A collection of five papers on the roles of analysis and action in rural development, by W. J. Siffin, G. Johnson, J. P. Gittinger, P. Lyman, and R. Blue. This publication is both exploratory and experimental. It explores certain themes and concerns that lie along the edges of more conventional statements about aspects of rural development. In practice, a lot of the "thinking" about rural development tends to be much separated from the "doing." Thus one prime concern of those who would promote the development of rural areas in poor countries ought to be the interplay of analysis and action. Two crucial needs are to strengthen that interplay and to enlarge the ambit and potency of analysis so that it leads toward more effective strategies of action. The material in this publication is drawn from a pilot workshop on rural development conducted under PASITAM auspices at Michigan State University in 1974. The aim of the workshop was to explore the potentials for relating knowledge about "institution building" and "technical assistance methodology" to some central concerns in the field of rural development. Much of what was said at the workshop was conventional, and is not included in this publication. Some of the novel materials are included—the discussion of certain practical problems of the relation between analysis and decision-making. They display such things as the assumptions embedded in certain forms of analysis and some of the working relationships between producers and the sometime consumers of analysis products.
RURAL DEVELOPMENT
The Interplay of
Analysis and Action

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Preface

A Perspective on Some Concerns of Rural Development

We are all familiar with ambitious titles, titles that promise much and then take most of it away in small-print subtitles. A classic, if perhaps apocryphal, example is The Modernizing Impact of Technology Upon Traditional Culture, followed by the subtitle, A Case Study of Two Villages in the Trobriand Islands. The title of this brief report verges on heroic pretense. It is saved by the awareness of every informed reader: not even a document ten times as large as this could deal sufficiently with the subject of our title.

This publication is both exploratory and experimental. It explores certain themes and concerns that lie along the edges of more conventional statements about aspects of rural development. Some of those statements lay out elaborate techniques of analysis. Others present comprehensive "maps" of the field. In addition, there are cases with lessons and arguments for one or another strategy of rural development.

The systematic, technologically-based analyses offer broad indicators of what might be done. They seldom say much about how to do it; although some well-developed work on project analysis considers the organizing and managing of projects. Sector analysis usually stops short of any systematic consideration of the requirements—and the potentials—for implementing the aims it identifies.

Case studies, which can be valuable sources of insight, may also offer misleading models. This danger is reduced when the cases specify the contextual conditions that seem to help "explain" what happened and why it happened.

The broad arguments about strategies demonstrate a number of things: how people extrapolate from experience, and how we use art and conviction to supplement the evidence when compelling problems and concerns demand attention but defy solution.

In practice, a lot of the "thinking" about the vast subject of rural development tends to be much separated from the "doing." If this is an overstatement it still suggests that one prime concern of those who would promote the development of rural areas in poor countries ought to be the interplay of analysis and action. Two crucial needs are to
strengthen that interplay and to enlarge the ambit and potency of analysis so that it leads toward more effective strategies of action or at least to the reduction of error.

This exploratory statement makes no large promises. It does display some of the actual features of the interplay of analysis and interaction. Or it is an "experimental" effort to display some of those properties. It is experimental in another sense as well. The format consists of selections from the actual discourse at a workshop. As it turned out, there were no expletives to delete. Some minor adjustments and adaptations of the original statements were made to facilitate the transition from an oral to a written presentation, but the intent here is to display a thoughtful and generally unpretentious discourse. And that is certainly an experiment! The material that follows is drawn—quite selectively—from a pilot workshop in rural development conducted under PASITAM auspices at Michigan State University in 1974. The aim of that workshop was to explore, in a reasonably systematic fashion, the potentials for relating knowledge about "institution building" and "technical assistance methodology" to some central concerns in the field of rural development. The approach of the workshop was to identify a set of levels of decision-making ranging from national development concerns to individual projects and their implementation, to examine the prevalent techniques of analysis used at each of those levels, and then to consider how those techniques serve the needs of practical action.

As one might expect, much of what was said at the workshop was distinguished by its conventionality. In this statement we have eliminated the large mass of such materials; they are available from other sources. Part of what follows is novel—the discussion of certain practical problems of the relation between analysis and decision-making. Some is not particularly novel, but it is an interesting display of such things as the assumptions embedded in certain forms of analysis and some of the working relationships between producers and the sometime consumers of analysis products.

Those of us who put together this document see the following statement as both simple and complex. It offers a somewhat simplified view of the messiness and looseness that exists in the relationships between analysis and action. It indicates that the interplay of analysis and action is indeed complex.
This statement is justified if it stirs some sharpened sense of that inter-
play in those domains of effort where problems are delineated, strategies
are shaped, decisions are made, and implementation is sought.

William J. Siffin, Director
Program of Advanced Studies
in Institution Building
and Technology Assistance
Methodology
Rural Development
Overview

Approximately 85% of the 750 million poor in the developing world are considered to be in absolute poverty—and based on the arbitrary criterion of an annual per capita income equivalent to $50 or less. . . . more than 80% are estimated to live in rural areas. . . . There are over 80 million small holdings of less than two hectares, many of them comprising the several small fragments of land, most of which generate incomes below the absolute poverty level. The tenants, sharecroppers and squatters, who represent another 30 million or more families, are often less well-off. . . .

Despite high rates of migration from rural to urban areas, the rural population is growing by approximately 2% a year.1

Thus do modern institutions document some of the malignant qualities of the human condition. How can they help abolish those qualities?

The World Bank's policy paper on rural development confronts mind-staggering misery and outlines elements of a global strategy of attack. The bold posture is justified by the grim facts. The Bank report asserts the primacy of the problem of rural development and makes a commitment to increased lending for agriculture, for poverty-oriented projects within agriculture, and for such projects in the poorest countries. It projects net production increases "well above the 5% target suggested by the President, Robert S. McNamara, in his Nairobi speech."2

The Bank intends to lend about $7,000 million during 1975-79 for agricultural and rural development projects with total estimated costs of $15,000 million. It anticipates that this program will reach 100 million rural people, of whom 60 million will be in the poverty target group. That group will grow by 70 million in the period, and at least $75,000 million will be required in effective investment, if the productivity of the rural poor is to grow by at least 5 percent per year during 1975-79.

At a global level, the World Bank Rural Development paper describes a vast and confounding problem, sketches a set of policies and programs, and lays out the Bank's own commitment. It is "a meta-analysis of a meta-problem."

The Bank paper is also a political document intended to stir concern
and influence effort by presenting an argument about the importance of rural development, by indicating judgments about appropriate lines of action, and by announcing the commitment of money.

Relations of Analysis and Action

The World Bank analysis implicitly points toward another fundamental problem of the relations of action and analysis. When people and organizations are acting in relatively familiar fields, this problem may not exist, for analysis then involves the application of tested lessons of experience to situations which fit that experience. Analysis proceeds by analogy; the “analyst” and the “actor” may be identical, or closely linked by a large number of common referents. The substance of analysis may be highly technical, involving metallurgy, chemistry, or engineering. But the boundaries and content of the problem will be relatively determinate, and it will often be possible to “compute” a solution in advance with a high degree of reliability.

The extreme opposite of computational analysis is “analysis by intuition.” Here someone decides what is significant in a situation, chooses tools or other means of intervention, and estimates outcomes without conscious measurement or reasoning. Certain individuals demonstrate great effectiveness in making intuitive judgments in their specialized fields of activity, and there is something to be said in favor of this approach. In situations when there is little or no reliable information and no clear knowledge of the causal factors it is almost all that is available. Many successful managers and entrepreneurs combine “intuition” with the results of more explicit analysis as they make necessary decisions in novel and uncertain circumstances. The tests of their success are always retrospective.

The intuitivists may make and implement the soundest of judgments. But the analysis is not explicit and the process of judgment cannot be explained.

Those who would design action systems, or arrangements to accomplish some specified objective, generally seek to minimize their dependence on artistic approaches to analysis and decisions. The first aim of design is to limit as much as possible the likelihood of error. Another is to minimize waste, especially if large quantities of scarce resources are involved. The ideal instrument of these aims is effective, explicit, systematic analysis, prior to action insofar as possible and also as it proceeds. The root property of such analysis is reliable and relevant description and prediction.

The availability of such analysis in the field of rural development is limited. Knowledge of causal relations affecting the prospects for rural development is modest. And the major decisions and decision-making
arrangements for setting goals and choosing means of rural development are political.

The essence of politics is to make decisions about goals and means of action which for one reason or another cannot be arrived at through determinate analysis. In setting some goal within a society or community, there is often no way to arrive at the "right" answer except by stipulation. The problem is to find an answer—both acceptable and potentially workable. Such a choice frequently involves the accommodation of different interests. The Bank report, for example, notes that different global goals will have to be reconciled in its own program—the goals of expanding food supplies and alleviating rural poverty. If these objectives are potentially compatible they are not identical, and in some cases they are bound to conflict. It is not possible to design programs and projects to benefit only the rural poor. At least half the direct beneficiaries of a group of twenty-five of the Bank's 1974 projects fall into the $50 per capita annual income group. A sizable number of small farmers above the absolute poverty level is also involved. Empirical circumstances, and political realities as well, preclude the goal of benefiting the rural poor to the exclusion of all else.

The Bank paper acknowledges the other commonplace impediment to determinate design: "...the Bank's knowledge and experience of how best to help the rural poor raise their productivity and improve the quality of their lives is limited." This awareness leads to two strategic recommendations: projects should be flexible so they can be adapted on the basis of experience, and evaluation systems should be developed for control and to produce learning that can enlarge analysis and design capacities.

Throughout the 1975-79 program period, the Bank will engage in complex and sometimes subtle political activity: promoting and nurturing projects, trying to protect and serve the aims of its sector policy in the face of pressure and resistance from borrowers, and striving to encourage responsible implementation. In making its own decisions and in participating with borrowers in shared decisions, the Bank will proceed through a complex interplay of systematic analysis and the less directed processes of entrepreneurship, bargaining, and searches for common grounds with diverse interests in various countries.

In the Bank, economic analysis will play a key role in decisions. Projects will be subjected to the type of analysis discussed in the Price Gittinger paper. Other economic criteria will be brought to bear. Presumably the Bank will continue to maintain a distinctive adherence to the criteria of careful, as-rational-as-possible action. Yet, as Gittinger notes, whenever projects are designed to serve multiple objectives, they are less susceptible to economic evaluation. Many rural development
projects are of this nature. And the primary function of systematic analysis will be parametric. It will set the boundaries and conditions of "go/no go" decisions; economics will be the source of important constraints and other criteria for decisions about project implementation. For the Bank, however, the ability to make decisions on the basis of systematic analysis is bound to be less than in some other fields of its endeavors. In rural development efforts aimed at the poorest of the poor, many factors other than economics are important to constructive change. Some of them, e.g., political factors, will involve the interplay of power and influence. Others, particularly the crucial factor of incentives, will often have to be addressed pragmatically, or at best semi-systematically.

The U.S. Agency for International Development (AID) also has a prime commitment to attack the problems of the rural poor. It operates under a different configuration of decisional criteria and constraints than the World Bank—more flexible in some ways, less in others. Perhaps even more than in the Bank, the movement from general policy toward specific actions in AID is neither linear nor entirely coherent. There is a continuing interplay of "rational" strategizing, programming, and management with the thrusts of entrepreneurship and bargaining, within a complex and not always explicit set of political boundaries.

Analysis in the Service of Effective Action

In the World Bank, AID, and other agencies engaged in promoting and supporting such aims as rural development, there are the dual tasks of promoting desired action on one hand and of bounding it within a guiding rationale on the other. Systematic and semi-systematic (sometimes pseudo-systematic) analyses serve as important instruments in this complex domain of action.

There is stress as well as interdependence between those who specialize in analysis, particularly the formalized kinds that affect postures toward and decisions about programs and projects, and those whose primary concerns are action and results. Analysis and action are often too much separated. As the World Bank notes of its own experience (which is by no means unique), "there are few links between the preparation and implementation phase (of projects) and... 'project managers' are appointed too late. Despite the difficulties, it would help if 'project managers' were appointed fairly early in the preparation stage, so that they could be involved in designing the projects they are to manage... it might improve the design of projects and the quality of management."

"Design," and the analysis involved in it, frequently ignores or too lightly treats factors that prove to be sources of great difficulty and frustration for those who must obtain results. Witness the effects of a land tenure system on the working of a rural credit program, or the impact
of a given social structure on the ability to achieve community level cooperation in an irrigation scheme. Designers/analysts may also stress considerations that, in the views of the implementers, are inappropriate, e.g., setting suboptimizing and goal-displacing time-and-quantity targets or emphasizing physical facilities at the expense of other products. Finally, analysis, in seeking to build knowledge, uncovers error and thus engenders opposition by those who might be found to have erred.

If analysis and action are often too much separated, we must not overlook the fact that important distinctions must always be made between them. Analysis, particularly specialized forms of *a priori* analysis, is only one of the ingredients of effectiveness. Management is of at least equal importance. And if fortuity often plays a key part in outcomes, one measure of good management is the exploitation of fortuity.

In programs and projects in the field of rural development, major elements of the framework of action are set by analysis that precedes a decision to act. Frequent use of the phrase "project implementation" implies that the tasks of those who manage and execute are to "carry out the plan." On paper, at least, and in the formal actions of development organizations, inherent and ubiquitous conflict between plans and actions tends to be resolved in favor of the plans. There are powerful reasons for this, reasons centered in the imperatives of control and rationality. When the action gets too far out of line with the plan, a major reassessment of the situation occurs. When, as more often happens, action proceeds along lines that are fuzzily, stressfully, but relatively substantially related to the plan, there is a continuing interplay between the field and headquarters, marked by reports, negotiations, explanations, reviews, anxiety, and persistent efforts to measure what is going on and to impose more control. Much of the necessary accommodation between original intents and ongoing actualities occurs in the "natural system" side of the organization or organizations involved, and tends to be papered over in one way or another.

This fractious interplay between the planners/controllers/assessors on one hand, and the executors on the other, is inevitable and even desirable. How desirable will depend upon the general soundness of the initial conception and the integrity, competence, and aims of those involved. This continuing interplay is an essential part of the process for adjusting aims and efforts over time. Through this process political leverage may be mobilized against faltering acceptance or support for a project goal. And errors and inadequacies of *a priori* analysis are readdressed. Experience, and some of the observations in the following statements, suggest that some of the most common of those errors and inadequacies are:

1. **Faulty definitions of the problem to be attacked.** Analysis under-
lying the project designs and other interventions in the service of development is sometimes based on a misunderstanding of the nature of a “problem.” In other cases, analysis is perverted in one or both of two ways: by an urgent need for a "solution" (i.e., for action) or by a mode unsuited to the situation.

A “problem” is not a set of empirical conditions. A well-defined problem is, first of all, a judgment of a disparity between some empirical conditions and a preferable state of affairs. Every problem has a normative element. It also involves a set of facts—not only about the sheer existence of something undesirable, but also information about “how the situation works.” In other words, a problem should include statements about causal factors that (a) explain why the problem exists and (b) indicate the dynamics and constraints in the situation that will affect the results of an intervention. Such information is the basis for identifying and assessing alternative courses of action.

This need for explanation tends to be swept aside by a more compelling need for action, or summarily met by the a priori selection of a particular technology as a stipulated solution. In the field of military intelligence there is a saying about demands for information: “If you want it bad, you’re going to get it bad.” In the field of rural development it is sometimes said: “If they send a livestock man, you’re going to get a livestock project.”

It is easy to undervalue the talents of those who go on missions to make surveys and write up the analyses that underlie projects. It remains too true that the selection of technologists as analysts has substantial influence on the way a problem is “defined.” Technology-centered pre-project analysis tends to neglect causal features of the project environment that lie outside the fields of conventional technical expertise. Failures to analyze important properties of the task environments of action are not uncommon. Some of the reasons are suggested in Professor Glenn Johnson’s discussion of “sector analysis.” Some ways of dealing pragmatically with this analysis problem are indicated by Princeton Lyman.

How organizational and institutional factors in a project or program may be conceptualized is discussed by Richard Blue.

2. Analytical scholasticism. This is a form of “suboptimization” found in specialized analysis units of organizations that keep design development activities. Rural development analysis is not exempt from this pathology. Price Gittinger’s discussion of a project analysis includes some illustrations of the tendency to push the methods and techniques of formal analysis beyond appropriate levels of refinement.

Whenever analysis is rooted in a field of technological specialization, the experts will seek to advance the frontiers of their technique. This propensity is an inherent feature of any specialized field of knowledge.
in which status and other rewards are conferred by one’s professional peers. Even in the most elaborated fields of study, knowledge is imperfect. When a high value of such knowledge is institutionalized, there are strong incentives to “advance the state of the art.” There is much good in this, but there is also considerable potential for misallocating resources and for losing sight of larger purposes, namely explaining how things work.

One finds examples of this tendency toward scholasticism in economic analysis in some “systems approaches” and in some of the so-called management decision-making techniques incorporated in analyses and designs.

3. Ignoring organizational factors. Much analysis is directed toward the design of “action systems” in which one or more organizations are to be important instruments. Agricultural sector analyses make assumptions about the delivery of credit and technology, the functioning of markets, and the need for infrastructure such as transportation and storage. Yet the whole thrust of analysis is likely to turn on economic premises, posited production functions, and established technological effects (supplemented in some cases by recommendations about cooperatives, etc.) quite uninformed by discerning knowledge of their soundness.

In other instances, unvalidated assumptions are made about the need for certain kinds of public sector organizational infrastructure or about the workability of organizational arrangements modeled on alien experience. Not much of the sizable stock of knowledge about organization theory is systematically incorporated in analyses, even when the eventual outcome of an effort will be much affected by organizational and institutional factors.

Somewhat similarly, it is often acknowledged in an analysis that “management” will be important to the effectiveness of a project. Yet, such statements are seldom carried beyond conventional and often obsolete assumptions about training and the organization of management functions.

4. Inadequate organization of the design processes. Analysis as part of the basis for action is performed or directed by the organizations that design strategies, programs, and projects. Some of the common problems of using analysis as an effective tool of action are really problems of the larger organization—its structure and its procedures. National and international (or multi-lateral) donor organizations are often exquisitely complex. Cogent and useful generalizations about their limitations are not easy, although ignorant criticism is common.

In these organizations there is often an excessive separation of analysis and implementation. A linear progression from a preproject analysis to a post-analysis stage which consists of implementation is usually assumed.
As the World Bank paper and following statements indicate, the implementation of projects in such fields as rural development cries out for flexibility. Successive approximations rather than synoptic programming is appropriate. If so, ongoing analysis amounting to much more than trouble-shooting should be incorporated in projects—only in part as a direct cost, because one objective of such analysis should be the enlargement of analysis capabilities. Exposing the analysis specialists to the realities of implementation can help serve that aim.

"Timing," or the temporal pace of action, is also a problem in donor organizations. As Princeton Lyman notes from the viewpoint of a decision-maker, at some point analysis must stop and action begin. There will never be a completely harmonious orchestration of the analysts and the decision-makers. But there must be more ill-conceived projects entered into in haste than good project opportunities missed because of time spent in study.

Skewed and ad hoc approaches to analysis are another problem, consequences of the ways in which personnel—especially external personnel—are chosen for analysis assignments. Design organizations often do not cover all the relevant bases in the selection of technical experts to analyze some problem as a basis for action. This will be understandable to anyone who has tried to use social scientists in multidisciplinary analysis teams. Yet the requirements of effective problem delineation can only be ignored at the risk of future difficulties. There are large needs for better strategies of identifying and using analysis personnel—in-house and other.

If these are some of the problems, the following materials do not offer solutions—they provide perspective. There will never be a definitive statement of the most proper and promising approaches to the analysis of rural development problems. The need is for incremental gains in effectiveness. Much of that need will continue to be met through astute experts acting in relatively pragmatic ways. If they find these statements of some value as sources of enlarged awareness, we shall consider ourselves justified.

NOTES

2—Ibid., pp. 11-12. The Nairobi speech is McNamara's address of September 24, 1973.
3—Ibid., pp. 62-3.
4—Ibid., p. 74.
5—Ibid., p. 75.
Sector Analysis: Task Environment
Analysis at the Sector Level

The General Systems-Science Simulation Approach (GSSA) is a problem-oriented model which was developed in an eclectic manner, borrowing from various disciplines, techniques and subject matters, particularly mathematics and systems analysis. The GSSA model, in its basic form, can be transferred from problem to problem with the parameters and combinations of components changing to fit the relevant areas of the specific problem under analysis. GSSA is amenable for use in analysis at all levels from international to subsector.

The Problem-Solving Approach

JOHNSON: I am concerned about an approach more fundamental than sector analysis, namely, the General Systems-Science Simulation. The focus is on practical problems. The simulation can be used at the sector, subsector, national, and international levels. How does this method of studying practical problems help in institution-building efforts? We could look at institution building at any level of analysis, from the point of view of a discipline (economics, political science, sociology), or from the point of view of a particular subject matter (leadership, task environment). There are few purely institution-building problems faced by decision-makers, although a large number of problems involve institution building. Therefore, I prefer to look at practical problems.

The problem-solving approach involves a decision-making unit and a situation in which there is a possibility of producing something better. This situation has several crucial dimensions. First, there is the notion that something is happening over time and that one activity will have ramifications for future activities. Problem-solving involves human, technological, and institutional changes. The object is to reach a prescription for the right course of action for solving a particular problem. A dimension often ignored is that problem-solving has normative and positive characteristics.

I have identified six steps in problem-solving (see Figure 1). Two-directional arrows are placed from each step to the normative and positive indicating that a problem cannot be defined except on the basis of both normative and positive information. Decision-making is both normative and positive in that we try to find the course of action which
maximizes or minimizes something which may be positive or normative. These two-directional arrows indicate that after some definition, observation, or decision has been made, there will always be a feedback leading to the possibility of problem redefinition.

Problem definition. If we are going to work on a particular problem, we must envision the real world in which that problem exists.

The domain of our model is the domain of the problem. There is a different domain for every problem and a different model to go with each domain.

It is difficult to generalize about practical problems. A study was made of 1,000 midwestern farmers. It was initially thought there would be economic, sociological, technical, and institutional problems. It was found that they were subject areas, rather than day-to-day problems. The farmers collected information by subjects, but they used the information in different combinations to solve their problems. An attempt was made to classify the farmers' problems so courses could be organized, but we ran into difficulty because the problems changed frequently.

Information. To build flexibility into problem-solving, a multidisciplinary eclecticism in building models of the problem domain is needed. Information from the various disciplines relevant to the particular problem is obtained and put together into a composite picture of the world in which this problem exists. Philosophical eclecticism, that is, drawing from both the normative and positive types of approach, is also required.
Eclecticism is the key word in a problem-solving approach; within disciplines, building models also calls for an eclecticism with respect to kinds and types of information. An econometrician who will look only at time series data is shutting himself off from many necessary sources of information. When modeling one of these domains, there is so little information that it is necessary to use whatever is available.

The ultimate objective of the whole modeling process is to discover the best course of action. I do not believe the problem can be defined ahead of time in terms of departures from some predefined optimum that a discipline (e.g., economics) will provide. Economists are inclined to say that an optimum can be defined, and a problem exists if society is not adjusting to that optimum. If a dozen different kinds of technical research can be supported, an economist suggests investment until the marginal return on the last dollar on research is equal to a dollar. This means nothing until you have arranged all of those kinds of research in order of their decreasing net advantage. When enough is known about them to put them in that order, an optimum can be found. Economic theory which assumes that the work on establishing the preconditions is already done is not very useful.

A problem definition cannot always be a variance from a predefined optimum, but the conditions can be established for determining an optimum by investigating the process. It consists of finding a problem, making observations, redefining it, making more observations, analyzing, etc. There are preconditions for maximization which are established by participating in the process. These involve trying to obtain more than one “good” and avoiding more than one “bad.” To choose the best course of action, a common denominator must be found among these “goods” and “bads.” It cannot be just money or utility. If it is utility, there are many dimensions, usually involving some normative aspect which cannot be understood ahead of time.

To find a common denominator, the choice must be interpersonally valid. Most practical problems involved in changing institutions have solutions which will result in harming some to benefit others. If this were not the case, the market could handle it. Governments become involved when there is a possibility of dissension about a solution. The ownership of education cannot be redistributed in a society through changing its educational institutions without hurting the presently educated elite. Not only will you give them more competition, but you will also have to tax them to pay for the uneducated.

**Decision.** Finally, there must be an agreed-upon decision, a sort of dialectic process. I use terms like “interaction” between modelers and decision-makers in an “adaptive process” where decision-makers and
investigators adapt their thinking to what is learned. What values are important? What is some of the important positive information?

“Iteration” is a key word. Model once, interact, model again, and interact some more in order to eventually find a common denominator or to learn enough to make a decision. Feedback loops are important because that is where the interaction and iteration are obtained. This is an adaptive process whereby decision-makers and researchers adapt their thinking to each other's needs.

*The General Systems-Science Simulation Approach to Problem-Solving*

The problem-solving approach described above is used in GSSA; however, the distinctive word in this particular approach is “simulation.” The two modifying adjectives are “general” and “systems-science.” The first means that the approach will be general with respect to disciplines, theories, and techniques. The kinds of models we are talking about are not confined to economics nor to one technique in economics such as input-output models. The second adjective indicates that we are looking at the domain or the system in which a problem will exist. The systems scientist has something to contribute in building components of the problem based on different disciplines and different techniques.

![FIGURE 3 The GSSA Approach](image)

*The general problem-solving approach is used in the first step in the development of the theoretical model. It takes time to define a problem properly. That part of the real world in which the problem is located must be understood in its institutional, technological, and human complexity. The domain to be modeled has both time and space dimensions and theoretical concepts drawn from many disciplines.*

*At some stage in the accumulation of knowledge, it is possible to begin to conceptualize a theoretical model of that part of the real world in which the problem exists. This theoretical model will be complex and indefinite. Such problem-solving models are generally multidisciplinary, and they must take normative as well as positive variables into account. These variables are referred to as “performance variables.”*
Normative knowledge should not be made a matter of assumption but kept open as a possibility. Normativists condition their studies by assuming certain things are good and others are bad without investigation. They are influenced enough by positivism to think that there is nothing to be learned in the investigation of values. The pragmatist, on the other hand, says that as soon as you put values beyond question, you open the road to despotism.

A single discipline approach is too limiting for studying the domains of a problem because each discipline has its own inadequacies. Economics, for instance, proceeds directly to maximization. It does not deal with the establishment of preconditions for maximization; that is, it neglects the processes of changing technology, institutions, and people. Although economics deals with nonmonetary as well as monetary values, economists are often constrained in handling values by positivistic philosophies.

Other institution-oriented disciplines, such as political science and sociology, are also inadequate for dealing with problems involving institutional change or institution building. These disciplines do not have well-established theories regarding the origin and processes of institutional change. This, plus the lack of descriptive information, produces a wariness of quantitative work. Unfortunately, there is also a vagueness surrounding how to deal with values in a problem-solving context.

Once conceptualized, the model needs to be quantified. The first step in this process is to express the conceptual model mathematically. The mathematical expression will be complex—too complex for a computer. This ordinarily involves cooperative efforts among highly competent "disciplinarians." After such a model is developed and checked out for internal consistency and correspondence with the problematic situation, it must be further simplified so that it can be handled with the computational facilities available. If a computer is to be used, simplification involves creating a computer model capable of approximating the ideal conceptualizations previously expressed mathematically. The systems analyst is a key person; it is he who translates the complex mathematical expression for the computer.

*Nigerian and Korean Simulation Studies*

An example of this type of sectoral analysis is the work of the Consortium for the Study of Nigerian Rural Development and the Korean Agriculture System Simulation (KASS). The Nigerian simulation model was built as a disciplinary or subject matter study. The purpose in building this model was to develop the approach. However, we had to begin with a discipline-based approach to reduce the cost of making sector studies. This approach was not focused on problems. The model was
constructed with a building block approach so that the subject matter components could be taken apart and recombined when the Korean study was begun. This project was not computerized; the computational work was done manually. We made projects at three points in time for three policy alternatives. The cost was five times as much as the computerized study.

The main problems encountered involved the technology of Nigerian agriculture, education, and institutions. The problem which made the greatest impression was formally brought to our attention by a government official. He said the recommendation of the report could not be implemented until a strong Ministry of Agriculture was established. The Nigerian Constitution left agriculture up to the regional governments. The ministry that existed was created by the military dictatorship and was of questionable legitimacy.

We tried to take these factors into consideration and to study the consequences of establishing a strong federal Ministry of Agriculture. We had omitted this institutional component, part of the overall problem of modernization of Nigerian agriculture; it was not something separate and apart.

Because of new factors in the Korean situation, the first step was deciding how to reconstitute the components of the Nigerian model and to build some new components. We needed a descriptive picture of the Korean economy and the problems important there. Twenty people were placed on short-term assignments to study specific subject areas under the direction of our systems scientist. The subjects included areas we were quite sure were relevant and other areas that required some study before relevance could be determined. We used the twenty studies as a descriptive input in building the Korean model.

QUESTION: Were the subject matters in Nigeria and those in Korea very different?

JOHNSON: They were quite different, but there were many components similar in structure. For instance, a demographic component to model human population is not that much different from the demographic component to model trees in Nigeria. Trees are planted; people are born. Many of these components are mathematically similar, and once you learn how to handle the basic processes you can transfer them. The component process is transferable, but the total configuration of Korea looks much different than that found in Nigeria.

QUESTION: If your systems analyst knows what kind of information he is going to need so that he can tell the researcher, he seems to be a very crucial person. What is his background?

JOHNSON: In the Korean study, he had an agricultural economics
background in addition to electrical engineering and systems analysis. He is a crucial person. That brings up two important elements in systems science simulation: (1) a training program for personnel and (2) a software library to make the components retrievable so that we can draw them out repeatedly instead of having to re-create them. The latter is too expensive. The necessary personnel are not the project leaders but the ones who can go through the steps to move the model from theory to a mathematical expression to a computer program. The move from mathematics to the computer is the crucial one.

QUESTION: What guidelines do you have to determine the relevance of the data you gather?

JOHNSON: Information is gathered to feed the model. First, we had to get a description of Korea so that we could know about the domain to be modeled. We had no model for Korea; we had a pile of components. We brought in subject matter specialists to get some preliminary observations and to see what agricultural problems existed. Of course these problems didn't fit into any classification. But we eventually arrived at three broad policy alternatives in which the Koreans were interested. We decided to build a model iteratively and interactively. The Koreans have long since gone beyond the model that our report is based on. They are still adding components using the iteration and interaction process.

One of the important things from the standpoint of institution building is some information turned up by one of the subject matter groups. It seems that the personnel who worked in agriculture at the local level reported to the Ministry of Home Affairs to execute programs for the Ministry of Agriculture, including the collection of data on the agricultural system. This turns out to be an important institutional flaw in the administration of programs in the Ministry of Agriculture. It is an aspect of almost any problem to which you address yourself in Korean agriculture—poor data goes back to this administrative flaw. If you address yourself to why water development schemes do not work as conceived in the Ministry of Agriculture, you can see that the Ministry of Home Affairs has been playing regional politics.

I am convinced that we could put this on the computer as a factor for simulation, that is, to the extent we know something about it. It may not be worth the cost at this time. It may be cheaper to do it manually with professors and specialists. We have not constructed such a model for the power play between two ministers.

QUESTION: Did you not interfere because you were acting as conditional normativists?
JOHNSON: Conditional normativism means that you assume the values ahead of time and apply them to what you observe. I do not think we acted as conditional normativists. Until the professor discovered positivistically that the institutional situation existed, we did not think about assigning values to eliminating the situation or the dysfunction of its continuing.

How one gets new knowledge of the consequences of institutional imperatives is a difficult world in which to operate. If I ask what the factors are that can give success to a project like Comilla, some would respond that it was one person, others something else. To test that, I need to duplicate the Comilla project, and that is most difficult.

COMMENT: It is very difficult to do anything approaching experimental design when trying to test variance in institutional inputs.

JOHNSON: You are raising a very fundamental question. It has to do with verifying and validating design models; it has to do with originality and creativity. If you create a design for an institution that has never existed before, it is something like creating a design for a vehicle to go to the moon. Those designs were tested in simulation. The same sort of thing is involved here. If a model or recommendation is original or creative, it is not verifiable in the sense that you can just look to another experience exactly like it.

Testing the Model

Is the design logical in view of available theories; that is, is it consistent? If the design or the concepts on which the design is based contradict something else you believe is true, you have to reject one or the other. As long as there is logical inconsistency between the perceived body of knowledge and the new concept on which the design is based, there is a question.

To the extent that you can get some experiences as a basis for a test of the concept with reality, you can carry out the test of consistency with experience. On the basis of these experiences, you form a new concept and compare it with the concept you are testing. If they agree, you can say that it is possible that this concept agrees with reality because it agrees with another concept based on experience.

There is also the workability test—the test of the pragmatist. Even if you examine the concept from the point of view of using it in simulation while not actually using it, you may be able to see that it does not work, and you can return to the drawing board. There is the question of clarity in communication. If the question is clear and the design is clear enough that you can explain it to someone who has access to the same information, then it passes.
Even if the design or concept passes all of these tests, it is still only tentative. The final test is in the operation. I know of no other way of testing this before it is put into operation. I do know that most procedures advocated by statisticians are far too specialized. They are based for the most part on methodologies implied by positivism, and they have very little to do with verifying or validating the normative information that goes into the design.

QUESTION: I am fascinated by your building into your model factors such as institutions. How do you assign values to these normative factors? Take for example the Comilla experience. If you can keep the local government occupied with enough activities, they will leave the co-ops alone long enough to enable them to survive. How does something like that show up in the model?

JOHNSON: This type of factor was not quantified in the Korean model; it was left to a manned component. At this point, political science has a long way to go toward describing the real effect on administration of letting a man be politically responsible to one ministry while executing a program for another. We need to know what the relationships and what some of the parameters are. We could quantify it, but I question whether it would be worth it now.

COMMENT: There are people working on developing observations about decision-making on development matters and relating this to the degree of power and authority political leaders have. There are others working on political models. I am wondering whether we are yet at the point where we can begin to build our concepts of authority and power into some kind of systematized framework.

JOHNSON: I think that one of the opportunities and one of the needs with respect to this work is to exploit complementarities between the theories and techniques in the different disciplines in these problem-solving contexts. There is a lot of work to be done. It is surprising that, given the inadequacies, you can put together even our preliminary and crude models.

QUESTION: How does the institution-building model fit into what you have been talking about? You have been concerned with identifying the important variables in a specific situation and assigning a value to them. Does the institution-building model identify the important variables? Would you describe the process by which you began to specify the important variables? Since you are after a problem-oriented solution, it would seem that you would be concerned with some variables that were amenable to change. By what process did you determine these in both the Nigerian and Korean cases?
JOHNSON: These were basically two different problems. In the Nigerian case, there was a question of legitimacy of the ministry; whereas the Korean ministry had complete legitimacy, but there was a conflict between two ministries. There may be a general institution-building model capable of handling this analysis in all parts of the world, but my experience is that the model has to be made of blocks and components. These can be moved to different situations, but the configurations cannot. We have a long way to go before we know enough to develop these components, especially in political and social areas. Until then, we are going to depend on manned components in these models.

Clarification of the term "Model"

COMMENT: It would be valuable to get some clarification of the term "model." We have used several terms interchangeably: taxonomy, heuristic sensitizing scheme, institution-building framework. In one presentation, we seemed to be leaning toward the "sensitizing schema" interpretation of "model," and it seems that you are talking about something highly specific regarding observations.

COMMENT: I differentiate between model as a conceptualization and model as a mathematical expression. Before beginning to build math models, we must attempt to determine parameters for concepts which make up these models. One of the ways to form institution-building concepts into a simulation model is to break down the payout function far enough to begin to accommodate the outputs of institutions.

You have to accept that institutions make up a system, an infrastructure. In order to have an impact, an institution will have to produce a product, a service, information, or new knowledge. It is then conceivable that we could delineate simulation models to the point that we could begin to specify the particular output of given institutions into a highly developed payout function. This would begin to enable us to relate the consequences of alternative institutional actions to sector-wide consequences.

As to a simulation of the institution itself, I do not know whether it is possible to put mathematical indices to the set of concepts which I call a systems model of an institution. Economists, for example, do not have the tools to do it by themselves.

JOHNSON: I am thinking of a model as a conceptual representation of reality. There is relevant theoretical and descriptive work in the disciplines, as well as in subject matter areas, which is extremely useful in modeling the domain of some particular problem. The type of model I am building is made up of components covering all relevant areas in the domain of a particular problem. These components start out as theore-
tical models made up of statements regarding the relevant concepts in the area. It is translated into mathematics and then into an expression which the computer can handle.

Subject areas such as institution building and the disciplines of political science and sociology could make valuable contributions if they could combine the contributions of the relevant disciplines for handling the problems in their areas and if they would demand the disciplinary improvements necessary in order to feed these components into the systems simulation models.

COMMENT: Most of the required work needs to be done on the disciplinary side; however, systems analysis and simulation can be helpful in giving some direction to the researchers. Based on its view of the institution as a component of a larger system, it needs to help identify the kinds of parameters in order to get back to the individual institution in a micro perspective.

JOHNSON: I agree that we need more interaction between the disciplinarians and the applied researchers. We have wasted time on making comparisons among very sophisticated techniques, linear programming with input-output models with simultaneous equation models, when we need to spend our time learning how to integrate modeling methods and how to interface with models from the biological and other physical sciences.

QUESTION: This question has to do with trying to specify what “components” are. There is a difference between a model that specifies certain components and one that shows that there is a relationship between relative prices and adoption of a technology. If you have a model that shows relationships, you are faced with a question on the rates of transformation. When you transfer a rate for Nigeria with one kind of land tenure system and one kind of family relationship to Korea, you may have trouble unless you set up new components altogether. To what extent, in transferring rates from one context to another, must you assume that the influences are the same?

JOHNSON: You must try to discover them. Some things cannot be transferred from one country to another; the parameters are different. You have to accept that in some cases the parameters and rates are going to change. When they do, you adjust your components.

GSSA vs. Other Sectoral Analysis

QUESTION: Could you differentiate between sector analysis as it is now used in programming and project development and sector analysis as you would use it in your simulation? Are there differences in terms of content, technique, and comprehensiveness? If so, what are they?
JOHNSON: The kind I am talking about is more eclectic than most. Some sector analyses are done in terms of systems of simultaneous equations based primarily on time series data like that developed in the Coles Commission at the University of Chicago. Others involve input-output tables with linear programs. In addition, in these models the institutional and technical change factors are likely to be perfunctory. You are likely to have some dummy variables to take into account technical change, or you will have a trend variable. You will interpret the coefficient with respect to time and technical change, or you may have some other variable that will measure increases in human capital.

The type of sector analysis I am advocating here is one in which any one of these more specialized approaches would not be excluded. This type deals more explicitly with the variables. It is more difficult in these models to get enough disciplinary help from the technical scientists to model the processes of institutional change. This, however, is the direction I think we have to go.

QUESTION: To what extent can GSSA influence what we can learn about the implicit changes needed to carry the decision actions that we arrive at through GSSA?

JOHNSON: It depends on what is known—how good the data base is. The variables in systems analysis are no better defined than the quality of their definition in institution building, economics, or any other discipline or subject matter.

Problems with GSSA Data Base and Implementation

COMMENT: This brings up two problems. One involves the data base used in GSSA. How good can your data be, particularly in countries with disparate agricultural conditions and only estimates of agricultural capacity and demographic information? The second problem involves developing a capacity to implement or, in another sense, developing the capacity to sense accurately what the priorities are at the local level. If the capacity to translate the recommendations of the plan from the sector analysis is altered, the parameters of time and scope are reduced because you do not have the capacity to implement the recommendations. The result is suboptimization.

JOHNSON: The data base is always a problem. The problem is no greater for a set of computations of a given degree of complexity whether you computerize or not. Poor data is not avoided by not systematizing your computations. You do not avoid poor data on agricultural technology when a committee of agricultural, technical experts sits down and forms a judgment as to what should be done. They still do not have the data. You may know more about your shortcomings
when an equation with parameters is written. A related issue is the complexity of the data; there is no need to make models more complex just because you are computerizing. There is some temptation here because it is so easy to make the computations, but there is nothing inherent in computerization that makes it necessary to have more complex data.

COMMENT: If the outcome of the sector analysis is to benefit the many as opposed to the few, it will be necessary to pay attention to the source from which you gather your data. It seems that your data is drawn mainly from government people. This is, of course, the legitimate avenue; no one is suggesting that the elected government officials should be sidestepped. But there is cause for concern if only the elite, the university professors, the bureaucracy, are contacted. There must be some means of obtaining information from the people at the grass-roots level to ensure the equity of the sectoral analysis plan.

JOHNSON: Your point is well taken, and it is being acknowledged in some areas where the country has university professors who are doing grass-roots research. There is no substitute for systematic work in collecting good data at the farm level.

The general approach I have been talking about is as applicable at the individual farm level as at the national level. The success of farm management workers in the U.S. for the past forty to fifty years comes from going into the farmer's situation, sitting down, and projecting to the family the consequences of alternative ways of reorganizing the farm or, in the farm credit administration, presenting alternative ways of getting more capital for necessary development. This has been an efficient procedure.

To return to your second point about GSSA—the capacity to implement a plan. This can be built in as a constraint in the model, either formally or informally. An over estimation of the capacity to implement is the most common failing of governments in the less-developed world. With a handful of trained economists and 7.5 percent of the population illiterate, the bureaucrats in these areas will have ideas about operating the detailed minutiae of an economy that we, with highly educated populations, would not dare try. We would not think that we would have the capacity to supervise individual production and consumption decisions in that detail from government offices.

This problem is with the desires of governments who want to use socialist techniques to redistribute the ownership rights or make other drastic changes in the system. You cannot find the administrative capacity to do some of the less involved duties of government. The administrative capacity presents needs to be used for establishing new technology
or institutions which are going to produce the structural capacity to make long-term changes in the society.

**QUESTION:** In your experience in Nigeria and Korea, have you observed that the recommendations of sectoral analysis plans have had an impact in programming and project development? These decisions tend to be political to a large degree and are often multi-purposed. Technical concerns are obviously important, but some less rational concerns are often determinative.

**JOHNSON:** The Nigerian Consortium paper and pencil projections which were published in the Consortium report were used along with the actual report as the basic document in the Nigerian agricultural planning project. We furnished six resource people. The Nigerian simulation model was used to make projections which were furnished to Permasac and the Agricultural Planning Office. A prospective agricultural planning document has been produced in Nigeria, and a significant portion of the document is based on our projections.

As for the actual implementation of programs and projects in the field, I am not close enough to know how much our report had to do with any changes. We recommended and worked out with the Nigerians the consortium report recommendations to change marketing based operations. They are being changed.

In addition, in Korea and Nigeria the model has been institutionalized as a planning tool. In Korea, I know that information is being fed back into the model to maintain it in the ongoing Korean agricultural development effort.
Project Analysis Methodology

The central design problem in World Bank projects is what to do about the kinds of institutional structures to effect changes with the capital transfer. Social and institutional development criteria are “impossible to define tightly enough to agree on what achievement represents.” Gittinger, therefore, concludes that projects should remain well-defined arrangements for transferring funds for specific development tasks which involve no political or social decisions about development. Social and political decisions are to be addressed at the broad program level before a project is set up.

Project analysis permits the choice of a high yielding investment and a determination of the contribution of a project to the social and economic objectives. Insistence that a project have efficiency as its central concern, despite recognition that institutions are a central design problem, is based on the necessity that projects pay for themselves.

GITTINGER: Until this point in the workshop, we have been discussing analysis in the context of agricultural development. It is necessary, however, to also look at the particular institutional structure of the narrower environment within which a project must operate. The projects with which I am familiar in the World Bank involve capital transfer. Hence, we have not been notably concerned about the social and political aspects of our projects. This is changing. The World Bank and other agencies concerned with agricultural development have been reexamining their priorities. We have increasingly come to realize the necessity of programs which can effectively reach smaller and lower income farmers.

Project Environment

It is clear that in rural development projects the more narrowly oriented technical and agricultural economists and project analysts are now in the same situation as the broader based institution-building and development persons. Capital transfer is still our only weapon to encourage the growth of agricultural income which benefits low income farmers. The problems we face in the transfer of capital are as much institutional as anything else. The central design problem in Bank projects is what to do about the institutional structures to effect change with the capital transfer. This institutional problem is to some extent hidden from technocrats who are primarily concerned with the financial aspect of capital
transfer. We tend to assume that we know all that is necessary for running institutions. It is becoming obvious that we do not.

This orientation to investment in projects for low income farmers creates other problems as well. We no longer have a set of clear-cut criteria in project design. Until now efficiency has been the overriding consideration. Concern for low income farmers creates the need for multiple objective project designs. It is not clear what the non-economic objectives might be; and, to further complicate matters, many of these objectives are not easily quantifiable and certainly not easily reduced to monetary terms.

We obviously do not have an ideal approach to project design. The World Bank is a rather empirical organization in the process of learning about rural development in part by financing rural development projects—a sort of sink-or-swim theory of project design. We are encouraging countries to produce projects for low income development and are financing such local experiments.

For the minimum package program in Ethiopia, one goal is to reduce financial and institutional overhead by setting up the simplest administrative structure that is viable in the area. The minimum package program is an off-shoot of the more comprehensive rural development program known as CADU, a program whose scope and intensity make it too expensive to replicate. One way to spread positive effects is to have CADU perform functions such as research, which may best be done on a national level. These minimum packages, such as extension, marketing, and credit services (basic elements of the CADU development program) are then distributed to local areas.

A minimum package area is typically 5,500 farms, laid out along five kilometers on both sides of a highway. This plan helps eliminate the problem of reaching people who live too far away from established transportation. As feeder roads are extended, new minimum package areas will be established. The goal is to have 80 percent of Ethiopian farmers covered by the minimum package program. As the program grows, from thirteen last year to twenty-eight this year to thirty-eight next year, it will become a nationwide project affecting small farmers. If successful, it will mean, for the first time in our experience, that we will have had a national impact in rural development—especially in reaching small farmers. Although CADU does not give services to large farmers, it recognizes that the first innovators will likely be the medium-sized farmers. Its efforts will then be increased to incorporate the smaller farmer.

QUESTION: Is there anything built into the project design to make sure that the larger farmers getting the benefits first will not upset the resource allocation and affect land tenure to the detriment of the small farmer?
COMMENT: The spread should happen rapidly enough that no great disturbance in the tenure program will occur.

There is also a regional development program to reach small farmers in Malawai. Here, a large geographic region is being utilized in cooperation with German bilateral aid operating in an adjacent development program. This is a comprehensive program, including schools and maternal child health care, and a project to introduce farmers to peanut and cotton production permitting them to intensify their holdings in an area of dense settlement. The problem is not financial, but rather organizing the institutions with an insufficient staff. Competition among projects for trained personnel inhibits the replicability of the project.

A third approach deals with the problem of an institution which, though adequately staffed, is geared toward large farmers. The Bank is choosing Mexico as the first place to work in this type of situation. The administration has reached the large farmers effectively. The government has now asked the Bank to help with a large project which will take these same administrative skills and focus on the small farmer. The administrative capability exists. The question is whether a new political commitment can take this effective administrative structure and implement it. The Bank has poured a lot into sector strategies and into the design of this particular project, but there are still major issues about institutional structures to be resolved.

A final approach to reaching small farmers has been the somewhat spontaneous settlement projects in the Amazon region. There the costs involved, not the administrative problems, have prevented projects from being replicated. The government is trying to provide the minimum institutional framework necessary without actively settling the farmers. The farmers have volunteered to clear their own land and establish their own holdings in an effort to keep the costs per farmer down. The costs are still high, however, because of transportation difficulties. This approach represents more of a catalytic than interventionist role for the donor.

The common issues in these experimental approaches to reach small farmers are important. One major problem concerns costs. There is a danger of getting so involved in providing social services that one forgets that production is the core of any successful agricultural development project. A lesson drawn from these projects is seen in the problems of replicability. It is possible that we may disperse our energies and resources only to come up with some costly unreproducible pilot projects. The problem for rural development projects is to design products that can be productive and to capture a share of this product so that overhead costs can be covered.

COMMENT: You are saying that the indiscriminate establishment of
an "institution" for each delivery system in a project increases the project's cost. In effect, your goal is to look for institutional shortcuts by finding the crucial elements in a project and scaling down the institutions so costs are minimized by reducing dependency. The problem is that the emphasis on production does not recognize that social service provisions will, in the long run, reduce costs by reducing dependency.

GITTINGER: We have to begin with the assumption that our basic objective in rural development is to reach large numbers of small farmers. To do this, projects have to be replicated; they should grow into programs or series of projects. Replication requires considerable financing, as our examples have shown. Therefore, a project should not start out with heavy subsidization. Further, it is necessary to introduce in the design a fiscal mechanism to increase the project's ability to be replicated. We have to make certain that the project, or the government, has some means of capturing some of the increase which occurs in farmers' incomes as a result of the project.

High interest rates in a loan project may ensure that the project reaches small farmers. Cheap credit eliminates small farmers. If the project gives credit lower than the market, the big farmers get it because they wield political power. They then invest it in the urban sector for high returns. High interest rates, on the other hand, draw resources into the credit system making it possible for the credit system to pay for itself. This enables the system to grow and reach an increasing number of farmers.

The problem between production and social services is one of balance within the project: not whether social services but how much. I would personally place the emphasis on efficiency over social services. The efficiency criterion holds that production must approach the optimum distribution—the highest value added for resources available.

Production can involve many different patterns. We do not really know very much about design nor do we have the data to determine optimum patterns of production, that is, those patterns giving us the highest value added for the resources available. I am concerned that excessive emphasis on production for home consumption could limit the margin of increments of farmer incomes which could be garnered to help support more projects.

COMMENT: The problem is, however, whether or not social changes, especially in terms of income distribution, should be built into the system so that the farmer will have the incentive to produce.

GITTINGER: It is not necessarily the case that low prices mean low profits. This problem of balance must be solved through decision-making processes. One might reduce production or marketing costs and increase
incentives to produce. The basic fact is, however, that if the project is involved in a consistent net transfer, you cannot have very many projects. Therefore, the institution must establish some means of capturing monies to pay for development needs—perhaps not always by taxes but by charging for a valued commodity (e.g., schools) and using the proceeds for development projects.

Project Evaluation

The considerable issues which exist about the evaluation of projects revolve around the objectives chosen for a project. If the objective changes from some efficiency to other, multiple objectives, the definition of a benefit changes. If efficiency is the criterion, the benefit is clearly wealth generated, and it does not matter whether large farmers, small farmers, or the government get the larger share of benefit. But if income distribution becomes one of the objectives, then wealth generated is insufficient to tell us which projects are most useful.

I would prefer to continue using efficiency measures because they can be defined clearly in economic terms. In subsequent decisions, you can decide about income distribution, employment and regional impact. One could choose from among the efficient projects those which have a good income distribution impact and then choose from among them the ones which can be implemented within the area being considered. I must admit that the weight of professional debate at the moment is going against this type of strategy.

There are three schools of thought about how we should be changing our analysis techniques to more nearly reflect the emerging objectives. The best known of these is a technique produced by a group headed by I.M.D. Little. This is an interesting system in several ways, the most interesting factor being its numéraire (unit of measurement for comparison): investable surplus held by government. It is an elaborate system and involves a serious problem of deriving prices. For example, all of their prices are order prices. Everything is priced in terms of what it could be imported or exported for. New prices must be established for everything because the so-called non-tradables, such as electricity or gravel, would have to be valued in terms of how much diesel fuel is necessary to run the machine that digs the gravel and the value of the machine itself. In the end, you work down to the labor factor and take the import value of the labor consumption. Despite its problems, this seems at the moment to be the most widely recognized system.

I prefer a system not exclusively based on the government sector (as in the Little numéraire) because it leaves room for more investment by small farmers. Unless you use this approach, consumption by farmers is considered a cost, not a benefit; it reduces the amount available for savings. This makes me uncomfortable because one of the objectives of
multiple objective projects is to increase farm consumption.

A second system which I suspect will tend to dominate the field (although it is not actually out yet) is that conceived by Herman Van der Tak, the chief project economist for the World Bank. The numeraire in the Van der Tak system is investable savings.

The third system is still in the formulation process under the auspices of UNIDO. It is a more elegant system than the other two, but it has not been applied as much and is more awkward to use. The primary authors are Steve Marklin of Harvard University and Das Gupta of London University. Their numeraire is consumption maximized over time. They consider questions of time preference and discounting, the other side of the coin from the Little investment criteria. Since they are maximizing it over time, they are very concerned about the investment problems.

According to Gittinger, the three systems are not that different. The researchers are in very close contact, and the differences in systems are as much theological as practical. A kind of amalgamation will no doubt occur. But since 98 percent of the projects for which these systems are actually produced will be Bank projects, Gittinger believes that the Van der Tak version will be very influential.

COMMENT: It is disturbing to hear the three major schools of project evaluation discussed and to realize that their total concentration is on production. Some variables simply have no numeraires: sense of common purpose, maximizing local leadership, personal development. There are variables in multiple objective projects to which economists cannot address themselves. There are other important insights from political scientists and sociologists. The question is how these different approaches can be joined in project design.

Gittinger: All of these schools tend to choose from among alternatives. The economist has a dozen possible ways to reach farmers, so he chooses under one system the alternative which gives the greatest amount of investable surplus for governments or under another system the greatest total value for savings. Each alternative institution is viewed by an economist as a different project.

Political and Social Implications

Following is a discussion of the extent to which projects should include political and social specifications. Much of the difference of opinion hinges on the definition of the scope of the project. Gittinger argues for a limited project scope. Others argue that projects have social and political implications important not only in the broader development process but also in the immediate production efficiency of a project. Consequently, these factors should be included in any project analysis.

Gittinger's frame of reference is that of a member of a lending institution. His assumption throughout is that capital transfer is one way to increase farmers' in-
QUESTION: Your suggestion about evaluating each alternative project for the monetary benefit to be derived implies a view of the development process in a limited and contained sort of way. Is not “process” a better word than “project” for your concern, since a project always has certain social and political as well as economic impacts which must be taken into consideration at different stages?

If we intervene with capital and technology suitable for the stage at which we are aiming, we may ignore a whole series of preliminary stages and spoil the total effect by too much mechanization and too much capital for the level of development. A kind of open-ended funding can take into account demands which are produced as the project evolves. It is then possible to discretely feed money into the project in terms of the criteria met as the project evolves. This approach contains more than the considerations usually captured by economic criteria, although they are critical.

GITTINGER: This calls for a close look at the value of projects. They first must be separated from broad programs entailing political and social decisions. Projects are not completely free from the decision-making process, but they should be as separate as possible. They should not be contingent upon a particular political action.

Loans do not fit logically into the type of activities of broad programs. A project is a rather specific tool in the hands of developers. It is a manageable unit with distinct boundaries of area, time, and scope. It takes on a particular circumscribed goal needing capital funding. Economists must direct themselves to contained activities; one cannot lend large sums of money based on social and institutional development criteria. It is almost impossible to define these criteria tightly enough to establish a basis for agreement on what constitutes achievement.

These value decisions must be made before the project is put into effect. Once the planners have made the political decisions about priorities, a series of projects should be established to handle the specific problems involved in dealing with them. Many of your comments have implied that the World Bank and other donor agencies become involved in the political process of host countries. I am adamantly against any political involvement which steps beyond the bounds of the established political process because this involvement leads to the destruction of any international organization’s activities.

COMMENT: Lending institutions cannot be exempted from the need
among development agencies to become aware of the political implications of their projects. This need cannot be ignored by refusing to deal with social or institutional factors because they do not fit into the production requirement of project design. In fact, broad social factors do have an effect on the efficiency criterion even from the point of view of a cost benefit analysis. Innovation—new seeds or fertilizers—maximizes production. But if a problem in local government blocks the dissemination of innovation, a bottleneck will exist that may double the dissemination time. Awareness of the impact of inefficient governments or of cooperatives will have production importance. Yet we label local government and institution building as political phenomena that should not be touched.

Recently in Nairobi, McNamara, giving a major policy speech for the World Bank, underlined the necessity of an increased concern for the small farmer in government policy. There is much political education that has to take place to move from McNamara’s pressure to actual change in the policies of underdeveloped country governments. Donor agencies do not have to deal directly with political issues. There are intermediate points at which the Bank might be in a position to pressure for greater political understanding or maturity on the part of the government leaders.

If the Bank is assuming multiple goals, it must be aware of and employ techniques to produce greater equity in its projects. The government might be pressured or educated to allocate an increasing amount of resources to the rural sector rather than to its usually urban political base. The degree to which the government can realize that these policies would make the rural sector more productive and make a fairer distribution of resources available to the government is the degree to which it can increase in political maturity. The extent to which the government puts more resources into viable local structures and gives rewards to those willing to work in the rural sector are some criteria which the Bank can monitor.

GITTINGER: We are getting ourselves into an either-or situation. I am increasingly of the opinion, and I think many economists agree, that the trade-off between income distribution and growth is not as sharp as we have traditionally thought. In terms of projects, if a project analyst says he has two projects, one of high yield/high rate of return type and the other with a high degree of income distribution but low yield, I would be inclined to tell him to work a bit harder. There are other alternatives.

Growth vs. Development Orientation
Let us suppose that the Bank, or any other donor agency, has a multiple objective orientation. This is somewhat like the desire to build a
house with community values in mind. If our project is the house, the housing project is equivalent to a program. Our objective is to build a community that meets many objectives.

The aim of project analysis is to focus more attention on the community in which the housing project exists. The most efficient house might not turn out to be the house we would choose because of bad effects on our neighbors. The real advantage of project analysis lies not in building from one stage to another but in isolating manageable and necessary bits of activity over a definite time period from beginning to end so that problems in implementation can be anticipated. If a project plan does not exist, you may end up with no electrical outlets and have to tear down a wall after the house is built.

**COMMENT:** It seems that project analysis is rather sterile unless it takes the institutional component into consideration. Project designers and analysts set up a series of alternative models. In institution building the problem is to analyze the existing environment to discover which model, rather than which project, is most applicable. But the institution-building function is important in enabling the project designer to choose the most applicable model. The problem is that the project designers and institution builders do not collaborate.

For the future of the project, it is also necessary to assess its administrative and political effects. The donor ought to know that if this technology is introduced it will have income distribution effects which in a few years will produce administrative or political bottlenecks. For instance, in some areas projects have created rising expectations to which the existing system had no institutional capacity to respond. If project designers can anticipate this, they can be ready to advise the government on how to minimize the disequilibrium produced by the development project with respect to the support systems the government has traditionally depended on.

There is another area in which the institutional aspect is crucial to project design. This is on the level of the specific project analysis to get the project accepted or even tolerated by the right people. If this is not done, your well-designed clock will be crushed by the conflicting forces at work within the Ministry of Agriculture or between the Ministry of Agriculture and the donor agency.

**GITTINGER:** What increasingly happens in most governments is that some kind of planning board or state planning officer provides the basis of coordination. In this situation, you can best get the ear of the right person by the quality of your project analysis. I have seen many project analyses of two and three pages. You would not get anyone's attention with that; no one would know what you were doing. But if you begin
to get it up to thirty-five to fifty pages, including year-by-year tables, farm budgets, etc., then the chances are that an increasing number of design errors can be spotted in advance. The main feature of the project analysis should be its thoroughness. At the moment, what usually happens is that these projects tend just to grow. The Minister says, "We'd like to have a rice project in our five-year plan." The Secretary communicates this to the head of the planning organization so that they can start putting together a project. They generally draw upon the models of existing rice projects remembering that cooperative farms didn't work the last time so maybe they should try a state farm system. Or maybe they think that since the new minister is in favor of state farms, that system would be better. Next, they will get the soils man to report on the amount of the soils suitable for a particular strain of rice. They are thus able to narrow the alternatives further.

This increasing specificity is what project analysis is all about; the difference is that project analysis puts the determination and testing of possible alternatives on a more formal, systematic, and presumably more reliable basis. In this phase, the sort of operationalizing of project analysis discussed before takes place on the part of the planners.

One of the main values of project analysis is that it allows different perspectives to focus on a particular project—the soils analyst, the economist, the financial analyst. By increasing the numbers of areas in which you have checklists, you can decrease the number of loopholes which might allow some important factor in implementation to slip through. For instance, you say to an engineer, "Design me a sugar mill," instead of saying to a project team, "Design me a project." The engineer designs a beautiful sugar mill but pays no attention to the supply of sugar cane—that wasn't his assignment.

The best use of project analysis is to first make sure that you have chosen a high yielding investment and that your investment makes an appropriate contribution to the broader social and economic objectives. Also, a well-designed project has a better chance of being implemented because, despite the increased expense of a good project analysis, it would increase the chances of avoiding problems in implementation. In the long run, it would be worth spending a large amount of money to analyze a project using all these techniques simply for their value in anticipating the problems of implementation. It is more important for the government to improve their procedures for using project analysis than to increase the sophistication of the analysis. The procedure used by the U. S. Water Commission is the most realistic. At the moment, this is a more appropriate technique, given the skills that economists have, than the three described above which try to incorporate through the price system and then adjust. Even though the latter seems to be the way
we appear to be going in the international community, I think these are more sophisticated than sophisticated approaches.

The U.S. Water Commission procedure involves analysis of the project using benefit-cost ratio at market prices with certain defined secondary benefits. If this fits the standard of efficiency, matrices are prepared to determine the impact on the region, the environment, income distribution, and employment. In this way, the project analysis does not get involved in those activities which are more purely part of the political process. It uses project analysis first to determine what is efficient, and then uses the techniques appropriate to political and institutional analysis.

We may have at the Bank some sophisticated methodologies for project analysis. I consider them sophisticated because they do not contribute much to the efficiency of the Bank's investment decisions. Often, there is not more than one percent difference in estimated rate of return among the different methods. Given such an insignificant difference in methods, improving the efficiency of analysis techniques will not do much toward improving the efficiency with which investment or project design decisions are made.

I feel strongly that more real improvement in the effectiveness of Bank lending would occur if more emphasis were placed on some of the other less formal aspects of project design. Despite what I have said before, one aspect I think most important is designing suitable institutions for these projects. How could we train elementary school graduates to be more effective extension agents? Might we achieve a trade-off between a simple technique we extend (fertilizer or improved seed) and levels of training of extension agents? Is there a trade-off to be made between yields on farms and lower institutional costs of getting farmers to settle on the land? There is more to be done in this direction which will greatly affect the investment decision. The sophisticated analytical techniques are more systematic, but they do not provide the insight into the productivity of the project that institutional analysis can. We must improve the institutional quality and the fit of the institutions in Bank projects. How do we do this, and how do we encourage governments to do this?

Another less formal aspect of project design that must be emphasized is paying more attention to the implementability of the projects, that is, only selecting projects which can be well-implemented. Our investment decision will be better if we consider how difficult the project will be to implement. If it is hard to implement, we must realize that it will be a low yielding alternative. Even our economic analysis will be improved if we look at the implementability, also closely related to the institutional issue.

A third area is related to the sophisticated analysis issue. The implica-
tion of progressively better analyses is that you cover fewer and fewer projects. It is better to have 100 projects analyzed at 80 percent perfection than to have two projects analyzed with the best methodology at a 95 percent level of perfection and the rest of your investment budget made without benefit of any analysis.

One reason I argue so strongly for project format is that it provides a hypothesis which a lot of disciplines can, in fact, address in assessing a proposed investment. The economist, political scientist, and agronomist have something in common in terms of which to react to. The discipline of preparing a formal analysis forces a government or agency to draw together into a consistent hypothesis many different skills to help form the project.

In theory, project analysis could be used to choose between priorities; that is, whether we should have a jute mill or a rice mill, whether to emphasize industrialization or agriculture. But in practice it is best used to help people construct a high yield project and then to assess it systematically. The pure theory of project analysis says that this choice of priorities can be made by working down the list of high yielding projects. In practice, this is not possible; our methodologies are not up to it, and the data we feed into the system cannot support it. Instead, somebody comes to you with their priorities in mind: “We want a jute mill; can you help us set up a project?”

Another less formal aspect of project design needing emphasis is farm budgeting. Economists take an area, multiply it by yield, and arrive at their benefit stream. This is wrong and can lead to avoidable problems. You can instead start with a farm budget or budgets for many farms. Make a budget of what will happen to the farm household if it participates in the project. What is its income going to be year-by-year, or month-by-month? How long is it going to be before their income is up to what it would be without the project? How much are they going to have to pay back if you have a credit program? What is the net farm benefit going to be? From that net farm benefit build up your project stream. Don’t build it up by taking the area and multiplying it by yield; that is not the way projects work.

Farm budgets enable you to determine some crucial factors for project design. For instance, you begin to see what the family has to live on while the project is maturing. That is a very important piece of information; from it project designers can determine if it is possible to maintain a reasonable lifestyle during the project. An economist put together a farm budget for an irrigation pump simply to show the incremental returns. It did not show farm income. As a result, farmers were supposed to live for three years on less than their pre-project annual incomes while they paid back their pump loans. The project designers wondered why
no one would take advantage of the loan.

The incremental return can also be obtained which can aggregate up to the benefit stream in the project making it a good analytical tool. Out of this incremental return and its timing you can begin to answer questions about how much incentive to participate is provided. We must have some sense of what farmers must have per month for incentive—usually a great deal. Farmers generally want to double their incomes before taking the risk of changing their production techniques.

You can look at the credit structure. If you have farm budgets, you can see when the farmers are going to get receipts and when they have to pay back. It is then possible to design a sensible grace period and repayment schedule. You can go to the lending agencies and show them that a five-year payment plan with no grace period will prevent farmers from participating. If the farmers need two or three years for the project to materialize and six or eight years to repay, the lending agency meeting this schedule can charge higher interest for the longer repayment period. It is then possible to obtain more of the additional surplus.

Another benefit arising from these budgets is the acquisition of some judgment about risk. It is easy to do sensitivity analyses on these without using formal risk analysis. What happens if the yield is 20 percent lower than the farmer's income? He uses the same amount of fertilizer but gets 20 percent less crop, and his income is wiped out. Most farmers will say that they cannot afford to participate under such conditions.

Budgeting can enable you to catch some rather easy but significant errors that can be made if the focus is on the macro picture. It is common to see project designs where the expectation was that a family would meet incredible production estimates, such as 500 days of labor in June from a three-man family. It is astonishing how much can be gained from these budgets using fairly primitive techniques. If linear programs are used, mechanics become the major concern and most of your energy is spent trying to determine the coefficients. The Bank has been placing more stress on the importance of good, sound budgeting in project work and on the kinds of practical information about the workability and feasibility of projects that can be obtained from good budgeting.

There are design implications here. We have to figure out a way to forgive farmers if their crop fails. We have to be sure that our yields are near to our estimates. Maybe this means more field crop testing and postponing the project until we have it.

QUESTION: It appears that project development involves dealing with elite members of society whose chief values may not be redistribution. The main political function of the Bank seems to be in the process of soliciting and collaboratively developing, designing, and choosing among
It would be informative to know what means are used in finding and developing projects as well as what kinds of conscious evaluation of the political impacts of this function are made in the process.

GITTINGER: I agree completely that the Bank must be aware of the political implications of its projects and that a particular type of project may create certain political and administrative problems for the country. Bank people should also be aware of their power in selecting particular projects over others and of the relative political implications of each. My disagreement is with those who would have the Bank accept a project based on some future political performance.

I am not so unrealistic as to think that governments should use only the project format. The project format makes sense for discrete investments that concern a capital transfer agency such as the World Bank. It is obvious that continuing programs, such as research and extension, do not lend themselves to the project format.

As for our procedure of selection at the Bank, the projects typically tend to grow. The whole process probably takes seven to ten years. In the first four or five years, there is much discussion with a lot of ideas tossed around. At an annual meeting, the Minister of Finance will talk to the Bank vice president for his region about a problem his country has in, let us say, rice production. The vice president might say that the Bank has been concerned about world rice production. Later, at a more technical level, the country program division chief will be in the country, and the minister will suggest rice production as a possible future project. The program division chief, who has come to the country to get ideas, perhaps remembers that some of his technicians had mentioned that they hadn't done as much work as they should have in one area in the country. He will then send a technician to the area to investigate problems to see if rice can be grown, if there is any need for it, etc.

At some point the country may decide to prepare a project proposal. A bank staff member may talk with them; they may talk to the FAO country representative and get FAO to help prepare the project. If the country can afford it, they may engage a consultant or, if their own administration is sufficiently developed, they may decide to assign the preparation of the project to a unit in the planning commission. The process of arriving at the formal preparation takes about five years.

The project preparation procedure may take from six months to two years depending on the complexity of the project and the quality of the preparation unit. The first step is an appraisal report prepared with Bank and perhaps FAO help. Second, the Bank arranges the visit of an appraisal team who will probably reshape the proposal. The proposal is run through the Bank bureaucracy a few times for a third revision which is
sent to the government for comments. After discussing the project together for five years, there is usually a consensus about the project plan at this point.

The next step is the formal negotiation session at a technical level with an agronomist, the planning commission, and ministry of agriculture representatives. They will come to an agreement about the details of the project and the Bank's requirements. This is produced as a proposal report and forwarded to our Board of Directors with a recommendation that the loan be made. Typically, the Board will accept it without change. The Bank plans for a lending program that is stated in general magnitude. Then the problem is to accumulate enough separate investments to pick up the general budget which is set for two to three years at a time.

Sometimes, in countries with serious development problems, we find a real shortage of projects even though an attempt has been made to increase our lending to them. We are tapering off our lending to countries which have been increasing their balance of payments. The choice of countries for funding projects is based on a range of considerations. The decision is based first on regions, then countries, and then on some judgment about worldwide demands for credit. Considerations of this sort—such as creditworthiness, views of the government about borrowing from the Bank, and attitudes of the Bank about particular governments—are made quite apart from the project considerations. From time to time, governments become discouraged about borrowing, or the Bank's receptivity to some governments diminishes because their policies appear to be inappropriate.

At the moment, the rate of inflation is driving the real value of the Bank's lending to many countries below previous levels. Our program, which was projected to expand in real terms, is constant. In some countries we are facing serious problems about being net-borrowers from countries, or at least net-recipients of inflows, because the real value of payments is greater than the money we are able to introduce through new projects.
The Use of Analysis at the Project Level

Princeton Lyman is concerned with the application of analysis to action. For example: What can donor countries really transfer if they want to open up opportunities for people rather than to just do something for them? From this point of view, one productive role of the donor personnel is catalytic rather than interventionalist. And the main orientation of a project is to its particular task environment, with a specific target group in mind and a continuing sensitivity to the interests of that group in relation to larger national needs and desires.

LYMAN: Perhaps the best way to begin is to describe what we mean by the project level and to distinguish it from the sectoral. One of the differences is a very practical one—it is a state of mind. In doing a sector analysis, you want to know how the sector works and how one factor fits another. You might want to make policy recommendations at the end, but the main focus is the analysis. When you are at the project level, you want a product. You want an action output. This constrains and directs your analysis. It affects how much time you will spend on any particular factor and how you will treat the variables. In theory, of course, sector analysis precedes project analysis. The sector analysis is supposed to set the context within which you are operating so that the project designer has answered several of the basic questions before he begins.

In practice, this rarely happens (in AID, at any rate) because of a main problem in dealing with large task environments—the question of scope. How far do you go? What are the limits of the factors that one looks at just to do any one project? Even if you have a sector analysis, a number of questions remain to be answered. A number of components should be taken into account in analyzing the task environment of a project. However, after I listed them, I realized that AID's project design is not set up to deal with these at all.

Components of a Project Environment

Those familiar with AID's design system know that we have an elaborate project description guideline called GPOI—goals, purpose, outputs, and inputs. It involves a detailed document with a chart called the "logical framework." This is supposed to clarify your thinking; yet it
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says nothing about the actual components of a particular project analysis and design. Here are the factors that must somehow be addressed.

First, one has to have some sense of the political circumstances within which a project will operate. One has to be very careful in this regard, in two ways. One is to resist writing a political history of the country; that is, to be sure to include only the relevant and crucial elements of the political environment. Second is the awareness of the priorities of the decision makers in the country. Your sectoral analysis may tell you that the country's biggest problem is with small farmers, but if the regime does not want to do anything about them, it can save you a lot of trouble in designing the project if you know this in advance.

Two aspects of the social component of the task environment are also relevant. One is the set of social factors related to the normative goals within which you are working. It is important to know what implications the project has for income distribution, welfare, equity, and employment. The other aspect of the social component is more value-free. It is simply those social conditions which will affect the project: family conditions, attitudes toward labor, kinship relationships, ways of holding and using land, etc.

We were working on a livestock project in Lesotho several years ago in which it was very important to know the social conditions. In that area, land is held in common, but cattle are owned individually. Americans tend to want to fence the land for livestock, but we would have been fencing what was held in common for the advantage of a few. In this case, income distribution has nothing to do with who holds the land but relates to how many cattle you hold.

There are many economic factors to consider in a project. One of the most important is the capacity of the economic system. Can the economic situation in the country take on the kind of project that you are talking about? Does the government have the financial capacity to support the kinds of investments that one is talking about? On another level, what are the capacities of the various sectors? What is the output of a given sector?

Even though the institutional factors of the project's task environment are important, I must question at the outset whether institutions are necessarily central to all projects. In many projects the institutions are of course critical. There are two aspects of the institutional factor. One is the capacity that exists in a country: who is organized to do what. The second is what kind of alternative institutions might be developed. If there are no strongly developed institutions to take on a certain task, one must consider the implications of creating alternative forms of institutions. There are many debates on whether this is a good thing or not. It is a favorite tactic of the World Bank to create a new structure or a
new public authority. From the Bank's point of view, this is a good thing because a new authority is not subject to old civil service rules and is easier to shape and control. Other people argue that this leads a country to have many separate public authorities and no integrated governmental system.

Technology should also be one of the components of the task environment examined. Change in technology may require change in institutions. Introducing a fertilizer-based agricultural technology may require a different kind of extension service than would be needed in trying to develop on existing capacities, changing minor aspects of the agricultural sector. In the first case, you might want to build a big extension system.

There are also two competing theories of technology which are better when blended. First, more modern technology should be introduced into the developing countries. The opposite view is that advanced technology is irrelevant to primitive conditions—that one ought to engage in both labor intensive and more easily adaptable technology.

The extremes of these positions are dangerous. There are places in the developing world where labor is a severe constraint. Where farmers are short of labor, to engage in labor intensive agricultural techniques is unrealistic. Moreover, certain extremely modern technologies can be valuable even to the poorest of countries. The use of satellites to do a natural resources inventory can cut down on the time and cost of a survey. With a few month's training and $2,000, you can set up a laboratory in any country with only one expert and a group of high school graduates to read and interpret satellite imagery.

A final component in task environment analysis is financial. I shall not deal with it here.
Everybody knows how you control rangeland; you fence it and you coerce. You may have range wars, as we have had in the U.S., but that is the way everyone knows how to develop the range.

The Africans may have something to tell us, i.e., this method is impossible for them. Perhaps the nomads are the best users of this rangeland. One ought to be willing to think of an entirely different way of cultivating the Sahel. I am not sure I would go as far as one anthropologist who has suggested that overgrazing is not such a bad thing. But it is the traditional form of grazing that can keep 6 million people alive in an environment that nobody else knows how to exist in.

If you begin to think in these terms, your ideas about project goals and project design will not automatically lead you to U.S.-style range development. To determine the style that is possible given the resources in the area, you will look for people trained to deal with nomads and to understand how the nomads have cultivated that area for the last few hundred years. We need people who are able to develop systems that are compatible with the government's needs as well as the nomads' needs to manage a range more efficiently from both points of view.

Manpower that is both formally and technically trained is very important, but it tends to lead one toward creating small groups of talent of a sort that exists in our own societies. I would like to know whom you are trying to reach in the creation of institutions or projects. Who is it you are involved with? What bothers me is that we tend to build the institution or project around people like ourselves for ourselves. I agree that manpower and training aspects are critical, but specifying what these are must flow from the needs of the existing social system.

When you start asking questions about the goals of a project, you cannot for very long remain at the project level. Concern for project goals leads automatically into sectoral and even national planning goals. You have to take into consideration what you are trying to accomplish in agriculture and, in the long run, in developing the country as a whole. This can even lead you to considering what technical assistance as a whole should be doing. Your answer to that can have a direct effect on your livestock or fertilizer project.

My own philosophy is that the most important product of any development project is the experience that the people get in working in it. That becomes more important than all the targets of the project. We had a fertilizer project in Korea which failed miserably. It was a nightmare that lasted ten years and was always considered one of our worst projects. Later, when the Korean economy was really beginning to boom, Gulf Oil came in and built two huge fertilizer factories based on the refining industry. The Korean engineers put the plants up and got them ready a full year ahead of schedule. It was a real engineering feat.
We asked the Minister of Science and Technology how the Koreans were able to do such a fantastic job of getting these plants up ahead of schedule. He reminded us of the Chungin Fertilizer Plant and commented that, even though it may have been a disaster in our eyes, every engineer in Korea cut his teeth on that plant. We in AID considered the project a failure, but it trained a generation of skilled engineers; perhaps it was not a disaster after all.

If one looks at a development project in terms of accomplishing the experience criterion, one's approach to the project task environment and to the design of the project will be in terms of what factors will maximize the experience for the most people.

**COMMENT:** It seems as though the basic choice to be made is in terms of whether you are trying to get as many things done as possible or to make a particular qualitative change in the people's condition. Maybe in the long run both aims must be part of technical assistance, but for each specific project one's position on this issue will affect the whole project's operation.

If you are concerned about getting as many things done as possible, it follows that you must become very concerned in your project design about setting up objectives and the framework for seeing to it that things get done. You become concerned about supervision and control to make sure that schedules are met and corruption is minimized. The donor agent becomes in effect an interventionist; he is concerned with content and specific product. He provides as many solutions, frameworks, formulae as he can. These are often confusing and contradictory so that the net effect is to perpetuate a dependent relationship rather than to allow the recipient to develop his own potential while making mistakes and making his own decisions. In other words, the position you take on technical assistance goals will determine, among other things, what you are going to consider “training,” whom you will train, the specificity and control deemed necessary in the project design, and the length of time of the project.

**LYMAN:** I agree with you to a great degree. There are also some other factors operating in the real world which can affect to what extent you are able to effect your ideal. The important point is that goals put major limits on project analysis—what factors you are likely to consider viable and important. But let us look at the limitations within the situation of the actors: the donor agency and the host country.

**The Effect of Actors on the Design Process**

Some of you have called for a catalytic rather than an interventionist style of technical assistance. AID would like to pursue a collaborative planning policy in designing projects, but it is difficult to put into
practice because most host countries do not have that kind of talented
and trained manpower to spare. It is very valuable to share in planning,
but I am concerned about a country that has to go through the same
thing with the World Bank, the French, the Common Market, etc.

It is impossible for donors to be neutral catalysts: there are too many
constraints on them. In the case of AID, the U.S. Congress demands the
kind of over-superintendence of projects characteristic of the interven­
tionist style. It may be that the recipients are hindered in developing
their own potential; but we must answer to Congress as well as to other
sections of the government. For example, not too long ago AID could
not give assistance in wheat growing to any country because the Depart­
ment of Agriculture said we had too much wheat to export.

The donor agencies themselves are not often neutral: they represent
different philosophies. The World Bank tends to be export oriented. It
 tends more toward programs that foster the commercialization of agri­
culture and less to domestic food production. AID tends to emphasize
domestic food production rather than export production. Sometimes
donors give exactly opposite advice. The World Bank will say that you
must build up your export industry, and we will say you cannot do
anything until you build up your food supply. At least the country has
a choice, but they need to become very sophisticated in knowing what
to go to particular agencies for.

The way an agency operates can affect the quality of a design. For
instance, since AID has so few people in the field in Africa, we have re­
lied on regional office and Washington personnel to help our missions de­
sign projects. This creates both advantages and disadvantages. On the one
hand, one can concentrate on the design task independently of other
management responsibilities; on the other hand, there is a certain
amount of discontinuity in the design effort because designers are flit­
ing in and out rather than working in the country.

AID is constrained in the type of projects it will support by attitudes
in Congress. For instance, regarding emergency relief versus long-term
development, we would generally prefer to fund long-term develop­
ment; but Congress is terribly interested in immediate humanitarian
considerations because the American public is impressed by our re­
sponding visibly to needed help.

During the drought in the Sahel, Congress voted special funds in re­
sponse to the emergency. You talk about a project that is going to take
three or four years to develop, and people say, “I don’t want to get in­
volved in that, we get more money than we anticipate for emergency re­
lief.” You find congressmen saying, “Emergency, yes; long-term develop­
ment, no. You have a regular budget in AID for that.” This is an impor­
tant issue in our relationship with Congress; if an automatic equation is
made between emergency and development, you could lose Congressional support because development is not what many congressmen are interested in.

We have tried to establish a relationship with Congress that would allow us to be flexible. We have established some rough, arbitrary decisions about the kind of time-frame which makes sense in relating development to emergency.

This issue of aim and time exists within as well as outside AID. Some people feel that, given a very harsh or fragile environment, we ought to concentrate on assisting people in the area to survive. Others think that this is a fruitless task, that the best emergency aid is development aid—find the best areas, put the money in, and don’t worry about equity at this point. Simply get more food production in the area and see how the food can be distributed. We have had quite a few debates over that.

The Effect of Actors on the Design Process—Constraints on the Host Government

You find that the countries in the Sabel tend to have the same kinds of problems. There may be a terrific immediate need for assistance in terms of food and transportation; but, if you look at the list of projects that the country presented to the donors last year, there will be a whole range of long-term development projects. Host governments do not want to remain on the edge of disaster forever, and the only way to get out is through some very basic development.

There are certain limitations of choice for governments in making development decisions: the host country government, just like ours, cannot do everything. Governments in many countries rest on a very narrow base of support. It may be that a government in a country that is 90 percent rural poor still derives its political support from the group that is 10 percent urban. For example, in West Africa one major problem was that of a government holding down the price of meat in the cities because the civil servants could not afford it if the price went up. But they could not get meat into the city because no one would sell; the price was too low. To raise the price was the “right” thing to do, but nobody could afford to raise it. They could not afford it politically or economically: they could not pay the higher wages necessary if the price had gone up.

As you can see, it is not easy to walk in and say to another government that this is the way it ought to be, especially if the donor government has many of the same types of problems in equity, etc.

COMMENT: The international community, however, does have a responsibility regarding this increasing distinction between the desires of the government of a developing country and the desires of the people.
The international community has established an image which all nations feel compelled to accept. Certain characteristics of a country are perceived as indications of development, as military strength, and as economic independence. The government tends to establish priorities in terms of what is valued in the international community. In a country where there has been no active war in the last forty years, over 75 percent of the national budget is going to defense. But the nation or people do not benefit much from this. When they need foreign exchange to be economically independent, the government focuses on the cash (export) crop while people are starving and dying in the area. It is doubtful whether a government does this to maintain foreign trade. It seems more likely that the aim is to maintain its stature in the international community.

The donor agencies take the easy way out of this by saying, we will give you aid for helping poor farmers but what you do with it is an internal matter. The pressure of norms of the international community on the policies of the underdeveloped governments has made it an international problem.

LYMAN: You are raising a very controversial question, and we have no answers to it. Donors do tackle some issues and they do not tackle others. They would rather not tackle the question of military budgets. I might agree with you in particular cases, but I must say I take a rather limited view of what the U.S. should say to other countries about those kinds of things. We do not spend a small amount of our budget on the military.

In Ethiopia, the Swedes said they would stop all aid unless the government passed a land reform bill. They backed down from that for two reasons. One, the threat was totally unenforceable; the government was not about to pass a most critical bill just because a donor agency said it would pack up and go home. Second, in reality people were not sure that the passing of the land reform bill was the answer. So, it became an empty gesture.

Other donors were happy that the Swedes did it, but nobody would follow suit. Even though we should support equitable goals, to go in like the Swedes with a demand for a certain policy or no aid is likely to be unrealistic from our point of view.

QUESTION: There is more to this discrepancy between government and grass-roots objectives than international pressure. The problem is compounded by the inability of government, experts, and people to agree. The question is: who knows what is good for a particular community and on what are they basing their evaluation—government or economic objectives, or the value system of the people?
LYMAN: Even if you do know that, it still does not answer the question. If I knew everything about the cultures of the people of the nomadic worlds, I still would not know whether their interests are more in changing their way of life for the next ten, twenty years or preserving it. I am very hesitant to suggest. A year ago I wrote a paper on what should happen in Africa's livestock industry. Now I am embarrassed as I look back on the paper because there are too many unknowns.

I do not think that the governments know either, although they tend to have a fairly clear idea. Governments tend to move toward the commercial approach because they think it is necessary, more modern, and feasible. They have made this decision, and I do not know if it is right or not. We can wave warning flags and raise questions as we are inclined to do. Some people are suspicious that the government's motives are not that good. I think this is unfair because the situation varies with each country.

QUESTION: The question is whether everyone has to follow the development process as established by the developed countries. Should not a government be genuine enough to question what its individual fate is? Should a government aspire to become what others have become, or should it examine its potential and limits and make its own objectives?

LYMAN: The world has changed. Governments do need foreign exchange. We are more interdependent. Governments of underdeveloped countries exist in a modern world and cannot survive without foreign exchange.

You can look at West Africa and the peanut and cotton crops, and you can say that they are all a product of colonial plantation development. You could say that was a terrible way for that area to develop, but commercially there isn't an independent government in West Africa that isn't interested in exports of cotton and peanuts. You live in the modern world or you don't. Once you cross a certain point you cannot go back entirely.

The issue is illustrated in a project to commercialize the livestock industry in West Africa. The effect of commercialization is to produce beef for the high price market; some say that as you commercialize livestock you decrease the amount of protein available for low income groups. Another effect is to destroy a traditional way of life that may depend on livestock—in this case, the nomads. Anthropologists think it is outrageous to serve the needs of a few at the cost of destroying a culture. Economists disagree giving the argument that commercial livestock market needs will be met one way or another, e.g., through imports. If the nomads refuse to commercialize, they will be left behind, existing on a
subsistence basis with no market at all because the world will not wait for them.

When you suggest to the governments that they might not want to commercialize, it is as though you have said (with a sort of patronizing, colonial attitude) that a commercial livestock industry is not suitable for people in underdeveloped countries.

Effect of the International Situation on the Design Process

The international community, as our discussion has pointed out, is one of the limiting factors in project design and strategy. The relationship that has grown up over a number of years between European and African countries on the development and export of commercial crops like cotton and peanuts has conditioned a lot of project development. This orientation toward export crops has affected the entire extension, research, and farming systems in the commercial sector.

The lifeline of modern government is foreign exchange. In the middle of a drought, an African country ordered every truck in the country to the cotton area to harvest the cotton and get it to the market. They knew that if they did not get the crop out they would not survive.

Limitations in the Design Process Itself

There are certain constraints on donor agencies and host countries having to do with limitations in the design process itself. There comes a point at which you can analyze no further—you must have a project. So you make compromises. In addition, you realize that there are social problems, inequities in income distribution, limitations and inadequacies in manpower and institutions; but you want a project, so you have to deal with the realities and make compromises.

You recognize that there is a large area of variables which is beyond your capacity to incorporate into the analysis and the project. Many factors are best handled as the project proceeds because they will not be known until the project is in operation. These considerations should be left to creative implementation.

This area of indeterminate variables is increased by such factors as a lack of ability to direct the benefits unless there are forces such as social pressures or institutions to support a change in benefits. Another factor which increases these indeterminate variables is the amount of data available. This is an enormous problem because of the costs involved in acquisition.

In almost all areas where we are designing projects, you find the unavailability of correct data: you don't know how many small farmers there actually are, what the land tenure situation is, or what the income levels are. Until you begin to see the cost involved, you feel you have to
have a research and evaluation component in your project. However, you can spend hundreds of thousands of dollars in every case to gather baseline data in rural areas where there are no established data mechanisms.

**QUESTION:** It seems that you are missing some economies of scale if you build in a research and data component for each project. Isn't a central part of the whole development process to build an infrastructural development in this case for a data gathering capacity?

**LYMAN:** My response is on two levels. First, I agree with you, but my problem is that we have a tendency to export our type of institutions to counties. We say that universities should do the research, and only M.A. degree holders can do research. There is, however, a great deal of research and evaluation that should be done locally. On a more philosophical level, my response is based on my belief that projects should be geared toward increasing the experience of participants. We really do not know how to do that, but if I had to choose between finding out everything I needed to know about nomadic livestock in West Africa and trying to put resources at the disposal of the people, the nomads who know the area, I would choose the latter.

One of the real dilemmas in my position is that one questions what it is possible to transfer. The closer you get to saying that the essence of project design is not to do something for someone but to open up opportunities for the people who are there to do more with their environment, the less one has to offer. We really do not know how to transfer this ability. What is it that one has to offer when dealing with people who know their environment much better than the outsider? How do you make available whatever it is that westerners have to offer besides money—the technology and technical capacity?

An ideal style of technical assistance would put only one or two permanent technical advisors in the field. They would arrange for periodic consultations between the people affected by a project and whatever experts they think should be involved. For example, in livestock planning in a nomadic area in West Africa, these groups move over extraordinary distances—sometimes several hundred miles during a year. Present AID practice is to demonstrate new techniques by setting up a pilot project in a certain area. We bring in many advisors and dollars and take a lot of time to show how a specific area can be changed to good grazeland. I find this irrelevant; the cost of replicability is too great, and each area is different. In addition, the more advisors involved, the more I question how much emphasis is being put on local participant training and experience. A more reasonable approach would be to determine the main groups in the area and their patterns of movement. Four times a year you could meet them at specific areas in their migration patterns.
At those meetings you could have a kind of consultation seminar with the technical experts necessary to change the rangeland situation. We could talk about the problems that group is facing and point out what we think is important. In the exchange of ideas with these herders who, after all, know their animals very well, a system for dealing with problems could be developed that would be compatible with the people in the area.

QUESTION: Do you think this problem is a basic matter of developing institutions to communicate the interests and needs of the people in the area to the government?

LYMAN: Institutions are very important and are usually set up with certain goals in mind. In this particular country, there are three different institutions for livestock. One is strictly concerned with increasing the export and marketing of cattle. It is staffed with bright and capable people. The extension service for the nomads consists of an information service that is hardly developed at all. Then there are a lot of experimental stations for research.

AID tends to deal with the marketing institution because it is the most powerful. If one is going to influence the government's attitude toward the nomads' situation, it is probably going to be through that institution's influence on the government rather than by trying to build up counter-institutions. Now can you ignore the economy of the country in which the government has a concern? As mentioned before, if a country does not have enough revenue to pay for its daily expenses, then the need for export revenue cannot be ignored.

QUESTION: This raises the issue of what aspects of the limitations on the design process is exogenous and what is endogenous to the project design. That is, what is "given," and what can the project manipulate?

LYMAN: The limitations are both exogenous and endogenous. At the project level, we can say that some parts of the economic, political, and social situation in the country can be considered as "given," but our analysis should be able to point us to some areas in which we can make an impact. In other words, who is it that you are trying to benefit? Now, it may be that you cannot affect the landless laborer, but you can determine to go for the lower 30 percent of the landed because they have large enough farms to benefit (yet they are at the lower end of the economic equity profile).

Determining the target group is the central process. When you specify the target, you can fit the rest of your design to the task of reaching that group. Once you specify the group and clarify the objectives, you can allow for a great deal of flexibility in the project margin's creative implementation. If the target group is not specified, you choose the wrong
kind of flexibility because a project manager is concerned with output. In five years he may have the project in high productivity, but the objective of increasing opportunities for low income farmers is not likely to be met.

COMMENT: This brings up the problem of implementation of objectives. It seems that project design must take into consideration the constraints that local project managers are going to have to deal with. Oftentimes, for instance, project managers do not have much of an idea about what specifically is going to have to be done in terms of the project operation, on a year-to-year basis, to achieve the project objectives. They see their practical problems, and they know the general objectives; but they do not know how to bridge the gap.

LYMAN: Leadership is a central problem in project design; very often the design centers around one individual. One health project in Africa is dependent on one physician because he is very close to the President of the country. He has his own organization separate from the Ministry of Health. As long as he is there and this relationship exists, I suppose the project will be a success; but one questions whether one ought to build a project around one individual.

COMMENT: This raises the institutional question. Institutionalization is a matter of trying to arrange the project so that it will take root and establish itself in some way independent of that individual. Charismatic leadership may initially be very useful, but strategies must be built into a design to establish the organization's viability apart from the individual. During the life of a project, for instance, the leader may need to perform different types of functions—entrepreneur, conciliator—so people with different skills are needed at different times.

LYMAN: I must return to my tenet about the basic objectives of projects. If development is to increase the experience of people, leadership may take on a different light. An example of what I am talking about took place in Ecuador. A combination of AID, Peace Corps, Ecuadorian students, and others were involved in the project. The best description of its style was that they were trying to encourage participation. They had a small training center and a few people who went out into the village. When they were asked what they were in the village for, they said that they were simply there to listen. The village would not believe that. They thought they were there to teach them something. They were there for two days refusing to teach anything until the villagers got themselves together to talk to these strange people. They began to tell the strangers what they knew about the area. Out of this process evolved a growing sense that there were ways of doing things themselves. The project was run largely by Ecuadorians.
When I went out to see the project with the AID manager, one of the Ecuadorians told him he was coming out too often. It was their project. The attitude and atmosphere were refreshingly frank; but at the time I was considering the project, it seemed to have no promising outcome. It seemed to rest on the motivation of a few individuals. Subsequently, however, the Ecuadorians developed it into an institute which got some resources from the university, and it has prospered. In effect, this was leadership development.

QUESTION: Is it possible for a project to have true consistency in objectives? Won’t there always be the tendency on the local level to turn the project into what the manager or the project personnel at that level believe that they need? Usually this would involve turning an equity project into a concern with growth and output.

LYMAN: Current emphasis on equity is a reaction to past emphasis on growth. We are finding it easier to talk about equity than to do something about it. I am afraid that people will become too frustrated and return to the growth emphasis before they have fully tried. We must keep in mind that it is really a question of relative emphasis. There may be trade-offs between growth and equity, but only in the short-run, not in absolute terms. In the long-run, you can make an equity project a growth project. Conversely, you must build into growth projects certain equity compensations.

We have a project in Africa that involves an export commodity. We are concerned with marketing a product that is largely to the benefit of larger farmers. It is a good project, but the question is what you can build into the project over a wider geographic area so that marketing does not depend on access to roads and vehicles.

COMMENT: This problem with internal consistency is a very real one—one that is apparent in the CADU project. One of the major emphases in that project was to phase out some of its activities to the target population. A means to this end was identified as the promotion of cooperatives. When CADU started organizing cooperatives, there was a national law which stated that any person living in a given area could become a member of a cooperative.

CADU's policy was to limit participation in its credit program to farmers who cultivated less than twenty hectares. CADU wanted to strengthen the cooperatives by transferring its credit program to the cooperatives. Of course the cooperatives were dominated by larger farmers. This dramatically illustrates the problem of internal consistency. On the one hand, CADU is a small farmer project; on the other hand, cooperatives could be controlled by larger farmers.
The small farmer was in a difficult position because he depended on money lenders and local merchants for his credit. He was told he had to join a cooperative to participate in the credit program. He did not have much choice. When he joined the cooperative, he became submissive under the leadership of the larger farmer. CADU policy was to issue loans to the cooperative as a whole rather than to individuals in the cooperative.

To try to get around the probability that the larger farmers would get the loans, the project proposed an amendment to the national law to classify cooperatives into commercial and small farmer. This policy would neither discourage the development of commercial agriculture nor inhibit the smaller farmer.

These equity concerns eventually come back to the question of to what extent can or should a donor agency involve itself in righting an imbalance of equity in a host country. Since this involves intervention in the country’s internal politics, almost all of the presenters were against this kind of involvement. During the discussion it was pointed out that the international community helps to create the discrepancy and consequently must take some responsibility in combatting it.
Institution Building and the Foreign Aid Relationship

The following discussion illustrates the magnitude of the step involved in moving from the efficiency criterion in project analysis and design to a consideration of organizational and institutional factors. When, as is typical, a project involves technical assistance and thus relations between a donor agency and one or more host country agencies, that complexity is a challenge to orderly thinking and successful strategizing.

Blue presents two inextricably related sets of ideas: a way of thinking about "institution building" concerning technical assistance, and some observations about real-world characteristics of technical assistance activities that bear upon institution-building objectives. His observations are enlightened by a study in which he and several colleagues have been involved: an examination of the actual factors involved in the design of technical assistance projects in the field of rural development.

BLUE: Our approach to the design of institutions begins by asking, "What are institutions supposed to do?" We do not start out by assuming that more schools, hospitals, etc. are needed. Our initial focus is on the functions that need to be performed; the means for performing these may involve new institutions, altered old ones, or simply ad hoc organizational arrangements. Modernization involves the introduction of new technologies to production. This may require the creation of institutions to provide the organizational framework of the new production system. We know a great deal more about how to evaluate the "technological recipe" in terms of its economic impact than we know about the organization of the institutional foundation for providing that recipe. This is no less true for developing nations than for the U. S. One of the best examples in the U. S. experience was with the attempt at income distribution through poverty and welfare programs. Our assumptions about behavior were not valid. As a result, the institutions that emerged were different from those intended.

We are, after all, engaged in a process of social engineering. We are attempting to modify the way people relate to the production problem. We are trying to do this within the context of some objectives: increasing productivity and equal distribution of incomes. We may intervene in a society to modify existing patterns of behavior by designing a new set of institutions or a new set of organizational capacities, or by modifying old ones. One of the first things needed is a map of existing institutional structures.
My experience with AID has indicated that very little systematic attention is paid to institution-building concerns. It is commonly assumed that the existing societal institutions cannot perform the new functions required by the introduction of the new technology. This is a costly kind of approach: to proceed to build institutions before first finding out if the existing ones have the capacity to perform the tasks required by the new technology. Anthropologists have noted that traditional institutions usually have considerable capacity for change—in their goals and in the specificity and complexity of their organizational structures. An example is the ability of the traditional caste system in India to increase its organizational capacity to perform new kinds of functions.

Definition of “Institution.”

I have begun with the very broadest meaning of institutions: consistent patterns of role interaction having some functional relationship to the maintenance or achievement of social norms and goals. Another way of looking at institutions is in terms of their output. Political scientists look at institutions as constellations of power; that is, institutions persist, they organize social relationships, and in this way they are able to command resources. A church, a caste organization, and a bureaucracy are able to command resources and, therefore, represent a component of the distribution of power in any social system.

If you begin to think of institutions as the way power is organized in society, you can also begin to appreciate some of the difficulties of institution building. Institution building means the creation of new constellations of power, resources, objectives, and goals in a society. We need to recognize that, when we are talking very glibly about increasing, improving, or creating new organizations, we are putting those new organizations into a social system with the kind of givens and inertia that might be based on thousands of years of history.

I want to distinguish between institutions and organizations. An organization is a more limited sub-set that does not have to become institutionalized. This distinction is important because a lot of discussion in institution building is really about organization building and management. In the latter case, the emphasis is on the creation of a specific organization to do a specific task, whether it is a bank, a cooperative, or a credit organization. Creating an organization, working out the personnel chart, filling the slots, defining the particular functions, and forming a budget does not institutionalize that organization. In an institutionalized organization the roles are consistent over time and are related to some social norm or goal. Thus, the U. S. Presidency is an organization and an institution.

A foreign assistance relationship may often simply involve the crea-
Institution Building and Foreign Aid

tion of specific organizations to perform specific tasks. Upon completion, the organizations may no longer need to exist. A problem is created when such organizations have long-term objectives loaded onto them or when a donor agency makes no distinction between the criteria for setting up the short-term organization and the long-term institution building.

To understand this important distinction, it is valuable to have a model of the distinguishing qualities of institutions. I think of institutions in terms of Herbert Simon's control theory approach combined with the idea of bargaining. The bargaining approach views the creation and maintenance of institutions through ongoing bargaining for resources and objectives. The Simon control model assumes that we are trying to control a particular process or to continue purposive activity.

As a framework for examining this complicated, continuing interplay of bargaining and control, one may imagine a "mechanical system" in which the institution has an inner and an outer environment. The inner environment is composed of the decision-making apparatus. The outer environment is what the institution-building literature might call the task environment. It is composed of the social structure, the economic processes, and the political system within which the institution operates.

The relations between the institution and the outer environment involve an effector (or modifier of the outer environment) and a feedback arrangement. The effector introduces a change, regulates it, and makes certain it achieves objectives. The feedback arrangement performs a sensor function, finding out and evaluating the success of the strategies in the outer environment. The entire process involves, then, a sensory system which feeds information back into the inner environment which then makes adjustments in the strategies which the effector introduces to the outer environment. In AID, these functions are a part of the field mission.

That the effector and the sensor functions are not separate in AID has important ramifications for the operation of the system. It is very difficult to get reliable feedback within a bureaucratic structure which evaluates itself. The organization is basically judged on its ability to survive; consequently the AID field mission is likely to give the best possible version of its activities.

If you set up an autonomous or semi-autonomous body to act as a sensor, one of the ironies is that in the process of institutionalization this body will develop its own interests, e.g., in certain kinds of information which can secure its budget. AID has tried using semi-autonomous sensors in the form of contract relationships. It will have a university do an evaluation of a mission program. Generally the contractor works very
closely with the field mission. In fact, such contract relationships themselves often become institutionalized over time, and the problem of independent judgment continues.

Every organized system has an inner environment, that is, a control structure which decides what the organization is going to do and how it is going to do it. Every organized system has an effector, that is, some means of implementing decisions, and a sensor which discovers the actual effect of what they are doing. Both participants in the foreign aid relationship—donor and recipient—may be seen as an organized system.

Characteristics of the AID Inner Environment

In complex organizations such as AID and FAO, there are suborganizations, each of which has a different set of organizational interests. I have noticed in AID that perceptions of proper decisions about project funding and project selection differ between those persons trained in extension, agricultural education, and communication and those trained in economics and political science. There is potential for conflict within the organization regarding decision strategies. To maintain consensus and reduce dissonance is difficult in an organization like AID, a complex organization with no unity of purpose in its development strategy. There is much internal dissension.

The problem of getting agreement in a complex organization with a high potential for internal dissension explains why it is difficult for AID to adopt a consistent institutional strategy and why AID project reports state goals at best in nominal terms and at worst in terms that are vague and ambiguous.

Characteristics of the AID Outer Environment

The basic outer environment of AID is composed of the host countries in which its field missions work. Each country can also be thought of in terms of its own inner and outer environments. The inner environment consists of the formal organizations of government. The outer environment is the task environment in which both AID and the country's government try to act as controllers.

AID attempts to act as a controller in the host government's environment. It may, for example, try to introduce a new technology. In doing so it seeks to produce behaviors consistent with that technology, typically by establishing infrastructure institutions to support the "technological recipe." The host country government is also trying to impose control, often with different perceptions and somewhat different goals.

QUESTION: How is this inner environment/outer environment classification related to Blase's three-tier, hierarchical arrangement of power?

BLUE: We are talking about power, but this does not necessarily have to be hierarchical. The basic question is: To whom do you assign the
power, authority, and the resources to do a particular job? This concerns the creation of organizations. Institutionalization of such organizations requires two things: the organizations have to become valued, and the government has to be able to command a share of the increased productivity created by the new technology or of the income of that productivity.

If the donor agency begins by saying an institution must be created first, it must realize that this will lead it immediately into internal political considerations. A system already exists in some state of equilibrium: there is a budget with a fairly stable allocation schedule. A new organization upsets the budget balance, may take away some functions from existing organizations, may hire away scarce trained personnel, and perhaps compete for support from other organizations. Under such conditions, it is understandable that the existing institutions would have no interest in supporting the creation of a new institution.

Changes in the distribution of power in the outer environment shared by the donor agency and host government can create problems in the foreign aid relationship. A donor agency cannot tell the government that it is going to modify existing power relationships and the government's inner environment. This involves one directly in the internal political process and encourages inevitable resistance. Given these constraints, the donor agency will typically subsidize the creation of the new organization to remove it from being perceived as a budget threat. Even so, it is crucial that a capacity be built into the arrangement so that the institutionalized organization can capture some of the benefits it creates to build its own budgetary and political support base.

One of the major constraints operating on AID as an effector in a host country environment is the limitations placed on it by other parts of its outer environment—the United States Congress and the Department of State. The Congress provides the budget, and the Department of State provides overall foreign policy direction. Congress limits AID's ability in the institution-building process by the short-term budget cycles it imposes. Two- to five-year time limitations for AID projects imposed by the budget requirements of Congress are too short to make institutionalization a realistic project goal.

The long and politically complex process of institutionalization does not enable AID to meet the short-term production requirements of Congress. Short-term productivity goals siphon off many resources needed for institution building. If AID has to demonstrate to Congress that its projects are doing something, if it has to show that it has increased productivity by x percent a year, it has to find institutional and organizational shortcuts.

To increase the institutional capacities of existing organizations or to
create a new institution takes too long and involves too many resources. AID, therefore, sometimes tries to short circuit the existing institutional structure of the host country by creating a temporary project authority. This provides a temporary mechanism for introducing the technological recipe. It does not provide for institutional development in the host country. AID is almost forced into this tactic not only because of the constraints of its own outer environment, namely Congress, but also because it knows a lot more about the design of technological recipes than it does about the design of the institutional components of such recipes. This ignorance is not surprising. Institutional specialists themselves do not yet know how to specify the relevant properties of both the inner and outer environments of the countries concerned.

It is easier for the social scientist to change an aspect of the technological recipe than the behavior patterns of people for whom technology is an instrument of change. To do the latter he must ask: What behaviors are appropriate to that technological recipe and its constructive use? Is there a reasonable expectation that existing institutions can change or accommodate in order to make it work? The major donor agency problem of design is not to strengthen its own effectors and sensors but to help the host government improve its effectors and sensors.

Better design of institutions may be developed by increasing our understanding of past attempts at institutional design. AID needs to develop its own institutional memory—its feedback arrangements—so that it knows what it has attempted, can make comparisons in terms of institutional alternatives, and can then apply these factors to new situations. This involves the development of capacities for information gathering, coding, and validity checking. It also involves an obligation to transfer the findings to host governments; otherwise their potential for control will be reduced relatively.

AID spends a good amount of time and effort in developing international networks, each of which is both sensor and effector, with someone acting as broker to gather and process information for the whole developing community. To the extent that these international networks tend to be controlled by Western industrial countries, this is a subtle form of imperialism. AID wants its people to control the capacity of the inner environments in order to control the development of outer environment capacity. Much of what goes on in AID relationships is to introduce new technologies. However, the control systems that are developed may satisfy the interests of AID’s inner environment more than the interests of host country inner environments.

Bargaining Theory

We have been describing aspects of control theory as it applies to the foreign aid relationship. Another way of looking at these relationships is
In terms of bargaining which introduces an element of political reality.
There is a bargaining relationship between the inner environment of the host country and AID/Washington, with the field mission acting as a kind of broker in that process. This relationship is illustrated by the following diagram.

The degree of bargaining depends on the relative strength of the host government. A strong government will try to control the relationship by bargaining with AID about the terms of a project agreement. There is variation in the power of host governments to impose their designs upon AID. Some governments impose constraints by saying, for example, "You will work primarily within the existing structure of the Ministry of Agriculture." Other governments give AID carte blanche to attempt to create whatever organizational structure it wants.

To the person concerned with institution building, it is a process by which new sources of power are created and new sources of income and other resources are controlled. In this type of process no one gets his way absolutely; a decision is always the outcome of continuing bargaining and negotiation. The factors involved in determining the outcome of the process are: the resources available to the host government and the strategies the host country has devised to try to capture control of the resources of the donor.

Bargaining theory offers an important insight for those concerned with institutional design. When the donor agency acts in a vacuum, it tends to act incrementally. This is especially true if the inner environment of the agency is as unstable, unstructured, and constrained by time as is AID. In its initiatives, AID depends largely on informal, conventional wisdom existing within the personnel communication networks that make up AID as an organization. Because of the size and complexity of the organization, there are many conventional wisdoms, depending on which personnel in which network are applied to a particular project.

Very little attention is paid to the question of institutional design. AID generally selects or creates an organization as a need arises to apply a recipe for technological intervention. Somebody has to provide the research, the training program, the water, and the marketing as organizations to handle each of these areas are selected or devised.

There is nothing inherently wrong with this; it is a kind of muddling through approach to institutional change. However, there are certain dangers. One is the tendency to create more organizations than may be necessary. Another is the risk of leaving important organizational/institutional factors out of the plan for applying the technological recipe.

There are many examples of this latter danger. In Turkey, when the
FIGURE 4 Bargaining Relationship
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Turkish government asked AID for a massive wheat program, the Minister of Agriculture originally was extremely unrealistic in his request for the amount of the first year's shipment—around 50,000 metric tons. Negotiations brought the figure down to 20,000. Even so, when the wheat began to arrive, there were not sufficient vehicles to get the wheat to the cultivators.

Control over the vehicles was with the Ministry of Highways. How could the Ministry of Agriculture gain temporary control of the resources of the Ministry of Highways? Several strategies might have been pursued: payment or perhaps a negative threat to use the friendship of the President to get the Minister of Highways fired. The President may or may not have that capacity; the Minister of Highways may have his own political base and could thus tell the President that if he fired him, he would be in trouble with his party. These bargaining relationships go on; AID steps in to put pressure on the government so it can maintain its distribution schedules.

This mundane example shows the kind of bottleneck that occurs again and again. In trying to design institutions, one must alert officials to problems that may appear so that they may begin their own bargaining processes. These processes are the essence of institutionalization. They involve the exchange of information and resources and the coordination of that exchange. In institutionalization we are trying to organize bureaucracies to relate to and perform functions that have been identified by project goals.

QUESTION: Talk about a "recipe" reminds me of a kitchen recipe, a sort of exact formula for handling a problem. Foreign assistance is a process; it is an approach to solving problems rather than a static, predetermined undertaking. Everything that you have been describing leaves me with the impression that AID is tackling the symptoms rather than the problem in its approach. It might be interesting to examine AID's handling of a comprehensive problem. I suspect that the incremental and ad hoc quality of institution building would not be the rule in a well-conceived, long-term project.

BLUE: There are two points to respond to here. One has to do with our use of the term "recipe" and the other with the ad hoc quality of AID project design. "Recipe" is a term evolving out of a look at ten AID projects. In comparing these projects we wanted to keep some factor constant. What we chose was the set of components necessary to meet the increased productivity objective. We chose projects in which the objectives were to increase productivity rather than to build institutions per se. We sought to distinguish between what you are providing the cultivator and how you are providing it so that we may learn
more about how to provide the technology.

Second, mundane problems of the type I described in Turkey are not unimportant to the extent that they reflect patterns. These patterns may indicate serious problems in the design strategy of a project, especially in regard to the awareness of the institutional capabilities of the country where the technology is being introduced.

Because of the fragmented organization of AID and its incremental ad hoc style of developing projects, these nit-picking factors are often the crucial variables—the bottlenecks upon which the ultimate success or failure of the production process depends. If AID were so constructed that institution building could become a purposive programmed activity, it is quite possible that these factors could assume their nit-picking proportions instead of being the pivotal variables that they often are.

You cannot reduce the factors to a formula for project design. You can clearly state your objectives, the components of the technological system, and the institutional requirements of satisfying those technological inputs to provide the infrastructural support.

Bargaining theory is particularly valuable in thinking of objectives. Whether you are looking at the inner environment of an organization or the outer environment in which it encounters other organizations, it is important to be able to specify the existing system of relationships. This locates the possible sources of power, the possible sets of objectives, and the potential sources of conflict.

Organizational theorists point to the organization's overt objectives that are stated in terms of productivity, development, or income sharing, etc.; and they point to the organization's maintenance objectives that have to do with budgets and personnel. The problem for every organization is that their projected goals (i.e., development goals in AID) are often inconsistent with their survival objectives. The organizational requisites of AID/Washington are very different from the organizational requisites in the field. This becomes a source both of conflict and bargaining within AID.

A project design will be developed and a proposal submitted which the mission thinks is very good, but Washington will often say that the mission does not have the larger view. But what is the larger view? It may be the fact that AID/Washington has to satisfy the State Department and Congress. It may be a high risk, high cost project. So the bargaining relationships go on in terms of a compromise.

After locating the sources of potential conflict, you become concerned with how these sources arrive at a set of preferences on which they can agree. One way is to state objectives in rather ambiguous terms. Another is to avoid tackling the more difficult problems.
What I am leading to here is another reason why institution building is a difficult objective for AID. It is not only the question of time constraints in the budget or the organizational complexity of AID itself; it is also the nature of the way conflict resolution takes place in a loose-knit, complex organization with budgetary and time limitations. In this sort of situation, institution-building activities can be perceived as high cost and high risk with limited return. You can do other things to utilize manpower and resources if you concentrate on the inner environment rather than the outer environment.

Unfortunately, there is no institution-building model with a predictive capability. Ideally, the next step for social scientists is to begin to generate hypotheses about the relationships among the structures we have been talking about. For example, what effect does organizing the inner environment as a highly hierarchical finance system have on AID's capacity to perform its objectives? Also needed are hypotheses about the relationships within AID's outer environments in host countries. This is an area we are just now beginning to think seriously about.

COMMENT: Predicting interrelationships is certainly a goal to work toward. At this point you do have a kind of descriptive model. The next step, it would seem, would be a kind of taxonomy, even a checklist, based on the kinds of analyses you were trying to do with 20, 100, and eventually even 1000 different development projects.

Operational people need sensitizing to the kinds of factors to be aware of in institution building and the possible alternatives. With this they can use their experience, what information is available to them, plus whatever intuition they have developed to form subjective predictive relationships. The discipline is not at the stage where it can make predictive statements about relationships. A very productive intermediate step might be a more detailed taxonomy.

BLUE: I would say that in our own project (a study of factors involved in the design of rural development projects) we are trying to develop two major sets of taxonomies: of structural relationships and of the more difficult process factors that affect outcomes.

The real problem is applying the taxonomy to the realities of a project. There are a lot of different variables out there: in the technology and design aspects of the project, in the existing structure of the host government and its outer environment, including existing institutions and behaviors. In our research we are heading toward the development of the taxonomies and their application, but we have no intentions of beginning to go beyond speculative hypotheses about these relationships.
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