basis from a world-wide pool of expertise. As part of such a network, the host country needs access to relatively informal channels of trusted advice that can describe the personal qualities of candidates. (The Sector team in Jamaica relies heavily on personal contacts in the AACTE -- American Association of Colleges of Teacher Education.) The importance of personal qualities becomes apparent in the work style observed in Jamaica. It is also strongly indicated by the D & I theory, which identifies the stringent demands on interpersonal relationships for effectively bridging different forms of expertise.

In summary, this chapter has attempted to deal with the problem of knowledge utilization from the standpoint of reconciling a variety of perspectives and forms of expertise that are appropriately very different. The natural conflicts that arise demand a special ability to resolve. The more that people charged with implementing plans in the host country are in control of this process, the more likely they will utilize the knowledge required. Where confidence and trust can be established on grounds other than institutional channels, franker recognition of conflicts can take place, highly differentiated views can be re-integrated, and shared knowledge will give rise to greater chances of its eventual utilization. The kind of trust and interchange that this requires, however, seems less consistent with high-level agreements for collaboration between large organizations than it does with knowledge networks that can facilitate personal contacts among individuals. This is the level at which knowledge is ultimately received, challenged, modified, validated and eventually trusted enough to be applied to program actions.

CHAPTER V

COST-EFFECTIVENESS ANALYSIS APPLIED TO EDUCATIONAL PLANNING EFFORTS

In most conventional applications of cost-effectiveness analysis (CEA) we are trying to get from A to B in the cheapest way possible. In the case of educational planning, however, we often set off from A on a path to discover where B is. Moreover, if the journey is successful, it may end up changing our minds about why we wanted to go there. Other modes of conveyance may appear as we proceed; the very composition of who "we" are may have changed before we arrive. And in the end, we might find that we wanted to go to C instead of B anyway. In short, we face a difficult problem of trying to take aim on a constantly moving target. This is especially true where development programs are carried out in the familiar pursuit of "structural change." It is less true for projects that aim at monitoring and control or minor adjustments in the system.

In the course of this project, we have encountered some fundamental criticisms of the whole CEA approach. Some of these doubts are reviewed at the end of this chapter. No matter how valid these criticisms, however, they must be seen as qualifying rather than negating the usefulness of cost-effectiveness analysis.

1. Normal Difficulties in the Application of Cost-Effectiveness Analysis

Even the critics of CEA must somehow weigh benefits and costs of policy alternatives. This usually boils down to cost-effectiveness analysis in one guise or another -- PPBS, Management by Objectives, logical frameworks, systems analysis, Goals Achievement Matrices, Planning Balance Sheets, Dialectical Scanning. The strengths and limits of CEA are present in any form of policy or project evaluation that addresses the basic questions:

-- What costs are accounted for, and how are they measured?

-- What dimensions of effectiveness are considered, and how are they measured?

Where costs and effectiveness are both considered in monetary terms or other quantifiables, no serious conceptual problems arise. Difficulties exist, but most analysts have learned to live with them. These include:

(a) Data availability. Unfortunately, this problem is usually worst where the educational needs are also at their worst -- in the poorest enclaves of the least developed LDCs. Slight consolation might be found in the fact that in such situations, educational planning knowledge is not usually the limiting factor to social progress. ✓

(b) Lack of agreement on specific analytical conventions. The problem is not a failure of sophistication in technique, but the lack of guidelines for judgment in a particular situation as to which techniques are valid in the context of local realities (see, for example, the discussion in Arrigazzi, 1972).

(c) Complex or indirect links between inputs and outputs. The frustrations of trying to construct educational "production functions" illustrates the difficulty of establishing input-output relationships as a basis for CEA in evaluation of educational systems. The problem is vastly compounded when one attempts to take evaluation beyond the educational system to the meta-system we call educational planning, a step which requires several links even further removed from tangible outcomes of schooling. Some would argue that the chain of effects cannot be well defined regardless of improvements in our data and models. They see a gray curtain descending between intentions and outcomes that can never be satisfactorily lifted: educational processes take too long to play themselves out; moreover at its best education creates a form of social progress made up of inventive surprises.

Others maintain that the gray curtain can be penetrated. One can at least do tracer studies of graduates to correct the most serious misallocation of resources. One can provide an expanded analytic base to capture educational outcomes, in the form of employment opportunities for graduates, economic credit to go along with their skills, ideological guidance, and incentives to serve where most needed. The same could

apply to tracking down the outcomes of past educational planning efforts, as a guide to their better use in the future. We have seen a few retrospective post-mortems on what went right or wrong for particular planning efforts, but these are probably a biased sample of the kind of planning that generally takes place.

2. Neglected Dimensions of Costs and Benefits

In traditional cost-effectiveness analysis, a favorable ratio is sought between costs (expressed in monetary terms) and some quantified measure of effectiveness. Many policy decisions appear to operate on a different basis of calculation, however. Indirect monetary benefits may provide the most critical leverage in choice among different educational programs or planning procedures.¹ At the same time, non-monetary items may have the greatest significance on the cost side.² In addition, there may be categories of costs and benefits that cannot be quantified at all, sometimes referred to as "intangibles." The various possibilities are summarized in Figure A.

Figure V-A

	Type of Factors to be Considered in Computing Cost-Effectiveness		
	Monetary	Other Tangibles (Quantified)	Intangibles (Non-Quantifiable)
Effectiveness	(1)	(3)	(5)
Cost	(2)	(4)	(6)

← Traditional CEA Ratio →

1. Indirect monetary benefits might accrue to the public sector (e.g., funding from international donors, contingent on adoption of certain planning procedures or educational programs); or to the private sector (individuals or employers, profiting from skills supplied at public expense); or even to suppliers of services (planners, educators, professional associations, whose income derives from providing programs and plans).

2. Examples of non-monetary costs could include unemployment (if education favors capital-intensive infrastructure), opportunity costs (if funds are diverted to education from other uses), homogenized standards of welfare (resulting in "second-class" status for anyone at the lower end of the spectrum, and anyone relying on traditional lifestyles.)

Clearly, it is not as straightforward a decision-rule to weigh these six categories against each other as it is to compare simple ratios of monetary costs (cell 2) against intended benefits (cell 3). Yet there is no ethical way to eliminate a broader range of judgmental trade-offs in the formulation of social policy. The schema shown in Figure 3 forces recognition that not all benefits and costs can be measured in quantitative terms. Analysts state this as fact, but then go on to construct formulas which exclude qualitative (or "intangible") categories of program effects.

3. Problems of Measurement

Given this basic six-cell framework for considering costs and effectiveness, some of the major issues of measuring costs in the context of educational planning can be summarized, as follows.

(a) What is a cost to some is a benefit to others. The cost of educational planning, for example, constitutes the livelihood of the educational planner, and, of course, enters national income accounts. This makes a trivial difference in the case of a few planners, but not in the case of thousands of teachers in a large project. In connection with technical assistance the question often arises: what's in it for the supplier of planning services? This reflects the fact that a mixture of altruism and self-interest motivates planners, sponsors, ministries of education and teachers alike, and this must be recognized, particularly if they are expected to serve poor communities by-passed by educational opportunities in the past. Rhetoric to the contrary will not change this. To understand the situation requires recognition of the other incentives that cause official policies to be acted upon, neglected, or distorted.

(b) Some costs are "accountable," others not. Endeavors carried out in a developmental context tend to incur certain overhead costs that cannot be attributed to specific outcomes. These include start-up costs of particular institutions; administrative overhead for ad hoc, contractual programs; coverage for risks; "loss leaders" to pave the way for more self-financing future endeavors; or the writing off of costs against

R & D and the general enlightenment of planners elsewhere. Sometimes, cost figures do not include the implicit costs of using volunteer inputs to programs (e.g., Peace Corps inputs into host country planning efforts), or the part-time use of other agencies' facilities. These are often described instead, as "cost savings." (See, for example, Coombs and Ahmed, 1974, pp. 181ff.) Costs of technical assistance that accrue to the recipients of foreign aid are rarely calculated, although these may be quite high, given that middle-level management tends to be thinly spread in developing countries. Nor are other opportunity costs of receiving foreign aid always considered, such as servicing of long-term debt on foreign loans, operating costs and retirement benefits for new categories of staffing created by foreign-sponsored programs, cost overruns on capital projects, and the like. Determining imputed costs, e.g., of scarce resources, through shadow pricing is difficult in most developing countries where market structures are irregular and monetary and fiscal conditions and policies unstable. Determining the appropriate discount rates to apply to loans utilized in capital projects is difficult and yet sensitivity analysis applied to the costs and benefits of capital projects indicates that the discount rate chosen can affect the resulting cost benefits analysis profoundly, sometimes doubling costs over long term projects.

Some costs obviously should be written off against "overhead" or otherwise excluded from inclusion in cost-effectiveness calculations of particular programs. Our research suggests, however, that (a) there are no universally accepted guidelines of what to include or exclude, (b) appropriate guidelines probably vary with specific applications of CEA, and (c) there is considerable room for biasing cost estimates for or against a project, depending on the analyst's willingness to acknowledge a wide variety of indirect costs or to exclude these from consideration.

(c) There is a bias toward overhead. Given that "start-up" costs of projects (including R&D) can usually be justified as separate from the operating and capital costs of on-going programs, there is sometimes a detectable bias toward innovations, new starts, institution-

building, and research components in programs subject to cost-effectiveness review. Often this overhead is appropriate and manifestly productive. In some cases, however, the high expense of a program is rationalized on grounds that the program is "new" and must be tested out. Meanwhile, alongside the "innovations" there might be found well-established programs geared toward the same objectives, providing outputs at cheaper cost per unit. Yet cost-effectiveness comparisons between the old and new can be glibly dismissed on grounds that the new program, being "experimental," warrants the extra cost.

Leaving aside now the question of costs, we can turn to the issue of effectiveness: what dimensions of effectiveness apply to educational planning, and how are these to be measured?

(a) Primary, secondary, and tertiary impacts. Educational planning makes its impact through an extended chain of events: educational processes are themselves long-term, and it is impossible--perhaps inappropriate--to separate planning from the broader context of societal processes that make planning possible and fruitful.

In evaluating the effectiveness of educational plans, major attention is given to primary impacts--those that are short-term and measurable. In this process other less immediate impacts may be ignored. Even though recognized as significant, they are denied a place in systematic analysis because they call for conjecture and knowledge of local circumstance that analytical specialists often lack.

Secondary impacts generally refer to program outcomes which accrue to populations outside the target group as well as effects not explicitly weighed in the policy calculus. Examples are benefits to teachers and purveyors of educational equipment; consumption benefits or disbenefits to children; custodial functions of schooling for children and otherwise unemployed adults; social status conferred by a diploma; provision of a social sorting mechanism; possible displacement of other traditional forms of education provided by family, religion, and work place.

Tertiary impacts are those which affect the decision-making processes themselves. Both the act of planning and the resulting outcomes

may shift the relative power of different groups. The process itself may legitimize values not previously taken into account, change perceptions of reality, or affect the availability of resources to take action. Previously disenfranchised groups may become more active in politics. For example, self-help education in Kenya was stimulated through indigenous efforts to find alternatives to colonial government and missionary schools in the movement toward independence. Reforms create new institutions and new forms of vested interest. International collaboration may create new perceptions of what is at stake in development processes or coalesce values around salient new images of what is possible, in the form of demonstration programs or reference to foreign experience.

(b) Another dimension of "effectiveness" suggested by our work is the possibility of diminishing the need for output. Traditionally, planning takes the demand for services as an exogenously determined variable, the problem being one of maximizing supply. In many fields, however, controlling demand is an object of policy: highway planners, frustrated by the self-defeating tendency of new roads to generate their own demand, are rephrasing the question of cost-effectiveness--no longer asking how to maximize traffic flow but how to reduce the public's need for this mode of travel. Similarly, agricultural research is increasingly concerned with ways to minimize the need for pesticides and fertilizers, even while giving them full credit for the Green Revolution. Energy planners are also turning to conservation measures, abandoning the previously single-minded concern with augmentation of supplies. In education systematic policies to "conserve" requirements for schooling are rarely articulated or carried out. (China's policies since the Cultural Revolution, being a major exception.) Substitutes for formal schooling have proven feasible on a large scale, but they generally derive from the politics of last resort. Nonformal education, for example, is usually seen as a poor man's alternative to the standards of schooling set by yesterday's elites, modeled after the experience of the Atlantic Rim countries. Similarly, massive restructuring of production processes to accommodate existing skills has been carried out with success in the United States--but only as a temporary expedient of converting to a wartime economy in the early forties.

At the same time the missionaries of deschooling should recognize the reality of poor people's aspirations for formal schooling. However useless the ornamentation may be and however it was originally engendered by outsiders, the aspiration is a psychic reality and a powerful one. There is an inherent weakness in the position of a new group of outsiders, who themselves possess high levels of attainment of formal schooling, preaching the need for poor people to limit opportunity in formal education for their children. This is a particularly weak position for university scholars to preach from--the need for others to receive less education than they themselves have. ✓

(c) Outputs versus outcomes.¹ As Guy Benveniste has explained, outcomes are the consequences of outputs. Outputs are the products of organizational intentions, whereas outcomes are the consequences of these outputs interacting with the environment, sometimes in unintended ways.

Outputs are not synonymous with official goals. One goal may be to advance knowledge, and the output is a flow of students and a list of publications. Yet there is always a direct relation between official outputs of an organization and announced goals. These goals provide the rationale for actions and the justification for official outputs. When we think about an organization--say, a school system--we quickly realize that in addition to pursuing a set of goals which may or may not be explicit, the organization fulfills other social needs which are not necessarily included among the official goals. No one tells us that the goal of the school system is to provide agreeable employment for teachers because no one thinks this is an attractive way to describe a school system. Yet it is a fact that school systems do provide agreeable employment opportunities. No one says that the goal of the school system is to provide a supervised watch for children--a parking function--yet schools do, in fact, provide such supervised guard during school hours.

1. This section is based on a paper prepared for the Networks Project by Guy Benveniste, "Caveats Regarding the Application of Cost-Effectiveness Indicators." University of California at Berkeley. Mimeo. 1975.

In other words, while organizations pursue official goals, they also fulfill other social needs which may be quite important, even if these functions are not part of the official goals pursued.

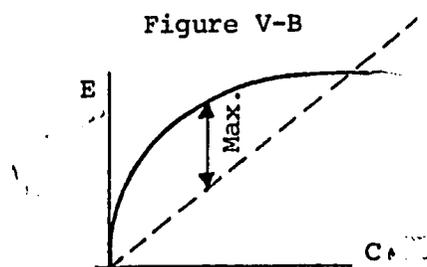
Now, therefore, we have to ask ourselves to what extent our concern with official goals of university networks eliminates other social functions of these networks which have nothing to do with knowledge generation but are important.

For example, international networks provide opportunities for researchers to travel abroad and work in different environments--this may benefit their mental health, enrich their environmental stimuli, and thus increase their creative ability. Yet we may disregard such needs and benefits by limiting our choice of indicators to those linked to official goals. In other words, had we formulated the problem as one of mental health and had we decided that the mental health of professors was a bona fide concern, we would have selected different indicators to guide policy choices. Obviously, donor agencies and host governments are not officially mandated to upgrade the quality of world tourism or to pursue objectives that may appear frivolous.

Unfortunately, it is not as simple as all that. Frivolous objectives are pursued because people have a vested interest in them. It may be more useful to recognize these secondary functions instead of acting as if they did not exist. Anyone familiar with government or the world of education knows that hidden causes have more influence on what goes on than will be admitted. At times it is preferable to recognize what is pursued in reality and to say so: The reason why disclosure of this kind can be important is that the decisions made will reflect real needs, even if they do not form part of official goals. The more these true motives are hidden or dissimulated, the more alienation will be generated, since it is clear that what is said and what is done are not the same. Cynicism is often the result of too large a discrepancy between the ideal and reality. When it is impossible to measure or even discuss such other vital outputs, it may be preferable not to measure anything. At least the discrepancy between the stated ideal and the reality will be less obvious.

4. More Fundamental Problems of the Cost-Effectiveness Approach

In its most basic form cost-effectiveness calculations pose the situation shown in Figure B, with costs shown along the horizontal axis and effectiveness on the vertical. At any point above the 45° line, effectiveness is greater than costs, although the graph also shows that beyond the point of maximum efficiency there may be rapidly diminishing returns to scale.



When we observe educational planners in action, however, we rarely observe them making many decisions on this basis. Nor do we see sponsors of planning using CEA in these ways. Why? Some of the practical and theoretical problems of undertaking CEA have already been mentioned:

(a) Existence of multiple objectives and multiple categories of cost, irreducible to a simple ratio. (See earlier discussion of the six-cell matrix, which suggested the need for focus on such things as non-quantified objectives and non-monetary cost.)

(b) Policy choices rarely lie along a smooth curve such as that depicted in Figure B. Choices are usually found in "lumpy" packages comprising a few discrete options.

(c) Apart from multiple objectives, there are multiple publics, and the scale of effectiveness will vary according to the way different groups value specific outcomes or feel their effects (see Chapter II).

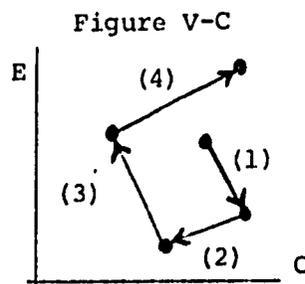
(d) Relationships posited by the cost-effectiveness curve may hold for some situations but not others. Typically such curves are derived from aggregating experience under a wide variety of conditions,

statistically controlled to eliminate the effect of "extraneous" variables. Yet when the aggregate relationship is reapplied to a new situation, the old calibration will again be insensitive to the strength of contextual variables in the new locale. The relationship must then be recalibrated; but if this is the case, the original curve based on aggregate, controlled data does not represent a trustworthy standard of cost-effective relationships.

(e) Highly sophisticatedly analytical techniques that attempt to overcome all these problems can result in a loss of the "big picture" or a retreat from intuitive insight, political realities, value implications, and other judgmental bases needed for wise planning.

5. A "Compass" Approach to Cost-Effectiveness Analysis

Given the problems described above, how can we describe a heuristic for decision making that keeps judgment constantly in play, while still focusing on the relation between costs and effectiveness among policy alternatives? Based on our observation of educational planning and our own attempts to evaluate a range of network strategies for knowledge networks serving educational planning, we have concluded that cost-effectiveness analysis makes most sense in the pair-wise comparison of discrete alternatives. This does not call for absolute measures of effectiveness but only general, judgmental evaluations of how particular programs stand in relation to each other and other options. In effect, the direction and general magnitude of differences between real options seems more important than precise but narrowly focused calculations of aggregate relationships between costs and effectiveness. The appropriate schema then takes on the look of Figure C.



For sake of illustration, consider the kind of judgments likely to be made between the discrete policy options denoted by the dots. In order to make the pair-wise comparison (1), all that is necessary to know is that change is toward the "southeast" direction, where costs (C) are increasing, while effectiveness (E) is decreasing. In case (2) toward the southwest, a cost-saving seems possible, but at great expense in program effectiveness--a case of penny-wise, pound foolish. Again, no great effort is needed to get precise figures on C and E; the choice is fairly obvious.

More obvious still is the choice in regard to the northwest decision (3). Here one can get more output for less input--not a very frequently encountered situation, but it sometimes arises. Some shoe-string programs seem to go a long way, at least by some criteria, whereas past experience with other programs can sometimes show us expensive mistakes to avoid. Among the case studies reviewed, some have price tags that are astonishingly modest compared to other programs of similar ilk.

Only in the case of decision (4), moving northeast, would we need more precise data on the relationship between (E) and (C), which are both increasing. Yet realistically, greater precision here may not count for much: it may falsely imply a degree of knowledge that we simply cannot justify;¹ or the choice might be dictated by other constraints such as cost ceilings or minimum levels of performance.

In short, the application of CEA to educational planning efforts may call for a general "compass" approach as a preferred form of analysis, not only on grounds of practicality but also validity. The approach makes little claim for the comparability of policy options, except to identify alternatives whose comparability then becomes a central focus of analysis. The compass approach does not by any means exclude more precise and sophisticated analysis, but it helps keep an overall comparison of programs in view.

1. With good statistics, however, and proper use of sensitivity analysis, we can be more accurate about the state of our ignorance, helping decision makers to identify the range of judgment that they must then provide on their own. For a good example of this, see Arrigazzi, 1972.

The compass approach has a number of salient features and requirements:

(a) It forces comparison between real alternatives rather than abstract dimensions of programs taken out of context. Among other things, this may help to provide more systematic building upon sets of "most closely comparable" programs that already exist and less mounting of new enterprises in a vacuum without reference to previous experience.

(b) Central attention turns to the identification of "most comparable" options. These may extend beyond pair-wise alternatives. Because costs and effectiveness are not limited to one or two indicators, criteria for comparison may be multiple, and the specific programs to be compared may vary at different stages of the analysis. New program designs may result from the synthesis of features from previous options that have proved strong with respect to specific effectiveness measures.

(c) The search for "comparable options" requires special emphasis and may prove difficult. In the course of our research we have sometimes encountered resistance to learning from "somebody else's" experience. However inclined people may be to make generalizations about objective reality, proprietary instincts may arise in discussing their own program, which may be depicted as unique and incomparable to other experience.

On the other hand, comparisons diligently sought and discussed might result in more explicit attention to the tacit beliefs, special interests, and assumptions which sometimes govern choice among programs. In particular, the search for "comparable options" forces attention to basic philosophical positions centered on such questions as: "What business are we in, after all, as providers of technical assistance?" "In whose interest are we acting?" "What incentives govern our actions?"

(d) Unlike conventional CEA, the compass approach does not comprise a fixed algorithm or set of routine, step-wise procedures. It is more like a heuristic device which is instructive by ways of examples and draws heavily on skills of judgment, intuition, and

concrete knowledge of specific cases. It is not meant to replace more rigorous analysis but to provide a complementary framework for judgment in weighing the multiple dimensions of costs and effectiveness.

(e) The compass approach is essentially based on comparison between case studies. It allows neither the statistical rigor of a large sample nor the depth of a single case history, but it may strike a useful compromise between these extremes. If a "compass" analysis were to draw upon participation of representatives from the programs under discussion, they might form the nucleus of a knowledge network comprised of "most comparable" options. Presumably these would provide a valid basis for sharing of experience upon which participants could collectively build, both as users and providers of knowledge.

6. Examples of the Compass Approach

Several examples of "compasslike" comparisons can be cited. Laura Kaufman (1975) reported on an OECD comparison between the relative costs of university degrees in Britain and France. This comparison resulted in a concise but far-reaching summary of the costs and effectiveness for each country's programs. Jacques Hallak (1972) compared four alternative strategies for eliminating educational budget deficits in Sri Lanka, weighing various degrees of financial solvency against other outcomes (social, political, and economic). Ratings of performance on each outcome were shown on a fairly rudimentary scale of "poor/fair/good/strong." More precision would probably be superfluous for this kind of analysis, however, because assessment of certain outcomes is somewhat conjectural. Further, simplicity of scale helps the several outcome variables to be simultaneously considered and weighed.

Coombs and Ahmed's case studies of nonformal education (1974) provide some good examples of a compass approach to cost-effectiveness analysis. Their cases are presented in some depth but are also grouped according to general categories such as agricultural extension, cooperative self-help programs, and integrated rural development. Comparisons of costs and performance are then made within each group. This helps

to avoid the mixing of apples and oranges and juxtaposes programs which have most to learn from each other. Cost-effectiveness comparisons are particularly revealing for certain pairs or groups of programs: PACCA in Afghanistan and Puebla in Mexico; ACPO in Colombia, Gezira in the Sudan, and the Comilla project in East Pakistan. In one comparison of six rural training programs, costs per trainee were found to vary between \$20 and \$3,200 (see page 196). In examining the difference, the more expensive program was found to have superior results on some counts but significantly poorer results on others.

The virtue of this analysis is that it reveals how misleading cost-effectiveness comparisons can be when limited to single indicators of performance. Informed judgment plays a clear and important role in weighing one dimension of effectiveness against another. In this process the analyst or decision maker needs to be able to go back to the descriptive case studies for more detail as clarification is needed to refine the estimates of cost and effectiveness. However, equally important is the simplicity of the tableau as a heuristic device for simultaneously weighing the various programs, each with their multiple costs and objectives.

If the compassing exercise indicates that costs and effectiveness pretty much increase at the same order of magnitude in moving from one option to another, it might then be worth attempting more refined analysis of marginal differences between the alternatives. Russell Davis has shown how this can be done in a sensibly straightforward way in a comparison he proposed among three options for improving the utilization of school facilities in El Salvador (Davis, 1971). Costs and benefits are broken down into several components, and for each of these the relative attractiveness of options A, B, and C are compared as hypotheses (see Figure D). For some elements the relative superiority of one option might be obvious enough to be taken for granted. In other cases the hypotheses might require further data to make a determination. The virtue of the method is that a summary picture is always in view, and one can work always with the best available information, no matter how exhaustive or incomplete the data at hand. This capacity to do as best

you can with imperfect analysis is an important everyday need of educational planning in developing countries.

Figure V-D
Illustrative Comparison Among Options A, B, C

<u>Costs</u>	<u>Hypotheses to Test</u>	<u>Important Qualifications</u>
1. Construction	1. $C > A > B$	
2. Personnel	2.	
a. Supervision & Admin.	$C > (A=B)$	
b. Instruction	$A > C > B$	
3. Materials & equipment, etc.	3. $B > C > A$	
 <u>Benefits</u>		
1. Hours of instruction	1. $A < (B=C)$	[$B < A < C$ during harvest]
2. Characteristics of instruction	2.	
a. Service and supply	$B < (C=A)$	
b. Student satisfaction, etc.	$C < A < B$	
3. Utilization of TV	3. $C < B < A$	
4. Future developments	4. $(C=A) < B$	
5. (Other benefits as appropriate)		

CHAPTER VI
REVIEW OF SELECTED STRATEGIES
FOR UNIVERSITY OUTREACH

This chapter has two parts. The first is a selective review of outreach strategies encountered in research under the Network Project research. The second part considers the design of networking strategies as they may be shaped by the differing character of educational planning specialties among 211(d) universities, as between educational technology, nonformal education, and education cost/finance.

1. Selected Outreach Strategies

This review is descriptive with respect to organizations where the strategies are now operating. They are not offered as specific recommendations but simply as a catalogue of possibilities that sponsors, clients and universities might wish to explore further.

Strategies are considered under five general categories, listed roughly in order of increasing efficacy and increasing costs of implementation: (a) Paper systems; (b) Knowledge brokers; (c) Face-to-face discussion; (d) Institutional collaboration; (e) Jointly conducted action research.

These strategies might be applied individually or in combination. Within each strategy, tactical options are discussed or implied, allowing for adaptation to particular university circumstances.

Insofar as knowledge utilization is considered here mainly from the standpoint of outreach from the university to clients, the strategies and tactics reviewed are mainly forms of "knowledge push" or Top Down Planning (see Chapter III). Such tactics have to be both differentiated from and reconciled with "knowledge pull" perspectives on the same problem (see Chapters III, IV).

(a) Paper systems. Newsletters have appeared as a common feature of 211(d) universities, describing information on such things as data resources available in educational planning at each university, library size and new acquisitions, backgrounds and expertise of graduate students and faculty, pertinent information about ongoing projects, and problems and insights into field operations.

AID publication of technical reports and papers through the Government Printing Office provides another opportunity for knowledge exchange. These reports communicate the state of the art in AID's program of field analysis and on internal policies with potential impact on universities. Staff interviewed at Britain's Overseas Development Mission cited AID's dissemination of technical reports as a useful practice that ODM itself intends to adopt in the near future.

SIDA (The Swedish International Development Agency) also puts a great deal of emphasis on diffusion, with an important difference. Rather than putting out quantities of material under its own name, SIDA supports libraries and publications of other agencies which are of world eminence in particular fields. (One sixth of IIEP's support is from Sweden.) This has several potential benefits. It minimizes printing costs; it provides a world-recognized, centrally accessible source of information; it probably reduces duplication of effort, insofar as SIDA becomes exposed to the work of other agencies, through its IIEP contact; and it saves readers from being deluged by information from yet another source. Applying this model to the 211(d) universities, one might think in terms of a collaborative newsletter rather than separate diffusion efforts. A newsletter sent out from one institution can easily be filed unread, whereas one written jointly requires a more direct exchange among the various authors. Most of the present 211(d) newsletters make some effort to solicit information from other programs, but to some extent they amount to overlapping clearinghouse functions.

Paper systems have inherent limitations, however. The organization, Education and World Affairs reported from its own experience that "it is a mistake to prepare a report, distribute it widely, and simply hope that something will happen" (1969, p. 9). This conclusion is echoed again and

again in our findings. Louis Sleeper did a follow-up study on readership of selected documents circulated at AID showing that people read only a small proportion of technical reports and policy papers that cross their desks. This emerged despite the fact that the sample of reports he used for this study were selected to be of recognized significance in relation to the desk-persons' own work. (He was blocked from replicating the study at UNESCO.)

This suggests the possibility that people generally do not read what they do not solicit, contradicting the premise of most paper systems. The other outreach strategies to be reviewed put more emphasis on responding to felt needs, and less on maximizing the indiscriminate flow of information.

(b) Knowledge brokers. Centralized information analysis centers may prove significant for the preservation of field experience, the review of conceptual development, and in some cases shared access to knowledge useful in educational planning situations in developing countries. First, information must exist; secondly, it must be accessible; and lastly, it must be accessible in a form in which it can be used by planners. There are vast stores of information in existence -- almost too much -- but the data and information are not always available, or in utilizable form. For this reason data bases, information systems and search coordination systems should be briefly reviewed.

There are two basic types of information banks and systems with information available and usable for educational planning -- Document Systems and Fact-Data Systems. Document Systems are basically bibliographical in nature and provide indexed references for search by topics or subjects. The system may also store documents in the form of indexed references which are imaged for complete or partial retrieval. Document Reference and Storage systems can serve to preserve field experience and permit review of conceptual development in education and planning.

In the field of education, ERIC (Educational Resources Information Center) is a comprehensive Reference and Storage System. Under ERIC 20 centers in the United States index and store materials by special categories relevant to education (including "Planning" under "Educational

Management"). The centers are linked into a national information system. The holdings of ERIC have been rather limited on educational planning, amounting to about 50 entries by 1971. Even more limited is the coverage of educational planning in developing countries. In other areas of education the coverage is vast.

The very scope and volume of information holdings requires a second kind of organization and service -- Search Coordination Systems. Systems Development Service, a private firm, has 4 million citations on line for interactive search. SDS accesses document reference and storage systems -- ERIC, for example -- and also specialized versions of fact-data bases. Among the comprehensive systems accessed by SDS are MEDLINE and MEDCOMP in medicine, CHEMCON in chemistry, and the mind-boggling LSD-TRIP -- Library Systems Development Technical Reports Indexing Project. Lockheed DIALOG system accesses many of the same bases.

The second major component of information systems are the FACT-DATA systems. These systems are generally classified into (1) Social Science Data Archives, (2) Management Information Systems, and (3) Other Private or Semi-Private Systems. For educational planning the Social Science Data Archives are most relevant; for these information bases contain a vast holding of economic, demographic, political and social data which is accessibly for analysis and re-analysis. These information banks can preserve field experience, provide data for testing conceptual schemes, and also provide data on actual in-country situations where educational planning is going forward. In the Social Science Data Archives the major bases are:

(1) The Roper Public Opinion Research Center, which stores for retrieval over 7,000 sample surveys from the U.S. and 43 other countries.

(2) The Inter-University Consortium for Political Research, which has major studies in the U.S. and cross-national studies as well.

(3) the Bureau of Labor Statistics Base has mainly U.S. data, but there is also:

(4) the International Demographic Data Directory which covers demographic data in most countries of the world. The international

agencies also have extensive holdings of information in the form of indexed and stored documents, and, in some special areas fact-data systems as well.

The problem is not the existence of information, or even the availability of it for a given price or expenditure of effort. The problem is making it more readily available for utilization in educational planning, especially to planners in the poorer countries. This will require:

(1) Simplified and current descriptions of useful information and how to access it. This is no simple problem. Descriptions of systems and bases are almost always out of date by the time information on them is made public knowledge. The systems themselves always lag slightly behind, in up-data of current documentation, i.e., data in the bases is often incomplete and dated; and the information is rarely as complete, accessible or current as advertised. Hence, providing information on information systems is a never-ending problem. Many systems and bases start up in good times, and go out of business in lean times, to the discouragement of those who would use them.

(2) Training of users in the information that is available, how it may be accessed and how it may be used. After the users are trained they must be constantly re-trained or brought up-to-date through information exchange. Establishing and maintaining users-networks in the countries of the world is a large and continuing task.

(3) Providing funds for using systems and bases, even where there are only nominal charges for access and service. Almost all systems, including ERIC, involve some cost for use; and poor countries often do not make resources available for such activity.

(4) Providing funds for up-dating and completing information that is most directly relevant as a basis for educational planning knowledge. Before this can be done the information itself must be specified; and again it is not a one-shot operation, but something that must go on over time. Planners and researchers in the poor countries must furnish data as well as draw on it, and this presents, apart from financing and technical processing problems, some sensitive political issues.

There is no easy or inexpensive solution to the problem of establishing and maintaining information systems and user networks for planning, but some modest efforts in surveying and reporting on the information systems, training users, and providing support for use of the systems would yield a worthwhile return to educational planning.

The purpose of most information banks and systems is to provide information that exists at large on selected problem areas. Few serve as knowledge brokers focused on the specific link between developing countries and American university resources. Professional organizations sometimes fill this need, such as the American Association of Colleges of Teacher Education (AACTE), MUCIA and the American Association of State Universities and Land Grant Colleges. On the other hand, the U.S. does not have an organization quite like Britain's Inter-University Council for Higher Education Overseas. There is now a small movement, it seems, to adopt the IUC model to the United States. (Ralph Smuckler from MSU visited Britain in the summer of 1975 to look into this possibility.) The IUC helps promote links between British and overseas universities. Recently it has emphasized staff development of overseas institutions and the provision of a broader range of resource bases in England, to prevent an incestuous dependency on particular British departments.

The IUC idea is so attractive in many ways that a few of its weaknesses might be noted. First, it is designed to represent the interests of British universities, even though it professes equal responsiveness to its other two constituencies, comprising foreign universities and the Overseas Development Ministry which provides much of its funding. The relative influence of ODM and UK universities varies according to leadership at IUC. These days the IUC reportedly has less of a "think tank" role than in previous times when its leadership exerted a more powerful, independent influence on overseas policy.

Secondly, the IUC's role is limited by its superficial contact with universities. There are too many (nearly fifty in England) for meetings to be very substantive. Representation is usually through vice-chancellors, who think of coordination as "a dirty word," according to one source. There are presently attempts by "young Turks" at some

universities to take over these representative functions from the old guard -- which at least implies that the IUC has an important enough function to be worth fighting over.

Thirdly, the UK universities' "knowledge sharing" functions in fact seem to be largely the work of independent initiatives taken by particular universities, notably Reading University, whose strength is attributed largely to the leadership from Margorie Mumford. IUC does attempt to encourage other universities to support Overseas Service Committees along the Reading model, but money is tight and there don't appear to be any strong university incentives for others to follow suit.

Fourth and last, university roles overseas are becoming much less stereotyped than in the past, and sharing of knowledge seems less practical under a single umbrella institution like the IUC. The IUC's role was clearer in an earlier era of setting up universities from scratch in the liberated Commonwealth nations: The model was Oxford/Cambridge, and the tasks were to advise on capital development and general academic planning. It has since become far more complicated than that, and the roles of British universities far more specialized, diverse, and ambiguous. A similar point was made in a Networks Project conference at UCLA, where Harry McKinney pointed out the great diversity to be found among American universities. An effort to link 211(d) universities to foreign aid could have the effect of by-passing other institutions, such as community colleges, whose structures and style are especially appropriate for outreach to rural areas. The Tuskegee Institute is another example of the outreach style, but it received no mention by 211(d) participants in the Networks Project, being instead brought to our attention by AID.

(c) Face-to-face discussion. Education and World Affairs was earlier quoted on its observation that reports do not produce results. EWA also suggested, however, that reports could be useful if followed up by conferences, workshops, formation of committees and planning for program implementation (EWA, 1969, pp. 8-9). There are numerous examples of this within the AID 211(d) network, many of them informal. An example is the following quotation taken from the 1973 "Report of Activities of the Program in International Education Finance, UCP School of Education":

Contact was established with other recipients of 211(d) grants from the AID agency. We therefore discussed our research plans with the relevant persons at Florida State University, Stanford University, UCLA Latin American Center and with the staff of the International Education group at Michigan State University. (This last group is under contract with AID.) Since informal education is of particular significance, we were fortunate to be able to arrange for a one-month visit at Berkeley of Dr. Manzoor Ahmed of ICED in Essex, Connecticut who has been working with Mr. Philip H. Coombs on two major studies of informal education for the IRPD and UNICEF. In early December, Drs. Guy Benveniste and Stuart Wells attended a two day meeting at Stanford University on educational technology. The purpose of that meeting was to explore potential areas of cooperation between 211(d) recipients interested in the uses of educational technology in developing countries. The meeting brought together Florida State, Stanford and Berkeley.

Other persons assisted us in this early planning phase and some came to Berkeley to consult with us. Dr. Tyrell Burgess came from England. We consulted with our colleagues at the SIDEC program at Stanford and brought Dr. George Nihan who had been working with the 211(d) grant to the Latin American Center at UCLA for two days at Berkeley.

Universities have encountered difficulty, however, in dealing with the byzantine intricacies of AID as an organization, described in past by Barkenbus (1975). Network Project researchers turned up the following comment made by a university administrator in reference to an AID contract, illustrating one weakness of the AID institutional structure:

Communications with AID have been a problem. The staff has had to deal with three branches of AID: the Budget Office [sic], the Grants Office [sic] and a Regional Board [sic]. Communication among these departments of AID was not very good and consequently university staff would find that, in spite of sending their written communications in triplicate, information did not reach all pertinent individuals at AID.

AID is aware of this problem, and one of its recent RFP's in educational planning requires "Consultative Committees" of AID people who would have continuing obligation of exchanging information and guiding the university and AID staff engaged in the project. Conceivably, the Consultative Committee could include officials and scholars from developing countries and other relevant participants.

Given the divergences and potential misunderstandings between

sponsors and knowledge generators, the processes of knowledge exchange often requires a need for mutual education, diplomacy and patient negotiation. Each must understand that the other has different perceptions for good reason, and that the complexity of educational development problems requires this diversity of views. Barkenbus (1975) has pointed out the diversity of views existing within AID, between USAID missions in the field, the regional bureaus, and the technical offices which cut across them. Barkenbus tends to side with one faction or another on various issues. Nevertheless, as Lawrence and Lorsch have cogently argued, dynamic organizations must be able to tolerate widely divergent modes of interpreting reality and relative priorities. There are no "right" and "wrong" answers, but only intelligent compromises and syntheses between different time frames for analysis and different locational foci, tasks and objectives. As already noted, however, in Chapter IV, it takes special skills and personality types to deal with the stress of trying to reconcile different organizational objectives and styles.

Job rotation is a possibly useful device for breaking networkers out of role stereotypes so that other people's views can be understood better. The extreme case might be China, where bureaucrats are periodically sent out to live with peasants until they get their "priorities straight." Peace Corps service has a similar function, in its effects of exposing Volunteers to the problems of development seen as a Bottom Up perspective. Certain technical assistance organizations, including ACPO, ADC, AID and HIID rotate personnel between field-work and "home office" staffing positions.

Actual exchange of roles may not be necessary for all purposes. It may suffice that people merely break out of role stereotypes which impose a communication barrier. Patricio Cariolla once remarked at an airport farewell for him Santiago, Chile that international conferences like the one he was about to attend offer three levels of truth: one at the level of formal presentations and discussions; another during the coffee breaks; and a third -- the most profound -- in the bar when everybody has finally relaxed enough to share their deepest personal thoughts.

This kind of observation does not fit very well into conventional

theories of management, and so it tends to pass unnoticed in more "serious" discussions of network design. Yet it contains an important truth, related precisely to the need for breaking out of stereotyped organizational modes in order to make networks function on an inter-personel level.

Another anecdote may reinforce this point. In a discussion at Sussex University, Geoffrey Oldham mentioned that national interests may prove fairly superficial and possible to overcome if discussions can take place in a setting where such roles "don't work." He cited the case of an outstandingly successful international conference held by SPRU (Sussex University's Science Policy Research Unit) in Barbados. At this conference, accommodations were designed to be very modest, with two persons to a room. Most participants, being high-level officials, were appalled. But being thrown together, people began to chat more informally and personal friendships developed. Major difficulties in the formal meetings were successfully attacked with a feeling of "We shall overcome," a very unusual spirit for such meetings. Other Oldham seminar tips:

- Get the right people -- committed, knowledgeable, and critically placed in policy making.
- Distribute background material, concisely defining the state of the art.
- One member of the group should have a specific research project in mind. (Plans of action do not come out of general discussions.)
- Use of "old boy" networks -- especially graduates of the same training program, but possibly members of past task forces. (In contrast, UNESCO designs its teams precisely to prevent members from thinking too much alike.)

(d) Institutional collaboration. A modest example of collaboration is seen in UCB-Stanford cooperation in sharing a research investigator between the two programs. Budgeted 50% by each university, this arrangement provides a concrete link between the two educational planning programs. It is unfortunate that the individual involved left for another position before potential benefits from such a relationship could be fully developed, but the idea may be sound enough to emulate elsewhere in the future.

At the level of more substantial projects, one of the best available

reviews of collaboration is Henry Glyde's study carried out at the University of Sussex. This examined past cases of British university links with overseas counterparts, and found that successful links are most likely to develop on the basis of:

- repeated short-term visits of MDC individuals or pairs;
- surveys of mutual interests;
- integration of training with technical assistance efforts;
- strong and enthusiastic management of the LDC institutions;
- small scale programs; and
- core funding of the MDC institution. [Comment: core funding may have been a cause of the success observed by Glyde, but alternatively, it might have been a spurious association, coming as a result of prior competence, interests and successful experience in the MDC institution.]

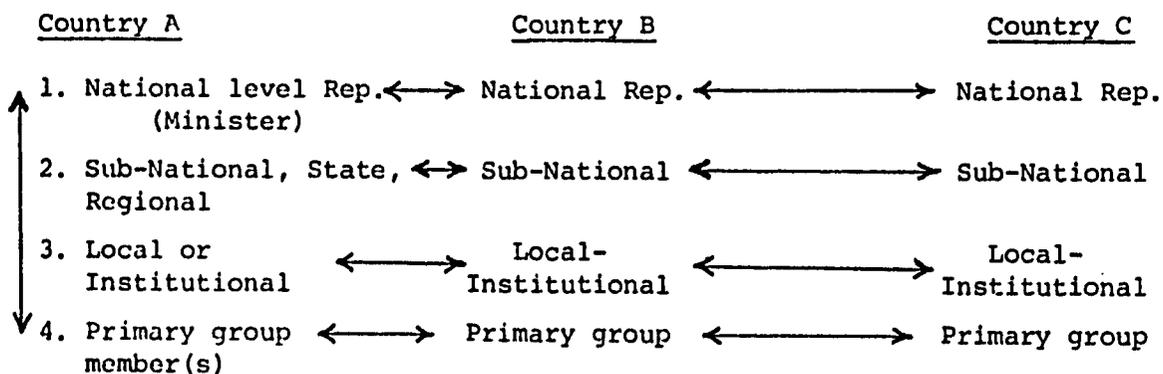
(e) Jointly conducted "action research." Another means to facilitate exchange is the development of long-term relationships with specific clients, along the lines of university-industry collaboration in Cambridge, Massachusetts, Palo Alto, and the Raleigh triangle. The U.S. General Accounting office has prepared a questionnaire for recipients of grants from RANN (NSF's Research Applied to National Needs) that attempts to measure the strength of such relationships between universities, or analogous R+D agencies, and their clients (GAO, TAG 29, 1974). Long-term links have other advantages as well: more opportunity for training and research efforts to complement technical assistance in mutually reinforcing ways (Hannum, 1975); and greater opportunity for U.S. personnel to become at home in a foreign language.

The disadvantages of such arrangements are two. One is that they are costly, typically involving large overhead components, and often becoming unwieldy in the process. The second problem is that they give an overpowering leverage to the Top Down approach, which could never be balanced by similar strengths in Bottom Up organizations acting as counterparts in the field. (See Chapter III and IV, and Appendix C). The fact that the

client's counterpart institution may also be strong (for example, in the University of Chile -- University Convenio) does not resolve this problem, if the client also has a Top Down approach to solving problems of the poor majority.

This issue was the central focus of the third Network Project conference held at Harvard's Center for Studies in Education and Development.

Participants identified a major quandry in getting direct contacts with the people who deal directly with the problems. It is even more difficult to contact those who are directly affected by problems. One difficulty is selection. The countries usually send VIPs to seminars and even training programs, rather than the people who are directly involved. The problem is to get to the "camel driver." (This was a reference to one of the great network transmissions of all times, when Lyndon Johnson picked a camel driver out of a mob in Pakistan and had direct and much publicized follow-up contact with him.) There is a need for contact that goes down and across. Most of the international exchange is just across at a very high level. One schema suggested by Davis and Kline was to get a team that went down from national to primary group level and to have this team meet with other teams, similarly structured from other countries. Nobody thought this would be easy, given the selection controls exercised by governments in most countries, but it might be the only way to get an exchange that goes deeper than most of those that took place at international conferences -- where the exchanges are abstract and lacking situational reality. The model would be something like this:



The problems of accomplishing this are not small ones. The size of the group, if many countries and governments are involved, would make things expensive and unwieldy. A lot of countries and governments would not encourage people from the levels below national to attend and participate. Many countries, when dealing on an international level, want "representatives," and these are representatives of the government, or party, or elites in power. Many delegations are stacked or packed this way. There would also be a problem that if the thing were structured, somewhat as above, the Minister, or man from the national level would view himself as head, and things would end up by one person speaking for the nation, even if he didn't know what he was talking about.

The advantages are also attractive. Not only would people with similar problems and perspectives have a chance to relate on an inter-country basis, an opportunity that is rare, especially for those at the lower levels, but there would also be a chance to get more coherent relationships and exchanges within country teams. IAF attempts some of this but it is limited to people involved in similar programs, e.g., rural, family schools.

It would not be too difficult to try, especially if only four or five countries were involved; and one place to begin might be in regional groupings that already exist, such as Central American common market, or the Andean Pact. There are already meetings that go on below the national level, i.e., representatives of universities in different countries meet, representatives of groups dealing directly with primary groups meet -- this is especially true of religious or mission groups. Also, organizations with similar purposes meet, i.e., cooperative groups, Rural Family School Movement, trade unions and syndicates. A natural sponsor for such a trial would be a university, particularly a large and powerful private one with international status, for it could probably bridge -- through more informal old boy networks -- government and private groups and groups at different levels. Some university people do know farmers and workers in the countries. It was also suggested as a general principal that informal contacts, wherever and however they exist -- the old boy network, if it does -- should perhaps be the basis for getting a trial going, and that more formal arrangements could follow.

Failing some kind of mechanism for more effective exchange across and up and down the various levels, there will always be the filtering out of direct knowledge from below, and the transmission of schemes of abstraction from above, and this problem is acute in educational planning or any other field. Something more innovative than the conventional seminars, reports, exchange of scholarly research, and international conventions of VIPs is needed. All participants agreed to this.

In summary then, the discussion dealt mainly with face-to-face contact and exchange, especially on matters of rural development education. This need not imply that more conventional exchange or transmission of knowledge through reports, books, seminars and teaching and training is not important, but something more innovative is required to break the filters that are built in at various levels of the system.

For reasons of both cost and effectiveness, jointly conducted "action research" on educational planning problems might look to strategies for purchasing university expertise without the mobilization of the university as an institution. A major example of this is the use of "panels of experts" at the Intermediate Technology Development Group (ITDG) in London. These draw on people from several universities, whose interest in solving real problems with other motivated colleagues in a well-focused subject area induces many to serve on the panels without remuneration. For this, among other reasons, ITDG's overhead budget is surprisingly low for the volume of its activities.

One problem this encounters is the availability of faculty to attend such panels, for reasons of distance and scheduling. This is compounded by ITDG's insistence that panel members follow up their deliberations wherever possible by visits to sites of application, and by dialogue with potential implementors in government, business and recipient communities.

Another suggested model of low-overhead action research would give greater responsibility to advanced students in technical assistance roles. The Foreign Area Fellowship Program, among others, has moved toward this approach in providing support for doctoral research abroad premised on the student's taking an active, supervised role in an LDC agency. At another level, Ahmednagar College's students were responsible for much

of that institution's success in outreach to rural communities (see the case study in Chapter III).

An idea raised at one of the Network Project conferences suggested giving students credit for projects in place of theses (an alternative now open to students in the UCLA Masters Program in Urban Planning). Student work would be styled after Peace Corps and Operation Bootstrap arrangements, and linked to small-scale development operations in rural areas. It would also be tied in with extension services of host country universities. Students would be expected to deal both with a specific sector problem (housing, education, agriculture, engineering, health, cultural programs), and also with the infrastructure that would make such programs implementable on a larger scale, such as cooperative management; links with local youth groups or national youth service programs; evaluation expertise; logistics; coordination with formal education programs and school facilities; and other support systems.

This proposal is generally consistent with the broad conclusions of the Networks Project summarized in the next chapter. None of the strategies referred to in the preceding pages is offered as specific prescriptions, but some may resonate with the philosophical perspectives of individuals or programs among the 211(d) universities, AID and LDC clients. As suggested in Chapter III, philosophical views will be a decisive factor in making such programs work.

It should be recalled that this chapter has approached university outreach strategies from a Top Down, knowledge-push, university-based perspective. Whatever strategies and tactics prove useful for adoption, care must be taken to integrate them with parallel strategies for Bottom Up networking, involving support of activities and organizations closer to the primary groups. (See Chapter IV.) Students may prove more flexible than faculty in keeping a foot in each camp. Future exploration of networks would therefore probably benefit from their inclusion, both as a source of ideas and as participants in actual programs.

2. Networking Tactics As Affected By Educational Planning Specialties

Under this Networks Project the question was raised as to whether

the different emphases of educational planning among 211(d) institutions -- non-formal education, cost and finance, educational technology -- made any difference in their needs or opportunities for entering into knowledge networks. Differences were indeed found, but a case could be made that these largely reflect other factors besides the subject area specialization of the institution. The degree and nature of outreach at each institution seems to be largely determined by leadership, as might be expected. Faculty who were interviewed referred to the age and size of the 211(d) institutions as possibly important factors, but this relationship does not appear to hold up consistently.

At first glance there seems to be some factual basis to the conventional wisdom that work in non-formal education will take the advisor out in the rural wilderness, educational technology will take him as far as the schools, while cost and finance requires only a visit to the nation's capitol. Indeed, we found these things happening, but not with great consistency. More importantly, it seems that as soon as a university becomes involved in a specific overseas project, the possibility of distinct knowledge networking styles among the 211(d) specializations tends to disappear. For example, an MSU specialist in non-formal education will soon become involved in questions of educational technology and cost/finance if his work has any direct bearing on specific policy. Either MSU then begins to take on the functions of UCB and FSU and Stanford, or UCB and the rest had better be prepared to meet MSU staff out in the field where the specific relationships between specializations come into play.

Specific cross-relationships cannot be defined by talking with any one specialist, or even by putting specialists together in one room (as was done in three Network Project seminars for 211(d) participants). The relationships are defined by specific field conditions and program purposes and not by input-output relationships calibrated on the basis of aggregate experience. This was one of the major conclusions stemming from the various discussions, questionnaires, correspondence and seminars undertaken in this Networks Project with participation from 211(d) universities: little could be said about coordination among these participants unless reference were made to very specific problem scenarios.

The full scenario may not reveal itself even from a field perspective until action gets underway and the failures of coordination begin to make themselves felt. This is not to deny the enormous contribution of sector analysis exercises in spelling out major relationships in advance. Nevertheless, the full revelation of important linkages generally comes out only in the literature of retrospect.

A couple of examples will illustrate this point. One of them is J.E. Anderson's study, Organization and Financing of Self-Help Education in Kenya (1973). He points out that in the missionary and colonial period of that country, a self-help tradition was established in education by the government's very reluctance to extend schooling opportunities beyond a narrow elite. The tradition continued strong through the mid-sixties, but subsequently there was a move to bring all schools up to uniform standards, while at the same time making self-help part of official policy. The result reported by Anderson was a set of standards which only the richer communities could afford to maintain. At the same time, the earlier spirit of self-help has begun to decline now that official policies take over the initiative for school programs.

A second example comes from Tanzania, which has also had a relatively strong commitment to helping the poor majority. Nicholas Bennett reported on the 1964/1969 plan in that country and the consequences of failure to coordinate cost/finance analysis with the substantive questions of educational improvement. Based on Tanzanian data, he found that foreign aid programs tended to build schools on the order of two to three times more expensive than locally built ones. During the period 1963-1970 costs per child rose 47 percent. He concludes:

Had it been realized that qualitative and structural changes were being planned which would, if implemented, have almost doubled the recurrent cost of each child entering the system at a time when half the children in the country were not receiving any schooling, the decision taken might have been different. If the planners had fully costed all the proposals thoroughly, they would have realized that if the existing structure had been maintained, universal primary education could almost have been achieved by the end of the plan period. (Bennett, 1972, p. 31)

These two cases reveal a striking pattern that bears on the vital importance of good coordination: when host country governments, with the aid of foreign advisors, embark on educational ventures without a crystal-clear formulation of the relationship between new technology, nonformal options and their cost/finance implications, the school population that stands to suffer most is the poor. This is true even when our ostensible purpose is to help precisely those groups.

We began this discussion with the question of whether the differences in knowledge base among the 211(d) universities would affect the appropriate design of their respective knowledge networks. To summarize our findings on this:

(a) The literature makes it clear that coordination among the three major 211(d) subject areas is vital.

(b) It is not clear that the energy needed for such coordination would be well spent on general exchanges of knowledge within the United States. The specific types of coordination needed are dictated by the nature of local educational options considered and by the social, political, and economic circumstances around which particular policy decisions revolve in the field. It seems logical, then, that the field is where the coordination should take place, not in the United States.

(c) If coordination is to be managed from the site of overseas projects, it would be logical to tie this in with the sector analysis and sector assessment studies being carried out by AID in selected countries. The version of sector assessment used in Jamaica possibly offers the best model of how this might work, with its emphasis on training of nationals to take over full control of coordination, its methodology that keeps the big picture constantly in view, and its highly selective, well-orchestrated use of foreign technical assistance.

CHAPTER VII

CONCLUSIONS

No attempt will be made to summarize previous chapters. The purpose here is to weave threads of earlier material into a more coherent pattern of practical implications deriving from the research.

1. Building on what exists. Throughout the research carried out under this project, new network proposals were encountered that failed to evaluate or even acknowledge long established practices along closely similar lines. This lack of historical memory has several causes. Among many scholars, it derives from an unproductive tradition of policy analysis which is based on abstractions rather than practical planning experience. Among many people in the field, it arises from an opposite failing, the unwillingness to acknowledge valid cross-cultural and cross-historical generalizations which justify the effort to transfer knowledge from one situation to another, and which thereby justify the existence of knowledge networks. The chief advocates of networks are consequently drawn from the ranks of scholars, injecting a bias toward the superiority of academic expertise over the more anecdotal lessons of real world social practice. This fosters an image of LDC counterparts as knowledge users rather than generators, and it fails to acknowledge the value of their own solutions to problems in the field of educational planning.

The case studies on ACPO and Ahmednagar reported in Chapter III suggest specific possibilities for building on existing success. Yet

these cases may be only the tip of an iceberg. Information from rural communities is highly filtered and has fewer channels of diffusion than the knowledge produced by universities. A major effort is needed to restore the balance. One of the most important contributions that universities could make would be to offer a mirror to developing countries of what they are doing well.¹ An important parallel function of network sponsors like AID would be to provide resources for successful programs in the field to undertake training and outreach functions of their own.²

2. Educational planning knowledge networks must operate through more than one form of knowledge exchange. As suggested in Chapter II, planning generally involves two kinds of knowledge bases, reflecting two sets of purposes. One of these is the conventional base of codified data, applied to fairly well-defined problems in well-established institutional settings. This is the meat and potatoes of planning, and it has applications either to delimited problems like equipment allocations or far-reaching issues like urban/rural and rich/poor disparities.

Another function of planning is to keep the big picture in view, and this calls for a more subjective knowledge base, a less institutionalized way of formulating problems, and first hand contacts with

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1. Some of the work at ICED exemplifies this approach. See Coombs and Ahmed (1974), ICED (1975), Thompson (1975).
 2. AID support for ACPO is a good example. See Case Study E in Chapter III.

the "intact reality" which primary groups experience in their own lives. This was discussed in Chapter II in connection with the alternative knowledge bases for educational planning; it was expanded in Chapter III to consider other variables in the Top Down/Bottom Up dichotomy in planning philosophies; and it was further discussed in Chapter IV in connection with the issue of differentiating and reconciling tensions between these various alternative perspectives. Based on these considerations, knowledge networks can be seen to perform highly differentiated functions. According to the argument of Chapter VI, it is probably ineffective to compromise this needed differentiation by incorporating the several functions into the same network. Multiple networks are needed.

3. University roles. It can further be said that universities have the knowledge base for doing both kinds of planning. They can engage in Bottom Up as well as Top Down efforts (see the Community Service Voucher Program at Northwestern University and the work at Ahmednagar, Case Studies C and F). They can raise issues which define the larger context of planning efforts (work at Sussex University being a good example), even though they are reluctant to deal with contextual knowledge that relates to local realities of a host country, in the face of university reward structures. Universities also provide a vital resource base for specialized knowledge.

4. Inter-university coordination. Coordination among specializations (e.g., cost/finance, educational technology, nonformal education) seems both difficult and probably invalid to attempt apart from a particular field site where the knowledge is to be applied. The futility of

coordinating knowledge in places remote from applications was encountered on several grounds: (a) the improper calibration of input-output relationships on averaged data (see Chapter II); (b) the dubious moral and political value of constructing a picture of the client's world without setting foot there or inviting his participation or, better, putting it in hands (see Appendix C on the issue of self-reliance and dependency); and (c) the cognitive and psychological barriers to reconciliation of philosophies and academic disciplines when experts have no transcending reality (such as a field site) that they can share (see Chapters IV and VI).

5. Regardless of the targeted beneficiaries of educational planning, the poor suffer most from planners' mistakes. The evidence for this is based on historical anecdotes (Chapter VI, part 2) that suggest this pattern: costs of correcting errors in planning are paid out of programs that would have benefitted the poor. Among all groups, these are the least organized to resist target cutbacks affecting them.

Educational planning is now acquiring improved data and methods for defining the identity and needs of poor communities (see Chapter II), yet the advances have not been incorporated into the practice of cost-effectiveness analysis (Chapter V). Berkeley's 211(d) grant is supporting work in this area, but the theory is still in need of real world applications.

6. Cost-effectiveness analysis as traditionally applied cannot do justice to the evaluation of network options. In fact, no such applications have been attempted among the organizations surveyed by this research project.

Networks defy many requirements of the cost-effectiveness method. They link people who perceive different outcomes at stake (Chapter III), and who usually disagree on the definition of knowledge "utilization" (Appendix B). Intended outputs are multiple and often non-quantifiable, and some outcomes are unintended. Important costs may also be non-quantifiable (Chapter V). For Bottom Up networks, effectiveness criteria vary for each project (Case Studies C and D). Important input/output relationships will vary according to local circumstances (Chapter II), or will be modelled differently according to the analyst's development philosophy (see the "Descriptive Variables" in Chapter III). More embracing models of network input/out relationships hinge around debatable premises about the positive or negative impacts of technical assistance, for example in regard to self-reliance (Appendix C). Data is often missing even for more immediate links between costs and outcomes, so that serious distortions are introduced if statistical relations are calculated using the partial data available.

Despite all these problems, network alternatives will perforce have to be evaluated, and they can be, provided that a method of comparisons is used that allows all considerations -- monetary effects, quantifiables, and intangibles -- to be considered simultaneously in the same tableau. This requires (a) reference to a very limited number of validly comparable options and (b) attention to the richness of each option as an "intact experience." This intactness must be based either on fully explored costs and effects of existing programs, or else based on scenarios constructed by joint effort of many experts dealing with the same site of applications, and including the participation of the target population (Chapter VI).

7. Some networking problems appear tractible, others beyond solution.

Chapter I, part 2 reviewed the broad history of technical assistance programs, defining the rationale of network strategies as a response to earlier problems, and identifying the problems now arising from the network approach itself. The latter include:

- (a) the problem of orchestrating a part-time commitment to outreach functions among university faculty;
- (b) keeping generalizable knowledge faithful to the complexities of action in particular sites;
- (c) the paradox of helping others to become self-sufficient; and
- (d) the problem of unequal partnerships, unresolved by international agreements because they arise within LDCs themselves.

(a) The first problem, concerning split commitments of university faculty, finds partial solutions in tactical arrangements alluded to in Chapter VI. Its deeper causes are rooted in university reward structures (see Case Study B) which can only be overcome at significant personal cost (Case C), or by major revolutions in the philosophy of higher education at particular institutions (Case F), or by working outside of universities altogether (Cases D, E).

(b) The second problem, concerning the reconciliation of general theory and local realities, seems tractible, but only if the contradictions of doing both at the same time are fully recognized, and steps taken to reconcile them (see Chapter III, and especially Chapter IV).

(c) The third problem, concerning the self-help paradox, has not been fully resolved. Some organizations claim success in helping others help themselves without imposing new forms of dependency -- ACPO

most convincingly, Ahmednagar College possibly, and the IAF and Community Voucher Programs in a more limited way and on a smaller scale. (See Chapter III). Judging by this, mixed (Top Down/Bottom Up) strategies seem most effective. Interpretation of results, however, depends on the observers basic beliefs, regarding values, perspective for viewing the problem, and theory of history (see Appendix C on self-reliance). As Rodrigo Medellin argued cogently in Network Project seminars, there is not a smooth transition between knowledge supplied from MDCs and universities on the one hand, and seeing things from the point of view of the people affected in the countryside. To an international sponsor or technical expert, the Green Revolution work of Mexico's CIMMYT looks well adapted to the country's needs with respect to grain production and the health of the agricultural sector. From the standpoint of someone living in the countryside, however, it spelled ruin for a class of ejidos swept aside by the commercialization of agriculture. There is no way to reconcile these views about the role of knowledge. The contradiction arises from basic differences in assumptions about the organization of social relationships. There is a watershed between perceptions of the same phenomenon that can never be reconciled, except from the perspective of one or another social class.

(d) The fourth problem concerns the matter of equal partnership within LDCs. Here, too, one's view of the tractibility of the problem depends on philosophical premises about equality and beliefs about social processes. Two points are suggested by the research: one is that educational planning by itself would be unlikely to change the political economic structures affecting relative social status among

groups. The other point is that we can identify institutions doing good work directly in touch with the groups we want to reach (see Case Studies, C, D, E, and F). These deserve support fully as much as more global efforts to rationalize education as a total system. If any doubts are held about the ultimate good that educational planning can do (see Appendix C), the logical way to hedge our bets is to put our money directly into the target community.

APPENDIX A

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APPENDIX B

FOUR CATEGORIES OF KNOWLEDGE UTILIZATION

The design and evaluation of knowledge networks can give rise to much fruitless debate because of an initial failure to define what is meant by better utilization of knowledge.

As a first step in clarification we must ask whose knowledge are we interested in using -- just the knowledge found in universities, or should we aim at helping primary groups to create their own knowledge? The authors of this report see the latter as a deserving priority, but we also wish to be realistic: university-generated knowledge also has a legitimate function. A lot of AID funds have been invested in it development; and our mandate under this contract calls for us to consider ways of getting it out to users in a more cost-effective manner.

In this appendix, therefore, we approach the question of knowledge utilization as a problem of outreach from the university to potential users elsewhere, whether these be other universities, sponsors like AID, clients, or primary groups. We are talking about the business of Top Down planning here, and the problem of knowledge "push" as described in Chapter III of this report. Nevertheless we should keep in mind that such a strategy might work best as a complement to Bottom Up strategies of knowledge pull. (See Chapters III and IV.)

Knowledge utilization is defined in this project in a way that distinguishes four categories of knowledge "use": dissemination, exchange, application, and validation. Each sets different standards for "utilization" and different criteria for measuring the effectiveness of university efforts; and each has different implications for an "optimal" strategy of knowledge networks. Each also provides a more homogeneous category for grouping case studies of educational planning efforts as a basis for making valid cost-effectiveness comparisons. These categories are briefly reviewed below.

1. Knowledge Dissemination

In the first version of knowledge utilization, dissemination is taken to mean:

(a) The employment of "general use" communication channels: journal articles and monographs; classroom and other training facilities; seminars and professional meetings; broadcasts and mail-outs. The term "general use" denotes that facilities are not restricted to one particular form of message or mission, but are accessible to a wide variety of senders and users, involving little esoteric skill or other restrictions on their use.

(b) Communication is primarily one-way. Included here are one-way communications of a reciprocal nature, for example, mutual participation in an information clearinghouse like ERIC. Thus, listener feedback, while it may be deemed useful, is dispensable for any package of knowledge disseminated.

(c) The specific identity of knowledge users may remain unknown, as well as specific applications of knowledge disseminated. Cost-effectiveness considerations call for broad audiences (economies of scale) and minimum need for feedback or validation of knowledge, which involve costly monitoring of practical applications and create problems of relevance and communicability, unless a homogeneous audience can be defined. Dissemination would then require the organization of receivers and senders into standard institutional roles such as students, professionals, researchers, trainers, administrators. The less dissemination channels identify specific users, the more they must identify specific classes of users sharing the same vocabulary, academic disciplines and paradigms, educational and cultural backgrounds, and social settings for interpreting the significance of knowledge transmitted. Examples would include consortia of universities (e.g., England's Inter-University Council for Higher Education Overseas); aid officers (e.g., AID's annual in-house Conference of Education Program Officers; Bellagio Conference participants; or groupings of users by specific subject interests (e.g., users of ERIC). Dissemination among dissimilar institutions may also take place by linking individuals

within them that share common backgrounds: old school ties, prior association with particular projects, shared views on development problems and priorities. A good example of this is the use of "panels of experts" by the Intermediate Technology Development Group (London) and also the Canadian Research Council.

Discussion of "dissemination" as a form of knowledge utilization.

In this version knowledge tends to be treated as a set of specific facts and concepts which are discovered, and capable of being stored and retrieved when needed. It retains its message even when disembodied from a specific setting. In this view, knowledge is an inert substance, universally valid, and unchanging: new knowledge accumulates in publications and reference files and in experts' heads, and old knowledge gets weeded out. Thus, knowledge has an existence independent of whether anyone puts it to practical use or not. Applications are considered as a separate issue, and not a touchstone for putting a value on knowledge or knowledge generation efforts.

Alternative definitions of knowledge utilization refer more concretely to what is done with it. In this view, the meaning of knowledge is not contained in the words and formulas and information media that give it expression but in the ways it is applied and makes a practical difference for people who put it to the test of practice. Hence, knowledge becomes knowledge only in use. In this pragmatic definition of knowledge, utilization of knowledge is measured by its intended or actual effects.

In defense of pure dissemination without application, university spokesmen point to a recognized danger of the pragmatic model -- the hazard that academic thinking can be captured by political and commercial interests that sponsor university teaching, research, and extension programs. For example, it has been argued that Land-Grant college research has been biased toward mechanization and heavy reliance on energy, fertilizer, and pesticide inputs, reflecting university cooperation with manufacturers, to the detriment of small farmers originally intended to be served by the Land-Grant programs. (Long and Groskind, 1973)

It can also be argued that dissemination opens paths to actions that would not have been identified by those who produced the knowledge.

Evidence includes:

- studies of innovation diffusion, indicating that at least for the "early adopters" of new practices, knowledge by itself can be a motive force, unaccompanied by other resources that a more "enriched" network of technical assistance might provide.
- significant educational reforms have often been the result of indirect dissemination of results from policy studies, rather than direct links between researchers and policy-makers. Dissemination helps translate new ideas into "good currency," fostering "climates of belief" (Cohen and Garet, 1975), and creating the necessary fertile ground for specific proposals.
- although there may be a low probability that any given recipients of knowledge will follow up with a specific action, some of the most significant programs in education have resulted from improbable combinations of people and ideas. The Comilla program in East Pakistan was modelled after the Land Grant College idea from the United States (Raper, 1970), Colombia's impressive rural radio school program ACPO, derived from the fact that a rural priest happened to know something about ham radio operations. These are only anecdotes, to be sure; but significant change in a major educational system is so rare that isolated anecdotal data are often all we have to work with.

The major shortcoming encountered in the dissemination literature is bias toward professional institutions as repositories of wisdom, and less attention to action programs as sources of knowledge. Dissemination is generally viewed only in terms of knowledge transfer from MDCs to LDCs, from academic centers of excellence to action agencies, from rich to poor communities, and from professionals to laymen. It is easy to be trapped in the same bias, even when it is recognized and resisted. Researchers based outside the poor communities must constantly remind themselves that dissemination also refers to Bottom Up knowledge transfers -- from action to new knowledge, from LDCs to MDCs, from laymen to professionals, and from poor to rich. This has special significance for educational planning in behalf of poor communities. This research has suggested that some of the best examples of educational planning derive from indigenous

efforts (see the cases of Bottom Up networks described in Chapter III). This indicates a major need for focus on a strategy of dissemination outward from development actions, along with more traditional networks of dissemination outward from centers of higher learning.

2. Knowledge Exchange

"Exchange" denotes a more interactive form of knowledge utilization, than "dissemination." As educational planning knowledge passes from the context of knowledge "producer" to "consumers," it requires various transformations: from general models to specific data requirements; from technical procedures to administrative ones; from academic paradigms to specific scenarios; from general goal statements to incentive structures operating in the implementing agencies; from procedural issues to political and ideological ones. Each of these transformations may also take place in reverse, moving from specific to general, from practice to theory, from ideological to technical. Thus, knowledge exchange denotes a mutual learning process, involving reciprocal feedback between producer and consumer. This involves a deliberate continuing process of shaping knowledge to specific user needs. Knowledge "exchange" contrasts with "dissemination" in the following ways:

(a) The specific identity of the user is generally known so that clarification of specific user needs can become part of the exchange process. Efforts to identify users can be seen in World Bank country studies; MSU anthropological field work underlying non-formal education projects; UCB exploratory field trips to identify potential clients; FSU's "iterative" approach to technical assistance on educational media, to stimulate reconsideration of client needs.

(b) Knowledge becomes transformed in the process of exchange. This contrast with the case of dissemination, where knowledge can be treated as an "inert" substance, universally valid, and unchanging. In "dissemination" it is assumed that new knowledge accumulates in publications and reference files and in experts' heads, and old knowledge gets weeded out, but has an existence independent of whether anyone puts it

to practical use or not. In contrast, knowledge exchange refers to distinct personal and institutional perceptions about what is at stake in the utilization of educational planning knowledge. In this view, the meaning of knowledge is not limited to the words, formulas and information media that give it expression, but gets its significance from the way it is applied and the way it makes a practical difference for people who consume it for specific purposes.

(c) Knowledge exchange generally involves more than the intact, undistorted transfer of information from one party to another. It may also require a shift in the conceptual framework of the knowledge receiver or sender in order for each to understand the significance of information to the other. The exchange may be modified accordingly -- either in terms of vocabulary, scenarios for depicting the ramifications of ideas, ideological references, level of specificity, or possibly even in the use of games and simulations.

Compared to knowledge dissemination, exchange is likely to be more costly per "message unit," but this is the price one must pay to bargain for a shared reality.

Discussion of "exchange" as a form of knowledge utilization. There are several reasons why a person engaged in knowledge exchange may resist conceptual shifts. It may be seen as a form of weakness reflecting adversely on one's bargaining position or professional vulnerability (Goulet, 1971). It requires a departure from previous assumptions, perceptions and understandings built up with one's usual colleagues, at both personal and institutional expense (Lawrence and Lorsch, 1967; Nathan, 1973). For some purposes, agreement on planned action might require that differences in ideology, and stakes in the outcome, be left implicit rather than thrown up as bones for contention (Lindblom, 1965; Benveniste, 1975).

One major virtue of knowledge exchange is that it may reduce the sheer volume of information that deluges technical assistance agencies and their clients, through indiscriminate dissemination. (Kenneth Boulding has proposed as the First Law of Knowledge that the problem is not one of getting more information, but filtering out noise.) This research has

not yet revealed objective grounds for determining how an organization can identify "critical" knowledge from the volume it must routinely process. Criteria can probably be developed based on specific identification of user characteristics. For example, U.S. Office of Education efforts to disseminate innovative educational practices suggest that their adoption by teachers can be enhanced by efforts to "target" dissemination toward well-defined groups of potential users. Dissemination efforts aimed at more general audiences, on the other hand, have met fairly consistent failure (see Berman and McLaughlin, 1974).

Among more successful networks, special attention has often been given to the transfer of not knowledge alone, but also attitudes that will help professionals mingle directly with practitioners in the field, thereby developing mutual trust and two-way learning; this, as opposed to "preaching expertise" out of context. Network success may hinge less upon a "grand organizational design" than it does on the programmatic details which shape attitudes of individual members (see Bowman; Nelson; Swanson; RAND; Pitts).

3. Knowledge Application

By "application," we mean the effective utilization of educational planning knowledge to bring about actual changes in educational policies and their implementation. Effectiveness is measured in terms of events beyond the planning process itself: knowledge effectiveness thus becomes defined in terms of knowledge in use.

A logical way to close the gap between knowledge production and practical applications is to house them in the same institution. A classic example is the integration of research with teaching and technical assistance functions, in organizations like the International Rice Research Institute (IRRI), ACPO (described in Chapter III), Comilla, and the original Land-Grant College model. In all of these, the idea was to combine applied research, service to primary groups, and development of new knowledge based on feedback from on-going action.

Some agencies have made a point to combine these functions even at the level of individuals. The English Government prepared a white

paper Government Research and Development (HMSO, 1972, Command 5046), which emphasizes the need for training scientists and administrators in the rudiments of each other's disciplines, to facilitate a faster transition between practice and theory, ideas and action.

Bridging the gap between knowledge producers and users is made harder by recent trends in educational planning subject matter, away from the hard core of educational planning (man-power analysis, decision theory, econometric modeling) toward "qualitative" planning. "Evaluation," "attitude change," "self-reliance," "brain-storming," "problem exploration," seem to be terms very much in vogue. They are frustrating, however, from the standpoint of delivering a "package" of knowledge to a client. IIEP embodies this trend most clearly, in the tenor of its recent annual reports. Some observers find IIEP's new approach confused and soft. Raymond Lyons (himself based at IIEP) remarked that "educational planning is dead" except in a few places tooled up with the people to implement it at all levels, and with the political preconditions for acting on the basis of rational means to ends.

The producer-to-user gap becomes broader when knowledge development is carried out by one institution and applied in another. An illustration of this process is provided in D. Lingwood and E. McAnany, "Scientific Information Flow and National Development: A Study of Brazilian Chemists," Institute for Communication Research, Stanford University, July 1971. The geographical, organizational, cultural, and environmental differences between knowledge producers and users in this model are not extreme, but logically, the cost of making the bridge rises; there is more chance for knowledge to get lost on the way; and feedback comes slower if knowledge proves deficient.

A final point arises in connection with knowledge application. Application is not necessarily desirable to maximize, as it is desirable to maximize knowledge dissemination and exchange. Although universities have long considered the search for knowledge a good thing in its own right, the benefits of applying knowledge have to be weighed more carefully against the costs. For example, methods that would assure maximum utilization of knowledge would include forms of command planning that

could eliminate democratic discussion of policy, and could take forms of action that would eliminate the possibility of experimentation along lines less grounded in solid knowledge but nevertheless more directly addressed to the broader aims of development. It is important not to do things only because we know how. It also is necessary to know why and to what effect.

By way of an example, efforts to develop the Sahel region in Africa through the sinking of deep-water wells have resulted in the shift of the "ecological burden" from the limiting factor of water to the carrying capacity of the land: in effect, water allowed an increase in cattle population to the point where they destroyed the grass cover, creating small but spreading deserts around the points where wells had been dug. By analogy, one might ask what happens when knowledge no longer becomes the limiting factor in the activity of people in rural areas: where will the burden of the social ecology then fall -- upon fragile traditional cultures? upon the exploitation of unreplaceable natural resources? upon the capacity of the urban "commercialized" economy to absorb labor? In the planner's pre-occupation with knowledge application, he often looks so hard for intended results that the broader often unanticipated outcomes go without notice. This is where knowledge validation attempts to go beyond knowledge applications.

4. Knowledge Validation

Some will dispute the contention that "validation" of knowledge is an important component of knowledge utilization. Good educational planning, however, is an iterative process, a long-term involvement in actions that need to be continually monitored, and reformed both for lessons learned from success, and adaptations made necessary by failure.

Validation of knowledge may be addressed to any of several discrete issues, each with distinct ramifications for educational planning networks and the form and content of knowledge involved.

(a) On one level, knowledge may be utilized to validate facts, or questions of pure efficiency in the relation between predetermined ends and means. Planning may thus attempt to evaluate the best (most efficient) way of expanding non-formal education, taking into account available media

technologies, cost and financial considerations, and assessment of needs. Where validation differs from mere application of plans is in critical discussions of key assumptions, formation of hypotheses, and on-going review of these problematic areas of doubt. An example is Arrigazzi's (1972) review of World Bank plans in Chile.

(b) On another level, planning may attempt to validate knowledge by the use of action programs as "live probes" into the underlying reality of development processes. Here, the focus is on causal relations. Doubts are not suppressed but made explicit, the object being to learn as well as to apply what is know. The foundations of analysis may shift from economic models to other, more varied, "systems of explanation." The "logical framework" used by AID is a significant example of knowledge validation in this sense, raising key issues not only concerning a project, but also the environment which mediates its effects.

(c) On a third level, planning efforts may require validation in terms of the range of outcomes at stake, including unintended second- and third-order consequences. Guy Benveniste (1975) makes a useful clarification between planning outputs (the focus of knowledge application) and outcomes (the focus of knowledge validation). Outcomes are "the consequences of the outputs as they interact with the environment." In order to address outcomes, we cannot consider university knowledge in isolation, or partial it out from other agencies they work with. The more a university succeeds in going beyond one-way knowledge dissemination, exchange, and applications to engage in knowledge validation, the less of a clear dividing line there will be between the university's own contribution and that of its counterparts. By the same token, it will become more difficult to assess the cost-effectiveness of American universities because their roles are not isolable, but have become -- where most successful -- an integral part of the entire apparatus of American aid policies and counterpart actions -- achievements, blunders, and all.

As knowledge validation casts its broad net over planning results it must begin to incorporate anthropological, political and ideological perspectives on the significance of planning efforts. Ordinarily, the ostensible "client" is assumed to specify objectives rather than the

planner, but who is the real client: the sponsor who provides the funding, educational officials, school children? Who decides whether educational planning should focus on the efficiency of the educational system itself, or extend to the relations between education and other social processes, or speak to the larger issues of development?

Such questions arise far more frequently in recent years than they did a decade ago. They were frequently voiced by planners interviewed in Europe, as well as participants in the Networks Project conferences held at Berkeley, Stanford, UCLA and Harvard:

-- "Even if we could measure cost-benefit ratios for knowledge transfers, how can we tell if we are being cost-beneficial from others' standpoints?"

-- "To say we are doing something well is not to say we are doing any good with it."

-- "Usually when we talk about cost-effectiveness, we are really talking about cost-feasibility, or cost-convenience, or cost-profitability from our own side of the transaction."

Carl Widstrand, interviewed at the Scandinavian Institute of North African Studies, raised similar questions in his paper "The Evaluation of Rural Development Projects" (p. 114):

What does 'improve the quality of rural life' mean? More fun? For whom? To make the elite stay? Making money? . . . more cows? . . . the new Embassy nightclub in Makutano? . . . the resident evaluator in Kapenguria? . . . A new bus line to be able to get out of the place?

Oscar Gise at IDS (Sussex) commented that especially since Dudley Seers' 1969 article, "The Meaning of Development," more attention has been given to the question of what outcomes follow from development programs. The 1975 Dag Hammarskjold Report summarizes much current thinking, laying out development priorities in terms of

-- the satisfaction of basic needs--beginning with the eradication of poverty--as the focus of development (food, habitat, health and education);

-- self-reliance and endogenous action, geared to local strengths;

-- harmony with the environment (e.g., recognition of "outer limits" to consumption by MDCs).

Recognizing that specific development programs must be accountable to higher level objectives, an AID evaluation manual proposes that program assessment go beyond considerations of efficiency and effectiveness to deal with the "significance" of outcomes with regard to over-arching goals and objectives (AID, 1974). Determining the exact meaning of significance, and for whom, is no simple task.

In some respects it is easier to envisage a role for universities in the validation of knowledge than in its application. There is a certain logic to this. It is sometimes easier to think critically about the experience of others than to engage in action programs to improve on reality in the field, and this is especially true for a university.

APPENDIX C

TECHNICAL ASSISTANCE FOR SELF-RELIANCE: PARADOX OR PROMISE?

"Self-reliance" has become a fashionable topic in discussions on development strategy around the world. The 1975 Dag Hammarskjold Report summarizes much of the current thinking on the subject. It stresses (1) shifting attention to satisfaction of basic needs as the focus of development processes; (2) strengthening self-reliance in the Third World, both on the level of international collaboration and local self-help; and (3) recognition of environmental limits on growth, along with equity issues that arise from this, and the need for ceilings on resource exploitation by the rich, in addition to floors for the poor.¹

The notion of self-reliance, however, is full of paradoxes and contradictions as a basis of strategies for technical assistance. One European planner noted with some irony that "the best way to get money from sponsors these days is to say you want to be self-reliant." But the anomaly is an old one. In the sixties a CLACSO policy research group came together in Latin America to discuss the issue of research dependency on foreign funding. Planning a conference to discuss the problem, they found themselves in the paradoxical situation of choosing whether or not to accept a Ford Foundation offer to underwrite the conference.

Can one indeed provide technical assistance that helps developing nations to become self-reliant? Is there such a thing as educational planning assisted by foreigners that helps nationals escape outside influence? Or does the logic of self-reliance force the conclusion that

1. The Hammarskjold Report was prepared primarily for United Nations readers. It was published as a special issue of the journal, Development Dialogue under the title, "Another Development."

LDCs are better off altogether without foreign university help, however well-intentioned. The answer depends on how one defines self-reliance and how one defines technical assistance. It also depends on the specific arguments that one might entertain about the possibility that technical assistance -- in educational planning for poor communities -- is ultimately counter-productive.

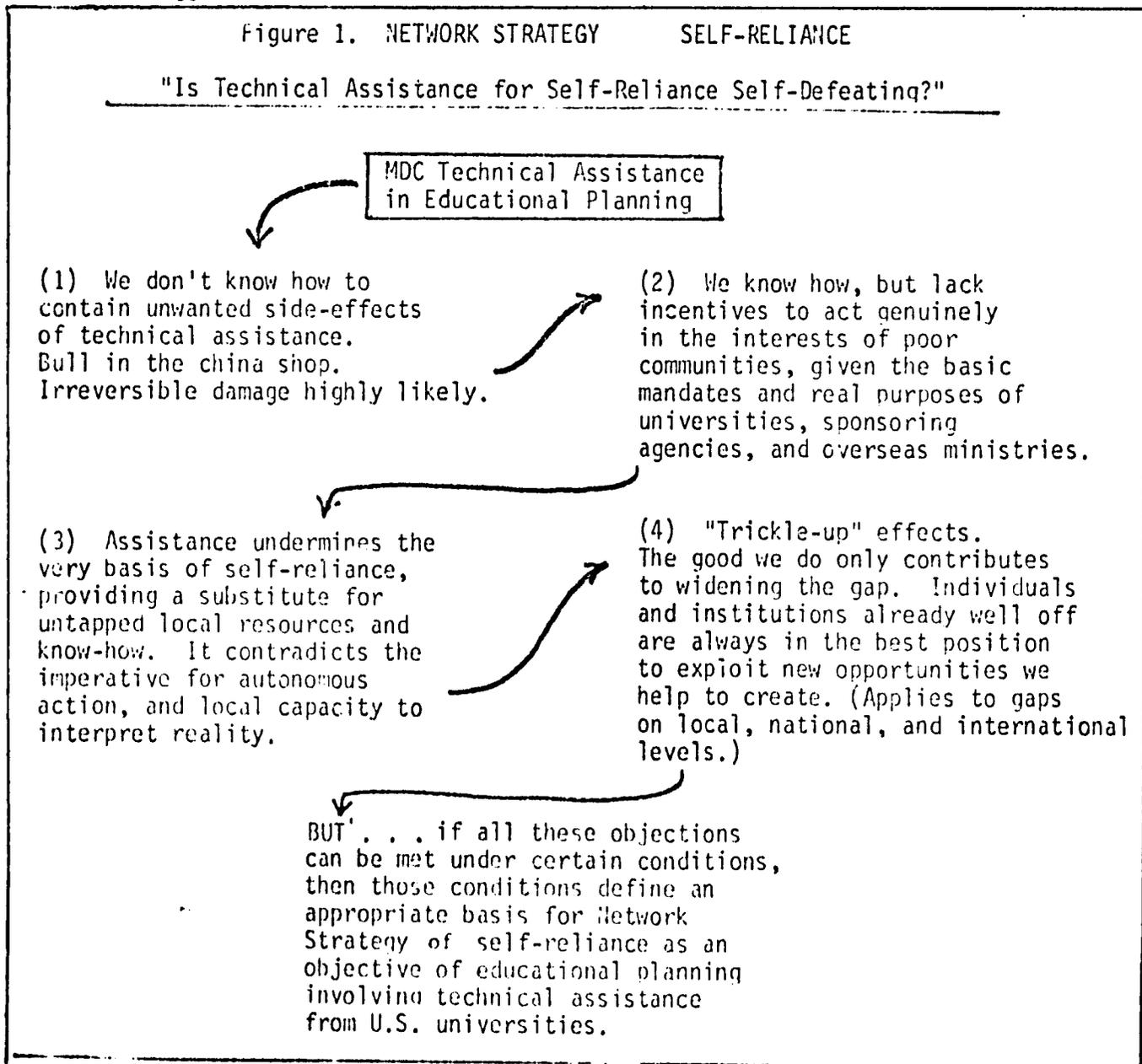
The research indicates that people are aware of the issue in various forms and responses to it are made on a number of levels: there has been considerable rhetoric calling for a more "mature partnership" between donors and recipients; there have been efforts to improve "needs assessment" through improved data on the "have-nots," application of new techniques like sector analysis focusing on "deprived majorities;" and more tactics aimed at a "client-centered" dialogue; and training of clients to take over key roles more quickly. On the other hand, it is difficult for anyone in technical assistance to consider seriously the possibility that there is a fundamental contradiction between what he or she is doing and the fundamental interests of the target community. It is easy to say our job is to "work ourselves out of a job" for a particular mission, but almost impossible to say, "we shouldn't be here in the first place."

The "self-reliance" argument here begins from the other end, with a review of arguments in favor of a "pure" strategy of self-reliance. Then there is a response to the arguments through a search for the conditions under which the self-defeating nature of technical assistance can be overcome. The object of the exercise is to re-establish a case for educational planning on behalf of poor communities involving American universities, if such a case can be made. Hopefully it ends on firmer grounds than the traditional faith in our profession -- that "because we are doctors, we must be healers."

Why go this route? Why start from the viewpoint of the severest critics? First, this approximates an approach to a "scientific" assessment of technical assistance. The test of a scientific proposition is not that it is verified in successive experiments but that it resists falsification by tests which attempt to establish rival hypotheses. Faith in the role of American universities can be made scientific to the extent that there is a

willingness to expose the basis of belief systematically to doubts posed by rival beliefs. Second, the exercise in stating criticisms and responding to them can result in a new set of design criteria that might revalidate earlier strategies.

Figure 1 depicts four separate (though interrelated) arguments addressed to the hypothesis that technical assistance efforts are counter-productive. Each argument will be briefly stated; possible responses will then be outlined, and policy implications drawn. The intended result is a set of design criteria appropriate for more self-reliant forms of educational development for poor communities, as a guideline for educational planning strategy.



1. First Argument: We Don't Know How to Contain Unwanted Side Effects

The question is whether planning efforts, successful or not for what they intend to do, are also producing unintended side effects of an even larger magnitude inflicting irreparable harm to the intended beneficiaries. The case that this is so has been made along roughly two lines:

(a) Ecological arguments stress the interdependence of social processes, the importance of secondary and tertiary impacts, the difficulty of foreseeing unintended consequences of planning, and the likelihood that such effects will be negative rather than positive in a richly ordered ecosystem. Much of the evidence here comes from biological ecosystems -- for example the mounting evidence that livestock development programs supported by U.S. AID in Africa were directly responsible for the Sahelian drought (Ormerod, 1976; Wade, 1975). Models of development emphasizing social (as opposed to economic) structures also point toward the fragility of cultural, moral, and organizational infrastructure in the face of large scale non-indigenous interventions.

(b) Technological bias. The second line of reasoning is a more specific premise that American foreign aid cannot escape its fundamental bias toward inappropriate technological solutions. Dickson (1974) and others have argued that MDCs are trapped by technological structures already in place. Not only does the present infrastructure make any basic changes impractical, but it destroys our capacity even to consider seriously any alternative philosophy of what constitutes social worth.

The point is not to support or refute the arguments just cited but to consider what if they do have some validity -- what would this suggest for reconstructing an "appropriate technology" of knowledge networks? Two strategies suggest themselves.

(a) The "Hard Line": Protectionism. Taking the previous arguments at face value might suggest agreeing with the critics that it is time to pack up and go home. Actually, this is not such a radical idea. It is only radical because it suggests going home now rather than later when LDCs will presumably be more "ready" to fend for themselves. The case for

protectionism from MDC assistance is in some ways analagous to the case for economic protectionism against free trade.¹ Examples of harm from "free trade" in education could include the establishment of dependence on MDC-style education systems, education technologies, or educational planning methods. For those who view LDCs as locked in archaic economic, cultural, and political institutions some sort of intellectual free trade makes sense. On the other hand, others look at the same evidence and conclude that the central problem is in fact underdevelopment defined as the persistence of unequal relationships between countries and between sectors within a country. An economic example of underdevelopment would be the British use of cheap manufactured goods sold through free markets to undermine indigenous cottage industries in India, and once this process had advanced far enough, establishing legal monopolies in many commodities. The protectionist argument rests on a sophisticated appreciation of the "ratchet effect" in dependence: assistance is addictive in the sense that if anything seems to go wrong, the immediate reaction is to go for a larger dose. By the time that fundamental doubts are raised about the value of the treatment, the client has lost the power to say "no." To the extent this is a valid picture of technical assistance "dependency" it calls for severe measures. The slightest compromise injects the seeds of future irreversible addiction. Such is the "pure" theory of protectionism -- the null hypothesis to be confronted with any other version of a technical assistance knowledge network that we might propose. It is mutually exclusive with any alternatives.

1. Western trade with China and Japan, for example, was initiated in each case by force of arms. Treaties imposed on China included the right of Western powers to trade in opium, as well as introduce cheap goods on a scale that virtually wiped out many classes of small merchants and craftsmen, transforming them into a new class of indentured laborers. It was a sorry chapter in American history, but few of our history books give an honest account of our role in forcing trade upon Asia. If we are still too righteous to acknowledge past mistakes, we need to be especially cautious about future ventures in networking, however benevolent our intentions.

(b) LDC-Based Knowledge Networks. The second antidote to the "dependency of ignorance" is less severe. LDC-based knowledge networks offer a medium for developing new knowledge in a geographic and cultural context close to the situation where knowledge is destined to be applied and validated. First, long term development strategies can develop a capacity to learn from past successes and failures -- in effect the kind of memory often lacking in a succession of externally funded technical assistance projects. Second, knowledge networks can provide a medium for "on the job" training of LDC technical assistance experts within their own countries, localities and international regions, avoiding costly scholarships to MDC institutions, and the associated effects of brain drain. This point was repeatedly stressed by the sector loan team in Jamaica, and it was reflected in their work style. Third, local networks allow a country or region's most qualified people to become involved in the process of broadening the application of available knowledge, whereas involvement in international networks often requires people who are fluent in other languages, or who are "unimportant" enough in their own country to be "dispensable" for extended trips abroad. Fourth, LDC networks -- unlike traditional international linkages -- can be centered within the actual target community, helping to keep the focus of planned action on intended clients.

The development of local knowledge networks would not necessarily replace international networks, but would likely require a shift in foreign assistance toward more explicit recognition to the importance of indigenous solutions. Along these lines, the Dag Hammarskjold Foundation (Uppsala) is shifting its main efforts from research to communications as the source of knowledge for educational planning. New publications are appearing along the lines of Andreas Fuglesang's Applied Communications in Developing Countries: Film-Making. The idea is to help reflect back to LDCs an image of their own experience and their competence in helping themselves and others.

Other ways in which MDC agencies can assist in bringing together knowledge production and use within LDCs can be illustrated by organizational practices exemplified in these models:

- The INOTECH Center of SEAMEO (Centre for Educational Innovation and Technology, Southeast Asian Ministers of Education Organization). This Centre assists member states in the identification and resolution of common educational problems, undertaking research, training and experimentation programs, as well as publishing.
- ECIEL the Latin American network developed to coordinate research efforts within Latin America on problems of economic integration.
- ALER (Latin American Association of Radio Schools) a forum for exchange of experience and basic knowledge, ACPO being a key member.
- CSED/Harvard project on Utilization of Educational Specialists in LDCs. This is an AID-financed project to identify specialists, analyse the status of their present utilization, and develop a plan for their more effective utilization through directories and possibly other means.
- SIDA (Swedish International Development Agency). Because of its limited resources and recognized areas of specialization (e.g., cooperatives), SIDA tends to work through world-level agencies (like IIEP) so as to maximize the reach of its technical assistance capacities.
- Great Britain's Inter-University Council (IUC) serves as a world-wide broker for universities seeking technical assistance from British institutions of higher learning.
- Recently, a combination of foundations, international development banks, MDC governments, and the UNDP contributed to the establishment of a new network of research centers, the Consultative Group on International Agricultural Research (CGIAR). As an umbrella organization for such institutions such as IRRI and CIMMYT, CGIAR may not invest as much effort in strengthening national programs as its member institutes, but CGIAR at least extends the potential of responding to a broader variety of requests for spreading the Green Revolution to new crops and previously neglected climates and soils. As such, it suggests a model that might equally apply, to education, for example an international clearinghouse for reports on significant efforts like ACPO and Comilla. (See Wade, 1975.)
- Along more modest lines, ODM (the British Overseas Development Ministry) is moving to overcome its past stinginess in supporting information diffusions, and intends to publish research abstracts, emulating current practice ascribed to AID/Washington.

2. Second Argument for Self-Reliance: Lack of Incentives for Addressing the Real Needs of Poor Communities

This is a complex subject, prone to polemics, so only a brief treatment of the "incentives" issue will be attempted. Disincentives arise on several levels including (a) university structures, (b) international relations, and (c) "supplier effects."

(a) University disincentives to knowledge utilization are seen to include: pressures for publication (specialized, theoretical and original work, rather than practical synthesis of available knowledge for problem-solving in particular settings); lack of economic incentives (particularly in competition with private-sector consulting, where practical work is more highly rewarded); prestige and status rewards that are provided by professional organizations, but missing in the field; dominant academic paradigms that refer to conditions of industrialized nations but are less applicable to LDCs or rural and poor communities; political pressures (from outside the university) against support of unorthodox approaches to social policy; and organizational distrust by the university of faculty members taking on personal commitments to groups on the outside.

One of the activities sponsored by the UCLA networks project was an informal conference at Harvard's Center for Studies in Education and Development (July 8, 1975), bringing together a number of scholar/practitioners particularly concerned about how planners deal with knowledge with respect to the "Primary Groups," i.e., how knowledge was generated and transmitted to the PG's, and how the PG's transmitted knowledge about themselves and their needs to planners and scholars remote from the immediate problem context. This concern was shared by all present, but there was doubt whether the U.S. university -- especially the high quality academic ones -- and some of the scholars who inhabit such domains were interested in, or capable of, dealing effectively with this problem. Nobody could produce many success stories about professors, or institutions, who made their reputations by handling immediate, situational, unprocessed, and often ungeneralizable knowledge of the field. Field men do not prosper; at least the Harvards did not think so.

The same has been observed in connection with university roles in public service within the United States. (Galovin, 1969, pp. 471-473.) An All-Campus conference of the University of California, addressing the theme "Applied and Public Service Research" (1974) provided some remarkably frank testimony, both among faculty and clients of U.C. public service, on the tensions between university interests and those of particular clients. Problems include:

- faculty willingness to engage in politically risky efforts potentially embarrassing to the university;
- lack of on-going communication with communities outside academic circles; consequently a lack of "realism" in problem-solving efforts;
- the traditional university view that applied research tends to be "short-sighted" relative to basic research, and can just as well be done by government or industry;
- a concern for esoteric treatments and problems in professional schools (notably medicine), rather than the more common problems found among poor populations;
- promotion and tenure requirements insensitive to public services;
- academic freedom, including the freedom to be irrelevant.

(b) International relations. International technical assistance represents a monumental achievement of the Twentieth Century in the development of organized altruism on a global scale. Yet history teaches that every crusade becomes a vehicle for a diversity of interests, some explicit, some covert, some unconscious. AID's own mandate is full of ambivalence, reflecting in part the diversity of public opinions represented in the American Congress. Along with genuine interest in serving poor communities, AID must respond to other explicit provisions of its mandate: to maintain peaceful relations with foreign governments, to protect American commercial interests overseas, and to export American values.

It would be a mistake to deny that genuine concern for poor communities underlies much of technical assistance; but it is equally naive to deny the variety of obligations that international agencies must respond

to from other quarters. Similarly, it would be a mistake to assume that the major conflicts arise only from conflicts of national self-interest: they may just as easily be ranged along multi-national lines, or along class and caste and geographic lines within a particular country.

(c) Supplier Effects. To the extent that educational services are supplied by organizations outside the target community, the delivery system may evolve a set of organizational purposes that diverge from publically stated goals (Benveniste, 1975, pp. 12-14). It is not simple to assess directly the motives of the supplier of educational plans and educational services; nor is it always necessary. It is only necessary to look at the objective interests served by specific plans and policies and assume that most organizations sensibly pursue their own interests at least as diligently as they do the interests of others.

Often, standing between the supplier and the recipients of the primary group are the "middlemen" who claim to be voices of the community. If the supplier has a motive, albeit altruistic in part, for offering his services, the middleman has even a stronger motive for mediating this offer to his own advantage, though not always at the same time to the disadvantage of the primary group members among whom he must live. It is the middleman's game to deal with the supplier, and in doing this he often has certain skills and advantages in political manipulation and in-fighting. Since the middleman has no technical skills to sell, his survival and prosperity depend on selling himself to both sides and in doing this he may not accurately reflect the motives and needs of either group. The middleman thrives on the action of the negotiation, not of the implementation, and his motives may well be to keep things on the stir for as long as possible.

There is also the remote advocate who makes his living with a considerable self-righteous satisfaction, by criticizing the motives of the supplier and championing the recipient primary group member with whom he may have very little direct contact. In large and affluent countries with highly developed media it is highly profitable to champion the poor and attack the rich and mighty. Crusaders, investigative reporters, muck rakers and civilized revolutionaries are currently doing nicely. They perform a

valuable and important investigative and monitoring role, but it must never be forgotten that most of them are also doing nicely for themselves.

The supplier and the consumer of services are not equal partners in negotiating policy priorities and program options. It might be supposed that the client being more numerous has the advantage, but in fact this may constitute the clients' very weakness. A target community is likely to be more diverse than the organization that supplies educational planning or other technical services, whereas the supplier can act with a single mind. The community is not in the "business" of education full time; the supplier usually is. The client is not trained to deal with suppliers, but the supplier is usually experienced in dealing with "lay" clients. The community's stake in one or another form of education is likely to be modest; for the supplier, it often comes down to the jeopardy of livelihood if one alternative is chosen over another. The supplier is typically an expert in the rationale calculus of means and ends; the client may have accurate perceptions and intuitions, but lack the vocabulary and experience and accepted logic to protect the interests of his own community. The supplier also typically has more access to financial resources, expertise and delivery capacity for a favored policy than does the community for any alternative it might propose.

The supplier is also likely to have well-established channels of communication to persons of influence in specialized areas of policy: thus, a community may have educators and political representatives and organized interest groups; but the supplier -- say if a particular piece of educational equipment -- will have focused its influence on key officials in charge of educational equipment, whom no one else may ever have heard of.

The point is not that suppliers are likely to be unscrupulous, conspiratorial or cynically self-interested, at least any more than the community which also pursues its own interests. Nor is it a question of who controls the "legitimate" expression of a particular reality.

Given the nexus of impure motives found in middlemen and suppliers, international relations and university providers, is the only way out a "pure" strategy of self-reliance? A logical alternative to "pure"

self-reliance might be the development of a knowledge network strategy reasonably "dis-connected" from the outright providers of educational services. The idea is analogous to having the noise in one's car diagnosed by a mechanic who is not in the business of actually repairing cars. Where are "honest mechanics" to be found in educational planning? One place might be an institution like ITDG (The Intermediate Technology Development Group, London), which has the following interesting characteristics:

(a) It operates on a minimal budget (about \$130,000 financed from a variety of sources) and its modest size -- consistent with its "small is beautiful" credo -- helps preserve its identification with groups distrustful of expensive complexity.

(b) It is explicit about its ideology, in the sense of providing a consistent operational framework for assessing priorities. Unlike most aid agencies, it warns its clients about the dilemmas inherent in all development efforts. (Jacques Hallak, an IIEP staffer, expressed the same concern about traditional planning and radical rhetoric alike in his book A Qui Sert L'Ecole? As Hallak expresses it, "there are no technical solutions to political problems.")

(c) ITDG also relies heavily on university personnel, counting on their relative non-commitment to particular development programs, the moral idealism that a university can sustain and its cosmopolitan connections. ITDG relies heavily on "panels of experts" who conduct occasional seminars on selected problems. Panel members include a large proportion of university-based contributors, often non-remunerated.

This suggests a model that might apply to other forms of knowledge networking addressed more specifically to policies of self-reliance in the educational field. A small, tightly knit institution, provided with minimal funds to work on a delimited but significant problem area, might be able to draw on "rich" university staff on a part-time basis with fairly modest honoraria. There are many "ifs" -- good leadership, a suggestive but well-defined problem focus, an outlet for idealism strong enough to permit minimum remuneration to feed out persons primarily in it for the job;

a good publishing outlet (ITDG has its own journal, Appropriate Technology); and links directly to primary groups in the target communities. At its best, such an effort might constitute a "university without walls," drawing on the best traditions of higher education without some of the distorted incentives found within academic institutions themselves.

3. Third Argument for Self-Reliance: All Assistance Contradicts the Imperative for Autonomous Action

In recent years, there has been growing identification of resources for development which are not traditionally "counted" as social assets, and which have either been underexploited or thoughtlessly squandered in traditional development policies. Such resources include:

- natural capacities and individual endowments not reflected in the verbal intelligence tested and rewarded in formal education;
- traditional process for production of goods and services;
- skills developed by such processes;
- indigenous organization patterns, as described by Mangin, Turner, and others;
- local materials derived from natural resource endowments;
- underlying social forces and dynamics which can be harnessed;
- other classes of resources, possibly unique to each site.

The growing pattern of recognition that conventional development programs only touch a fraction of the resources a community can muster on its own behalf raises another, more basic question: how much do present development efforts actually suppress the current, or potential use of indigenous resources? Experts (particularly foreign educational experts) may have quite specialized and limited views of a situation, narrowly focusing on goals that a particular program is designed to achieve, often in response to directives from international sponsors requiring that operational targets be unambiguously defined.

The problem of "what is lost" can be approached from several angles. From a strictly economic standpoint, the loss may be expressed as our

"opportunity cost" of underexploited resources. From a cultural and anthropological perspective, the loss may be more serious -- the inflicting of irreversible damage to social traditions that will require permanent and costly substitutes in the form of social legislation, formal education, legal institutions, long distance communications, monetized work incentives, and a range of social services for persons uprooted and no longer able to care for themselves. (It should be noted that in most forms of social accounts, all these phenomena become positive indicators of development rather than symptoms of breakdown in traditional social mechanisms for self-reliant coping with basic needs.) Convinced of the power of new solutions, international agencies pursue them through a "useless proliferation of techniques," undermining the creative spirit necessary for continual evaluation and re-adaptation at the local level.

Bert Oram at ITDG insists that technical assistance should shift its attention away from new invention toward revealing and adapting "from the past," which can only be carried out in intimate touch with local conditions. There already exists a "fantastic array of means to ends," says Gabriel Carron (IIEP). "They are just sitting there." And Raymond Lyons (IIEP) says, "In the past five years there's been a tremendous emphasis on innovation. We're neglecting to take a sober look at what each country has gone on doing."

Echoing this is a statement in the 1975 Dag Hammarskjold Report on Development and International Cooperation, p. 94:

The root of the problem lies not in the importation of techniques -- the Japanese experience demonstrates that -- but in a lack of selectivity.

Partial explanation of this oversight can be seen in comments made by several planners interviewed who noted that there is sometimes tremendous bureaucratic pressure to "get the money spent." The need for resources is usually demonstrable, but there is a tendency for assistance to be dealt out in "quantum jumps," in phase with congressional (or other donor) convenience, but grossly out of calibration to the absorptive capacity of the recipient agency. The result is not mere inefficiency in the use of funds but sometime serious distortions of priorities.

Thoughtful testing and experimentation gives way to lavish building and hardware projects, setting physical standards of excellence bound to widen the gap between haves and have-nots in the system. British advisors to overseas university programs now talk about the near impossibility of overcoming the "Oxford gold standard" needlessly exported in decades past. American, European and local advisors associated with the AID-sponsored comprehensive high school program in Columbia have expressed their own misgivings about what they have collectively wrought. Each school costs more than U.S. \$1,000,000 each -- impossible to provide to any more than a "new elite" of children in that country. (Reflecting on that program, one expert concluded that we have come up against such an acute crisis in our technical assistance policies that we should send all the experts home and let the younger generations of better trained host-country leaders take over.)¹

Anderson makes a similar point in regard to self-help schools in Kenya. Community contributions that were once liberally donated have tended to dwindle in recent years with the proliferation of government-imposed standards and controls over local education. Pressure put on communities to "build to government standards" has resulted in delays of locally initiated projects, forced a shift in contributions from labor and materials to cash payments, and threatened to undermine the cooperative spirit which sets the tone for development action on other fronts as well (Anderson, 1973, Preface, Chapters I and VII.)

Clive Smees at the Overseas Development Mission (London) relates another anecdote about the possible "kiss of death" effect of foreign aid: A number of countries (U.S., U.K., Germany, Russia) were invited to enter into assistance partnerships on a one-to-one basis with several of India's Institutes of Technology (IITs). (AID's contribution to its IIT was made through a consortium of U.S. universities.) Subsequently,

1. It has been pointed out that some of the "younger leaders" in Columbia pushed for the comprehensive high schools, too. But it is also argued that some of these were trained abroad, and "ruined" by foreign ideas.

a review team did a summative evaluation of the effectiveness of aid from the various countries. The most successful program however, was found to be the "control case" -- the IIT that had received no outside aid at all and had no pretensions of producing 80 top quality Ph.D.'s in physics for subsequent employment by NASA (as one of the IITs succeeded in doing). Instead, the control IIT had to rely on funding from local government, which insisted on program development along lines directly appropriate to meet local needs. It is of course possible that NASA ended up doing more "good" by satellite ETV than the control IIT did with its emphasis on "relevance and self-reliance." Nevertheless, the evaluators judged otherwise. (Lest the universities come in for all the blame, it was a university group which made this IIT evaluation.)

The following dimensions of self-reliance deserve attention in any analysis of the impact of educational planning assistance:

- capacity of the host country to mobilize not only its own financial resources, but also contributions of labor and local materials (Guyana has developed model self-help construction programs, with volunteered labor and certain equipment donated by AID, which deserves credit for encouraging such programs overseas since the early sixties);
- capacity to take initiatives in the design and implementation of local projects. (Models for action here might include the political support given to projects undertaken by local sheikhiats in Tunisia, using streamlined channels of communication through the Neo-Destour Party rather than the more cumbersome formal bureaucracy. Canada's Local Initiative Program operates in somewhat analogous fashion);
- capacity to define needs and priorities at the community level. Relevant here is the work of Freire (1970) and Goulet (1971);
- capacity to evaluate program outcomes in a manner that builds on exchange of experience with other communities facing similar problems (Comilla, ACPO, and the Land-Grant Colleges provide excellent working models for carrying out such an exchange -- far better than most of the available literature on diffusion of specific innovations.)

4. Fourth Argument: "Trickle Up Effects"

It is hard to argue with the fact that the traditional beneficiaries of educational investments in most LDCs have been the elites. The same

has been true, historically, in the more industrialized countries. Regardless of how evenly educational opportunities and resources are distributed, children of families from higher social and economic status are almost always better qualified for advanced study, based on academic criteria of promotion. So rare are the exceptions to this pattern that we must be prepared to look well beyond traditional educational structures to find significant exceptions to the rule.

It is also increasingly evident that "trickle down" benefits to the poor are being affected by "trickle up" effects -- for example, the tendency of resources to become diverted from poor regions, or captured by the minority of successful people who tend to move out of the target community. In fact, there is some evidence that the gap between rich and poor communities may be widening in the wake of the First Development Decade (Faber and Seers, 1972, Vol. I, pp. 80ff.; Simmons, 1974; Society for International Development Newsletter 13:1, January-February 1976).

Caiden and Wildavsky (1974) describe in detail the problems of technical assistance for the poorest nations. Countries that need help most are precisely the nations lacking the absorptive capacity for the knowledge and resources foreign assistance has to offer. Thus the basic paradox: technical assistance can bridge the narrowest gaps but not the broadest ones, or build bridges where there are already bridges. The objectives of planning -- the training of key people, the mobilization of resources and political support, the partnership between autonomous equals -- turn out to be the pre-conditions of effective planning. So assistance aims first (and almost always) at those who are already most advanced, whether at the level of the village, the nation, or the international community of LDCs. This is not always true, but it is hard to find the exceptional case of helping the "worst first."

Not much serious research has been undertaken on the redistribution effects of public policy. James Bonnan (1970) has reviewed several studies of long-term programs aimed at providing more equal opportunities in the U.S. (farm subsidies, higher education, land reclamation). He concludes:

(a) we don't know much;

(b) what we can measure turns out to be surprisingly regressive, contrary to intentions;

(c) much of the regressive effect stems from a factor that cannot be easily anticipated, or easily measured -- namely, the superior ability of people who are already well off to adapt their behavior more effectively than the poor towards maximizing their access to whatever benefits are provided; and

(d) once this behavioral adaptation takes place, it creates institutions which protect those interests, making any significant corrections in the system politically unfeasible. (This is a good example of "third order," or institutional effects, which are less visible, but which determine outcomes more than the transient resource flows involved in "first" and "second order" effects.)

European interviews seemed to indicate a growing interest in examining the role of MDCs not simply in terms of their ostensible aid to development programs, but also in terms of the unintended hindrances that they pose to development, through trade policies, technology biases, consumption standards, political interference, arms exports, control of media, and so on. Although much of this is simply rhetoric (not new to AID and the World Bank), some agencies seem to be focusing their operations directly on some of these issues, notably the Intermediary Technology Development Group (London) and the Science Policy Research Unit (Sussex).

What are the implications of the "trickle up" process for the design of knowledge networks? First, it is possible to fall back on the old strategy of pure protectionism, and end the matter. But this assumes less harm withdrawing from the scene than sticking around to put a finger in the dike. On the other hand, we may have learned enough about the nature of trickle-ups to know where rear-guard action can do some good. We can identify it where it appears, and eventually find ways of stemming the flow early enough to control harmful effects. The very act of breeding discussion within or between agencies can at least help to avoid repeating major unconscious mistakes of the past.

With this objective in mind, two forms of analysis seem most relevant. One is already emerging in the growing attention paid to systematic analysis of assumptions underlying alternative strategies. Procedures for assumptions analysis exist: the logical framework (in standard use at AID, among other agencies); dialectical scanning (Hudson, 1974); investigative journalism (used by the Peace Corps for internal evaluation); participant observation methods; and the so-called "trans-active" style of planning with its emphasis on dialogue with the persons ultimately affected by planned systems.

The second approach is to focus analysis on selected classes of populations involved in the trickle-up process, using hard data wherever possible to monitor the trend of gaps between target groups and the rest. This would need to begin with a trickle-up theory yielding a clear and unambiguous focus on specific target communities.

In this context, one notes that it is increasingly fashionable to talk about such categories as McNamara's "lowest 40 percent" or the "Fourth World." The latter is variously taken to mean the "25 poorest" (which are characteristically small and landlocked) or the "35 most seriously affected" (those which do not share the growing political strength of the Third World because they haven't the oil and mineral resources to bargain with). Recently we have discovered the NOD countries, or "non-oil" developing nations. (See AIDTO circular A-90, 2.18.76.)

In applying this prescription to university based knowledge networks, we can get a general idea of trainees attending 211(d) sponsored universities, according to the type of country they came from. There are many qualifications that need to be made before any proper inference can be drawn from this table, and there are possible errors in the data. The table is

Classification of Country of Student Origin	Stanford	UCB	UCLA	FSU	Totals
Petroleum exporter	0	1	13	1	15
Industrial (U.S., etc.)	-	-	--	60	60
High income (>\$375/cap)	3	3	36	48	100
Middle income (>\$200/cap)	4	1	3	36	44
Lower income (<\$200/cap)	2	1	0	1	4
Totals:	9	6	52	146	223

Data Sources

Stanford	LDC Projects and inquiries of Stanford ICR, 9/1/73 - 8/31/74
UCB	Field Contracts UCB/IEF, 1974
UCLA	Research Projects UCLA/LAC, 1970-73
FSU	Center for Educational Technology

therefore intended to raise the issue, not provide any answers to the question of who benefits most from technical assistance aimed at "poor communities." (For all we know, it may be elites from the richest countries who are most dedicated to helping the genuinely rock-bottom poor.)

One thing we should recognize, however: all the analysis in the world will not affect change. Prescriptions will not move people, only give them a better sense of direction if they are prepared to act. In this sense, analysis has its greatest leverage in giving support to concrete actions that are already underway in the target community. This means giving recognition and protection to indigenous programs or to the exceptional imports that have kept the benefits of progress in the communities themselves. This suggests a strategy different from total self-reliance. It may even increase rather than lessen the demands placed on MDC technical assistance.