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CONSULTATION ON MCH/FP EXTENSION
AND RELATED PROJECTS AT THE
INTERNATIONAL CENTRE FOR DIARRHEAL
DISEASE RESEARCH, BANGLADESH

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LIST OF ACRONYMS

BP	Births Prevented or Averted
CEA	Cost-Effectiveness Analysis
CYP	Couple-Years of Protection
DSS	Demographic Surveillance System
ICDDR, B	International Centre for Diarrheal Disease Research, Bangladesh
MCH/FP	Maternal and Child Health and Family Planning
MOHPC	Ministry of Health and Population Control
THC	Thana Health Complex

EXECUTIVE SUMMARY

The International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, B) has embarked on an exciting experiment in the transfer of lessons learned in their Matlab experimental station to more typical areas of Bangladesh. The project is an ambitious attempt to experiment with the delivery system for health and family planning. We were invited to consult with the staff to discuss this and related projects currently being undertaken by the ICDDR, B.

Overall Project Design

The theory behind the project might be more carefully articulated. The concepts of planned and actual organizing activities and planned and actual client transactions may be useful in this effort. In the current project, the experience of Matlab will be combined with knowledge of the current government program to create a new program based on elements of both.

The intervention strategy of the project requires further elaboration; this should be a guided theoretical framework which addresses the following types of questions:

- What is the theoretical rationale for choosing specific interventions? Their choice should be based on an argument that what is being transferred was a critical contributor to the Matlab success; that it is appropriate for the program context into which it is introduced; and that it can be transferred by project staff.
- How are these interventions expected to affect performance?
- While the project cannot provide a definitive answer, it should nevertheless be concerned with issues of extensibility. Key questions are: Will there be a lasting impact as a result of the intervention? Or will results disappear at the completion of the project? Can some of the learning derived from the Extension Project be introduced into the Ministry of Health and Population Control (MOHPC) programs?

A key to testing the hypotheses underlying the project is to assure that there is sufficient variation in the intervention treatments designed for this level.

Operations Research and Functional Analysis

The operations research component of the project is designed to: (1) Provide baseline information on program functioning prior to the intervention, and (2) to develop an understanding of program functioning that will allow the specification of the intervention. The organizational components of the project should be based on an open systems framework specifying the elements of both the focal organization and the environment of the Thana-level family planning and health programs. Prior to formal surveys and observations, preliminary data should be collected about program functioning at the Thana level. Development and revision of survey instruments should be based on the results of preliminary data collection. Participant observation studies will be necessary for key program variables, especially on the quantity and quality of work variable. A functional analysis of the sterilization procedures has already been designed.

Research Protocol Review

The research aims of the maternal and child health and family planning (MCH/FP) Extension Project are well defined and the project is of great intellectual and practical significance. However, the project lacks scientific manpower in the area of operations research, a new area of inquiry for the ICDDR, B. The position of the project within the Centre's organizational structure is also problematic.

Application of Cost-Effectiveness Research

Observers are interested in establishing not only that the project has an impact on fertility, but that it has this impact within the financial constraints of the Government of Bangladesh. Thus, there is a concern with establishing the cost of reducing fertility within the approach of the project compared with the cost of reducing fertility through the present government program. Such comparisons should be possible but require careful documentation of both the costs and the impact.

Demographic and Economic Components

The Asian Development Bank is currently funding a massive water control project in the region where the Matlab field station is located. Given the long existing surveillance system and the historical involvement of the ICDDR, B in this area, the existence of this project provides an unusual opportunity to undertake research on a number of aspects of the development process.

Funding for the Demographic
Surveillance System

The research possibilities created by the existence of the Embankment Project may help to fund the Demographic Surveillance System (DSS), but a more general attempt to involve the outside research community in the collection and analysis of the DSS data may be an important additional step to be undertaken to fund this important system.

I. INTRODUCTION AND BACKGROUND

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The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B) has embarked on an exciting experiment in the transfer of lessons learned in their Matlab experimental station to more typical areas of Bangladesh. The project is an ambitious attempt to experiment with the delivery system for health and family planning. In many respects, it represents an attempt to venture into a form of experimentation with which the health and family planning communities have little experience. We were invited to consult with the staff to discuss this and related projects currently being undertaken by the ICDDR, B.

Purpose of the Assignment

This consultation was intended to assist the ICDDR, B in a review of its MCH/FP Extension Project, which attempts to transfer some of the technologies in health and family planning developed in the Matlab Field Research Station and two other Thanas in Bangladesh. The scope of work communicated to the consultants was as follows:

1. Review the operations research methodology design.
2. Review the many instruments already produced and assist in improving them.
3. Particularly assist the functional analysis of government health services and utilization.
4. Advise in the preparation of a first phase strategy: family planning services development.
5. Advise on data collection and analysis for health economic research, such as the efficiency of services, priority setting, cost analysis, and other issues.

Upon arrival, we undertook extensive discussion with Dr. James F. Phillips and other staff members of the ICDDR, B and checked in with Mr. C. Gurney and Ms. Shanti Conally of the USAID Mission. In the course of discussions with ICDDR, B staff, the scope of work was extended to include consultation on the Embankment Project of the ICDDR, B, and on the design of an international research collaboration for the Demographic Surveillance System (DSS). We were also asked to comment formally on the protocol document for the MCH/FP Extension Project.

Background

Since the early 1960's the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, B, or Cholera Research Laboratory as it was previously known), has maintained a field laboratory station for health and related research in Matlab Thana to the south of Dacca. Matlab Thana is a relatively remote and completely rural area. The population of this area was considered at the time of the establishment of the laboratory to be typical of many parts of Bangladesh. It was poor, dependent upon agriculture and fishing for its income, and characterized by high fertility and high mortality. Much of the mortality was associated with diarrheal disease, and the research emphasis during the first years of the laboratory's existence was on mortality and morbidity associated with diarrhea.

The initial work of the Matlab field station was largely oriented towards surveillance and laboratory studies of the diseases in the area. Gradually, however, the laboratory became more involved in interventions to improve the health of the resident population. In the middle 1970's, it also became involved in the delivery of family planning services for the population. These involvements have gone through a number of stages. In short, during the last several years it has been possible to document that there has been a substantial reduction in fertility in the population in this area, and there are many indications that mortality is also lower than it is in neighboring areas.

The intervention strategy used in Matlab combines the provision of certain basic primary health care services (immunization, oral rehydration, and some prenatal care) with the offer of a variety of contraceptive methods to couples who want them. Methods available include the pill, the IUD, the copper T, and sterilization. Simultaneously with the provision of these services, the surveillance system provides researchers and administrators with a relatively complete and accurate record of vital events in the community.

There are a number of special features of this system. The fact that a range of services in both primary care and family planning is available is often spoken of as a goal of service systems, but it is seldom as well implemented as in Matlab. Moreover, the research system provides a very complete record of the successes and the failures of the system. The most important feature of the system may, however, be the very complete administrative system which permits the administrators and the supervisory staff of the project to be relatively sure that the field and clinic staff is regularly carrying out its duties, especially with regard to home visits. The project also has the advantage of being able to both reward and punish its staff according to their performance. In short, they have established an effective system for monitoring performance and for undertaking corrective action where needed, and there seems to be evidence that this system has succeeded in reducing mortality and fertility in the region.

In the light of this experience, the Government of Bangladesh has strongly encouraged the ICDDR, B to attempt to extend its system or elements of the system to other parts of the country. The MCH/FP project is an attempt to transfer some elements of the Matlab experience to two other Thanas.

II. OBSERVATIONS AND FINDINGS

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Overall Project Design

The MCH/FP Extension Project addresses the question of how innovations that have been successfully implemented in small-scale experimental projects can be transferred to government programs. This is an issue of great intellectual significance in that there is little known about the transfer of health technologies from small-scale pilot projects to larger, public programs. Much of the research in this area has remained satisfied with assessments of the success of small-scale experiments, leaving the question of transferability unanswered. The underlying assumption has generally been that the success of the pilot project itself has ipso facto demonstrated the relevance and transferability of such projects to larger, public systems. The Extension Project, on the other hand, specifically focuses on the question of transfer. It is, therefore, a research venture of major significance which, if carefully executed, will have important implications for our understanding of health programs, not only in Bangladesh but in other countries as well.

Secondly, the focus on transferability has crucial practical implications. Bangladesh, as other countries, has benefited from several projects that have instituted high-quality services for relatively small populations. While such projects have helped many individuals in critical ways, they cannot provide or have not provided these services on a scale necessary to serve the country as a whole. This role has been left to be filled by publicly organized programs implemented under the umbrella of the Ministry of Health and Population Control (MOHPC). Such public programs have, until now, failed to institute the quantity and quality of services necessary to provide for better health and to encourage family limitation. To the extent that the Extension Project can provide insights into how successful, small-scale pilot projects can benefit not only the populations they serve but generate knowledge that produces improvements in large-scale public programs, it has the potential for producing lessons of much practical policy relevance.

The Extension Project is based on an action research design. Selected elements of the MCH/FP delivery technology, developed and implemented in Matlab, are to be introduced by project personnel into the MOHPC MCH/FP programs in two Thanas. Demographic, socioeconomic, and organizational research will be conducted to develop detailed procedures for the intervention and to assess its impact and effectiveness.

It is useful to conceptualize the Extension Project as consisting of a mix of research and action. Taken in its entirety, the project is a single large research effort focusing on the transfer of health innovations from pilot projects to public systems. It is important that the project as a unified venture be carefully documented and analyzed. Here it should be acknowledged that, while the details of the intervention

strategy are yet to be worked out, basic decisions on the overall scale of the intervention have already been made. As it stands, the project is designed to work in two Thanas, each containing an intervention and a control area. While interventions are to occur primarily at the sub-Thana level--a decision of much practical validity--the fact that both intervention and control areas are within the same Thana has its problems. Contamination is likely to occur because, to facilitate intervention at the sub-Thana level, key health and family planning personnel of the Thana level will have to be involved.

Within the overall action research design, the project has the following research and intervention components.

Research

Organizational analysis of the existing MOHPC programs will be undertaken to:

- Design an intervention strategy based on the lessons from Matlab.

While project staff have good insight into the functioning of the Matlab experiment both in terms of its service delivery and organizational components, the actual organizational functioning of the MOHPC program is not well understood. Such knowledge is an important prerequisite for the development of action strategies.

- Document the status/conditions of the MOHPC programs to allow for a pre-post intervention comparison.

While the ultimate impact of the intervention should be measured in terms of prevalence levels and fertility, changes in organizational factors are themselves important indicators of success or failure.

Multiple methods of data collection are involved in this effort--surveys, document analysis, in-depth interviews, and participant or informal observation.

The project will include demographic surveillance of the two Thanas and of adjacent control areas.

Research will also involve surveys of the client population for purposes of assessing basic socioeconomic characteristics and for gathering information on the quality and quantity of interaction with the MOHPC program.

Intervention

The intervention is designed to use some of the elements of the Matlab experience. Those lessons fall into two broad categories. First, there have been important lessons about how to provide services to the villagers. Second, there have been important lessons about how the delivery of these services should be managed.

Elements in an Intellectual Framework

In thinking about the problems of transferring learning, we feel that one should make the following kinds of distinctions.

Distinction Between Client Transactions and Organizing

Any program will have to have a plan for dealing with the client population; that is, it will have to decide what kind of contraceptive mix or health technology will be offered to the population living in the villages of the extension areas? How will these families be reached? Which government personnel will be responsible for offering specific services? Such questions describe the client strategy of the extension project. The client strategies will include not only these issues, but such questions as the continuity of services, followup, referral systems, and the question of what nonfamily planning services should be offered as part of the program.

Any program will also have to organize itself to undertake these client transactions. Whereas the client strategy identifies the elements in the plan or program that relate to the contact between the program and the client, the organizational strategy describes the plan or the practice by which resources are marshaled for carrying out the client strategy. That is, the organizing activities of a program are the set of actions designed to facilitate the transactions with the clients. It is true that client transactions are the ultimate goal of the organization, but these transactions cannot take place without the existence of a set of administrative or organizing activities to make them possible. Examples of organizing activities might include the process of making resource allocation decisions, training programs, personnel management, evaluation activities, etc. Such activities do not involve the client population, but the actual pattern of exchange with the client is highly dependent upon them.

Distinction Between Planned and Observed Program Activities

It is important to distinguish between the plans of a program and the way the program actually operates in the field. Planned strategies are the intentions of government authorities or of program workers. These might

be represented by a government planning document or in the verbal statement of a government official or a field worker about what he or she intends to do. Observed strategies or activities are the actual behavior of the program both at the client and at the organizing levels. It is commonplace to observe that there are often observable differences between plan and practice. In understanding organizations and their effectiveness, this distinction is central. The field worker may not visit the village as often as he or she tells the interviewer is planned. The supervisor may not check the work of the field worker with the frequency assumed in the original plan for a program. The physician may not take the time with a client or a patient that was intended.

Distinctions Among the Current Program of the Government, the Original Experience in Matlab, and the Planned Program to Come Out of the Intervention

There may be a contrast among all of the above strategies as they actually exist in the current government program and as they are intended to exist or would be observed to exist in the new strategy. Thus, one way of conceptualizing the transfer of technology is with a four-dimensional definition of the problem. In each of these dimensions, the organizers of the project attempt to move the government program with its characteristics to an approximation to the planned strategy, which is the essence of the new project.

A diagram may make this process clear. In the current project, the experience of Matlab (1) will be combined with the knowledge of the current government program (2) to create a new program (3) based on elements of both. The elements that are important are in the four cells of the diagrams.

1. Matlab Activities

Organizing Plan	Organizing Practice
Client Transactions Plan	Client Transactions Plan

2. Current Government Activities in Experimental Area

Organizing Plan	Organizing Practice
Client Transactions Plan	Client Transactions Plan

3. New Program in Experimental Area

Organizing Plan	Organizing Practice
Client Transactions Plan	Client Transactions Plan



Using the concepts developed above, we see that what made Matlab successful was not only a successful strategy for interacting with the client population, namely an integrated family planning/MCH approach, but a very successful organizing strategy that was suited to the client transaction strategy. Because the organizational strategy was actually implemented, the client strategy was also successful. It would be mistaken to conclude that Matlab implemented a successful client strategy alone. It would be easy to overlook exactly how important a successfully implemented organizational strategy was in that particular experiment. Matlab developed a very strong organizational capability to implement a range of client strategies, beginning with a narrower family planning approach and ending with a greater degree of integration.

In regard to the transferability of innovation to other areas, it is important to ask questions about how to build up that kind of organizational capability elsewhere. In other words, the learning that has to take place should not only occur at the level of client transactions but must begin with questions about organizational strategies. Another way of putting that question is to ask, How can organizational capability be built elsewhere? What are the organizational lessons that can be learned from Matlab, and how can they be transferred to other areas?

There is sufficient circumstantial and intuitive evidence to suggest that the administrative system in the two extension areas is weak and that, if the transfer of innovation from Matlab is to be successful, a great deal of effort has to be invested in building administrative capabilities in these areas. The proposal as it stands suggests that a fairly complex system of organizational analysis, referred to as functional analysis, be carried out in the months preceding the actual implementation of a Matlab strategy in these areas.

In the Extension Project, an effort will be made to transfer the process learned in Matlab to new areas under the control of the government program. It is probably fair to say that, in making this transfer, it would be easier to identify the client strategy which the program will attempt to introduce into the new areas than it will be to identify the organizing strategy which will be used as the basis for the new program. Thus, a major effort will have to be made during the first months of the program to identify and assess the characteristics of the organization that is charged with delivering health and family planning services in these extension areas.

This effort will take a number of forms. First, there are some characteristics of the program that are relatively well understood. In these areas, program organizers can begin to identify solutions or strategies for dealing with problems without further research. Second, there will be a set of organizational problems that are understood but need assessment as to the exact dimensions of the problem. For example, it is clear from the experience with programs of this kind that there will be a problem in dealing with the transfer of staff in and out of

the extension areas. Such transfers will complicate training and the ongoing continuity of services. But without an attempt to measure the extent of transfers, the exact dimensions of this organizational problem will not be understood. A third kind of organizational problem will be those that are unanticipated at the beginning, and a major effort will have to be made to interview current program staff and respondents from within the community to identify the nature of such problems. Thus, in at least two areas an effort will have to be made to empirically identify organizational problems which may help or impede the transfer of planning from Matlab to the extension areas. The same effort will be used to document, in a baseline sense, the characteristics of the organization and the workers within the organization at the beginning of the period of experimentation.

It should also be clear from the above that the organizers of the extension program will be aware at the beginning of many of the problems they have to resolve as a part of this transfer. Thus, a first and perhaps most important step of the project will be to develop a capacity for problem solving that is ongoing and can be used as the basis for making the kinds of adjustments required to effectively transfer technology. This process of problem solving should be continuous; that is, it should be staged so that all learning about the organization takes place in some later stage. There will inevitably be a continuing stream of organizational problems in effectuating this transfer as there is in any ongoing administrative program, and the organization's ability to survive will be in many ways a function of its inherent problem-solving capability.

The above comments are based on our view that the intervention strategy should be guided by a theoretical framework which addresses the following types of questions:

- What is the theoretical rationale for choosing specific interventions? Their choice should be based on an argument that what is being transferred was a critical contributor to the Matlab success; that it is appropriate for the program context into which it is introduced; and that it can be transferred by project staff.
- How are these interventions expected to affect performance/impact?
- While the project cannot provide a definitive answer, it should nevertheless be concerned with issues of extensibility. Key questions are: Will there be a lasting impact as a result of the intervention, or will results disappear at the completion of the project? Can some of the learning derived from the Extension Project be introduced into the MOHPC programs?

Determinants of program impact To understand the project and its impact on the health and family planning practices of the village population, it is important to have a theory or a theoretical framework that links government program activities with the fertility or health practices of particular interest. The theoretical paper that we developed at Ann Arbor (R. Simmons, G. Noss, G. Simmons, 1982) provides one possible framework, but it lacks enough specificity to offer much guidance at the level at which empirical work is being undertaken in the MCH/FP Extension Project. An extended version of the Kanpur Project framework may be more appropriate and can be reconciled with the distinction emphasized earlier between organizing and client transactions. Figure 1 presents a picture of such a model. Within this general framework, one can identify the way variables affect outcome and find ways of measuring the different relationships involved.

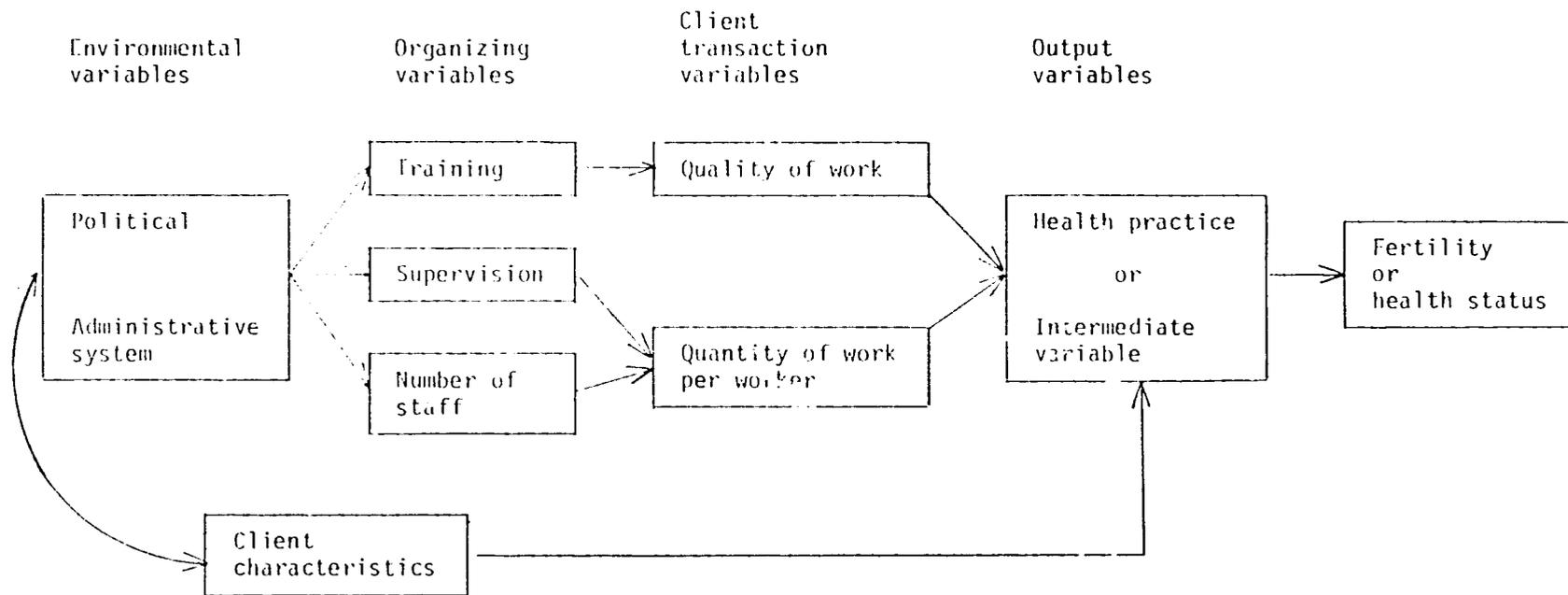
Types of intervention The Extension Project is based on an intervention strategy that leaves the basic structure of the MOHPC system untouched. There is to be no change in the formal structure of administration and technical leadership, no change in the basic physical and human resources provided, and no change in the broad plans according to which of these are to be used. Within this broad strategy of leaving the basic program structure unchanged, the Extension Project intends to intervene in two ways:

1. Mobilization of existing leadership and resources to assist the implementation of evaluation research and intervention strategies. This process has already begun. Intervention at this level is part of the overall action research. This form of intervention requires the same level of conceptualization and documentation that is accorded to lower level interventions. Even within the overall strategy of working within the existing system, there are efforts that can be undertaken to facilitate work of the project staff in the experimental areas.

Project staff might work together to assure supply of contraceptives and medicines, to assure avoidance of frequent transfer, and to encourage participation of sub-Thana staff in the intervention strategies. In fact, some of these efforts are already underway to facilitate the initial baseline data collection efforts. Decisions about how far to push intervention at this level have to be guided by the overall constraint that the basic design of the program should remain unchanged and by the learning that will result from close collaboration with Thana level and possibly higher level program staff. The purpose of this discussion is not to argue in favor of any specific intervention, but to suggest that intervention at this level is part of the overall research strategy and should be conceptualized as such.

Figure 1

THE DETERMINANTS OF PROGRAM IMPACT



2. Sub-Thana level intervention designed to strengthen technical competence, job motivation, and managerial skills of existing program staff.

A key to testing the hypotheses underlying the project is to assure that there is sufficient variation in the intervention treatments designed for this level. A four-way design might be appropriate:

		Management training for supervisory staff and counterpart support	
		Yes	No
Technical training for field workers	Yes	HH	HM
	No	MH	LL

The cells indicate the hypothesized degree of effectiveness in terms of the ability of the staff: (1) To carry out their technical tasks, and (2) to assure a high level of interaction with the client population. The first index measures the ability of the system to carry out the technical aspects of interacting with the client population when such interactions take place. The second measures the ability of the organizing capability of the system to assure a high level of contact. The HH in the upper left cell indicates that, with both technical training of the field workers and management training of the supervisory staff and continuing counterpart support, we would expect a high performance on both the client transactions and the organizing task. The HM in the upper right cell indicates that, with technical training of the workers but no special efforts with the supervisory system, one might expect high level of achievement in the area of client transactions and moderate levels of effectiveness in the organizational transactions.

III. OPERATIONS RESEARCH AND FUNCTIONAL ANALYSIS

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Overall Purpose

The organization research component of the MCH/FP Extension Project is vital to the overall research strategy. Operations research consists of: (1) The systematic pursuit of knowledge pertaining to organization, structure, process, and overall functioning; and (2) the design of interventions intended to improve organizational functioning. The MCH/FP Extension Project contains both of these components. One of the purposes of the organizational analysis is to provide baseline information on program functioning prior to the intervention to allow assessment of impact and to collect data for systematic analysis of the determinants of project performance.

The second purpose of the organizational analysis is to develop an understanding of program functioning that will allow the specification or clarification of the intervention strategy. This organizational diagnosis is not the same as the intervention strategy; it is a precursor to the intervention. Its objective is to determine what interventions are feasible and desirable. Since the overall project design identified training and counterpart support as the two major areas of intervention, the organizational analysis should provide information that will make it possible to specify the nature of the training and counterpart support and to establish procedures for operationalization.

Theoretical Framework

The organizational assessment should be guided by a theoretical framework. Our suggestion is that an open-system approach be used. In the most basic sense of the term, "system" refers to a set of inter-related elements; change in one of the elements of the system leads to change in other elements. Thus, in adopting a systems framework, one starts with the understanding that the family planning, MCH, and other preventive health programs organized by the MOHPC do not function in a vacuum. They are shaped by the larger social, economic, political, cultural, and bureaucratic forces in society, and it is important to capture the nature of these interrelationships. The systems concept furthermore alerts the researcher to the fact that what happens at one program level is not isolated from policies, decisions, and patterns of behavior at other levels. The systems perspective emphasizes the interconnectiveness and mutual causality of component program elements and the larger context within which the program functions.

Key concepts in a systems approach are that of organization and environment. Family planning activities in Bangladesh are carried out by a wide variety of governmental and nongovernmental agencies. However,

the major responsibility for program implementation rests with the delivery system that functions under the umbrella of the MOHPC. It, therefore, is most sensible to consider the MOHPC program at the Thana level, the "focal organization" of the study. The focal organization at the Thana level has multiple formal functions and is also characterized by multiple informal relationships. Formally speaking, it is the main provider of governmental medical care, public health, family planning, and MCH services. The interplay of these multiple functions are critical for the understanding of the specific functioning of the family planning and MCH program.

The environment of an organization has been conceptualized as "the set of all the elements external to the organization which affect its structure and operations and which are, in turn, affected by the activities of the organization." (Y. Hasenfeld and R. English, Human Service Organizations, Ann Arbor, 1974, p.98). It is worthwhile to distinguish between: (1) The task environment, which is divided into the client sector and the environmental sector, and (2) general environmental conditions. The *task environment* refers to parts of the environment that are relevant to goal setting and goal attainment. The *client sector* consists of the actual and potential clients of the family planning program and of the social system and culture to which they belong. Influencing this sector is one of the formal objectives of the family planning program. Yet, the influence is not unidirectional. The rural population exercises major influence upon the ability of the government staff to carry out their responsibilities.

Environmental sectors are groups or agencies other than the focal organization which exert an influence or can in turn be influenced to support the organization's programs. Other governmental departments of relevance for the Thana-level MOHPC delivery system, the district level organization of the MOHPC, political leaders, other family planning providers, religious leaders, and local influentials are all examples of such environmental sectors.

By *general environmental conditions*, we refer to the economic, social, political, and cultural factors that affect the family planning and health programs. The poverty, unemployment, and general deprivation which prevail in rural Bangladesh act as a major constraint upon the ability of the government programs to function effectively. Cultural values and norms are another set of external influences necessary for an understanding of the handicaps under which the program must function. The program has, for example, relied upon female field staff as a major contact point between the program and the clients. However, women play a fairly orthodox role in the rural society and have, therefore, difficulty in moving about from one village to another. A program that depends on extensive and frequent contacts between workers and village women will be negatively affected by such general cultural factors.

In sum, understanding the role of the environment in shaping program functioning is absolutely critical to understanding how and where change can be brought about. It is all too tempting to look only inside the organization, ignoring those factors that impinge upon its functioning from the outside.

The systems view of the MOHPC program can be graphically represented as shown in figure 2.

Client Transactions and Organizing Activities

The major function of the systems model described above is to represent in a simplified version the complex and multiple agencies, groups, and actors which, affected by a set of environmental conditions, jointly determine the nature of the family planning program and its response in the rural areas of Bangladesh. Moving from this representational to a more analytical level, we further distinguish between two different dimensions: client transactions and organizing activities. This distinction was discussed in an earlier part of this report. Below is a listing of variables relevant for the study of each of these dimensions. This listing, while not exhaustive, attempts to cover key factors. The five organizational functions or subsystems which Katz and Kahn consider crucial for organization survival are superimposed upon the distinction between organizing activities and client transactions. (D. Katz and R. Kahn, Social Psychology of Organizations, 1978). The distinction among these five subsystems is a helpful way of assuring that key dimensions are covered.

Client Transactions

Production subsystem/function: What does the organization produce, what are its outputs, what techniques/technologies are used, and what is the quantity and quality of its output?

Number of acceptors, prevalence rates, continuation rate

Methods used, method shifts

Quality of medical services

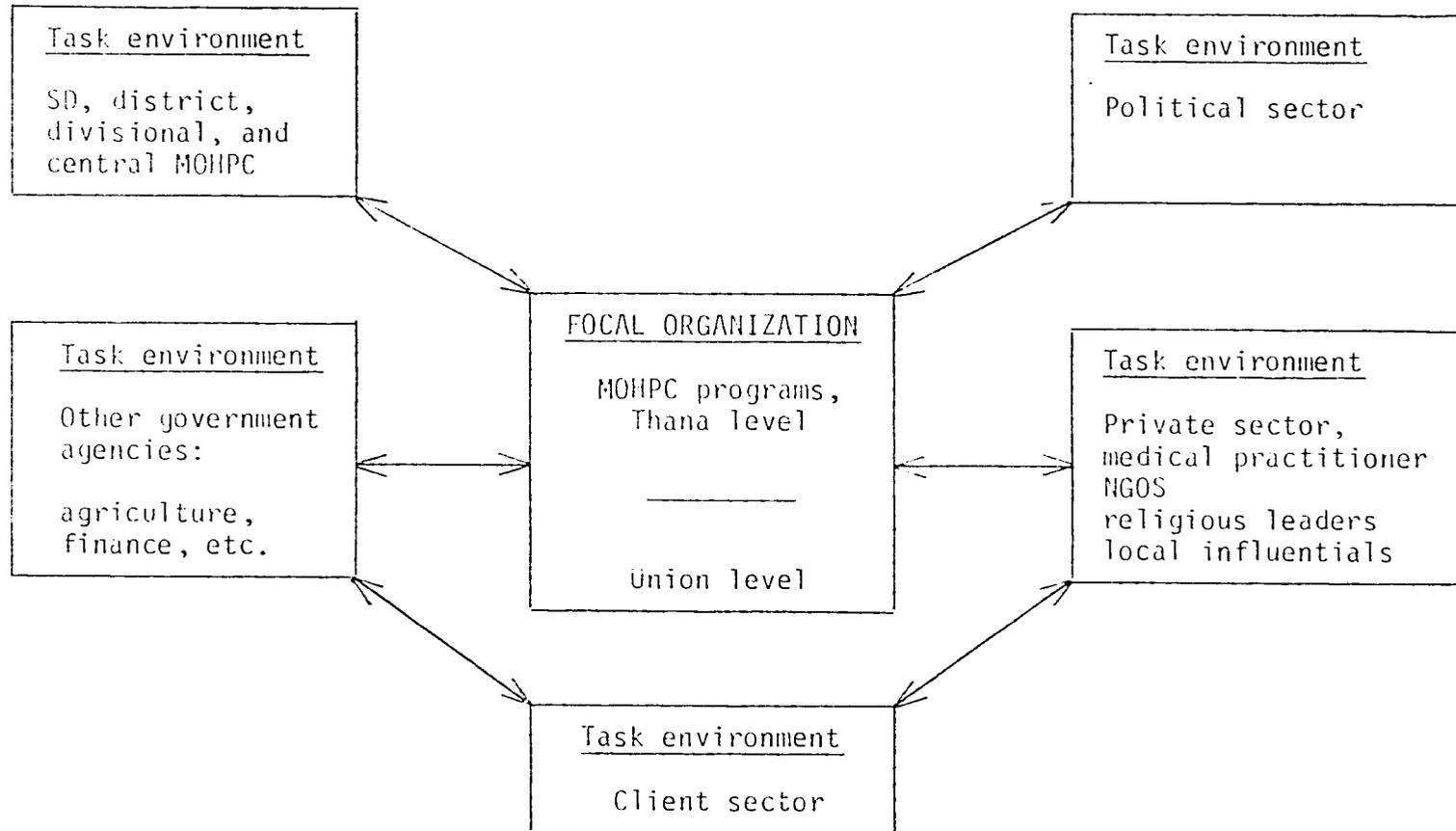
Quality and quantity of motivational/educational efforts

Quality and quantity of followup

Quality and quantity of preventive services provided

Figure 2

GENERAL ENVIRONMENTAL CONDITIONS
(Cultural, Economic and Social)



Technical competence of staff

Division of labor; teamwork

Quality and type of recordkeeping

Production supportive subsystem I: How does the organization recruit its clients?

Strategies for client recruitment, role of incentives

Nature of relationships with village population (rapport, trust, hostility, conflict)

Responsiveness to client needs

Organizing Dimension

Production supportive subsystem II: How does the focal organization procure its resources, physical and human, and how does the organization create legitimacy and support for its activities in the environment?

Financial resources available

Medical supplies, contraceptives

Recruitment of personnel

Interaction with actors in the task environment for purposes of soliciting community support

Handling of political interference (demand for employment, demand for transfers)

Relationships with higher level administrative officials (guidance, support, control, responsiveness to lower level needs)

Managerial subsystem: How are decisions made; conflicts resolved; activities at different levels within the organization coordinated; supervision, control and leadership within the focal organization exercised?

Quantity and quality of supervision

Nature of decision making

Patterns of communication

Information sharing

Structure of authority, formal and informal

Exercise of authority

Maintenance subsystem/function: How does the organization mobilize the energies of the staff toward productive purposes? How are new members introduced and trained? How are nonproductive needs of the members of the organization provided for? What are rewards and sanctions?

Job motivation

Existence of rewards and sanctions for performance

Training

Interpersonal relationships

Adaptive subsystem/function: How does the organization adapt to changes in its environment?

Responses to changes in the availability of resources

Responses to changes in client comfort with contraception

Phases in the Organizational Analysis

The organizational analysis can be conceptualized as consisting of several stages:

Initial organizational assessment and data collection

Formal surveys and participant observation

Discussions with officials and staff at several levels for development/finalizing of intervention strategy

Observations and interviews during intervention

Post intervention observation and surveys

Initial Assessment at the Thana Level

The purpose of this initial organizational diagnosis is to gather information that should allow sharpening of survey instruments and design of participant observation approach. The following dimensions of the

organization of health and family planning programs at the Thana level should be ascertained during this phase:

Actual staff posted at all levels; their formal and actual working patterns

Supervisory structure: actual and planned

Assessment of the type, quality and quantity of work performed by field staff

Nature of interaction with the rural population (What motivational, educational, health, family planning activities are being pursued; who gets served and contacted? What is the nature of relationships between staff and villagers: trust? hostility? indifference?)

Level of competence of staff

Division of labor--health and family planning, curative, preventive. What is the status of integration; what are perceptions of integration?

Problems of field staff and of supervisors

Nature of relationships with nonhealth agencies

Staff motivation and morale

Training: quality and quantity

Rewards and sanctions: What counts?

Relationships with higher administrative levels (logistics, supply, other supervisory support/control; patterns of communication; responsiveness of higher levels to lower levels)

Relationships with nonhealth actors and agencies in the community

This assessment should be based on informal discussions and be guided by a checklist of questions. These discussions should take place at the Thana, union, and village level. It would also be helpful to have discussions on key issues with district officials to gain insight into how higher level officials perceive the situation at the Thana level.

This initial informal assessment should be conducted by senior operations research staff. Suggested length of stay in each Thana, 8-10 days. Emphasis should be on informal discussions, and opportunities for informal observations of the actual functioning of the programs should be sought.

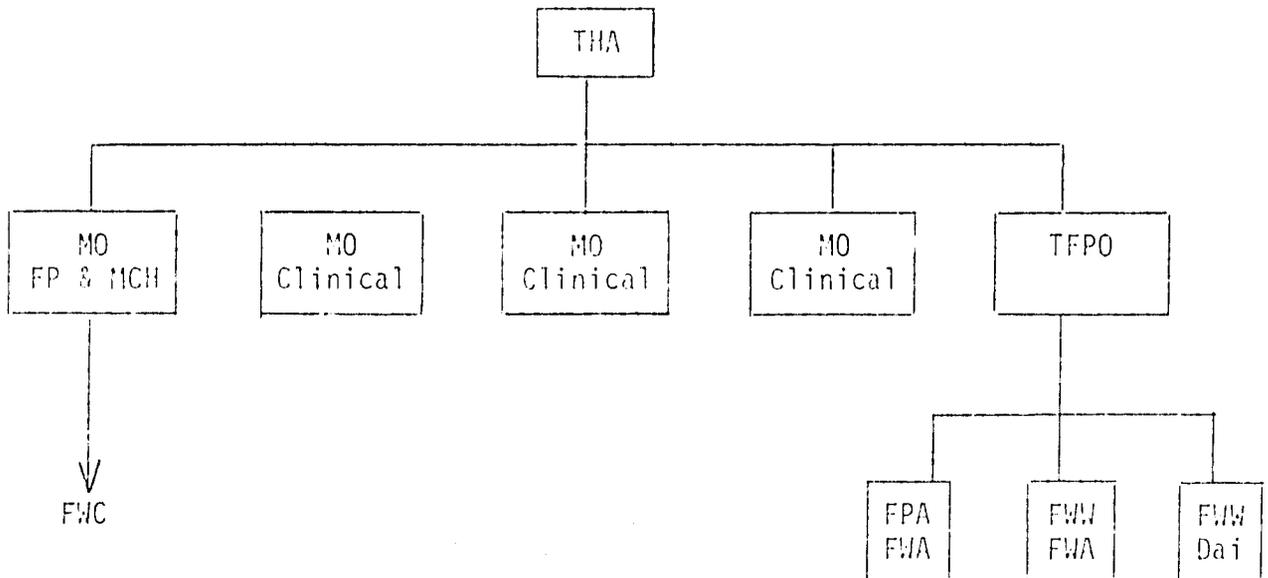
Careful and detailed notes should be taken during these informal conversations. These notes should be typed upon return to Dacca. Copies should be kept in notebooks. (Note: Field notes should also be kept by

other senior project staff and by junior staff, describing characteristic field events, encounters with officials and staff, observations on the quality and quantity of services, etc. A filing/reference system should be developed as field notes could be a rich source of information on program functioning and constitute a critical qualitative data base for the project. There should be as much attention to the systematic recording of field observations as to other instruments.)

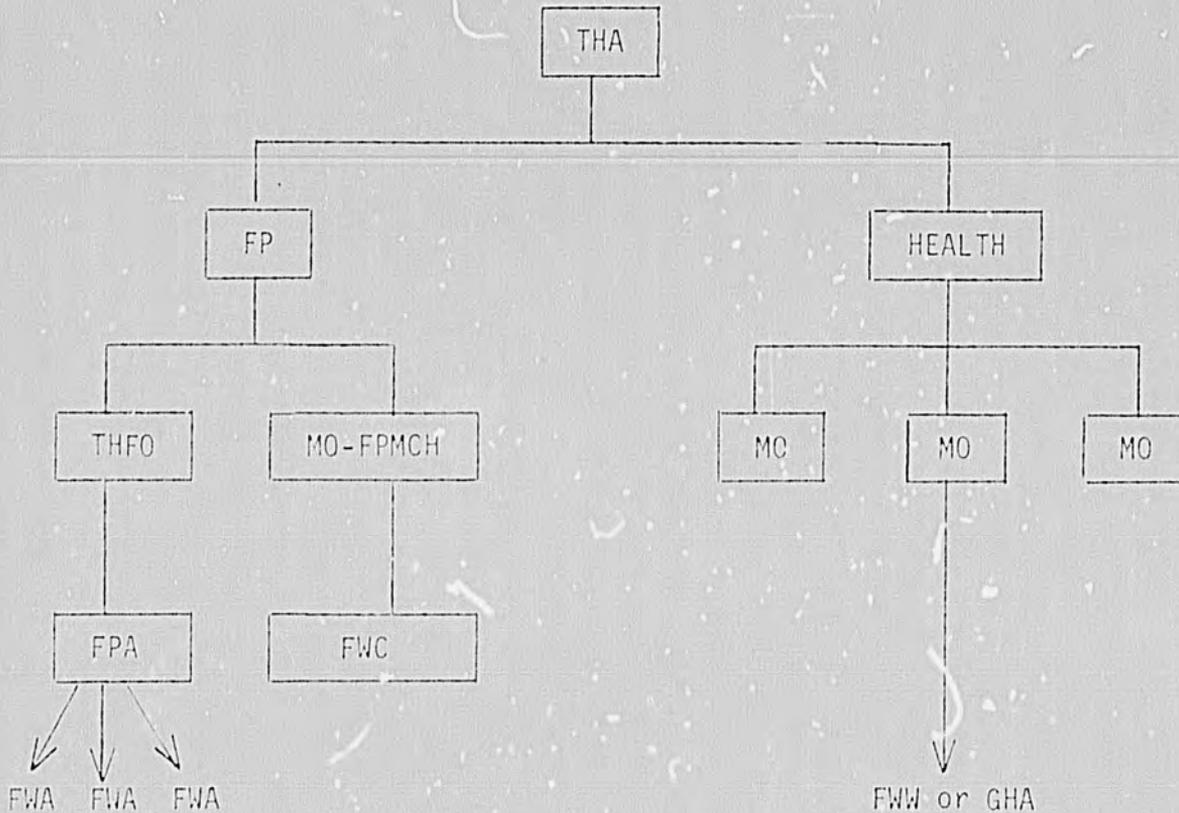
Notes should be taken as unobtrusively but as carefully as possible, recording (where feasible and appropriate) verbatim statements of officials, staff and villagers.

A summary report of the observations made during the first field trip should be prepared before proceeding with this initial, informal assessment in the second Thana. This report should state what has been learned and what questions remain. What are the important variables that should later be measured through survey of the field staff and through participant observation? It has been our observation that, with the current emphasis on survey techniques, researchers often go through elaborate survey procedures to come up with basic descriptive findings which could have been more readily obtained through informal in-depth interviews of the type described above. Survey instruments and participant observation techniques designed after such initial assessments have been conducted, stand to benefit and are likely to measure variables more precisely than is otherwise possible.

Payoffs from informal in-depth interviews During the Munshiganj field trip, we had lengthy conversations with Dr. L. Rahman, the deputy director of Implementation, who accompanied us on the trip. One of the topics of discussion was integration of family planning and health services. Background notes from the Extension Project and available organization charts presented the Thana-level organization structure as follows:



Our discussions, however, made it clear that there remains a stark cleavage between the health and family planning side in spite of the efforts to produce an integrated system. Thana-level staff and officials continue to perceive themselves as divided into a family planning and health side. Dr. Rahman described the system in ways that can be represented as follows:



Understanding of this continuing cleavage between health and family planning has crucial implications for survey design and intervention.

Utilization of other thanas for initial assessment Part of the initial, informal observations might be conducted in other Thanas, possibly in the vicinity of Dacca. While there are variations in program functioning, the basic parameters of the organizational process should be similar in all Thanas. Using Thanas other than those in the project for part of the initial phase of the organizational diagnosis should avoid excessive contamination of project Thanas through the intrusion of researchers. Organizational assessments affect program functioning by the entrance of outsiders, the requests for information, and the focus on problem areas. That is, organizational diagnosis itself is

likely to alter the behavior of program staff and officials. This is especially true in light of the evidence of a persistent discrepancy between formally established patterns of field work and supervision and actual patterns of behavior. Program staff and officials are most likely to interpret the research endeavor as a form of inspection and adjust their behavior accordingly. This happens in spite of the researchers' declaration to the contrary and in spite of informal approaches.

Preliminary work on other Thanas should also provide some perspective on the unique and special characteristics of the project Thanas and the organizational processes that pertain to the program as a whole. For the same reasons, discussions with district officials outside the two project districts would also be instructive.

Phase 2: Formal Surveys and Participant Observation

At the completion of the initial phase in the operations research component of the MCH/FP Extension Project, the accumulated data should be carefully reviewed to determine what variables should be measured through formal surveys and participant observation. The variables listed above under the broad categories of organizing activities and client transactions should serve as a broad guideline for the key variables to be measured. Participant observation techniques will have to be used for areas of concern that are unlikely to yield valid data through the use of formal survey techniques. Key variables for which this is likely to be true are the quantity and the quality of work of field staff, supervisors, and medical personnel. The quantity of work variable will undoubtedly be the most difficult to measure, given the inevitable presence of a Hawthorne effect introduced through participant observation, and inaccurate reporting in interviews. Nonetheless, various informal attempts should be made to gather information on this critical factor.

Case analysis or study of variation In designing the survey instruments and participant observation studies, it will be essential to decide to what extent the purpose of this data collection effort is: (1) To describe and analyze the functioning of the health and family planning program in the project Thanas, or (2) to test hypotheses concerning the influence of different factors on variations in program performance within these two Thanas. If the study of variation in performance is

¹ See, for example, Barbara Pillsbury, Lenni Kangas, Alan Margolis, U.S. Assistance to the Family Planning and Population Program in Bangladesh 1972-80, USAID, Washington, and Dacca, 1981. The same point was apparently also made in a functional analysis of the field workers done by the World Bank.

to be a major objective of the research endeavor, the survey instruments must be designed to emphasize the measurement of variation in both the dependent and independent variables. It is our conclusion that the major use of the operations research components of the project is to describe the organization and delivery of family planning and health programs as they exist prior to the intervention. The study of the organizational determinants of performance (through multivariate analysis) might be an interesting by-product of the research but should not be considered an essential objective.

Functional Analysis I: Comments on Existing Instruments

Functional Analysis I, A

The following are a number of specific comments on the instruments available at the time of our consultation:

1. Indicate type of unit where this analysis was performed: THC, FWC, MCWC, etc.
2. Include item: Are there enough cots available for all patients during postoperative care, or do patients have to lie on the floor?
3. Include at end of I, A: Summary assessment of adequacy of physical facilities of sterilization unit.
4. Pretesting of this instrument should establish whether the suggested format is appropriate. For example, how is this questionnaire to be filled out in cases where there is no separate preoperative preparation room and equipment is kept elsewhere?
5. This instrument should be completed by a physician.
6. The instrument is detailed and much thought has gone into its preparation. After pretesting, it should be reviewed to see whether some of the information collected is too detailed or unnecessary. To decide this, give some thought to how this information might be summarized in a descriptive statement on physical facilities. What summary indices on physical facilities can be suggested? Which of these are most important? Thinking ahead to the analysis is a most helpful technique in instrument design.

Functional Analysis I, B

1. For how many patients is this instrument to be completed?
2. Information and counseling: This section contains a number of items where the observer has to decide whether the client has adequately understood various elements of the counseling session. How is the observer to do this? It might be more manageable to assess the adequacy of the counselor's explanation than to determine the adequacy of the client's understanding. Even then, however, guidelines will have to be established as to what constitutes an adequate explanation, etc. This comment applies to II A, B, e.g., of Functional Analysis I, B.
3. Ill-informed consent: How is the observer to determine whether the client is really consenting?
4. Rejected clients: Inquire whether medical care is provided, where appropriate, and whether arrangements were made for patient's return for sterilization later.
5. Summary measures of the quality of the counseling and the surgical procedures should be developed.
6. In general this instrument has been carefully developed. The comment on pretesting and thinking ahead to the analysis made for I, A also applies here.

Functional Analysis II: Thana Health Complex Outdoor Patient

1. Consider for possible inclusion observation on the type of explanation provided by the physician to the patient. Did he/she provide information on the sickness? How it can be prevented? Cured? How long it should last? Presence of other patients? Men? Women?
2. Consider for possible inclusion an assessment of the adequacy of the directions provided by the pharmacist.
3. Consider for inclusion the following: Was another health care practitioner consulted before coming to THC. If previous THC visits reported: Have you ever been asked by one of the physicians at the THC to pay for the services he/she provided? Have you ever been asked by the pharmacist to pay for medicines?
4. Summary sheet: Where was information on "Who directed the patient/relative to come to clinic?" obtained?

Functional Analysis III: Observation Schedule for
Static Health Worker

Each worker will be observed every half hour to record whether he/she is present at the place of duty and, if present, what kind of services are being delivered. While such observations have their utility, it should be realized that the presence of the observer is likely to influence the behavior of the worker. Therefore, no conclusions can be drawn based on such observations about the quantity of work performed by these workers under normal conditions.

Village Worker Module

1. As discussed above, the initial, informal assessment phase of the study should provide insight into the types of variables that should be included in the worker interview. This initial phase should also provide guidance about what information can be obtained through formal surveys and what information can be obtained only through informal discussions and observations.
2. As it stands, the worker questionnaire covers the following variables: Personal characteristics of the worker (background, education, training, marital status, contraceptive behavior, number of children, job history), job description, job problems, village problems, salary, number of households in work area, number of acceptors recruited, mortality perception, benefits of integration. Not included are variables pertaining to work style of worker, supervision, supplies, teamwork, recordkeeping, detailed information on acceptors recruited, continuing users, etc.

We presume that a number of these variables will be obtained through observational methods (e.g., quality and quantity of motivational/educational methods, quality and quantity of followup, quality and quantity of nonfamily planning preventive services, strategies for client recruitment, nature of the relationship with village population, responsiveness to client needs). Others, however, might be included in the formal survey: e.g., rewards received for good work. Sanctions for inadequate performance. Type of supervision received. Major purpose of supervision--inspection versus guidance and support. Technical competence of workers (specific items testing the worker's basic knowledge of contraception and other health services might be incorporated).

IV. THE APPLICATION OF COST-EFFECTIVENESS
TO THE EXTENSION PROJECT

IV. THE APPLICATION OF COST-EFFECTIVENESS TO THE EXTENSION PROJECT

The economics of transferring methods from the Matlab experiment to new areas in Bangladesh is of central interest. Observers both from inside the country (e.g., in the Ministry of Health or the Planning Commission) and from the outside (e.g., the representatives of international agencies and other outsiders) will want to know whether it is possible to transfer lessons from a program that has had a significant impact on family planning practice and possibly on health to other situations. The economic question that such observers will be asking falls under the general heading of cost-effectiveness analysis.

Cost effectiveness analysis (CEA) is a decision-making tool designed primarily to permit administrators to make the best use of scarce resources. The basic idea underlying the technique is that policymakers should attempt to systematically shift resources from activities with a low level of return to those with a high level of return. If a \$100 expenditure on Project A yields five new family planning acceptors and a similar expenditure on Project B yields ten new acceptors, then, if maximizing family planning acceptors is the desired goal, administrators will be better off spending money on Project B.

This simple example makes the procedure seem trivial, but most real world applications present a great many difficulties. Since projects differ in size, location, and complexity, comparison among them is possible only through the careful application of highly standardized procedures.

The methods of cost effectiveness are detailed in the references appended to this note, copies of which have been provided to the project staff. The following pages offer some supplementary observations that may be of assistance in the application of these techniques to the Extension Project.

Cost effectiveness methods always involve comparisons. The purpose of the analysis is essentially to estimate the costs associated with alternative ways of undertaking the same project or the same activity. Thus, in the instance of the MCH/FP Extension Project, by using CEA one is attempting to compare the costs of delivering health services/family planning by following selected procedures from Matlab in comparison with the costs that would be associated with the usual government program.

A second characteristic of CEA is that it always involves the use of ratios to make comparisons. Comparisons are made by estimating the ratio of the cost to the impact for various methods of delivering services. Such measures are necessary because of the different scales on which programs operate. The use of ratios means that the analyst must

measure both the costs and the impact associated with each program or each activity that is being compared. Moreover, the costs and the impact must be linked by an implied causality. This last assumption may seem self-evident, but an analyst could include costs that are not associated with a given activity or could attribute impacts to the program inappropriately.

In the Extension Project, there are two kinds of comparison that are possible. First, one can make comparisons among the different treatment areas. Second, one can compare the treatment areas with the control areas that are served by the normal government program. In either case, the analyst will have to estimate both the costs and the impact.

Measuring Costs

Costs are measured by the resources that are given up in carrying out the activity. In general, costs can be measured by the amount of expenditure on a project, but the economic literature is replete with examples of situations where money expenditure may give a misleading measure of what has been given up in order to undertake a project. In the Extension Project, we suggest that you follow the example of most of the health and family planning literature by ignoring such divergences between the true opportunity cost and the expenditure except for the most obvious and important examples. Contraceptive costs may be such an example. Contraceptives may not have any money costs for the project, but there should still be some costs attributed to them in the analysis. Perhaps estimates can be made on the basis of different assumptions about the resource costs involved.

The major difficulty in estimating costs is separating the costs of the project from other costs with which they are related. For example, senior administrative staff in the Thana or in the district may devote part of their time to the project, but chances are that most of their administrative efforts and time will be directed toward other parts of their jurisdiction. We suggest that an estimate of the proportion of staff time devoted to the project stand as a measure of their contribution.

In establishing estimates of costs, the analyst should consider the importance of the research effort in assuring the impact of the project. If the existence of the project has had a large effect on the project, then the appropriate costs should be included. Alternative estimates with and without may be the best approach here.

The basic steps in estimating costs will be as follows:

1. Make a list of the resources used in the project during a given time period: different kinds of staff working with clients, administrative staff, buildings, transportation, contraceptives, etc.
2. Estimate the total number of person/days or the amount of each input that is used.
3. Find out the cost per unit of input, i.e., the salary level of the staff (including supplementary benefits), the fair rental value of buildings, the market cost of supplies, etc.
4. Multiply the elements of #2 by #3 to establish the cost for each category of input.
5. Sum to get an estimate of the total cost of the activity for the time period in question.

This information can be tabled as follows:

Cost for Activity _____ in Time Period _____

<u>Input</u>	<u>Quantity of Input Used</u>	<u>Cost or Price per Unit</u>	<u>Cost</u>
1.			
2.			
3.			
4.			
5.			
.			
.			
.			
n.			
TOTAL			

There are a number of ways of classifying the inputs and the costs associated with a program. A basic distinction is between direct costs and indirect costs. Direct costs are directly associated with the production of output from an activity. They correspond to the client transactions in the systems framework spelled out above. Indirect costs are the residual costs of running the program and can be thought of as organizing costs in the systems framework.

Warren C. Robinson has provided a useful list of potential costs falling in each category.

Name of Organization:

Expenditures on Family Planning

Direct Costs

1. Salaries of full-time and part-time field staff
2. Payments to clients, if any
3. Travel and per diem to field staff
4. Contraceptive supplies by type
5. Vehicles (purchase and maintenance)
6. Other equipment
7. Training of field staff
8. Buildings and fixed facilities (purchase and maintenance)

Indirect Costs

9. Administrative personnel
10. Analysis and evaluation
 - a. Personnel
 - b. Equipment
 - c. Supplies and other
11. Information, education, and communication
 - a. Personnel
 - b. Printing, radio, and other media charges
 - c. Supplies, etc.

12. Research

- a. Biomedical
- b. Demographic

13. Fellowships and foreign training

14. All other indirect costs

Impact measures will be more familiar to readers of this report than costs. Probably the best measures of impact would be couple-years of protection (CYP) or births prevented or averted (BP). We prefer the latter, but for the purposes of this project they are similar. The use of acceptors is an inferior alternative because it does not take into account the great difference in the demographic impact of different methods of contraception and the differences in age patterns of acceptance. Methods of estimation are detailed in standard references such as Chandrasekhar and Hermalin.

To assess impact, you will need an estimate for each area of the number of acceptors by method and size. You will also need some measure of continuation rates and of the alternative fertility in the absence of family planning use. These last two issues are complicated but are discussed in the literature.

The BP are attributed to the year in which they were created by program activity. That is, if a woman adopts an IUD in 1982 and keeps it for 5 years, even the births prevented in the year 1987 are attributed to the activities in 1982.

Cost-Effectiveness Ratio

If information as described above is collected for each activity for each year, it should be possible to create a table as shown on the following page.

Activity

A B C Control

1. Costs in Year 1
BP in Year 1
CE Ratio Year 1

2. Costs in Year 2
BP in Year 2
CE Ratio Year 2

•
•
•
•
•
•
•

n. Costs in Year n
BP in Year n
CE Ratio Year n

References of Cost-Effectiveness Analysis

1. K.E. Warner and B.R. Luce, Cost-Benefit and Cost-Effectiveness Analysis in Health Care: Principles, Practice, and Potential, Health Administration Press, Ann Arbor, 1982.
2. Warren C. Robinson, "The Methodology of Cost-Benefit Programmes," in the U.N., The Population Debate: Dimensions and Perspectives, papers of the World Population Conference, Bucharest, 1974, Volume II, pp. 550-559.
3. U.N., ESCAP, A Comparative Study on the Input-Output Relationships of Family Planning Programmes in Selected Countries of the ESCAP Region: Measures of Efficiency for Family Planning Evaluation Programmes, Asian Population Studies Series, No. 30., Bangladesh, 1981.
4. G.B. Simmons, "Public Expenditure Analysis and Family Planning Programs," in L. Tabah, ed., Population Growth and Economic Development in the Third World, Ordina Ed., 1976.
5. G.B. Simmons, "The Analysis of Efficiency of Family Planning Programs," prepared for the International Workshop on Cost-Effectiveness and Cost-Benefit Analysis in Family Planning Programs, Johns Hopkins University, August 1981.

APPENDICES

Appendix A

ITINERARY

Appendix A

ITINERARY

Schedule of Meetings for
Ruth Simmons and George Simmons
in Dacca

- June 25 Arrive in Dacca
- Meet from 7 to 11 p.m. with Dr. James F. Phillips, Director of the MCH/Family Planning Extension Project, ICDDR, B.
- June 26 Meetings with Dr. Phillips and staff of project.
- Meeting with Michael Goon, ICDDR, B administrator.
- June 27 Meeting with Dr. Phillips and review of documentation on the MCH/FP project.
- June 28 Meeting with ICDDR, B staff: M.R. Bashir, associate director; Dr. Mizanur Rahman, coordinator of the Embankment Project (George Simmons).
- Meeting with Charles Gurney and Shanti Conally, USAID
- Meeting with Extension project staff on instruments (Ruth Simmons).
- June 29 Further meetings with project staff.
- Meeting with Mr. Mabud of Planning Commission
- June 30
to
July 1 Visit to Matlab project area.
- July 2 Work with project staff at ICDDR, B.
- July 3 Visit to Munshiganj, site of German health and family planning project, to learn about government system for delivering health and family planning services - accompanied by Deputy Director Dr. L. Rahman.
- July 4 Meeting with Dr. Phillips and review of documents, especially instruments for field data collection. Preparation of report.
- July 5 Preparation of report.
- July 6 Preparation of report; meeting with Dr. Mizanur Rahman; presentation of seminar to ICDDR, B staff on the subject of organizational analysis.

- July 7 Seminar at ICDDR, B on ways of conceptualizing the differences between the government programs and the special program in Matlab.
- Debriefing with Mr. Bashir.
- Consultations on report.
- July 8 Meeting with project field staff; submission of draft report.
- Meeting with Dr. Stan D'Souza, director of research for ICDDR, B.
- Departure.

Appendix B
RESEARCH PROTOCOL REVIEW

International Centre
for Diarrhoeal Disease Research, Bangladesh

Memorandum

TO Director

FROM George and Ruth Simmons

DATE 07.07.82

SUBJECT Research Protocol Review: MCH/FP Extension Project

General Comment: This review is based on a review of pieces of the Aid proposal and a larger draft which in combination are to constitute the final protocol.

1. Description

(Write a concise description of the proposal, including aims, procedures, and background, as appropriate to a clear description of the project proposal.)

The MCH/FP Extension Project is a large-scale action research program aimed at testing the feasibility of transferring some of the lessons learned in the Matlab MCH/FP experiment to the Government health and family planning program. The action component of the program involves an attempt to adapt the package of services offered to the rural population in Matlab so that these services can be offered by the normal Government organization and to identify the key administrative activities that will assure the implementation of this program of services, again within the framework of the government pattern. On the research side the project has several components. Most important, the overall program is treated as an experiment and the study design allows for a baseline survey, a careful monitoring of the experience in both the experimental and the control areas and a post treatment survey to assess the effects of the intervention. The experimental design is based on a well elaborated set of theoretical propositions about the process of transferring the learning from small scale experiments and about the determinants of behavioral change in health and population. The various components of the larger project are also designed to permit the careful examination of various subsidiary but important propositions. The combination of surveys and sample monitoring will permit the testing of a range of propositions about demographic and contraceptive behavior. Surveys of the government staff and other techniques of documenting their patterns of behavior will permit the testing of propositions about the nature of the government system. Finally, the use of specific interventions to help with the health or fertility control problems of villagers in this area should permit further testing of knowledge gained in Matlab. The project will also attempt to systematically document the nature of interventions in the areas of training and organizational intervention.

The fact that this is a large-scale intervention aimed at a significant sized component of the rural population should increase its inherent relevance to the formulation of government health and family planning policy. The government of Bangladesh has been searching for solutions to the overwhelming problems in these areas, and the interest generated by projects such as Matlab has been tempered by a recognition that the experience of Matlab could be difficult to extent to the normal government program. It is this interest which explains why the government has been keen to see this project undertaken.

2. Adequacy of Background Information

(Does the protocol indicate thorough understanding of the state of knowledge in the field?)

Has all relevant work at ICDDR,B been cited?)

The protocol reflects an extremely thorough review of the state of knowledge in the field and includes extensive background information. To the best of our knowledge the relevant references to the extensive previous experience of the ICDDR,B in this area have been included.

3. Critique of Research Plan

(Discuss the strengths and weaknesses of each aspect of the proposal as outlined below:

Is the rationale for this research clearly stated, and supportable by the background information given?)

Rationale. In the statement of the rationale (p 41) more prominence would be given to the importance of the research aspects of the project. The following paragraphs are an attempt to put the scientific basis of the project into perspective.

Science is a process of accumulating knowledge through a well defined interaction between theory and empirical observation. This process was first established in the areas of natural science, e.g. astronomy or physics. During the past century the methods of science have become well established in the study of human behavior in areas such as health and social behavior. One application of social science is to the study of administration or organization of government programs. The ICDDR,B has a strong commitment to research in this area as reflected in the existence of the Community Services Research Working Group, and the proposal for the MCH/FP Extension Project fits squarely within this tradition.

Director

The study of government health and family planning programs shares with other scientific activities a concern with careful and replicable procedure, a commitment to precise definitions and to systematic confrontation of theories with data which have the potential of proving them wrong and a desire to proceed in a manner which is cumulative rather than cyclic or episodic. The study of organizations or government programs has its own special difficulties however. To a greater degree than is true for most research in the natural sciences, the study of programs such as the government health and family planning program is subject to distortion from many sources. Unlike bacteria, administrators usually know that they are being studied, and they may have strong motivations for trying to influence the research process. Thus the full controls that define a laboratory experiment are difficult or impossible to maintain. In addition, since scientific study of health programs is of fairly recent origin, definitions and procedures have not been worked out as thoroughly as they have been in the natural sciences. Two lessons to be drawn from this discussion are that while programs, policies and administration generally can be studied systematically using the methods of science, great care must be exercised in the process.

The MOH/FP Extension Project is doubly complex in that it involves action research. That is to say that it is an attempt to change the behavior of an administrative system and at the same time to use scientific methods to document the experience of change and its impact on health and family planning goals. Careful planning is required to separate the research and the intervention components of the project.

It should also be noted that the project has a number of subsidiary scientific aims. The project will attempt to document the present pattern of activities of government health and family planning staff in the experimental thanas. It will collect data on health and fertility that is of interest in and of itself. These activities will assist in the assessment of the results of the larger experiment but will provide the basis for legitimate scientific papers quite independent from the larger project.

(Are the aims well defined, and logical?)

Aims. While the research aims are well defined, detailed and logical, our own research and experience with health and family planning programs in Asia suggests that one of the key hypotheses relating to implementation is likely to be disproven by the research (p 44). Implementation problems do not necessarily relate to "readily manipulable administrative issues" but to problems which are systemic and structural in nature. There is definitely scope for managerial change and in that respect the suggested research is of critical relevance. However, to expect that managerial change can solve all implementation bottlenecks is unrealistic. Moreover, certain aspects of the intervention strategy will involve intervention of a structural nature. However, even such structural change will not touch the deeply rooted structural problems of the MOHPC programs which are a reflection of the bureaucracy at large. Expected outcomes of the research action strategy should therefore be viewed with greater realism.

(Is the approach to the problem valid and likely to yield useful results?

Is the experimental design adequate? Are the numbers of subjects/animals/experiments justified? Has provision been made for controlling for confounding variables? Is sampling, and/or subject stratification appropriate or required?)

Approach to the problem and experimental design. We have examined the sections of the protocol documents dealing with experimental design. In general we find ourselves in agreement with the overall thrust of the proposal, but we have reservations on two aspects of the design. First, we have some misgivings about the specification of the treatments to be used in the experiment and have made detailed suggestions to the Project Director about ways of conceptualizing and carrying out appropriate treatments. Our main concern has been that the treatments should be sufficiently distinct from each other to assure variation in impact. We have also emphasized a need for stronger conceptualization of treatments. We also recognize that many of the details of organizational intervention will need to be worked out as the project develops. This is quite consistent with the well established tradition of organization development. For this reason it will be particularly important to document the exact nature of the intervention which are used in the project.

Second, we believe that the controls specified in the original design are inadequate. Given the organizational theory underlying the experiment it is necessary to have a specific control area in another thana unaffected by the training and counterpart activities of the project. Given the need for the involvement of thana level officials in the intervention there is no way that the intervention activities can be restricted to some unions and not to others.

(Are all procedures feasible? Are they adequately described?)

Feasibility of procedure. The proposal specifies a research strategy whereby specific intervention plans are to be shaped by findings of diagnostic research early in the project period. Given the suggested timing and phasing of research, we are concerned that there may not be adequate time to follow this strategy. During our consultations we have made detailed suggestions about the phasing of various components of the diagnostic organizational analysis that could facilitate implementation of this developmental research strategy. In light of the inadequate resources especially in the area of operations research and in light of the pace at which project implementation is proceeding, we continue to be concerned however, that the quality of the organizational analysis might suffer.

A comment on method is perhaps appropriate. In some respects the data collection activities of the project represent an innovation for the ICDDR,B. First, instead of using the surveillance of the entire population as worked out in Matlab, the project will maintain surveillance on selected households,

Special attention should be given to the establishment of this system and to questions of how this kind of data collection can be maintained in a cost-effective manner. Second, one important goal of the research will be to measure the quality and quantity of contacts between the program staff and the village population. Methods for this purpose should be developed but they should be independent of the sample surveillance system. Perhaps teams can visit randomly selected households in the villages in which the sample surveillance households are listed.

(Will the data generated answer each of the questions outlined in the specific aims?)

Answer each question. We believe that all of the questions outlined among the specific aims are potentially answerable with the data that are to be generated from the project. It should be recognized, however, that some of the treatments planned as a part of the project design have effects which are not fully controllable. Consequently the ability to statistically test some of the hypotheses implicit in the statement of aims will depend upon the outcome of the field experiment. But potentially all questions are answerable if there is sufficient variance in the treatment and the outcome variables.

(Has careful attention been given to all details, and procedures for data analysis?)

Details. The Extension Project constitutes in some sense a research program that is likely to generate a number of scientific papers and a number of different kinds of data analysis. Most of them are discussed either implicitly or explicitly in the project protocol, but for many analyses the details will have to be worked out as a part of the project activity. For example, the details of the organizational analysis can only be specified after the original diagnostic efforts are complete. This continuing process of defining the data collection and analysis procedures are reasonably well described in the protocol document.

(Is the analytical framework adequate? Has sufficient attention been given to statistical problems in study design and data analysis?)

Analytical framework. We believe that the analytical framework is adequate. That we have some reservations about the current statement of the treatment component of the experiment and about the related plans for organizational analysis should be clear from previous comments. We have communicated to the project director some ideas for modification of the protocol document to accommodate to these weaknesses. With these qualifications we have no reservations about the analytic framework and the plans for statistical analysis.

4. Assessment of Relevance

(Will the research produce new data and concepts, or confirm existing hypothesis? What is the significance and pertinence of the proposed study with regard to the state of the field and importance of the aims?)

Project design. The MCH/FP Extension Project addresses the question of how innovations that have been successfully implemented in small-scale experimental projects can be transferred to government programs. This is an issue of great intellectual and practical significance. It is of great intellectual significance in that there is little known about the transfer of health technologies from small-scale pilot projects to larger, public programs. Much of the research in this area has remained satisfied with assessments of the success of small-scale experiments, leaving the question of transferability unanswered. The underlying assumption has generally been that the success of the pilot project itself has ipso facto demonstrated the relevance and transferability of such projects to larger, public systems. The Extension Project on the other hand specifically focuses on the question of transfer. It is therefore a research venture of major significance which, if carefully executed, will have important implications for our understanding of health programs not only in Bangladesh but in other countries as well.

Secondly, the focus on transferability has crucial practical importance. Bangladesh, as other countries, has benefitted from several projects that have instituted high quality services for relatively small populations. While such projects have helped many individuals in critical ways, they cannot provide or have not provided these services on a scale necessary to serve the country as a whole. This role has been left to be filled by publicly organized programs implemented under the umbrella of the Ministry of Health and Population Control. Such public programs have, until now, failed to institute the quantity and quality of services necessary to provide for better health and to encourage family limitation. To the extent that the Extension Project can provide insights into how successful, small-scale pilot projects can benefit not only the populations they serve but generate knowledge that produces improvements in large-scale public programs, it has the potential for producing lessons of much practical policy relevance.

The Extension Project is based on an action research design. Selected elements of the MCH/FP delivery technology, developed and implemented in Matlab, are to be introduced by project personnel into the Ministry of Health and Population Control MCH/FP program in two thanas. Demographic, socio-economic, and organizational research will be conducted in order to develop detailed procedures for the intervention and in order to assess its impact and effectiveness.

5. Facilities Required

(Are the requirements for facilities adequately presented? Are the requirements for facilities justified by the research plan?)

- a) The project lacks scientific manpower in the area of operations research. While the project is receiving strong guidance in its demographic and client research components, there is currently no one on the project who can assume the complex operational research tasks. Operations research on public systems in health and family planning is a new area of inquiry for the Centre. It is also a field in which there is as yet little international expertise. Although there has recently been much emphasis on the importance of the management of public programs in health and family planning, there are few scientists who have experience with the design and implementation of broad-based empirical research on the organizational aspects of public health and family planning programs and with designing intervention strategies based on an understanding of the organizational functioning of such programs. The success of the Extension Project is critically dependent upon recruitment of an experienced researcher in this area. Technology from Matlab to the government program, such organizational separation in the Centre would seem to be counter-productive.
- b) The position of the Extension Project within the Centre's organizational structure is problematic. The project currently reports to the Program Development Committee for policy and administrative matters, and to the Training, Extension and Communication Working Group for communicating its design, and progress to other scientists in the Centre. As a scientific enterprise the MCH/FP Extension Project belongs in a scientific group. The project is currently also organizationally separate from the MCH/FP Matlab program. The fundamental purpose of the MCH/FP project are rooted in the commitment and goals of the Community Services Research Working Group. Since it is one of the major purposes of the project to test the feasibility of transferring health and family planning technology from Matlab to the government program, such organizational separation in the Centre would seem to be counterproductive.

6. Budget

(Is it realistic in terms of the aim and methodology? Are all items justified on the basis of the approach, procedures, and analysis of data proposed? Itemize, and provide specific reasons for added requirements, or reduction in the amount proposed.)

The budget as presented in the documents we have seen seems adequate with two qualifications. First, the need for senior level scientific personnel is very clear. There is a need for a physician trainer/epidemiologist, a specialist in organizational research and a demographer social scientist. The sources for funding all of these positions are not clear to us, but it is our impression that the Centre is aware of these needs and will provide for them. The scope of this research program is ambitious and one person will not be sufficient to see it to completion. Second, there is a need for a better defined control area in the neighborhood of each thana. Additional resources may be needed for this purpose.

J&RS:kj

Appendix C

THE DEMOGRAPHIC AND ECONOMIC
COMPONENTS OF THE EMBANKMENT PROJECT

July 3, 1982

To: Dr. A.C.M. Mizarur Rahman, Coordinator, Embankment Project

Working Group

From: George B. Simmons, Consultant

Subject: The Demographic and Economic Components of the
Embankment Project

The Asian Development Bank's project to build an embankment around a significant portion of Moulab Thana is likely to have a significant impact on the lives of the people living inside and in the neighborhood. Changes in the economic activity of the population, changes in the flow of water through the region and the general change in the environment will profoundly influence a whole range of behaviors including demographic and health behavior. Since fortuitously the project strongly overlaps with the Moulab Surveillance area, the project represents an unusual opportunity to monitor the impact of a massive development intervention on the lives of the people it is designed to affect. The following pages contain some observations on some of the issues that seem important to me as an economist-demographer and about the approaches that I would take to investigating them.

There has been a great deal of discussion in the literature about the relative importance of economic interventions on the one hand and of health and family planning interventions on the other hand in influencing basic changes in human behavior. The construction of the Embankment which is primarily intended as an economic intervention into an area which has an ongoing experiment in health and family planning would permit one to sort out the

ways in which these different kinds of intervention can improve people's lives. The existence of the surveillance system will allow researchers to monitor many of the events occurring both inside and outside of the Embankment areas. It should also be observed that the DSS in some sense constitutes an intervention in its own right. All of this suggests to me that in terms of research design you should be thinking of a modified eight cell design as outlined below:

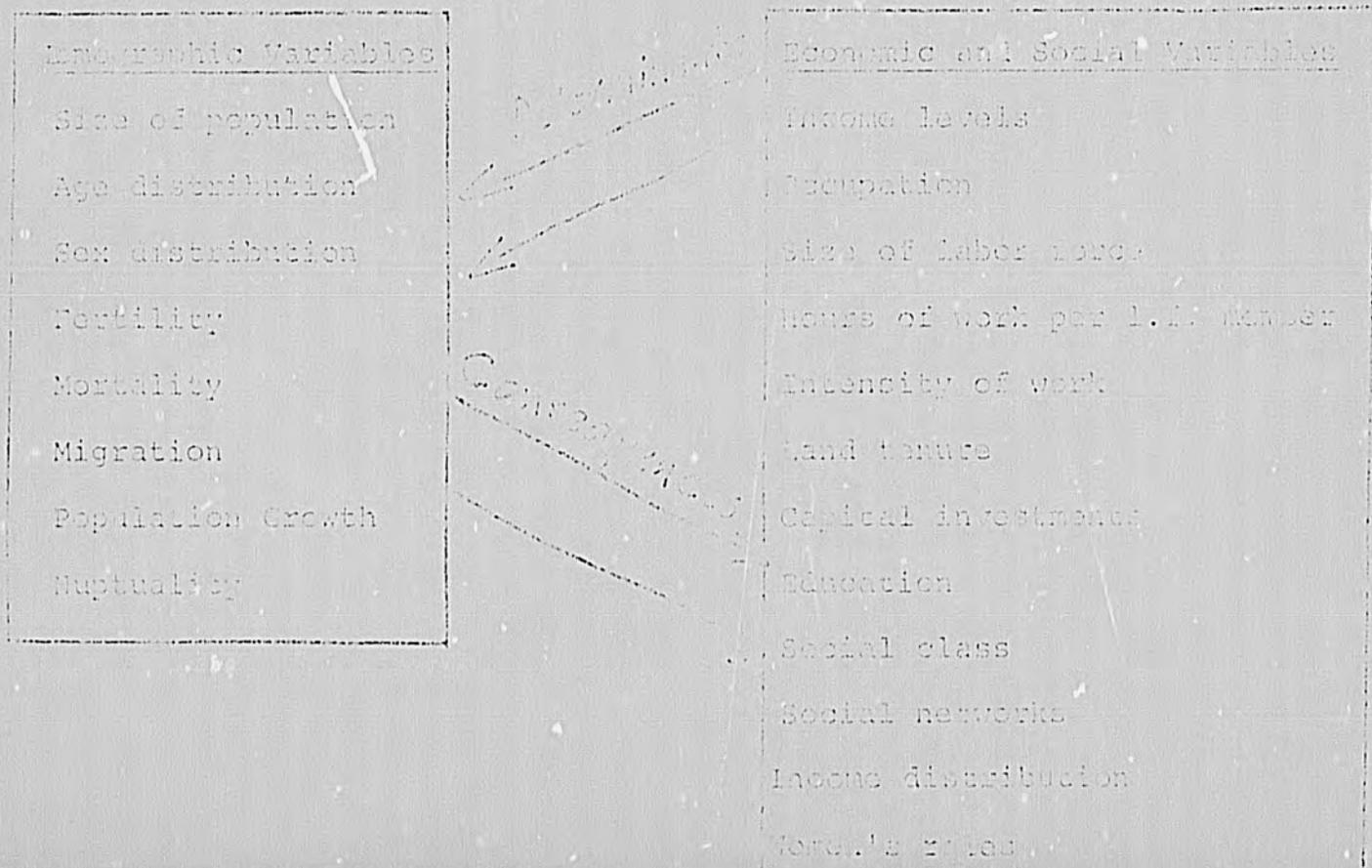
	Embankment	Non Embankment
Surveillance	MCH/FP	MCH/FP
	Comparison	Comparison
Non Surveillance		

In other words there are six kinds of villages of interest to the researcher:

1. those with DSS, the Embankment and the MCH/FP intervention
2. those with DSS, the Embankment and no MCH/FP intervention
3. those with DSS, no Embankment and the MCH/FP intervention
4. those with DSS, no Embankment and no MCH/FP intervention
5. those without DSS, the Embankment and no MCH/FP intervention
6. those without DSS, no Embankment and no MCH/FP intervention

This design is somewhat flawed by the absence of FP/MCH interventions in the non-Embarkment areas but is otherwise ideally suited for an examination of the effects of different combinations of treatments on the behaviors of people living in the villages of the Matlab area.

In the rest of this note I wish to list some of the key variables and relationships that might be of interest to study in the context discussed above. As a frame of reference I divide variables into two lists. The first list deals with demographic variables, the second with economic and social variables. In the lexicon of the demographer relationships which are causally assumed to go from the economic and social variables to the demographic variables are called determinants and those which flow in the other direction are called consequences. These are outline schematically below.



The relationships implied by the above diagram are relatively abstract and highly simplified. The framework could be extended in a number of directions. First the variable lists could be expanded greatly. Second the relationships within each set of variables could be specified. Third, the whole system could be made dynamic by appending time subscripts to the variables involved. Finally the full set of feedbacks and causal interdependencies could be specified. In the remaining paragraphs I will say a few more words on some of the relationships that might be of special interest.

There has been a great deal of interest in recent years in the role that family planning can play in development policy. There is an important question of the extent to which family planning can lead to the improvement of the well-being (economic or social) in the absence of structural change, of whether family planning can bring about a reduction in fertility in the absence of major economic change and about the relationships of both economic and family planning interventions to health. All of these relationships can be studied with the data that is likely to be generated from the proposed project.

The role of migration is likely to be of special interest. As the Embankment begins to have an impact on output and on the process of economic production and marketing, there will be the potential for a substantial increase in the incomes of people living in the region. Whether the potential increases in per capita income are realized will depend upon the extent to which local residents respond to the increased demand for labor and the extent to which that increased demand for labor leads to migration.

and thus to a displacement of legal labor. These questions can be researched with the present data set.

The general relationship between demographic change and work patterns is of great interest. Some persons have hypothesized that in populations such as that of Bangladesh there will be strong pressures to create jobs and that instead of the unemployment leading to increased levels of income and productivity there will be a tendency to find mechanisms for work sharing. In any case the patterns of labor in the region are of particular importance and I think that the project could make a special contribution by trying to monitor patterns of labor force activity. Procedures for doing so could be built into the DSS or through surveys but would be important for understanding the economic demographic dynamics of the region. Professor Eva Mueller of the University of Michigan and Professor Robert Evenson of Yale University have worked on problems of measuring time use and labor force participation in developing countries. Many of the staff of the population and development group at the ILO have experience in this area (Dr. Ghazi Faruq could be contacted).

Appendix D

THE EMBANKMENT PROJECT AND
FUNDING FOR THE DSS

July 4, 1982

TO: M.R. Bashir, Associate Director, Resources Development

FROM: G.B. Simmons, Consultant

SUBJECT: The Embankment Project and Funding for the DSS

The existence of the Asian Development Bank's Embankment project in Matlab Thana offers the ICDDR, B an unusual opportunity to study some fundamental questions about the consequences of development projects. This opportunity is in and of itself sufficient to justify the development of a project in this area. However, as the situation has been explained to me, one of the primary motivations for the current interest in the Embankment project is the planned discontinuation of current funding for the DSS. A research program built around the Embankment project strikes me as eminently sensible and potentially fundable, but given the strong world wide interest in health and population issues concerning places like Bangladesh and given the established capacity of the ICDDR, B to undertake meaningful research on those questions, the Embankment program need not be the only new approach to funding the DSS.

The Matlab DSS is one of the few projects with an established capacity to provide high quality surveillance data for a very poor rural population. The Centre also has a well established capacity to undertake research with this data. That having been said, I am still impressed by what I have observed both this year and on the occasion of my previous visit that the capacity of the Centre is greatly underutilized. Many more research papers could be written with the existing data and perhaps more important a larger number of new research projects could be generated both to support new data collection efforts

and to assure the full analysis of new and old data sets. Two initiatives might be undertaken to increase the research activity of the Centre.

First, the Centre should seek to establish itself as an international data archive on matters of health and population for the study of communities living in great poverty. As mentioned above there are few institutions as well equipped to document what is happening in populations like that of Matlab and there is currently a great deal of policy interest in such questions. With proper packaging, the idea of a data archive might be fundable in and of itself. Most funding agencies would want to assure that if they funded such an enterprise that there be reasonable access to the data generated by the archive on the part of qualified scholars and policy researchers.

Second and closely related to the above, I believe that there are many researchers in the international community who would like to undertake studies making use of the ICDDR,B's data and data collection capability. Many of these researchers can get access to funding not only to cover their own costs but to pay for some of the core costs of the DSS as well. There have been some examples of collaboration between scientists at the Centre and scientists affiliated with outside organizations, but generally it is my impression that the ICDDR, B is a fairly inward looking organization. I believe that if you were to establish a set of conditions under which outside researchers could get involved in research here, it would be possible to attract a set of research projects to the Centre that would: (1) be of some interest in themselves, (2) bring new funding to the DSS and perhaps to other Centre activities, and (5) stimulate the existing staff through contact with new ideas and research or analysis procedures. Researchers from the outside might come at the pre-doctoral, post-doctoral and established scientist levels. Rules for affiliation

funding and access to data would have to be established but the net result would be that the ICDDR, B would be more visible as an international resource deserving of support.