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Interdisciplinary analysis of two rural development projects in Pakistan

Edward Charles Pytlik

Iowa State University
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by

Edward Charles Pytlik

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ABSTRACT

Two Pakistani rural development projects were analyzed using an interdisciplinary technique. One project was conducted in the Punjab region of what formerly was West Pakistan (now Pakistan) under the auspices of the Colony Cooperative Farming Unions, Khanewal. The second project was conducted in the Comilla thana of what formerly was East Pakistan (now Bangladesh) under the auspices of the Pakistan Academy for Rural Development, Comilla. In addition to their being rural and in the same nation (Pakistan), both projects were undertaken in the early 1960's, were government sponsored, involved cooperative systems, included American Peace Corps Volunteers, and included a tractor driver training element.

A case study was developed on each of the selected rural development projects. An interdisciplinary technique was formulated to analyze the specific data within the case studies. This technique consisted of applying a series of 39 questions regarding the design, organization, and functions of the selected rural development projects. The questions were adapted from the works of D. Bordenave and P. Hill. The 39 questions were clustered into seven categories---cultural, economic, educational, political, psychological, sociological, and technical.

The findings and conclusions of the study were directly related to the three propositions put forth in the study. The
analysis of the Comilla project was used to verify the first proposition regarding a successful development project. It was concluded that a sufficient number of interdisciplinary dimensions were taken into account during the planning and implementation of the Comilla project. The analysis of the Khanewal project was used to verify the second proposition regarding an unsuccessful development project. It was concluded that the failure to take into account the relevant interdisciplinary dimensions of a development project, during its planning and implementation stages, decreased the chances for successfully integrating innovative practices into the target society. Bordenave's set of interdisciplinary questions was used to verify the study's third proposition regarding the proper accounting of a development project. It was concluded that an interdisciplinary methodology can provide a proper accounting of the many dimensions of a development project.
CHAPTER I. INTRODUCTION

He who only knows his own subject does not know that either.

S. R. Steinmetz

The period of decolonization that began at the conclusion of the Second World War, although somewhat abated, has continued to the present time. The end of the British Raj in India and the resultant formation of the free and independent countries of Pakistan and India in 1947 signaled the beginning of a new world order. Colonialism, imperialism, and exploitation of long-conquered lands were no longer to be tolerated. Freedom and independence of all nations, and for all peoples, were the new goals set by the world's most influential leaders. One after another, former colonies won or were given their independence--Nigeria, Malawi, Tanzania, Kenya, Egypt, Algeria, Singapore, Indonesia, Malaysia, Guyana, and Surinam.

But the transition from a protected colony to a free and independent nation was not always an easy matter. Problems quickly developed in many of the new countries. Many of these problems were directly related to a country having been a colony. For example, exploitation of resources left many nations without an economic foundation from which to function; the lack of a trained and educated indigenous cadre to replace the expatriate personnel in key political positions often led to chaos, revolt, and revolution; and this same lack of
replacement personnel in the technical areas often led to regression in the industrial, agricultural, and service sectors, which also added to the economic problems.

Virtually all of these former colonies, as well as many other nonprogressing countries throughout the world, needed massive support from the wealthier, more developed nations if they were to survive. The only question was, what type of support should be given? An obvious model to employ was the successful scheme used to rebuild Europe and Japan at the conclusion of World War II. First, there was a massive contribution of food, clothing, fuel, and building materials so that the survivors could regain the basic necessities of life—food, clothing, and shelter. Once the people were reasonably settled, seed monies and technologies were introduced to stimulate economic growth and development, particularly in the industrial sector (Drucker, 1968; Owens & Shaw, 1972).

The results of these efforts astounded even the most expectant development program planners. Within five years allied and former enemy countries alike had progressed to a situation whereby they were enjoying economic stability, industrial growth including independent development, and at least partial agricultural self-sufficiency. Why not, then, apply this same successful development scheme to the lesser developed countries of the Third World.

Thus, the development assistance programs initiated by highly-developed nations during the 1950's and 1960's centered
around three major areas—food exports to needy nations, economic development programs, and the stimulation of the industrial sector. Although they were not entirely ignored, agricultural and rural development programs were looked upon as secondary areas of concern.

This priority ranking of types of development programs was reflected in many of the Third World nations' own development schemes. Pakistan, for example, began preparing its first Five Year Plan (1955-1960) in 1953 with the assistance of expertise from the United Nations, the Agency for International Development, the Food and Agricultural Organization, Harvard University, the International Bank for Reconstruction and Development, and the International Monetary Fund. This plan allocated almost 65% of its investment monies to the industrial sector and the related infrastructures of water, power, transportation, and communication. Agriculture's share was a mere 9 1/2% of the total investment, although some of the allocation for water was for the creation of new irrigation systems and the improvement of others. Ten years later, Pakistan's third Five Year Plan (1965-1970) continued to reflect the same priority ratings. The industrial sector and related infrastructures were still receiving nearly 60% of the invested funds while agriculture's share had increased to just over 15% (Nyrop et al. 1971).

Since the priority rankings had not changed drastically in the ensuing 10 years, the development planners were
apparently happy with what had happened in the developing world. Indeed, some development experts felt that improvements within Third World countries had been substantial (Chodak, 1973, chap. 5; Merhav, 1969; Bendix, 1969; Apter, 1965). They pointed to the increased economic and political stability in many of the developing countries, to the increased industrial development, and to the successes of the "Green Revolution" in agricultural production. They referred to the growth and development of the more modern lifestyle enjoyed by an increasing number of persons living in the Third World. The persons reasonably happy with the results of the Third World development further claimed that the developing nations had progressed a long way in the past 20 years or so, and at the very least the development programs have helped to eliminate the worst situations and have started many nations toward greater self-sufficiency and stability.

Other persons working in the development area, however, had a much different opinion of the worth of past development programs. This group of development experts viewed the developed programs of the past 20 to 25 years as having ranged from not nearly as successful as they could be to unmitigated failures (Schumacher, 1973; Owens & Shaw, 1972; United Nations, 1975; World Bank, 1975). They viewed the apparent economic development successes as being at the expense of the majority of the people and having benefitted only a small segment of the population; they saw the apparent industrial successes as being
merely another form of western-nation exploitation; and they contended that the main cause of the food and population problems that had evolved over the past two decades were the result of improperly focused development programs.

The proponents for a new style of development program believed that there was more to development than seed money and the transfer of a technology. Such programs would never be successful, they claimed, because they only superimposed foreign schemata onto an unreceptive audience. They further contended that the success of the reconstruction schemes following World War II occurred because the societies being dealt with were familiar with the technologies, had an educated population, had been highly industrialized, and had had all of the infrastructures necessary for rapid economic growth. It was this familiarity, this acceptance, this knowledge of what to do with the offered commodities that was responsible for the successes in Europe and Japan. And, according to this group of development specialists, it was the lack of all of these things that caused the vast majority of past Third World development programs to be so unsuccessful.

The apparent lack of success of Third World development projects was acknowledged by most persons involved in that work and new forms of development strategies were beginning to emerge. One of these new development strategies was termed the interdisciplinary approach and it called for development programs that were totally integrated within the society it was to
aid. The interdisciplinary approach to Third World development proposed that in addition to the economic aspects of a development program, the social, psychological, environmental, and humanistic ramifications also had to be considered. Papanek (1967), for example, when discussing Pakistan's agricultural development program, stated that development officials doubted that a large proportion of cultivators would make the necessary decisions. The social, psychological, and institutional obstacles might be too great. Change might be precluded by the peasant's fatalism, the low importance he attaches to economic as against other values, the social and political organization of the village, the hold of tradition, or the distrust of government. (p. 148)

And when analyzing the results of this Pakistani agricultural development program, Papanek concluded that whether new technology was adopted depended in large part on the producer's knowledge of the technique and on the risk involved. It depended equally on the availability of credit and of the required supplies. (p. 152)

Papanek further concluded that "the market alone is inadequate to bring about technological changes in peasant agriculture" (p. 163).

Development planners throughout the world had specifically identified education as a discipline that played a major role in a successful development project. Schumacher (1973), in his book Small Is Beautiful, contended that development begins not with production of goods but with education, organization, and discipline. He writes:

If aid is given to introduce certain new economic
activities, these will be beneficial and viable only if they can be fairly sustained by the already existing educational level of fairly broad groups of people, and they will be truly viable only if they promote and spread advances in education, organization, and discipline. (p. 159)

Seers (1969) depicted a country's development in terms of solving the problems of poverty, unemployment, and inequality. He stated that education could specifically aid in the reduction of inequality if it was available at all economic levels, if it eased shortages of high level manpower, and if it prepared a professional class that was conscious of the realities of development.

If development specialists such as Papanek, Schumacher, and others were correct in their claim that for successful development to occur an interdisciplinary approach was required, then two propositions could be put forth. They were: (a) that by analyzing a successful development project an interdisciplinary element would be recognizable; and (b) that by analyzing an unsuccessful development project using an interdisciplinary technique the reasons for the project's failure would become apparent. This study attempted to test these propositions by analyzing two related rural development projects using an interdisciplinary methodology.

One project was conducted in the Punjab region of what formerly was West Pakistan (now Pakistan). The other project was conducted in the Comilla thana of what formerly was East Pakistan (now Bangladesh). In addition to their being rural
and in the same nation (Pakistan), both projects were undertaken in the early 1960's, were government sponsored, involved cooperative systems, included American Peace Corps volunteers, and included a tractor driver training element.

The Comilla Project had been recognized as being a successful development project (Franda, 1972; Lecerf, 1970). It was often referred to when a positive example of rural development was required. The results of the Punjab Project, in contrast, were not so positive. The Punjab Planning and Development Board (1974) and the author's personal experiences as a participant in the project both indicated that the project's goals and objectives were not met.

Statement of the Problem

The problem of this study was to analyze a farm mechanization project conducted in the Punjab region of West Pakistan and an integrated rural development project conducted in the Comilla thana of East Pakistan, using an interdisciplinary methodology.

Purpose of the Study

The purpose of this study was threefold:

1. To discern the successful and unsuccessful elements of the specified rural development projects and the reasons behind their success or failure.

2. To ascertain if elements of an interdisciplinary approach could be recognized as having been incorporated
within each project's design and implementation;

3. To explore linkages between the success or failure of a project and the incorporation of a multidimensional aspect within the project.

Need for the Study

Development planners throughout the world needed to realize the importance of the interdisciplinary approach in the formulation of Third World development projects. This need was clearly delineated in the Agency for International Development's policy determination paper entitled Institutional Grants Program (PD-62, October 30, 1974). This agency guideline paper, signed by Acting Administrator, John E. Murphy, stated:

AID is convinced that the solution to many problems in the LDC's (lesser developed countries) can be solved only through a multi-disciplinary approach, and particularly through the application of non-economic social science perspectives. In determining grant recipients, AID will favor institutions which show the most promise of bringing a multi-disciplinary approach to the solution of development problems, where appropriate. (p. 4)

This recognized need for an interdisciplinary approach to development was emphasized again in 1976 at a meeting held by the Organization for Economic Co-operation and Development's Committee for Scientific and Technological Policy. In the introductory remarks it was noted that:

The problems to be tackled go beyond the narrowly conceived field of Technical assistance. After all, technology transfer to LDC's implies an interaction among the private sector (private international investment and business in host countries), government
technical assistance agencies, ST policy agencies in technology exporting countries and relevant counterparts in technology importing countries. Therefore, given the nature of the above-mentioned demands, the very meaning of international scientific and technical co-operation for development must . . . be rethought and re-formulated. (p. 3)

Further evidence that the governments and their agencies were giving high priority to programs that were interdisciplinary in nature was recorded in the August 12, 1976, Federal Register. There, the U.S. Office of Education announced its Graduate International Studies program for 1977-78. Within section 146.22 of the Federal Register the following statement appeared:

The Commissioner may award grants to and contracts with . . . institutions to assist in the initiation and development of (1) international components for existing problem- or topic-oriented courses of study or (2) instruction on a problem or topic of contemporary concern to an existing international studies program. The resulting program must . . . provide course offerings of a comparative or interdisciplinary nature. Such programs will bring an interdisciplinary and comparative focus to problems, issues, or topics of mutual concern among nations.

The first criterion listed in the section devoted to describing the criteria for selection and the awarding of grants was "The international nature, contemporary relevance, and interdisciplinary and comparative dimensions of the program" (146.24).

A need for this study that was directly related to the project under analysis was also identifiable. In a publication entitled Punjab Development: Review and Prospects (Third and Fourth Issue: June, 1974), published by the Planning and
Not much progress has been made in the introduction of the type of machinery and implements which help raise per acre productivity and also are accessible to small farmers. To overcome these deficiencies, emphases need to be placed on the development and introduction of fractional mechanical technology and use of small threshers and tractors along with the whole range of yield-raising implements meant for land preparation, seed/fertilisation, etc. Organisational arrangements like co-operatives also need to be strengthened, so that mechanical technology can be made accessible to the small farmers, especially those having cultivated area below 12 acres (this category of farmers suffers from excess bullock capacity resulting into unusually large percentage of the crop area under fodder at the cost of food and fibre crops). (p. 141)

The type of program suggested in the above statement was almost identical to the project under analysis in the study. Since there was no consensus regarding the outcome of the project, and since it seemed that the project might be repeated, it was concluded that a thorough analysis of the first farm mechanization project could prove useful to those persons planning a similar project in the near future.

The need for interdisciplinary research related to Third World development projects was emphasized by Norman (1974) when he stated:

There has been an increasing number of pleas for interdisciplinary approach to research in the developing world. Lipton [Lipton, M. Interdisciplinary studies in less developed countries. Joint Reprint Series No. 35. Brighton, Institute of Development Studies, University of Sussex. 1970.] has forcefully argued for an inter-disciplinary approach because of the inability of conventional
economic theory, based on a profit maximisation goal, to adequately explain the behavior of traditional farmers in the developing world. (pp. 6-7)

One of the earlier calls for interdisciplinary research in the development of Third World nations came from Röling (1966). In an article in Sociologia Ruralis, Röling called for the integration of economic theory with rural sociology. Röling cited three reasons for why the integration should take place. First,

such phenomena as the growth of modern economies depend on behavior which is not implied in economic theory. In the second place the control of organizational and other social factors proved to be of paramount importance for economic growth. (p. 97)

Röling's third reason, which Lipton emphasized four years later, was that "the less an area is westernized, urbanized, and industrialized, the less satisfactorily economic theory explains economic behavior in that area" (p. 97).

DeWilde et al. (1967) chastized both national and international agencies for not adequately appraising in advance to potential outcomes of development projects. DeWilde stated that

We have repeatedly stressed that these responses can be assessed only in the light of all the interrelated factors--ecological, social, and economic--that are likely to influence them. (p. 222)

DeWilde continued by further delineating some of the factors that could affect a development project: kinship, political organization; land tenure; the division of responsibility by sex; labor migration; income and expenditure patterns; and outside influences.
Regarding the future approach to development, DeWilde claimed that:

For those areas where development has slowed or where little or no development has taken place it has now become especially important to identify the factors that have prevented the emergence of additional opportunities to raise production and to determine specifically what to do about these factors. Any investigation of these limiting factors must focus on areas that are clearly defined in terms of ecology and human environment. Problems can be identified and specific detailed solutions worked out only in this way. (pp. 228-229)

Collinson (1968) also noted the inadequacy of single discipline research as it was related to Third World development projects. Collinson declared that:

not all the variables in the economic analysis of the potential impact of innovations in peasant farming systems are quantifiable. Simple cost and return relationships may well be misleading as innovations usually have wider implications for the allocations of resources on the farm unit. Deeper analysis may throw up critical management factors on which advisory resources should be focused to realise the true potential of the innovation concerned. (p. 50)

Collinson concluded by saying that,

It is readily demonstrated that thorough analysis depends on the availability of information on these relationships. It is made particularly important when comparisons are needed with the aim of indicating development priorities. Close contact with related disciplines is clearly required. (p. 59)

Propositions of the Study

Most development experts agreed with two general assumptions. They were that (1) development projects were multifaceted; and (2) the success of such programs de-
pended upon the participants' ability to identify the various factors involved and to take into account the interactions between and the contributions made by each factor. From these assumptions then, the following propositions were put forth:

1. During the planning and operation of a successful development project the many relevant dimensions would have been taken into account;

2. During the planning and operation of a development project that was eventually deemed unsuccessful, some of the relevant dimensions would have been ignored;

3. A proper accounting of the many dimensions of a development project could only be made using an interdisciplinary methodology.

Assumptions of the Study

Development planners and their critics had only recently begun to emphasize the interdisciplinary approach to development. This broader outlook on the process of development was the result of the understanding and acceptance of certain facts and beliefs that underscored this study.

1. Development projects were multifaceted.

2. The success of development projects depended upon the participants' ability to identify the various factors involved and to take into account the interactions between factors and the contributions made by each factor.

3. The interdisciplinary approach would make a valuable
contribution to the development process.

4. Development planners, particularly those concerned with Third World nations, needed to understand the interdisciplinary approach to development.

5. Education was one of the disciplines which required major emphasis in an interdisciplinary approach to development.

6. Technical education was a major element within the broad education category which required emphasis in an interdisciplinary approach to development.

Limitations of the Study

1. This study was limited to an analysis of the farm mechanization project undertaken in the Punjab region, West Pakistan in 1961 under the auspices of the Colony Cooperative Farming Union, Khanewal, and the Comilla project undertaken in the Comilla thana, East Pakistan in 1959, under the auspices of the Pakistan Academy for Rural Development. The analysis of these projects was limited to the case studies contained in Chapter Three of this study and the documents from which the studies were derived.

2. The technique used for analysis emphasized the interdisciplinary approach.

Statement of the Procedure

1. A thorough review of the literature concerned with
the interdisciplinary approach to development was undertaken.

2. A thorough review of the literature concerned with the setting within which the specified development projects were undertaken as well as the projects themselves was undertaken. Government documents, relevant periodicals and journals, case studies, and general texts were reviewed.

From the material reviewed above, a detailed description of the selected development projects was formulated.

3. Using an interdisciplinary technique, the selected development projects were analyzed.

The analysis of the selected rural development projects was conducted by answering a series of 39 questions that were interdisciplinary in nature. Thirty-five of these questions were listed in Diaz Bordenave's essay "Communication of Agricultural Innovations in Latin America: The Need for New Models" (Communication Research. 1976, 3, 135-154). The remaining four questions were identified by Patricia Hill, in a casual paper entitled "Diffusion of Innovation qua Transfer of Technology Critique, Comments, and Recommendations" (Journalism Department, Iowa State University, 1976). To simplify the analysis, the questions were partially rewritten and reorganized from their original form (see Appendix) into seven general categories. The categories and the questions they contained were as follows:
Cultural

What was the historical genesis of [the social organization]?

Were the farmers consulted and were their needs for innovation ascertained?

Did the innovations take into account regional and local differences in ecology, economy, farming habits, and cultural norms?

What were the feedback possibilities and channels for the farmers to communicate their needs and results to the innovation sources and policy-makers?

What were the relationships between the processes of [human development], formal education, organization, politization, and technification of the rural population?

Economic

Did the majority of the farmers own their land, either individually or cooperatively?

Who controlled the economic institutions, particularly the market, credit, and input supply organizations?

[Did the adoption of the proffered innovations] promote employment or unemployment, fixation of the rural population or migration to the cities, enrichment of the already rich or better income distribution?

Educational

How adequate were the change agents or extension service
personnel as a two-way communication channel?

Were [the change agents or extension service personnel] technically competent, ideologically oriented to the welfare of the farmers, methodologically adequate?

How did farmers diagnose and solve their problems?

How did [farmers] search for extracommunity resources and help?

How well-developed [was the farmers'] communication ability?

What were the personal and group roles in farmers' problem-solving?

Were the skills necessary for [the] maintenance [of adopted innovations] available?

**Political**

How autonomous or independent was the country from external forces which affected its economy and its political decisions?

What criteria were used to guide the choice of innovations for diffusion - (a) the common welfare, (b) the increase of production for export, (c) the maintenance of low prices for urban consumers, (d) the profit of big commercial farmers and landowners?

[What effects did the adoption of certain innovations have] on regional and national development in the short, medium, and long range?
Was there communication monopoly, censorship, blockage, or distortion?

Were farmers organized in pressure groups that could exert influence on the social structure of land tenure, on the production infrastructure, and on the marketing system so as to facilitate the diffusion of appropriate innovations?

**Psychological**

Was there any degree of coercion necessary for the adoption of an innovation, either by the market situation, the credit institutions, the government, the landlords?

What was the role of mass media advertising?

Was [mass media] persuading farmers to adopt innovations that were really needed or that they did not need?

Were [the products and techniques being diffused] adequate to the stage of technological, economic, and social development in the nation?

[Did the new innovations] require the establishment of new systems of credit, land tenure, technical assistance, marketing, and insurance?

How adequate were the communication channels' content and treatment of the innovation in relation to the needs of the farmers?

**Sociological**

How was the rural social structure organized, and what
influence did it exert over individual decision-making?

Who decided what kinds of innovations would be diffused and developed?

What effects did the adoption of certain innovations have on individual and family welfare?

What kind of living and learning adjustments did the innovations require from the farmers?

Who controlled the sources and channels of communication for the innovations?

[Was mass communication] at the service of all the farmers or mainly at the service of the government, the input industries, the buyers of farm products, the larger farmers, the consumer groups?

Which were the institutions that directly or indirectly transferred technology to the farmers?

What . . . conditions affected the continued availability of auxiliary technologies?

Technical

Did [farmers] own their agricultural tools?

How appropriate and well-proven were the products and techniques being diffused?

Was technification promoted and executed without efforts for simultaneous [human development]?

What auxiliary technologies were needed to render the use of the proposed technology viable?
From whom was the proposed technology obtained, an external or an internal source?

4. The resultant findings were related and conclusions drawn.

5. Recommendations were made.

Definition of Terms

1. **Development**: A process of improving the capability of a society and its institutions to meet the increasing and changing needs and demands of the total population (L. Wilcox, lecture in Sociology for Development: Sociology 542X, Iowa State University, December 15, 1975).

2. **Farm mechanization**: The use of machine power for selected agricultural operations like land leveling, land preparation, cultivation, harvesting, etc., . . . for [the purpose of] increasing the area under cultivation and increasing the cropping intensity and crop productivity (Punjab Development: Review and Prospects. Lahore, Pakistan: Planning and Development Board, Government of Pakistan, 1974, pp. 138-139).

3. **Interdisciplinary**: Implies integration of disciplines through joint projects (D. W. Norman, Inter-disciplinary Research on Rural Development. OLC Paper No. 6, April, 1974, p. 6).

4. **Multidisciplinary**: Implies researchers from more than one discipline who do not necessarily communicate with one

5. **Technology**: The accumulation of artifacts and mental processes used by the human race in its attempt to create a better life environment (Synthesis of Definition by W. Gunston in E. de Bono (Ed.) *Technology Today*. London: Routledge and Kegan Paul Ltd. 1971, p. 60).
CHAPTER II. REVIEW OF LITERATURE

Introduction

During the decades following the Second World War, development of less developed countries (LDC's) was focused almost exclusively on improving those nations' economies. More specifically, the development strategies placed primary emphasis on expanding the industrial sector of the LDC's economy. As early as 1958, however, a few persons involved with aiding the development of LDC's had begun to question the validity of a single discipline approach to development.

Hirschman (1958), for example, having reviewed the economic development problems of LDC's stated that:

Our diagnosis has one special characteristic: it is not concerned with the lack of one or even of several needed factors or elements (capital, education, etc.) that must be combined with other elements to produce economic development, but with the deficiency in the combining process itself. Our diagnosis is simply that countries fail to take advantage of their development potential because, for reasons largely related to their image of change, they find it difficult to take the decisions needed for development in the required number and at the required speed. Capital or technical education are scarce or the banking system is inadequate because the country has found it difficult to take the steps necessary to create, direct, or procure capital, to spread education, and to introduce the proper institutions.

If backwardness is due to insufficient number and speed of development decisions and to inadequate performance of developmental tasks, then the fundamental problem of development consists in generating and energizing human action in a certain direction. (p. 25)

Hirschman viewed this LDC development process as being
similar to a highly-developed country's economic depression. He claimed that

The "lack of confidence" that rules in a depression is easily dispelled compared to the . . . reluctance to agree to priorities and to uneven change in the case of the group-focused image of change, and the difficulties of agreement-reaching and cooperation-enlisting in the case of the ego-focused image. These reluctances and difficulties can be overcome only slowly. Then, the taking of development decisions is held back not by physical obstacles and scarcities, but by imperfections in the decision-making process. Development theory and policy therefore face the task of examining under what conditions development decisions can be called forth in spite of these imperfections, through pacing devices or inducement mechanisms. (p. 26)

At about the same time, other development planners noted that although the industrial sector was improving in terms of measurable economic gains in many of the LDC's, the standard of living for all but a relatively few persons remained unchanged or had declined. The major reason for this phenomenon appeared to be that while the vast majority of the LDC citizens lived in the rural parts of the nation, the development programs emphasized the industrial growth of urban areas. Therefore, development planners began to include the rural and agricultural sectors in their development schemes.

The results of the development planners' endeavors, however, have not been overwhelmingly successful. Nearly 20 years later, McNamara (1975) in the forward to Uma Lele's book The Design of Rural Development: Lessons from Africa, reported that:
How to raise productivity among the rural poor in developing countries is one of the two or three most urgent questions confronting the international development community today.

The scale of the problem is immense: Of the 2,000 million people in the World Bank's developing member countries, roughly 1,500 million live on the land, and nearly half of those are entrapped in what can only be described as absolute poverty.

The number of the absolute poor increases and their enforced degradation deepens with every passing year, despite more than two decades of extraordinary worldwide economic growth.

The problem is not merely that the benefits of economic growth have been inequitably distributed, as they have, but that the poor themselves have been unable to contribute to that growth.

The solution, then, lies in raising the productivity of the poor, so that their own incomes can rise as those of others in their societies do.

But how? So far no one has the complete answers . . . . (p. v)

McNamara's final statement raised the following questions:

1. What were the incomplete answers that had been suggested to date?

2. Could the partial answers be integrated into a complete answer?

In an attempt to answer the first question, the interdisciplinary approaches to development that had been suggested by various development experts, from Hirschman in 1958 to the present were reviewed. Single discipline approaches were not included in this review for the following reasons:

1. The general lack of success of single discipline approaches to development for the past 20 years.
2. By its very definition, an interdisciplinary approach extracted ideas from various disciplines and incorporated them with other ideas from other disciplines. Therefore, each of the disciplines normally involved in development would have its ideas represented.

Since the idea of interdisciplinary development was being discussed at the same time that the need for rural development became obvious, most of the interdisciplinary approaches were concerned with aiding the rural population of the LDC's. The remainder of this study was an attempt to answer the second question raised by McNamara's statement.

Interdisciplinary Approaches to Development

Although the works cited in the following review of literature advocated an interdisciplinary approach to development, many of them still placed an emphasis on a specific discipline. Therefore, those approaches emphasizing similar disciplines were grouped together. Those approaches that were deemed too broad to fit a specific discipline were grouped into a general category.

Socio-cultural

In the summary and conclusions section of their book entitled, Tales of Two City-States: The Development Progress of Hong Kong and Singapore, Geiger and Geiger (1973) claimed that many developing as well as developed nations dismissed the progress made by Singapore and Hong Kong as being the result
of the special socio-cultural characteristics of the Chinese people. As such, then, non-Chinese countries could not duplicate the processes with any degree of success. The authors, however, viewed the development progress of the two city-states as being just as relevant as the successes in any other part of the world.

At the same time, Geiger and Geiger were well aware that just because a development strategy was successful in one situation it does not guarantee that it will be successful in a second situation. As they pointed out, "actual economic and political systems do not exist in isolation. They are inextricably interrelated . . . with the other institutional and cultural systems" (p. 24). Therefore, a particular development strategy was not likely to work if it was not compatible to the other elements of the society to which it was applied.

Saxena (1973) discussed modernization in terms of whether or not attitudinal and behavioral changes in individuals could significantly account for a change in the social system as a whole, and vice versa. In the social system as a whole, Saxena included such characteristics as social mobility, increased urbanization, education, industrialization, and mechanization. When discussing individuals, Saxena referred to attitudes, values, orientations, and behaviors necessary to participate in a modern society. By modernization, Saxena meant "a continuous change from one state of affairs to another, from a traditional way of life to a nontraditional and rapidly chang-
ing style of life which conforms to group patterns and expectations" (p. 18).

When discussing the results of the research regarding modernization of a society, Saxena concluded that:

From these observations there emerges a proposition that suggests that even if an individual is low on a variable, but lives in a system that is high on that variable, he will be more modern than someone who is high on a variable but lives in a system that is low on that variable, given that the variable under consideration is related to modernization. (p. 26)

Neihoff and Anderson (1964) suggested that a key member in the development process was the innovator or the change agent, and that the process itself was determined by the actions of the change agent and the reactions of the recipients. They then divided the recipient reactions into the categories of (a) the motivations for accepting or rejecting the innovations, and (b) the characteristics of the traditional culture which favor or retard acceptance of the innovation.

Neihoff and Anderson claimed that the motivations and characteristics were either positive, negative, or neutral toward developmental change. They further stated that some of these factors could only be positive while others could only be negative (see Figure 1).

In a very different approach to development, Mboya (1962) saw the problem of development as being much more complex than did the Geigers, Saxena, or Neihoff and Anderson. Mboya described the plight of the LDC nations of Africa as being not only interdisciplinary but also macroscopic in magnitude. His
Plan (of innovation)

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INTEGRATION

Figure 1. Actions and reactions during the introduction of an innovation. (Niehoff & Anderson, p. 6)
view was that development must be recognized as a problem of continental and global dimensions, not one of the individual and the village. In Mboya's opinion:

Africa is one of the underdeveloped continents of the world. Socially, Africa is underdeveloped in the sense that its tribal components have not yet found a proven basis for collective action. Furthermore, Africa is socially underdeveloped because there is almost no social and cultural traffic between English- and French-speaking Africa. The culture imposed on us sticks like burrs.

Economically, Africa is underdeveloped in the sense that mass poverty is universal. This poverty is not entirely due to poor natural resources, and hence it could definitely be lessened by methods already proved successful in other parts of the world. It is reflected in deficiencies like the shortage of schools, social services, hospitals, universities, and technical institutions. It is further reflected in the number of our women who die in childbirth, the universality of malnutrition, high incidence of various diseases, low wages, and in the contrast between the luxury and affluence of Europe and North America on the one hand, and the slum conditions and poverty prevailing in Africa on the other. (pp. 43-45)

"Development demands and produces far-reaching changes in societies; the fabric of social life becomes altered, social attitudes change" (p. 11). So stated Mountjoy in the introduction to his book, Developing the Underdeveloped Countries, (1971). Institutional arrangements, political conditions, adverse terms of trade, human conditions, social customs, and psychological obstacles all could have an effect, positively or negatively, on development plans he concluded.

When expanding on the human factor's importance to the process of development, Mountjoy claimed that many human factors were extremely difficult to incorporate into the
development scheme or were obstacles to a successful development effort. Examples given by Mountjoy included land tenure systems, the quality of government bureaucracy, and level of traditionalism within the culture and social customs. As an example of a psychological obstacle, Mountjoy quoted an article in *The Times* by J. Ardagh (1969): "A lack of flair for mechanics, lack of a sense of maintenance or belief in mechanics, so that clocks, telephones and typewriters are left unmended more through apathy than absence of skill" (p. 12).

Moore (1974) called for cooperation between the social sciences and earth sciences in the study of agricultural development projects in developing countries. Moore's reasons for requesting the integration of these sciences to solve agricultural problems included: (1) that ecology was a major factor in shaping rural societies; (2) there was a need to study the interrelationships between ecology and society; and (3) there was a need to study the effects of climate on a society.

Moore also claimed that there were interrelationships in rural societies between the society, its economics and its health standards; and between the economic and social organization and its demography. For these reasons, argued Moore, single discipline studies were not a realistic alternative for the study of rural societies. Instead, interdisciplinary studies were required if "successful" analyses of rural societies were to be forthcoming.
Educational

In addition to Schumacher and Seers, whose development theories were outlined in the introductory chapter, two others also placed major emphasis on the educational aspects of development. Long (1971) also made a strong appeal for an interdisciplinary approach to development, but his emphasis was toward the inclusion of interdisciplinary research in the universities. When discussing societal problems, Long stated that although they have scientific and technological aspects, "their solutions ... demand the simultaneous and interactive efforts of ... scientists, engineers, social scientists, political scientists, lawyers, and doctors, to name only the most obvious" (p. 961). Rather than look at universities as discipline-oriented institutions, Long stated, they should be viewed as the repositories of the required expertise.

But the most important reason for including universities in interdisciplinary research, according to Long, was to allow the students the opportunity to learn about and participate in an interdisciplinary effort. Long emphasized that "this can only happen when their professors have personal knowledge of and commitment to interdisciplinary research and when there are programs wherein students can learn by doing" (p. 961).

Developing nations are not the only places where development was failing, claimed Wignaraja (1976). The affluent,
mostly Western nations of the highly-developed world also had failed in their own development attempts. Wignaraja pointed to the polluted environment, wasted resources, and the fear and anxiety concerning basic value systems in the highly-developed nations. He argued that they were comparable to the lack of basic necessities of food, clothing, medical facilities, and safe drinking water in LDC's.

Wignaraja, therefore, called for a complete restructuring of the thought processes related to development. Such a re-thinking would require new information, retraining, and a new educational methodology. But most importantly, stated Wignaraja, the research into the new rethinking cannot be done by individuals or individual disciplines. Instead it must be a collaborative effort on the part of individuals and institutions, all of whom must have a common shared goal, Wignaraja emphasized.

**Economic**

Like Hirschman, Taake (1975) also saw an overemphasis on the economic aspects of development when discussing the planning of development projects. He stated that "macroeconomic planning was primarily regarded as a logical procedure with the aim of calculating a consistent set of targets and instruments" (p. 3). The result of this almost total emphasis on the economic aspects of development, as Taake put it, was that developing countries were "inundated with an excessive supply
of econometric model building, but it became increasingly
difficult to specifically orient these programming techniques
to the actual needs . . . in the developing countries" (p. 3).

The recognition of a slow, gradual, but steady trend away
from total economic development planning was a trend that could
only lead to improved development projects, Taake felt. He was
enthusied by the more frequent recognition of the associated
problems of goal definition, decision-making, political
structures, organization, and implementation at the planning
stages of development programs.

The overwhelming emphasis placed on economic development
by development planners also came under sharp criticism from
Geiger (1967). To too many development planners, claimed
Geiger, development was equated solely with accelerating the
economic growth of an LDC. "Their economies were assumed to
be autonomous systems affected by the other aspects of a
society to so minor an extent," stated Geiger, "that they
could be disregarded in the preparation and carrying out of
development policies" (pp. x - xi). Geiger contended that the
fallacy of this approach to development could be seen in what
he called "the manifest failure of so many development strate-
gies focused on economic growth per se" (p. xii).

Geiger conceded that substantial and sustained increases
in production were essential to a successful development pro-
duct. However, he felt that these components of a development
project were affected by other aspects of the society as well,
and that the recognition of this continuous interaction was necessary for the operation of a successful development project. According to Geiger, "Development is a highly complex process of interrelated changes in all the major systems--political, economic, and social-institutional--of a society and in the values, concepts, attitudes, and norms contained in its culture" (p. xi).

Wilkinson (1973) argued for the necessity of creating a new view toward development, one that was not so wedded to economic theory. He claimed that too often social science research was sectarian in its attitude. Wilkinson called for an interdisciplinary approach to development so that development planners might be able to draw from all available sources. As an example of this need, Wilkinson quoted T. W. Swan:

We all know that in models of economic growth we can produce stagnation crisis, Malthusian traps, inflation barriers, take-off instability situations, even trade cycles, at the drop of a symbolic cliché. The trouble is that any one of quite a lot of clichés will do. We also know that if we were asked to think about a five-year plan for India we would not look to economic theory for ready answers: we would need to learn a great deal about India, about people, about practical techniques. T. W. Swan, "Golden Ages and production functions", in Amartya Sen (Ed.) Growth Economics. (Harmondsworth, 1970), p. 203. (p.1)

Political

During his analysis of integrated rural development programs, Ruttan (1975) asked the following question: "Why is it possible to identify a number of relatively successful small-scale or pilot rural development projects but so diffi-
cult to find examples of successful rural development programs?" (p. 10). To seek an answer to his question, Ruttan delved into three specific areas of literature: writings related to the urban-industrial impact hypothesis; writings on the theory of induced technical change; and writings on the new models of institutional change.

Ruttan stated that the primary reason why successful small-scale development projects could be found while large-scale development programs could not was that the success of small-scale projects was usually attributable to individual human devotion to the project. When the successful pilot project was attempted on a national scale the intensity of the individual human devotion could not be maintained. In addition, Ruttan continued, turning the project over to a centralized government agency or bureaucracy often resulted in the local directors losing the right to tailor the project to the local situation. Local initiative was sacrificed for administrative convenience, Ruttan concluded.

Eastman (1976) wondered why Peru, after some 22 years of technical assistance from the University of North Carolina and additional input from the Iowa State University technical mission, had not increased its agricultural production. His analysis of the project related that the technical assistance from those universities concentrated on biological technology, credit, and extension education. Using Mosher's outline of agricultural development (in *Getting Agriculture Moving*. New
York: Frederick A. Praeger, 1966), Eastman found that a successful agricultural development project must contain inputs such as seed, fertilizer and pesticides, markets, price incentives, transportation for both inputs and outputs, credit and extension education, the latter two not essential but helpful. But of the others, Eastman wrote "If even one of these essentials is absent, no increase will occur" (p. 25).

Turning back to the Peruvian agricultural programs, Eastman found that the two American university missions had produced numerous studies on the marketing, transportation, inputs, and price supports in addition to their emphasis of the biological, credit, and extension dimensions of the project. However, Eastman found that

Consciously or unconsciously, the government elected to go with alternative policies. Among other things, food prices were kept low and adequate fertilizer was not imported. Nor did the technical advisors push very hard on the sensitive political issues. They preferred to remain aloof from the hard political decisions required for successful agricultural programs. (p. 25)

Psychological

Among the earliest of proponents for an interdisciplinary approach to development was McClelland. McClelland (1961) discussed his interdisciplinary approach to development in terms of increasing indigenous incentive systems. McClelland's thesis was that a psychological need for achievement was responsible for economic growth. He termed this need an n
achievement. Conversely, he claimed that a lack of achievement was responsible for economic decline and stagnation.

McClelland theorized that the forces that produced rapid economic development were inherent within the human being and manifested themselves through basic motivations and the methods and means of social organization. McClelland felt that to stimulate development a country needed to: break its orientation toward tradition and diversify its cultural, social, and economic activities; increase the achievement of its population; provide a better allocation of existing achievement resources.

But the question remained of how a development programmer might accomplish these tasks of reducing traditionalism and conservatism and increasing innovativeness.

Kunkel (1976) postulated that the heart of any analysis of development should be the psychological dimension of the project. This was because the psychological dimension would describe "the specific linkages between development processes on various preceding and concomitant phenomena which the usual economic and sociological approaches are wont to bypass or simply assume" (p. 651), Kunkel stated.

Kunkel claimed that all psychological analyses of development followed a general paradigm (see Figure 2). In explaining this paradigm, Kunkel stated that economic and sociological analyses of development deal only with the concepts enclosed in the triangles, while "psychological approaches postulate that
social, economic, cultural, and historical variables influence development through psychological elements (enclosed in a circle)" (p. 651). Kunkel further explained that these significant variables were all derived from a particular model of man.

When analyzing Pakistan's agricultural development, Papanek (1967) pointed out that when government officials attempted to increase production through marketing incentives alone, the project was not successful. Papanek claimed that
this was because the market incentives did nothing about the farmers' lack of technical knowledge (by 1960 only 10% had visited demonstration plots and less than 5% had seen an extension worker), the lack of necessary inputs (inferior seed grain was being provided by government seed farms; fertilizer, water, and seed was unavailable in many districts), and the lack of purchasing power of the subsistence farmer.

Papanek stated that when the government provided the additional incentives and necessary inputs during the five-year period from 1960-1965, production increased dramatically. The difference, according to Papanek, was that in addition to market incentives, the Pakistani farmers were profiting from "higher and more stable output prices and . . . subsidized inputs; improved . . . water, transportation, seeds, and other inputs; and a larger role for private initiative." Papanek concluded, "The key to increased production in the short run was water and fertilizer, with private initiative of great importance in expanding the use of both" (pp. 182-183).

The importance of incentives in the industrial development process was also emphasized by Mason (1972). Mason concluded that developing countries needed to emphasize incentive systems that would increase local, labor intensive industries, use national investments and local equipment, and train indigenous workers for skilled and managerial positions.

Mason made his conclusions having observed that the industrial sectors of many LDC's suffer from low labor absorption
and high capital investment, just the reverse of the prescribed needs for developing countries. Mason offered the following interrelated reasons for the occurrence of the phenomena:

Incentive schemes designed to induce investment in the less developed countries result in factor and commodity market price distortions. The distortions tend to encourage the use of too much capital in relation to labor.

Small markets and monopoly advantage reduce the incentive to engineer appropriate technologies. Artificial technological fixity reduces the options available, i.e., firms fail to fully consider relative factor prices in their decisions on choice of technique.

Technologies appropriate to conditions in less developed countries do not exist.

Skill shortages make impossible the application of labor intensive technologies, i.e., capital is substituted for labor to circumvent skill shortages. Multinational firms confront different factor prices than local firms, i.e., they obtain their capital in international markets at more favorable rates than those available to locally controlled firms and consequently they use more capital.

The demonstration effect operates to artificially constrain the options considered for use by local entrepreneurs, i.e., local firms emulate multinational firms. (pp. 9-10)

**Technical**

When discussing Third World agriculture, Jacoby (1974) described the judging of technological progress in agriculture as being conducted mostly in terms of yields per acre, amount of fertilizer used, capital investments, labor input, and the substitution of capital for labor. This type of analysis, Jacoby believed, "will necessarily mislead public opinion with
regard to the real effects of new technologies upon the weak economic system of underdeveloped countries" (p. 203).

Jacoby emphasized that in addition to increased output and economic measurements, technological advances in agriculture also have a profound effect upon such societal dimensions as employment, man-land relationships, and social stratification. Jacoby concluded by stating, "I do believe, however, that it would be essential if interdisciplinary research on this subject could be conducted with the participation of economists, agricultural scientists, and sociologists" (p. 204).

Also calling for an interdisciplinary approach to farm mechanization projects, Stevens and Ahmad (1971) posed the question, "How can governments be expected to make improved decisions if the involved professionals cannot come to agreement on objectives, methodology, and recommendations" (p. 32)? To the authors there was no question of the interdisciplinary aspects of development. Mechanization programs, they stated, had the interdisciplinary dimensions of engineering, biology, economics, and technical training. No one discipline was capable of making the comprehensive analysis required so that effective policy decisions could be made by government officials, Stevens and Ahmad claimed. Therefore "a formal or informal interdisciplinary effort . . . seems to be essential" (p. 31).

Using technological choice as the focal point, Vietorisz
(1974) also exemplified the interdisciplinary aspects of development. In an article entitled "Diversification, Linkage, and Integration Focus in the Technology Policies of Developing Countries," Vietorisz listed a series of questions that, in his opinion, ought to be asked of each technological choice. These questions demonstrated the extent to which development had so many interrelated parts. The questions were:

What does the technical alternative contribute to institution building? Does it stimulate new skills, new capabilities, new organization?

Does it lead to technological autonomy or a perpetuation of dependency, especially mother companies in foreign countries?

Does the technological alternative contribute toward societal integration? Does it weaken class barriers, promote mobility?

Does it contribute toward technological integration? Does it help to tie together universities and research institutions with producing enterprises?

Is the technological alternative compatible with reasonable resource management at the national level? (p. 76)

During the study and analysis of Asian agriculture development, Haseyama (1974) paid particular attention to the green revolution. His conclusions included the statement that many of the Asian countries lacked the agricultural infrastructure required for a successful green revolution. Further, Haseyama claimed that his analysis showed that most Asian countries were not yet able to make the necessary economic allocations required, nor did they have sufficient technical training or technical knowledge to create the needed environ-
ment for a successful green revolution.

Specifically, Haseyama stated that the following factors were required for a successful green revolution to occur in Asia:

(1) Advance agricultural infrastructure on the production side, particularly irrigation both in area and quality.
(2) Make available required agricultural input materials and development of credit facilities to provide farmers with funds to obtain input materials.
(3) Make institutional reforms to improve the current disparity of land and income distribution.
(4) Improve quality of HYV [high-yielding varieties] grain, which is often inferior to traditional varieties.
(5) Improve capacity of proper post-harvest treatment, and such post-harvest infrastructure as storage, transportation, stable marketing system, etc. (p. 104)

Gotsch (1972), when reporting on tractor mechanization and rural development in Pakistan stated that "to understand the issue of mechanization in Pakistan one clearly has to go beyond social accounting to its institutional and political dimensions" (pp. 21-22). Gotsch further reported that the general processes of economic and political change related to development could also be specifically related to mechanization. Thus, all had common dimensions. Examples of these interrelationships presented by Gotsch included:

1. more available water created greater demands for power;
2. the new technology conflicted with traditional forms of land tenancy;
3. the new technology provided cash surplus with which
to purchase new equipment;

4. foreign agencies became willing to finance equipment imports because they recognized a potential for increasing agricultural output;

5. the political structure that developed in the rural areas was compatible with mechanization programs.

Gotsch also reported on a Ford Foundation project in Pakistan in which an attempt was made to work with the affluent farmers to replicate the type and methods of agricultural technology that were found in southwestern United States. According to Gotsch, the results of this attempt at mechanization "was a much publicized report on farm power that advocated a rapid expansion of tractor availability but failed to deal adequately either with alternatives or with the concept of social costs and benefits" (p. 12).

To substantially raise the income of the poor, reported Mellor (1977), would mean an almost astronomical increase in the demand for food, requiring increased production rates far greater than anything achieved to date. Therefore, claimed Mellor, an increased food supply should be the prime production goal of development. This could be accomplished through investment in new agricultural technology.

The second step that must be taken, according to Mellor, would be to reduce capital requirements per worker in the industrial sector. Third, the export and import rates must both be increased in order to decrease capital intensity. Finally,
the fourth step that Mellor outlined in the process of raising
the income of the poor was to decentralize planning and ad­
ministrative procedures, and a change in emphasis from regula­
tory to facilitatory procedures.

However, Clay (1975) contended that technical change in a
development project required a sequencing and packaging of in­
novations. "It is the overall impact of a complementary pack­
age that is important and not necessarily the characteristics
of one component" (p. 74). Clay also claimed that economic
analyses of technological change often took for granted or
ignored inherent institutional change. This would result in
an incorrect analysis, stated Clay, because in many cases the
institutions needed to complement the technological change were
unavailable or unable to respond in the required manner.

Clay's case in point was a rural development project in
Bihar state of India. Having analyzed the project, Clay con­
cluded that choices made by officials, first in the choice of
tubewells, and second in the decision to introduce tractors
rather than power tillers, and third in the unrealistic collat­
eral requirements of the involved credit agencies, all impeded
the progress of the project. This, he continued, "ensured
that a higher proportion of the benefits accrued to larger
landholders through own use of equipment and earning economic
rents on the supply of scarce machine services" (p. 86). The
project also had the effect of making the small farmers de­
pendent upon the larger landowners for some of the necessary
inputs, thus reversing a traditional pattern of transactions; previously, the large landowner was dependent upon the labor provided to him by the small farmers.

The Canadian Hunger Foundation (1976), on the other hand, was concerned that development planners and analyzers would devote too much attention to the technology being introduced and not enough to the other interrelated aspects of the concerned society. The authors stated that

An approach which looks only at purely technical aspects would neglect the dynamic interrelationships among the technology in whatever form it takes, the users of the technology and their attitudes and values, the resource base of the region, and the economic and political structures surrounding the other factors. (pp. A2-A3)

The authors concluded by warning that if there were restricting limitations in any of the above areas, the chances for even a partially successful development project would be severely hampered.

General

The following approaches to interdisciplinary development did not emphasize a specific discipline. Rather, they were more general in scope. Owens and Shaw (1972, 1974), for example, proposed that only in modernizing societies were there "explicit efforts made to involve the populace in planning their own futures" (p. 4), an essential ingredient for successful development projects. Dual societies, they offered, were simply extensions of ruler-ruled traditional societies in
which decisions came from the top and left little or no room for the individuals to participate in their own destiny. The important characteristics of a dual and a modernizing society were compared in Table 1.

Table 1. Important characteristics of dual and modernizing societies (Owens & Shaw, 1972, 1974, pp. 12-13)

<table>
<thead>
<tr>
<th>Characteristics of Local Governments and Other Local Organizations</th>
<th>Dual</th>
<th>Modernizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organized problem-solving system</td>
<td>Inadequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Decision-making authority</td>
<td>Nominal</td>
<td>Considerable</td>
</tr>
<tr>
<td>Financial resources</td>
<td>Limited, essentially static</td>
<td>Considerable and rising</td>
</tr>
<tr>
<td>Written records (for both public and individual use)</td>
<td>Rare, not increasing; people rely on memory</td>
<td>Considerable and increasing reliance on memory declining</td>
</tr>
<tr>
<td>Leadership positions</td>
<td>Few; number not increasing much</td>
<td>Many; number increasing</td>
</tr>
<tr>
<td>Planned effort to induce transfer of loyalties from traditional to new institutions</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Concept of local development</td>
<td>Individual, ad hoc projects; little emphasis on interrelationships</td>
<td>Systems and networks; interrelationships emphasized</td>
</tr>
<tr>
<td>Organization of Space for Economic Activities</td>
<td>Organizes market towns No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 1. (Continued)

<table>
<thead>
<tr>
<th></th>
<th>Dual</th>
<th>Modernizing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment in infrastructure</strong> (electricity, transport, storage, land improvement)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National systems</td>
<td>Adequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Regional systems</td>
<td>Tends to be adequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Local systems</td>
<td>Inadequate; often no network</td>
<td>Adequate, built as networks</td>
</tr>
<tr>
<td>Build linkages between national, regional, and local levels</td>
<td>Unsystematic and slow</td>
<td>Essentially systematic and rapid</td>
</tr>
</tbody>
</table>

**Policy, Attitudes, Trends Related to Production System**

<table>
<thead>
<tr>
<th></th>
<th>Dual</th>
<th>Modernizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government believes the poor can pay cost of own improvement</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Price system</td>
<td>Substantial administrative controls</td>
<td>Strong reliance on &quot;the market&quot;</td>
</tr>
<tr>
<td>&quot;Efficiency&quot; generally equated with &quot;bigness&quot; and the &quot;latest machines&quot;</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Subsidized capital investment (which benefits mostly the rich)</td>
<td>Considerable</td>
<td>Little</td>
</tr>
<tr>
<td>Geographic dispersion of industry</td>
<td>Some</td>
<td>Considerable</td>
</tr>
<tr>
<td>Systematic extension of the financial system to local level</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Support of small producers</td>
<td>Little</td>
<td>Much</td>
</tr>
</tbody>
</table>
Table 1. (Continued)

<table>
<thead>
<tr>
<th></th>
<th>Dual</th>
<th>Modernizing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of investors</strong></td>
<td>Few; increasing slowly</td>
<td>Few in the beginning; rising rapidly</td>
</tr>
<tr>
<td><strong>Income distribution</strong></td>
<td>Inequality increasing</td>
<td>Inequality decreasing</td>
</tr>
<tr>
<td><strong>Un- and underemployment</strong></td>
<td>Rising</td>
<td>Falling</td>
</tr>
<tr>
<td><strong>Tenancy and/or land reform</strong></td>
<td>Lip service; lax enforcement</td>
<td>Enforced</td>
</tr>
<tr>
<td><strong>Agricultural taxation (land incomes)</strong></td>
<td>Low</td>
<td>Generally high</td>
</tr>
</tbody>
</table>

**Education**

- **Rely on formal education systems**
  - Dual: Yes
  - Modernizing: Yes

- **Willingness to introduce variety of "non-formal" education programs**
  - Dual: Little
  - Modernizing: Much

"**The Population Explosion**"

- **Birth rates**
  - Dual: High and essentially static
  - Modernizing: Falling

- **Exports (Per Capita)**
  - Dual: Rising slowly, static, or falling
  - Modernizing: Rising rapidly

Contrary to Owens and Shaw's emphasis on the industrial sector, Chodak (1973) claimed that LDC's usually modernize without industrialization. Industrialization was not the primary instigator of modernization. Chodak stated:
"African and Asian nations usually begin the process of modernization with nation-building and the elevation of modern political systems" (p. 259). In Chodak's opinion, the goals of LDC modernization were a change in the social structure toward the acceptance of new norms and values, and the spread of an educated society. These changes might make the introduction of industrialization much easier, Chodak continued, but it sometimes did not since it was not a primary goal of the modernization process.

Lele (1975) undertook the study of 17 rural development projects in seven African countries. The magnitude of the study allowed Lele to "draw upon comprehensive evidence developed from a diverse set of experiences in order to examine some of the most important policy and institutional issues of development faced by national governments and donor agencies" (p. xi). Lele continued by stating that the analysis of the projects under study had to go far beyond formal analytical steps to fully understand the "administrative, technological, sociopolitical, and environmental factors that influence the quality of rural planning and that often explain the ineffectiveness of its implementation at the micro level" (p. xi). Further Lele felt that the importance of the study was not that it could propose a set of definitive solutions for rural development, but that it promoted an understanding of the diversity and complexity of the constraints and potentials of rural areas.
Among Lele's conclusions were the following statements:

Their limited effectiveness cannot be attributed to the inadequate or inappropriate specification of target groups but rather to a combination of factors. First, the objectives of rural development have changed considerably over time. The projects were also based on more limited knowledge than is now available of broader sector and policy questions and of their possible impact on the performance of the individual programs. Frequently, . . . national policies could not be changed to improve project performance. The programs were often based on inadequate knowledge of technological possibilities and of their suitability to small-farm conditions. Experience with regard to the appropriate forms of administrative institutions and their transferability was limited when many of these programs were planned.

They also suffered from poor knowledge of the sociocultural and institutional environment in which they were to be implemented. Consequently, the programs were rarely designed with a view to anticipate the effect of sociopolitical factors on the response to interventions or with an intention to introduce modifications in plans in the course of implementation to achieve maximum effectiveness. Finally, and most importantly, the programs often experienced extreme scarcity of trained manpower. (p. 176)

Regarding the implications her findings had on future rural development projects, Lele noted that if the primary objective of the project was to aid the lowest income groups then it was important that the existing sectoral policies and involved institutions be explicitly oriented toward these groups. Lele also stated that more substantive planning was necessary for future rural development projects to be successful. Questions must be asked and answered regarding the profitability of new technologies; the effectiveness of local markets; the consequences of a new marketing scheme on existing social ties; the identification of the true constraints to
development; the feasibility of removing the constraints given the existing manpower and institutional development; and the time required to accomplish the tasks undertaken.

Lele recommended that future rural development projects begin by making only a few small changes aimed at the more critical constraints. This would allow the project to evolve slowly, at a more normal pace. Lele concluded by stating that, "Program evolution ought to be based on the specific knowledge acquired; the constraints identified; and the indigenous human, institutional, and financial capability developed during the course of earlier stages of program implementation" (p. 178).

Svennilson (1967) condensed the required ingredients for successful development into three general categories where change must occur:

a. social systems and human attitudes;
b. knowledge and human skills;
c. the physical implements in which modern technology is embodied. (p. 176)

Svennilson also listed five features of successful technology transfer: The transfer activity was a joint venture between the donor country and the recipient country; the transfer activity was conducted by a team of specialists; emphasis was placed on learning by doing; social and attitudinal changes occurred regarding the concepts of work, technology, education, and training; and adequate and reliable management and leadership was available.

Unsuccessful development was explained by Svennilson as
the occurrence of bottlenecks in the development process. Examples of these bottlenecks included equipment not being available when required; necessary inputs were available but human attitudes and social systems were opposed to the new innovations; the population was adequately educated and all the inputs were available, but managerial skills were lacking.

Development planning advocated by the International Labour Office (1977) emphasized the need for providing everyone with an absolute level of basic needs. Two basic needs were defined by the International Labour Office (ILO).

First, they include a certain minimum requirement of a family for private consumption: adequate food, shelter and clothing are obviously included, as would be certain household equipment and furniture.

Second, they include essential services provided by and for the community such as safe drinking water, sanitation, public transport, and health and educational facilities. (p. 33)

The ILO also emphasized that a basic needs development program would have to include the participation of the people in the decision-making processes involved in the program. The integrated ILO theory was that education and health facilitate participation, and participation ensured the acquisition of basic needs; while employment was both a means and an end within the overall development scheme.

Regarding integrated rural development projects, Norman (1974) noted that the implementation of such projects required the involvement of many disciplines. In addition, Norman stated that the knowledge required to solve many development
problems was found by perusing many different disciplines. These two situations, then, resulted in various disciplines having a symbiotic relationship with each other, which, in turn, required that many disciplines were forced to give up isolated research and to begin working in cooperation with other disciplines.

According to Norman,

There is a move away from a multi-disciplinary approach (which implies researchers from more than one discipline who do not necessarily communicate with one another) to that involving an inter-disciplinary emphasis (which implies greater integration of disciplines through joint projects). (p. 6)

Foster-Carter (1976), like Kunkel, also spoke of paradigms, not one expressly for psychological analysis of development, but "a new paradigm" which development analysts were beginning to apply to various projects. According to Foster-Carter, the new paradigm emphasized the interrelationships of development and underdevelopment and between traditional and modern systems. Foster-Carter also claimed that the new paradigm would identify conflicts of interests (between nations, between social classes), place emphasis on historical factors, recognize various economic structures, view development as a revolution as opposed to an evolution, and promote socialism.

Schramm's (1964) major thoughts on development emphasized a specific discipline. However, with the exception of Bordenave, Schramm was the only development expert who placed
a strong emphasis on communication. Schramm (1964) attacked the concept of having industrialization as the central focus of development planning. According to his thesis, not only was this concept a poor one because it benefitted only a small segment of the population, but also because the areas of agriculture, social overhead, and human resources had to be developed also if any real gain were to be realized in the industrial sector. In Schramm's view, all four of these factors must be developed simultaneously, and that it didn't really matter which one or ones were the prime movers—"The point is that they must go forward together" (p. 25).

Schramm's book, however, focused on the role of communications and mass media in the interdisciplinary development process. Schramm recommended 15 activities that developers and LDC's could do to aid in the development process. They were as follows:

1. A developing country should examine the flow of development information within its borders.
2. A developing country should examine the use it is making of the mass media in multiplying the flow of information on development.
3. To the extent that planning is possible, a developing country should plan a balanced and measured growth for its mass media, with a view to relationships among the media and to those between the media and other aspects of development.
4. A developing country (and its friends and aiders) should not hesitate to invest in a well-considered program of mass media development and use.
5. A developing country should try to establish a cooperative relationship between the organs of government responsible for its mass media development and those responsible for education and other related developments.
6. A developing country should take steps to facilitate the circulation of news.
7. A developing country should try to make it as easy as possible to establish and maintain "local media."
8. A developing country should give special attention to combining mass media with interpersonal communication.
9. A developing country should review its restrictions on the importing of informational materials.
10. A developing country should consider the possibility of establishing communication industries.
11. A developing country should provide adequate training for its information personnel.
12. A developing country should seek as much feedback as possible from its mass media audiences.
13. A developing country should draw up a special statute of information at the same time that it draws up a plan for economic and social development, and the statute should be adapted, through successive revisions, to the successive phases of national development.
14. A developing country should not hesitate to make use of new technical developments in communication, in cases where these new developments fit its needs and capabilities.
15. Countries should share their experience in using the mass media and other information channels to speed economic development and social change.

Summary

The review of literature was conducted to discern the various approaches to interdisciplinary development that had been advocated by persons concerned with LDC development and its planning. The review revealed that the call for an interdisciplinary approach to development had been made as early as 1958. However, although the interdisciplinary approaches put forth by development experts since 1958 were many and varied, most still emphasized a particular dimension of development. For example, development experts who placed an emphasis on the
socio-cultural aspects of an interdisciplinary approach to development included Geiger and Geiger, Mboya, Moore, Mountjoy, Neihoff and Anderson, and Saxena. That the economic aspects of development had been overemphasized was the primary message put forth by Geiger, Hirschman, Taake, and Wilkinson.

Long, Schumacher, Seers, and Wignaraja placed a major emphasis of their writings on the educational aspects of development. The political dimension of development was the focal point of the interdisciplinary approach advocated by Eastman and Ruttan, while Kunkel, Mason, McClelland, and Papanek focused on the psychological dimensions of an interdisciplinary approach to development.

Those development experts who placed an emphasis on the technical aspects of an interdisciplinary approach to development included the Canadian Hunger Foundation, Clay, Gotsch, Haseyama, Jacoby, Mellor, Stevens and Ahmad, and Vietorisz. Among the authors whose approach to interdisciplinary development did not emphasize a specific discipline were Chodak, Foster-Carter, the International Labour Office, Lele, Norman, Owens and Shaw, and Svennilson.

The above reviews, analyses, theories, plans, and research findings related to an interdisciplinary approach to development were extracted from a variety of development-oriented journals, periodicals, reports, and books. Despite the repeated call for nearly 20 years for an interdisciplinary approach to development, the vast majority of the writings con-
tained in the publications perused described single discipline approaches to development.
CHAPTER III. CASE STUDIES

This chapter contains the case studies of the two Pakistani rural development projects compared in Chapter 4: The Khanewal Rural Development Project undertaken in 1962, located in the Punjab Region of the former Province of West Pakistan (now Pakistan); the Comilla Rural Development Project undertaken in 1959, located in the Comilla District of the former province of East Pakistan (now Bangladesh).

Introduction

Pakistan became a nation on August 14, 1947. With its independence from England and separation from India, came a period of mass migration of Muslims from India into Pakistan and a reverse flow of Hindus from Pakistan into India. Despite the best efforts of government officials on both sides of the border, these mass migrations resulted in mass rioting and looting, mass panic, mass execution, and unimaginable bloodshed whenever waves of refugees met each other head on.

The country was in a state of unparalleled confusion. Land with crops almost ready to harvest was abandoned; whole villages and even cities were found totally abandoned. Contrasting this abandonment and emptiness were the hoards of landless, possessionless immigrants with no place to go.

Three years later, in 1950, when Karl Knaus became the first extension advisor from the Foreign Agricultural Service, U.S. Department of Agriculture, to enter Pakistan, things were
not much improved. The bloodshed had ended, at least for the time being, but the nation still was in its infant stage of independent rule.

Knaus (1953) described the situation in the following manner:

Pakistan had no established National Capital; very little industry or raw materials for industry other than agricultural products; and few developed resources such as fuel, forests, and minerals. Abundant water power in the north was undeveloped. There was little organized international trade; inadequate agricultural credit facilities; inadequate marketing facilities . . . . Irrigation is well developed, but there are tremendous problems of water supply, drainage, water logging and salt accumulation. Agriculture is the principal industry and engages over 85% of the people.

Of the several agricultural colleges in old India, only one of recognized standing was within the borders of Pakistan. The Punjab Agricultural College at Lyallpur was well established and well managed . . . . A limited amount of agricultural training was offered at Islamia College in Peshawar, Northwest Frontier Province. Farmers and professionally trained people who work in rural areas have very low status. (p. 1)

Knaus' job in Pakistan was to supervise the development of an agricultural extension service. The purpose of the extension service was "to teach the masses of the people with the known solutions of their problems of production, marketing and living standards, and encourage efforts of self-help" (Knaus, p. 31). It was assumed that this extension service would ultimately lead to the creation of an agricultural sector that would provide food and fibre to feed and clothe the nation's rapidly increasing population; provide a surplus of food and fibre for export to maintain a favorable balance of foreign
exchange and revenue from export and import taxes; improve the natural soil and water resources; and develop a national awareness of the importance of agriculture.

To make the extension service an effective force in the agricultural sector of Pakistan, Knaus felt that an adequate base of scientific knowledge was required. Therefore, he recommended that priority be given to enlarging and improving the agricultural colleges. Knaus also realized that a method had to be found for acquiring the participation of the people, thus he strongly urged that an effective practical program be established. Knaus suggested that this program have a cooperative-type organization, that it keep its administration close to the people, and that a committee of local volunteer leaders be allowed to determine program priorities for their area. In addition, Knaus stated that adequate supplies of materials were required, as were a sufficient number of trained personnel knowledgeable in the new agricultural technologies.

The new agricultural extension service had barely begun, however, when in 1952-1953, West Pakistan suffered from one of the lowest wheat harvests in the history of the Asian subcontinent. A severe drought which resulted in extremely low river levels and a shortage of water in irrigation canals, a diversion of land and water to cash crops, insect attacks, and the uncertainties of still unsettled land reform all contributed to the disaster. The wheat harvest for that period was 2,285,000 tons lower than the 1950-1951 harvest. This
tremendous shortage of wheat necessitated the importing of 1,637,300 tons of foodgrains, including almost 900,000 tons of wheat. The vast majority of these foodgrains came from Australia, Canada, and the United States (Ministry of Food and Agriculture, 1955).

This combined natural and man-made disaster did result in one positive side effect. It stimulated a new effort at planned economic development in Pakistan. In 1953, Pakistani economists, aided by expertise from the United Nations, the Food and Agriculture Organization, the Agency for International Development, and several advisory groups including Harvard University, undertook to establish a new economic plan for Pakistan. The outcome was the First Five-Year Plan (1955-1960), which was followed subsequently by the Second, Third, and Fourth Five-Year Plans covering the years 1960-1965, 1965-1970, and 1970-1975 (Nyrop et al. 1971).

Pakistan's First Five-Year Plan represented the country's first attempt to coordinate both the private and public sectors' development investments. Investment in the plan totaled Rs. 10.8 billion, of which Rs. 7.5 billion came from the public sector. Rs. 3.3 billion came from the private sector. (Figures for the First and Second Five-Year Plans represent investment totals for both East and West Pakistan.)

Industry received the largest percentage of the invested moneys from the First Five-Year Plan, 26.7%. It was followed by water and power, 21.3%; transport and communications, 16.7%;
physical planning and housing, 13.1%; and agriculture 9.5% (see Table 2). However, because much of the investment in the water and power area went for irrigation as opposed to industrial projects, agriculture's share was actually much greater than 9.5%.

The goals of the First Five-Year Plan included an increase of 15% in the GNP and an increase of 7% in per capita income. The actual outcome of the Plan was an 11% increase in the GNP, and a decline in the per capita income because the population increased 12% instead of the estimated 8%.

The expenditures for the Second Five-Year Plan, 1960-1965, more than doubled the expenditures of the First Plan (see Table 3). Total expenditures were Rs. 23 billion, with Rs. 14.6 billion coming from the public sector and Rs. 8.4 billion coming from the private sector. Industry's share of the total expenditures dropped to 22.3%, although it still retained the largest share. Agriculture jumped to 14.9%, while still benefiting from much of the allocation to water and power.

Most of the goals of the Second Five-Year Plan were met or surpassed. For example, the GNP increased 30% as opposed to the goal of 24%, and agriculture had a 3.4% annual increase as opposed to a 1.3% increase for the previous ten years.

In the Third Five-Year Plan (1965-1970) West Pakistan's share of the investments, Rs. 25 billion, was greater than the total planned investment of the Second Plan. Total planned investment for the Third Plan was Rs. 52 billion, with Rs. 30
Table 2. First Five-Year Plan by sectors and spending units, 1955-1960 in billion rupees (1957 value: 1 rupee = U.S. $0.21)^a

<table>
<thead>
<tr>
<th>Sector</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
<th>Percent of Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1.207</td>
<td>--</td>
<td>1.207</td>
<td>9.5</td>
</tr>
<tr>
<td>Water and Power</td>
<td>2.697</td>
<td>--</td>
<td>2.697</td>
<td>21.3</td>
</tr>
<tr>
<td>Industry</td>
<td>1.622</td>
<td>1.750</td>
<td>3.372</td>
<td>26.7</td>
</tr>
<tr>
<td>Fuels and Minerals</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transport and Communications</td>
<td>1.666</td>
<td>.450</td>
<td>2.116</td>
<td>16.7</td>
</tr>
<tr>
<td>Physical Planning and Housing</td>
<td>.861</td>
<td>.800</td>
<td>1.661</td>
<td>13.1</td>
</tr>
<tr>
<td>Education</td>
<td>.580</td>
<td>--</td>
<td>.580</td>
<td>4.6</td>
</tr>
<tr>
<td>Health</td>
<td>.288</td>
<td>--</td>
<td>.288</td>
<td>2.3</td>
</tr>
<tr>
<td>Social Welfare</td>
<td>.133</td>
<td>--</td>
<td>.133</td>
<td>1.0</td>
</tr>
<tr>
<td>Manpower Works Program</td>
<td>.298</td>
<td>--</td>
<td>.298</td>
<td>2.4</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>--</td>
<td>.300</td>
<td>.300</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>9.352</td>
<td>3.300</td>
<td>12.652</td>
<td>100.0</td>
</tr>
<tr>
<td>Less Shortfall</td>
<td>1.850</td>
<td>--</td>
<td>1.850</td>
<td>--</td>
</tr>
<tr>
<td>Net Total</td>
<td>7.502</td>
<td>3.300</td>
<td>10.802</td>
<td>--</td>
</tr>
</tbody>
</table>

^Adapted from Nyrop et al. (1971, p. 338)

billion coming from the public sector and Rs. 22 billion coming from the private sector. Industry's share remained at
Table 3. Second Five-Year Plan by sectors and spending units, 1960-1965 in billion rupees (1962 value: 1 rupee = U.S. $0.21)\textsuperscript{a}

<table>
<thead>
<tr>
<th>Sector</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
<th>Percent of Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>2.515</td>
<td>.905</td>
<td>3.420</td>
<td>14.9</td>
</tr>
<tr>
<td>Water and Power</td>
<td>4.140</td>
<td>.250</td>
<td>4.390</td>
<td>19.1</td>
</tr>
<tr>
<td>Industry</td>
<td>1.460</td>
<td>3.3660</td>
<td>5.120</td>
<td>22.3</td>
</tr>
<tr>
<td>Fuels and Minerals</td>
<td>.450</td>
<td>.550</td>
<td>1.000</td>
<td>4.3</td>
</tr>
<tr>
<td>Transport and Communications</td>
<td>2.725</td>
<td>1.325</td>
<td>4.050</td>
<td>17.6</td>
</tr>
<tr>
<td>Physical Planning and Housing</td>
<td>1.885</td>
<td>1.525</td>
<td>3.410</td>
<td>14.8</td>
</tr>
<tr>
<td>Education</td>
<td>.950</td>
<td>.100</td>
<td>1.050</td>
<td>4.6</td>
</tr>
<tr>
<td>Health</td>
<td>.370</td>
<td>.050</td>
<td>.420</td>
<td>1.8</td>
</tr>
<tr>
<td>Social Welfare</td>
<td>.125</td>
<td>.015</td>
<td>.140</td>
<td>0.6</td>
</tr>
<tr>
<td>Manpower Works Program</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total</td>
<td>14.620</td>
<td>8.330</td>
<td>23.000</td>
<td>100.0</td>
</tr>
<tr>
<td>Less Shortfall</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Net Total</td>
<td>14.620</td>
<td>8.330</td>
<td>23.000</td>
<td>--</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Adapted from Nyrop et al. (1971, p. 338)

22.3\%, transport and communications rose to 20\%, and agriculture increased slightly to 15.3\%, while water and power's
share declines to 16.4% (see Table 4).

Because of the success of the Second Plan, the goals for the Third Plan were very ambitious. They included a 35% increase in the GNP, an average annual per capita income increase of 3.8%, and a 5% increase in agricultural production. Due, however, to a decrease in foreign aid and foreign investment, hostilities with India which increased defense spending, and bad weather which resulted in poor harvests, Pakistan was forced to revise the Third Plan in 1967. Defense, an agricultural self-sufficiency program, and basic industries were considered top priorities, while industries, relying on imported raw materials and parts, languished. Consequently, public sector investment fell 25% short of its expectations and the annual growth rate increased 5.7%, compared to a goal of 6.5%.

As it headed into the period of the Fourth Five-Year Plan, 1970-1975, Pakistan could look back upon an extended experience of exceptional achievement. It also, however, had to look forward to a formidable array of economic problems in agriculture, industry, and the balance of payments. In agriculture the main problems were land tenure, farm-to-market communications and marketing, and rural credit. (Nyrop et al., 1971, p. 345)

The Fourth Five-Year Plan called for a total investment from the public and private sectors of some Rs. 75 billion. Implementation of the Fourth Plan had barely begun when, in 1971, the country was wracked with internal political turmoil which led eventually to a revolution, civil war, and the former provinces of East and West Pakistan becoming the independent nations of Bangladesh and Pakistan respectively.
Table 4. Third Five-Year Plan by sectors and spending units, West Pakistan, 1965-1970 in billion rupees (1967 value: 1 rupee = U.S. $0.21)\(^a\)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
<th>Percent of Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1.816</td>
<td>1.900</td>
<td>3.716</td>
<td>15.3</td>
</tr>
<tr>
<td>Water and Power</td>
<td>4.387</td>
<td>.550</td>
<td>4.937</td>
<td>16.4</td>
</tr>
<tr>
<td>Industry</td>
<td>1.081</td>
<td>4.500</td>
<td>5.581</td>
<td>22.3</td>
</tr>
<tr>
<td>Fuels and Minerals</td>
<td>.267</td>
<td>.450</td>
<td>.717</td>
<td>2.5</td>
</tr>
<tr>
<td>Transport and Communications</td>
<td>3.431</td>
<td>1.800</td>
<td>5.231</td>
<td>20.0</td>
</tr>
<tr>
<td>Physical Planning and Housing</td>
<td>1.113</td>
<td>1.650</td>
<td>2.763</td>
<td>12.2</td>
</tr>
<tr>
<td>Education</td>
<td>1.066</td>
<td>.100</td>
<td>1.166</td>
<td>5.1</td>
</tr>
<tr>
<td>Health</td>
<td>.544</td>
<td>.020</td>
<td>.564</td>
<td>2.3</td>
</tr>
<tr>
<td>Social Welfare</td>
<td>.040</td>
<td>.020</td>
<td>.060</td>
<td>0.3</td>
</tr>
<tr>
<td>Manpower Works Program</td>
<td>.035</td>
<td>.010</td>
<td>.045</td>
<td>0.2</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>.620</td>
<td>--</td>
<td>.620</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>14.400</td>
<td>11.000</td>
<td>25.400</td>
<td>100.00</td>
</tr>
<tr>
<td>Less Expected Shortfall</td>
<td>.400</td>
<td>--</td>
<td>.400</td>
<td>--</td>
</tr>
<tr>
<td>Net Total</td>
<td>14.000</td>
<td>11.000</td>
<td>25.000</td>
<td>--</td>
</tr>
</tbody>
</table>

\(^a\)Adapted from Nyrop et al. (1971, p. 338)
West Pakistan Rural Development

Introduction

West Pakistan's economy was overwhelmingly dependent upon agriculture. More than 45% of the provincial income was derived from agriculture, which included animal husbandry, forestry, and fisheries; approximately 60% of the workforce was employed in agriculture; virtually all of West Pakistan's exports were agriculture related; most of the country's expanding industries were dependent upon agriculture; and much of the Government's revenue was derived from taxes on land under cultivation and the products produced on that land (Nyrop et al.)

Approximately 1/4 of West Pakistan or about 47 million acres were under cultivation. Much of this cultivable land was located in the Indus Valley, and more than 1/2 of it was irrigated. The major crops grown in West Pakistan were wheat, cotton, rice, millet, sugar cane, and tobacco. From 75% to 80% of the land under cultivation was devoted to growing food grains.

Despite the dominance of agriculture interests, the agricultural sector was not without its problems. Nyrop, when describing the situation as late as 1971, stated:

Agricultural development lags behind the rest of the economy . . . and the yields per acre are among the lowest in the world. Quick profits to be made through commercial and industrial investments have tended to attract capital away from agricultural development. Agricultural holdings are often fragmented into uneconomic plots, and many agricultural
techniques remain primitive. Although improvements have been and are being made, plant and animal diseases are extensive, supply and marketing facilities are rudimentary, and credit facilities are inadequate. (p. 347)

Salinity and waterlogging, resulting from many years of flood irrigating, were major specific problems in many areas of West Pakistan, as was an inadequate supply of chemical fertilizers. It had been demonstrated that the proper amount of chemical fertilizer, coupled with sufficient irrigation water, could almost triple the yield per acre of many grain crops grown in West Pakistan. Farm mechanization had begun to add to the underemployment and unemployment problems in rural areas initiated by the small uneconomic family plots. Finally, perhaps the greatest problem was that the major technological innovations implemented in the agricultural sector had not benefitted the majority of the farmers, the masses of peasant farmers who lived at the subsistence level. Indeed, they seemingly were worse off than they were prior to the influx of the technologies. Almost all of the benefits seemed to have been reaped by a very narrow segment of West Pakistan's society—the bigger landowners, the money lenders, and the urban investors (Nulty, 1972).

The agrarian reform of West Pakistan included the formation of cooperatives as a means of ensuring the peasant farmer a share in the benefits received from the modernization of the agricultural sector. As already indicated, however, the masses of small farmers had not benefitted from the new tech-
nologies; many were still living at the subsistence level.

The Cooperative Systems

West Pakistan cooperatives were originally organized under the Cooperative Credit Societies Act of 1904. Their major function until the 1950's was to supply credit to the agricultural sector of the country. However, in practice, the cooperative societies "tended to be composed of reasonably well-to-do persons, many of them not farmers, and . . . loans were often spent for weddings or other ceremonies rather than for agricultural practices" (Nyrop, et al., 1971, p. 376).

In the early 1950's when much of the country was still unsettled, with many refugees still homeless and landless, a large reclamation and colonization project was begun in the desert regions of Western Punjab. One million two hundred thousand acres of land were to be reclaimed. Roads and irrigation canals were constructed and villages built. The purposes of the project were to resettle the refugees and make them not only self-sufficient, but actual contributors to the agricultural production of the country.

Each refugee family head was given 12 1/2 acres of land to cultivate, with the following restrictions:

1. He must become a member of the cooperative system.
2. He must live within the village confines.
3. He would pay for the land, house, and common village buildings by contributing a set portion of his crop to the
cooperative each year for 15 years.

4. He could not divide the land among his progeny; it must remain intact.

5. He could not sell the land since title remained with the Pakistan government.

The villages had provisions "for a school, a health center, a mosque, a public assembly hall, grain storage, police station, bazaars, vegetable gardens, and a common pasture of 40 acres" (Knaus, 1953, p. 14). The cooperative system was also to provide the villager with seed, fertilizer, water, sprays, credit, and all the necessities for growing his crops. It was assumed that because these items could be purchased or provided on a large scale, the farmer would save money and be able to secure the necessary items when needed. It was also planned that the cooperative system would buy the farmer's products directly, store them in godowns, and then resell the grain and fibre sporadically over the entire year. Thus, through the law of supply and demand, the cooperative would create a stable market and a higher return for the individual farmer.

The cooperatives, managed by government civil servants, were also responsible for providing the refugees with new technological developments in agriculture. This point caused considerable confusion and conflict with the extension service, whose responsibility was also to provide farmers with new developments. During this same time period, Pakistan joined
the Green Revolution, by introducing the "package system" for improving crop production. The "package" consisted of new short varieties of miracle wheat developed in Mexico, proper cultivation practices, increased fertilizer, and sufficient irrigation water. This package, when applied correctly, would more than double the per acre production.

The Khanewal Project

The Khanewal Project was that portion of the previously mentioned large land reclamation and colonization project undertaken in the early 1950's in the Western Punjab that came under the auspices of the Colony Cooperative Farming Union (CCFU). The headquarters of the CCFU was located in the town of Khanewal, hence, the name of the project.

The Khanewal Project was a multi-faceted rural development project designed to aid the former refugees in the areas of crop production, animal husbandry, farm mechanization, health and nutrition, and community development. Although multi-faceted, the Khanewal Project was not integrated, that is, there was no one overall development scheme for the entire area. Instead, each technical area was free to develop and implement its own programs. This lack of coordination was further complicated by the fact that personnel from the Basic Democracies (a national community development program), civil servants representing the CCFU, U.S. Peace Corps Volunteers, and local leaders all had similar, overlapping projects in
During the late 1950's, the neglect of the agriculture sector, a rapidly expanding population, and nature in the form of a drought, combined to cause serious food shortages in Pakistan. As a means to alleviate this problem, Pakistani development planners in the early 1960's suggested that the wheat production in the Punjab region could be significantly increased if the preparation and cultivation of the land were mechanized. The Punjab was the logical area for this emphasis because it was the breadbasket of West Pakistan (see Table 5).

The development planners used the following reasons for suggesting the mechanization of the agriculture of the Punjab. First, the farmers were leveling and cultivating their land by using primitive devices pulled by water buffalo or oxen. Since each farmer had his own animal, from 1/3 to 1/2 of the total land under cultivation had to be used for pasture and fodder crops for the animals. The introduction of tractors to prepare and cultivate the land would mean that the farmers would no longer need their buffalo, and therefore, significant amounts of land would be freed for the production of wheat.

Secondly, the primitive plow being used by the farmers of the Punjab, literally a wooden stick, did little more than scratch the surface of the land. The soil in this part of Pakistan had a heavy clay base and, as a result, dried brick-hard in the sun. Even when plowed wet, the land was rarely penetrated more than a few inches. Consequently, when the
Table 5. Estimated production of major crops in Pakistan and the Punjab (1973-1974)\(^a\)

<table>
<thead>
<tr>
<th></th>
<th>Million Tons</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pakistan</td>
<td>Punjab</td>
<td>Punjab’s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percentage Share</td>
</tr>
<tr>
<td>Wheat</td>
<td>7.32(^b)</td>
<td>5.60(^b)</td>
<td>76.5</td>
</tr>
<tr>
<td>Cotton (million bales)</td>
<td>3.70</td>
<td>2.53</td>
<td>68.4</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>22.00</td>
<td>16.36</td>
<td>74.4</td>
</tr>
<tr>
<td>Rice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine (basmati)</td>
<td>0.47</td>
<td>0.47</td>
<td>100.0</td>
</tr>
<tr>
<td>Medium and Coarse</td>
<td>1.94</td>
<td>0.62</td>
<td>32.0</td>
</tr>
<tr>
<td>Maize</td>
<td>0.76</td>
<td>0.33</td>
<td>43.4</td>
</tr>
<tr>
<td>Gram</td>
<td>0.55</td>
<td>0.39</td>
<td>70.9</td>
</tr>
<tr>
<td>Rape and Mustard</td>
<td>0.31</td>
<td>0.18</td>
<td>58.1</td>
</tr>
</tbody>
</table>

\(^a\)Adapted from Planning and Development Board, Government of the Punjab (1974, p. 7)

\(^b\)Actual for 1972-73

crop was flood-irrigated, the majority of the water simply evaporated instead of soaking into the ground. It was reasoned that steel tractor-drawn plows would be able to penetrate the soil deep enough to allow the soil to absorb a significantly larger amount of the scarce water.

Third, research being conducted in the reclamation of land lost to salinity, indicated that the salts could be
leached out through a combination of heavy irrigation and numerous deep plowings. Since soil salinity was an increasingly important problem in the Punjab, it was anticipated that the tractors could be used in the off season in land reclamation projects.

Fourth, high-yielding, short stem varieties of wheat were being introduced into the Punjab. It was found that these new varieties were vulnerable in improperly prepared land; the fields that were shallow-plowed prior to seeding would yield harvests far below those that were deep-plowed prior to seeding. Hence, the need for tractors.

The CCFU Farm Mechanization Project

As a pilot project, the Government of Pakistan purchased 50 John Deere Lantz diesel engine farm tractors from Germany and 50 International Harvester diesel engine farm tractors from England. The tractors and accompanying implements were distributed throughout the Punjab region under the auspices of the CCFU. Selected cooperative-member villages were sent one or two tractors, depending upon the size of the village, to replace the buffalo or oxen when cultivating and preparing the land. The villages differed in the number of farmers, but each farmer had only the 12 1/2 acres given to him by the Government when he had migrated from India after Partition in 1947.

There were several substantial and documented reasons
for introducing farm tractors to this particular part of the country. There was even an already well-established infrastructure, the cooperative union, to disperse the tractors and to eventually collect payments. However, the tractors were not well received by the villagers in the first place, and when the planning faults became evident, the project began to falter.

One reason why the tractors were not well received was because the villagers were never involved in the planning. In fact, those that received the tractors had no recourse; they weren't asked if they wanted them; they were told they had to take them. If the villagers had been consulted, the planners might have learned, for example, that the farmers had no intention of giving up their water buffalo, tractor or no tractor, because the buffalo performed many other services besides being a draft animal. The buffalo's milk was a substantial and important part of their diet, its dung when dried served as fuel for cooking fires, it served as a pack animal and as a means of transportation when necessary, and even in death the buffalo provided the farmer with meat and a hide that he could either use himself or sell.

The planners would also have discovered that the farmers were only a few years short of becoming free of their debt on the land. When the tractors and their payments were forced upon them, the villagers saw this as simply a way for the cooperative to extend its control for another extended period.
Over the years, the villagers had become disillusioned with the CCFU, seeing it only as a political and financial burden contributing little to their well-being, and were looking forward to having at least financial freedom. The tractor scheme, of course, eliminated this possibility, and as a result, the tractors were not welcome in most villages.

The farmers also saw the tractors as a weapon used by the cooperative union to accelerate the introduction of another technological innovation they were not particularly fond of—the short stemmed varieties of wheat. Even though yields increased dramatically, the negative aspects of the new wheat varieties outweighed the increased yields in the minds of many farmers. For example, the wheat was much harder than the local varieties and therefore more difficult to grind; the resultant flour did not have the right consistency to form good chupattis, a wheat cake that was the major part of a rural Pakistani's diet, and even the color of the flour was not appealing. In addition, the new varieties required more fertilizers and irrigation water, which increased the investment in the crop to the point where the increased yield barely covered the added expense. The tractors added yet another unwanted, and in the farmers' opinion, unwarranted expense.

Finally, the farmers did not like the new wheat varieties because they were short stemmed. Local wheats had been specifically chosen because they were long stemmed. The
farmers felt they were getting two crops for the price of one if they grew long stemmed wheat—the grain, of course, they used themselves, and the stems they used for feeding their animals. With the length of the stem reduced to less than half the size of their local wheats, the farmers saw a drastic reduction in the size of their fodder crop. In the eyes of the farmer, then, the short stemmed varieties of wheat were forcing them to take a great financial risk by increasing their initial investment, to produce a crop they didn't like as well, and to actually reduce an important secondary crop. And the tractors were the key element in this enterprise.

No attempt was made to inform the villagers of the positive potential of the tractors, or to educate them, at least to a basic understanding, of things mechanical. Thus, when the farmers did attempt to use the tractors (regardless of their opposition, they couldn't afford not to use them), this lack of technical knowledge became apparent. The tractors were not in the fields long before the following flaws in the project were recognized:

1. The tractor drivers the CCFU assigned to each tractor were uniformly unskilled in proper cultivation and tractor maintenance procedures.

2. The implements which accompanied the tractors were not suitable for working quarter-acre plots of land, the way the Punjabi farmers divided their land for irrigation purposes.

3. The closest fuel supply was from 20 to 40 miles away.
4. There were no repair shops, trained mechanics, or tools and equipment to do major or even much minor repair work.

5. The farmers believed that the plowing had to be done during a specific period of time, which proved to be too short to plow every farmer's land.

The last flaw caused a great deal of dissension among the farmers as to who was to get his land plowed first. The first four flaws, however, proved to be more critical to the project. One, or a combination of these flaws, resulted in nearly 90% of the tractors being in a state of disrepair within the first six months of operation. Some tractors were just out of fuel; others had minor mechanical problems such as dead batteries or flat tires; but some, perhaps 20%, already needed major mechanical repair, a condition caused by a combination of lack of maintenance, improper use, and the natural phenomena of intense heat and extremely dusty conditions.

The farmers were now faced with the choice of not repairing the tractors but still being forced to pay for them with absolutely no return, or taking on the added expense of having them repaired, meeting the further expense of keeping them properly maintained, and paying them off. The decision wasn't very difficult for many farmers. Why add more money to that already wasted, especially when they probably would not be able to receive any benefits anyway? Most farmers decided they wanted nothing further to do with the tractors and petitioned the CCFU to remove them from their village.
Instead, the Cooperative Union attempted to correct some of the flaws. They hired mechanics to begin repairing the tractors; they contracted for a centrally located fuel dump; since most parts were available in the larger cities, they began to build several centrally located workshops; they recalled the drivers for a short but intensive training session in periodic maintenance procedures and proper cultivation practices; they set up a monthly maintenance check in which the driver would be fined if the vehicle was not properly cared for; and they modified the implements for use in small areas.

But all this took a great deal of time and money. All the villagers saw was an increasing financial burden with no real return. Their request to have the tractors withdrawn was ignored. Consequently, the tractors and everyone associated with them were met with increased hostility; some farmers refused to use the tractors, while others continued to use them only under duress.

In the midst of all of this turmoil and conflict, the Government of Pakistan announced that another group of 50 International Harvester tractors had been ordered and were to arrive shortly. In an attempt to eliminate at least one area of inadequate preparation, the technicians responsible for integrating the tractors into the cooperative system, suggested to the CCFU that training sessions for the new drivers be initiated immediately. They claimed that such training
would produce drivers well trained in the operation, care, and maintenance of the tractors, and help to eliminate major sources of tractor "down time," time when the tractor was in a state of disrepair.

Further, it was suggested that if the young men selected were to come from the villages to which the new tractors were to be assigned, that

1. the farmers would have better rapport with the drivers;

2. the drivers would take better care of the equipment since a new tractor was still a prestigious item in most villages and, psychologically at least, the tractors belonged to the drivers;

3. pre-selection of the villages to be assigned tractors would be required; and thus

4. the villages would know the tractors were coming and begin to prepare for them.

The Director of the CCFU approved the idea, and shortly, the first of three training sessions were begun. The trainees selected were required to be sons of cooperative members and literate. Attendance ranged from 14 to 20 trainees, they were taught how to drive, how to properly cultivate a parcel of land, proper care of a tractor including daily, weekly, and monthly maintenance procedures, and how to make minor repairs.

When the new tractors arrived, 50 well-trained, anxious drivers greeted them with enthusiasm. But so did conflict. As the new tractors were being assembled at the CCFU head-
quarters in Khanewal, the drivers assigned to the old tractors began to cause an unexpected problem. The old drivers claimed that they had seniority over the new drivers, and therefore, should be the drivers of the new tractors. The technicians in the field objected and claimed it was the old, poorly-trained drivers who were responsible for the poor condition of the first group of tractors. The matter was submitted to the CCFU Director for arbitration, and he ruled that, because of their seniority, the old drivers had the right to request reassignment to the new tractors.

The result of the Director's decision was as follows. The old drivers, still poorly trained and refusing to keep their equipment properly maintained (claiming that it was too much work and that they were hired to drive, not repair,) soon had the new tractors in a state of disrepair; the villagers, already unhappy because an "intruder" had taken away a job assigned to one of their own, became hostile to both the driver and his tractor; the new drivers, bitterly disappointed and feeling betrayed at having been assigned to "foreign" villages and poor equipment, soon fell into work patterns resembling those of the old drivers.

The Khanewal project continued to function with government support until 1973. During fiscal year 1972-73, the Annual Development Programmes (ADP) allocation for the Khanewal project was Rs. 560,000. The following year, however, the project was removed from the ADP allocations for cooperative development schemes (Planning and Development Board, Punjab).
East Pakistan Rural Development

Introduction

The country of Pakistan began to systematically plan its economic development during the mid-1950's through the implementation of five-year plans. However, the major focus of the planning was directed toward West Pakistan, the seat of the national government. To a large extent, East Pakistan's role in the planning process was minor, as was its share of the planned outcomes. For example, in the First Five-Year Plan (1956-1960) the portion of public sector development expenditures allocated to East Pakistan was approximately 20% of the national total. It was not until the Third Five-Year Plan (1966-1970) that this figure approached 50% (Elkinton, 1976).

Also, East Pakistan's rural areas contained nearly 95% of the Province's population, produced 95% of the value of exports, and was responsible for some 70% of the annual gross domestic product (GDP). Despite this importance, for the first three five-year plans, East Pakistan's agricultural sector was awarded an average of only 17% of the Province's total allocation (see Table 6). Elkinton blamed this rather lackadaisical attitude toward agricultural development, at least partially, on a U.S. foreign aid program.

Until FY1967/68 the government of Pakistan assumed a relatively relaxed posture vis-à-vis agriculture; a sort of benign neglect prevailed. One important reason for this was the easy availability of food
grain and vegetable oil imports from the United States Public Law 480 (PL480) program. These import purchases were made with rupees and most of the funds generated were in turn made available to finance economic development projects. Thus, it is not surprising that development planning officials . . . were relatively unconcerned about the lack of agricultural production progress. (p. 61)

Table 6. Development allocations to the agricultural sector in the first three plans (million of Rupees)

<table>
<thead>
<tr>
<th>Five-Year Plan</th>
<th>Total Allocation</th>
<th>Allocated to Agriculture</th>
<th>Agr. % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Plan (1956-1960)</td>
<td>1,231.1</td>
<td>228.6</td>
<td>19.0</td>
</tr>
<tr>
<td>Second Plan (1961-1965)</td>
<td>5,550.5</td>
<td>996.6</td>
<td>17.0</td>
</tr>
<tr>
<td>Third Plan (1966-1970)</td>
<td>14,390.0</td>
<td>2,124.0</td>
<td>14.8</td>
</tr>
</tbody>
</table>

^Elkinton (1976, p. 61)

Comilla Rural Development

In sharp contrast with this rather negative attitude toward rural development was the establishment of the Pakistan Academy for Rural Development in Comilla in 1959, and the resultant research initiated by that institution. East Pakistan was divided into 17 administrative districts, one of which was Comilla District. Each district was divided into subdivisions, and each subdivision further divided into thanas. Thanas are comparable to counties in the United States. Comilla Kotwali thana, in 1961, had a rural popula-
tion of nearly 160,000 in an area of 107 square miles.

Comilla was located at the eastern edge of the Brahama­putra River delta, approximately 80 miles north of the Bay of Bengal. The area was extremely hot and moist during the summer, 90% of the 60 to 175 inches of annual rainfall occurred between May and November, and flooding was an annual occurrence. Ironically, irrigation was required during the winter growing season. Rice was the dominant crop, with nearly 90% of the land under cultivation devoted to it.

The average farmer of Comilla owned or rented 1.5 acres of land, broken into parcels of 1/2 acre or less. Farmers who owned their land were often in debt, and were required to pay, on the average, about 40% of their harvest to the money­lender. Tenant farmer contracts called for a payment of 50% of their harvest to the landlord.

Under the prevailing system of credit, loans were secured by the sale of parcels of land to the moneylenders; the borrowing farmer then paid rent to the new owner for the use of the land. Annual carrying charges . . . ranged between 60% and 90% of the loan. (Raper, 1970, p. 8)

In 1959, only one Comilla farmer in 25 used commercial fertilizer. Only half of the farmers used animal manure because this commodity also served as fuel for cooking fires. Their tools and equipment were primitive—a short-handled hoe, a heavy-bladed knife, a hand scythe, a wooden-wheeled cart, and a metal-pointed wooden plow. Many farmers also had bullocks, but these animals were often small, weak, and ill-fed.
Despite the high population density, communication links were poor between individual villages and between Comilla's villages and the outside world.

This isolation is represented by the narrow single path wandering from the village between the paddy fields to a distant paved road leading to the town. Life in the village has a continuity of its own untouched by books, newspapers, radios, electricity or machines. The path remains, in a sense, a one-way path, for the more venturesome and restless elements may leave it, while within the village even time itself seems to be caught in a backwash of existence. (McCarthy, 1963, pp. 6-7)

Annual flooding often made even the footpaths between villages impassable for weeks at a time; distribution of the area's weekly newspaper was meager, literacy being approximately 20%; telephone and telegraph connections were limited to the larger cities and towns of the Province; and although transistor radios could be found in some homes, ownership was still not common.

Pakistan Academy for Rural Development

The original idea for the Pakistan Academy for Rural Development at Comilla was first presented at a meeting of high ranking Pakistani government officials in 1955. By 1957, "two boards were established for the 'Pakistan Academies for Village Development East/West Pakistan' and their composition, powers, and related matters set forth" (Raper, p. 26). In a speech at Michigan State University, Akhter Hameed Khan, Comilla Academy's first director, described the institution's major purpose:
[The Academy] was started in 1959 as a result of recommendations made by a team sent by Michigan State University. The institution was set up in order to apply the principles of social science to public administration and to do research on social and economic problems of the villages. It was to be a training and research institution. Now this in itself is quite a novel idea for a country like Pakistan. In the first place, it is quite strange, there, to think of applying social science to administration. Secondly, to do research about rural problems and to try to discover more effective methods of rural development are also novel ideas.

As our "laboratory" area, we received the thana around Comilla Academy, a thana being an administrative unit roughly equal to a county. We have concentrated our research in this area, analyzing the rural position economically, socially, and psychologically. But apart from this kind of academic research, we also undertook a series of action programs, action research, to change and to reorganize and to find out more effective methods of doing things. (Khan, 1964, pp. 9-10)

The academy's action research became noted for its creative experimentation and unique pilot fieldwork. The primary focus of the Academy-sponsored rural development projects was to involve the farmers and their families.

The central concept of the Academy from its beginning . . . has been to regard Comilla as a laboratory for social and economic research, and to enlist the people of the thana, the staff of the Academy, and the local officers of government in a joint program of research and experimentation. And the staff members of the Academy--Pakistani and foreign alike--had to start by listening to the villagers, because that was the only way to find out where the process of change had to begin and--furthermore--the only way to persuade the villagers that the people from the Academy might be worth listening to. (Bell, 1970, p. viii)

Two assumptions were made by the Comilla Academy staff regarding the requirements for successful rural development.
The first assumption was that progress depended upon the willingness of the villagers to be innovative. Therefore, one of the first concerns was to ascertain the attitudes and priorities of the village leaders. The second assumption was that once the villagers adopted a small innovation and realized its success, that they would be more likely to accept larger, more complicated innovations leading to major change (Raper, 1970).

Consequently, the rural development projects that emanated from the Academy were designed to make the farmers aware of innovative economic, political, and social activities that were adaptable to or specifically created for their local culture. At the same time,

these development programs . . . were limited largely to improve organizational activities focused on supplying more profitable new technology to farmers, including the provision of training to insure the . . . productive use of the new technology. (Stevens, 1976, p. 98)

From 1959 through 1971, numerous experiments and pilot projects were undertaken by the Comilla Academy. Of these, six were considered of major importance—the agricultural cooperatives, the Thana Training and Development Center, the rural public works program, the thana irrigation program, the women's program and family planning, and the rural education experiments. Because of its similarities to the Khanewal Project in West Pakistan, the agricultural cooperative project was examined in depth.
The Comilla Agricultural Cooperatives

Having been charged with the difficult task of aiding the rural population of the Comilla thana, the Director of the Pakistan Academy for Rural Development and his staff approached the problem from what was then a unique position. Instead of briefly surveying the area of concern and then meeting with "outside" consultants to formulate their strategy, the usual procedure, Khan and his staff instead met with individual farmers, village groups, and local leaders. These informal, yet systematic consultations, in conjunction with surveying actual village conditions, led to the formulation of six basic hypotheses:

1. A viable private economic organization was needed which could serve as a basis for collaborative effort, and through which mechanization and other approved methods could be introduced.

2. The village would be recognized as the basic unit, with those families whose heads decided to do so becoming members of a local voluntary group.

3. Some linkage would be needed between these voluntary groups in the villages and the academy. Since it would be impossible to work directly with individual members of these groups, some form of representation would be needed.

4. A training method would follow logically from the above in which the organizers and model farmers would come to the Academy for weekly training sessions, followed by village meetings where the ideas learned would constitute the "lessons" for the villagers.

5. The early technical "inputs" would be furnished largely by a team of Japanese rice-cultivator demonstrators furnished by the Columbo Plan,
who would use the Academy's own farm and some land in nearby villages for demonstration plots, and who would teach at the weekly meetings and work with the model farmers.

6. Inasmuch as only the simplest techniques such as line sowing and improved fertilization could be adopted at first by individual villagers (considering the size of land holdings and other available resources) early emphasis would be given to these techniques and extended soon thereafter to joint planning, joint purchasing, credit, and joint use of machinery. (Raper, 1970, pp. 46-47)

All of these hypotheses led Khan and his staff to conclude that strategies based upon cooperative principles would serve as the best vehicle for initiating solutions to the area's major problem. The purposes for the formulation of the cooperatives were obvious, "to devise ways of increasing the agricultural production of ordinary cultivators, both to improve their incomes and to enlarge the food supply of the nation" (Schuman, 1967, p. 3). However, results from past cooperative efforts indicated that "normal" cooperative strategies would not suffice. Therefore, it was concluded by the Academy personnel that:

1. Basic changes from conventional cooperative efforts were required.

2. Changes in the rural social structure had to be made.

3. The individual's role within the social structure had to be altered.

With these parameters in mind, it was decided that two interrelated cooperatives be established, a village cooperative
system and a supportive Central Cooperative Association.

Village Cooperatives

The village cooperative system, as initiated by the Comilla Academy for Rural Development had at its core two key persons. The first was called the organizer. Organizers were selected by groups of farmers themselves, and the organizer's function was to serve as liaison between the village cooperative society and the Academy. The importance of the organizer was emphasized by Khan when he told the villagers, "He must be a man whom you trust. We don't care whether he can read or write; if he cannot read . . . we'll run a literacy course for him. But you send somebody whom you trust" (Khan, 1964, p. 34). The organizer's major duties included taking the weekly cash savings to the Academy for deposit, relaying problems to the Academy staff that had arisen since the last visit, and disseminating to the villagers ideas learned by attending Academy meetings.

The second key person in the village cooperative was the model farmer. The model farmer served essentially as the local agricultural extension agent. His importance was recognized because:

1. He is a resident village farmer who serves his own society rather than an outsider who serves several villages. 2. He is selected by the other members of a local voluntary cooperative group rather than by the Academy or some other agency. 3. He comes to the Academy one day each week for training, and so provides liaison between the farmers and the Academy. 4. He is one of a group
of village farmers who as a unit serve as innovator (individual innovators are rare). (5) He is taught by the Academy staff and advisors. (Raper, 1970, p. 51)

The significance of that dimension of the Comilla Project was emphasized by Schuman when he wrote:

Perhaps the most striking departure from ordinary efforts at rural development has been this emphasis on developing new local leadership. Rather than concentrating on sending extension officers and other government aid officials "into" villages, the Comilla program has encouraged village cooperatives to choose their own leaders for specially created roles such as Cooperative "organizer," "Accountant," and "Model Farmer." These men, whose past, present, and future lives are rooted in the village, are required to come at frequent and regular intervals . . . to the Central Association headquarters to discuss village problems, observe new methods and materials of farming, attend classes on subjects and skills directly related to their roles, and transact business with the Central Cooperative Association credit office. (pp. 4-5)

Later, in many villages, the organizer and model farmer positions were combined into a single position called a manager. The manager, having assumed the roles and duties of both the organizer and model farmer, became an almost full-time employee of the local society. As such, he received incentive payments for each member regularly attending the weekly village meeting and making a savings deposit; for each acre of land to which improved cultivation practices were applied; for organizing the schedule for using the cooperatively shared local irrigation pump; as well as receiving 1% of the loan payments paid back to the society by its members.

By mid-1960, seven village-based cooperatives had been formed. In addition, a vegetable growers society, a women's
cooperative, and a weavers cooperative were also functioning. By 1970, over 300 agricultural cooperatives were operating in the Comilla thana (see Table 7). That the goals of the program were being met, i.e., aiding those rural persons who needed help the most, was seen by the fact that virtually all of the cooperative members were farmers whose landholding were five acres or less (Raper, 1970).

Table 7. Status of Comilla-type agricultural cooperatives, 1970

<table>
<thead>
<tr>
<th>Cooperative System</th>
<th>Average Number of Coop Societies per Thana</th>
<th>Average Number of Coop Members per Thana</th>
<th>Average Shares &amp; Loans Issued per Member</th>
<th>Average Loans Over Total Loans (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comilla Thana 1960/61-1968/69</td>
<td>301</td>
<td>11,673</td>
<td>$28.98</td>
<td>$52.71</td>
</tr>
<tr>
<td>Three Extern-Thanas 1963-64-1968/69</td>
<td>229</td>
<td>5,873</td>
<td>$10.34</td>
<td>$57.75</td>
</tr>
<tr>
<td>Seven Comilla District Thanas 1965-Nov. 1970</td>
<td>196</td>
<td>5.620</td>
<td>$19.53</td>
<td>$54.60</td>
</tr>
</tbody>
</table>

*adapted from Stevens (1976, p. 101)

Central Cooperative Association

In January, 1962 the Kotwali Thana Central Cooperative Association (KTCCA) was formed. The Association's function was to support the activities of the local cooperatives by
providing services that individual cooperatives could not provide and to serve as a cohesive coordinating unit. In addition, the KTCCA was to provide general rules and regulations, discipline, training, and credit. Specifically, the Central Cooperative Association was created to

promote the continuation and expansion of savings; make provisions for crop-production loans and ... credit to the local cooperative societies (not to individual members) ...; provide training for the members and staff of the cooperatives, carry on bulk marketing and purchasing activities; procure, maintain, and hire out useful farm machines to the primary societies; establish a research and demonstration ... activity to yield practical ... information on cooperatives, farm machinery and ... civil administration ... , and develop by-laws and hire staff to achieve the above goals. (Raper, 1970, pp. 58, 59)

In order to become a member of the Central Credit Association, a local village cooperative society had to meet a number of requirements. Among these requirements were that the local society must show indications of village-wide support; that the society meet regularly and was able to solve its local problems cooperatively within the group; that the society was capable of raising collective funds, with contributions received from all members, regardless how poor; and that they could select several members to serve as their representative at Central Cooperative Association meetings, training and demonstration sessions (Schuman, 1967).

Among the first projects supported by the KTCCA was the training of drivers for the tractors assigned to the Academy by the Department of Agriculture. They were for the farmers'
use on a rental basis. The first two tractors to arrive at the Academy in March of 1960, produced little initial interest among the local farmers. They "saw that the tractors did the work well, but assumed apparently that the equipment was suited only to the farms of the government and the large landowners" (Raper, 1970, p. 77). Within a short time, however, having witnessed cultivation demonstrations on the fields of the more innovative and daring farmers, and hearing their positive reactions, "many farmers were wanting the use of the tractors and stood in a long queue at the Academy with the rent money in their hands" (Raper, 1970, p. 78).

But the project was not without its faults. To keep the two tractors from spending most of their time driving from one village to another, the Academy required that at least five farmers from the same village, having a minimum of eight contiguous acres for cultivation, jointly request the tractors before they would allow the tractors to go to a village. There was still much factionalism in the villages at this time and the farmers, because of past experiences, were afraid that their rent money would become "lost" or stolen. Both tractors remained inactive for a few days before one enterprising village came forth to request a tractor. Seeing that the money had not disappeared and that the tractor did proceed to the village and complete the contracted work, other village groups began to request the tractor at an increasing rate (Raper, 1970).
A second problem developed when it was found that the plots of land owned by each individual farmer were too small to be economically plowed with a tractor; too much turning, braking, and hydraulic lift use were required. The Academy personnel asked the farmers to solve this problem themselves. After much discussion, the farmers decided to drive small stakes into the ground to serve as temporary boundary markers (boundaries were traditionally formed by constructing a line of raised earth), allow the tractors to plow the contiguous holdings as a single plot of land, and then reconstructing the earthen boundaries. This system worked to everyone's satisfaction.

The third problem that arose with the coming of the tractors was that the drivers who accompanied those vehicles were not happy with their job assignment. The drivers dis­liked village life and refused to work during the heat of mid­day, when it rained, or on weekends. The farmers, who were used to working extremely long hours in their fields thought that the drivers' restrictions were abominable. The farmers called the drivers lazy and accused them of sabotaging the tractors when they didn't feel like working. It soon became apparent that the drivers, chosen because they were literate and thus able to keep records and make periodic reports to the Agricultural Department, were offsetting their usefulness with the negative rapport they had with the farmers.
Finally, it was suggested by the Academy staff that a training school be set up to train representatives from the villages to operate the tractors. This suggestion was received positively by all concerned. The Department of Agriculture drivers could return to working government-owned land close to urban areas, the farmers would have direct control over the driver since he would be under their direct hire, and the newly trained drivers would hold prestigious positions in the village.

The first six-week tractor driver training session began with 40 young men from the villages participating. All trainees were required to have met the following restrictions:

1. They were able-bodied.
2. They or their father was a member of a cooperative society.
3. They were familiar with agricultural work.
4. They were literate (for reading maintenance and repair manuals).
5. They had an interest in machinery.
6. They had been chosen by their fellow society members.

Thirty-six of the 40 young men who began the first training session completed the entire course. A second group began training just a week after the first group returned to their villages.

The tractor driver training course was conducted in con-
junction with the newly organized cooperative machine shop and tractor station. This unit was established to coordinate the tractor rental scheme, maintain all of the cooperatives' machinery, make major repairs on the equipment, and to train mechanics, tractor drivers, well drillers, and irrigation pump operators. From the modest beginning described above, the shop and training center developed rapidly. By the cropping year 1967-68, this concern was maintaining and repairing some 28 tractors that were cultivating nearly 5,000 acres of land and performing another 9,000 hours of additional agriculturally-oriented operations.

The Comilla Project continued to function with government support until 1971 when the Province of East Pakistan broke away from Pakistan and formed the independent nation of Bangladesh.
CHAPTER IV. ANALYSIS

Introduction

The problem of this study was to analyze a farm mechanization project conducted in the Punjab region of West Pakistan and an integrated rural development project conducted in the Comilla thana of East Pakistan. This analysis was made by extracting data from the case studies previously developed for each of the selected rural development projects.

For analysis of the Comilla rural development project, a case study was developed by synthesizing written materials from a variety of sources. Sources reviewed included the periodicals and journals Pakistan Quarterly, South Asian Review, and American University Fieldstaff Reports; speeches, articles and essays written by Akhter Hameed Khan, the first Director of the Pakistan Academy for Rural Development and the primary developer of the Comilla project; essays by C. M. Elkinton, a member of the USAID mission in Dacca from 1961 to 1971, and R. D. Stevens, a Michigan State University advisor to the Academy for Rural Development in Comilla; and a comprehensive text on the Comilla project by A. F. Raper.

For analysis of the Khanewal rural development project, a case study was also developed by synthesizing selected written materials. In addition to the journals and periodicals listed above, the following sources were also reviewed: Economic Development and Cultural Change, Economic and Poli-
tical Weekly, and Pakistan Development Review; Pakistan Government publications developed by Punjab Planning and Development Board and the Ministry of Food and Agriculture; publications by G. F. Papanek and C. H. Gotsch, Harvard University advisors to the Pakistan Government; and a case study of farm mechanization in the Punjab. However, specific reference to the Khanewal project was rarely found. Therefore, many of the details related to the farm mechanization project in Khanewal were synthesized from reports, papers, and lecture notes developed by the author from his personal experience in the Khanewal project.

The data extracted from each case study was compared using Bordenave's revised set of 39 interdisciplinary questions. When data related to a particular question could not be found in the case study, a thorough search of relevant literature was conducted in an attempt to adequately answer each question.

The interdisciplinary analysis resulted in a composite comparison of the two selected rural development projects. The findings of the study were developed by using the composite comparison to test the propositions of the study contained in Chapter I. Conclusions and recommendations were then drawn from the findings.

Case Study Comparison

An interdisciplinary technique was formulated to analyze
the specific data within the case studies. This technique consisted of applying a series of 39 questions regarding the design, organization, and functions of the selected rural development projects. The questions were adapted from D. Bordenave's "Communication of Agricultural Innovations in Latin America: The Need for New Models," in Communication Research, Volume 3, 1976, and P. Hill's "Diffusion of Innovation qua Transfer of Technology: Critique, Comments, and Recommendations," an unpublished casual paper, Journalism Department, Iowa State University, 1976. The 39 questions were clustered into seven categories--cultural, economic, educational, political, psychological, sociological, and technical questions.

Category I: Cultural

Question: What was the historical genesis of [the social organization]?

Answer: A. Khanewal

The majority of the participants in the Khanewal Project were refugees who emigrated from India at the time of partition in 1947. They were arbitrarily formed into villages in a cooperative settlement scheme that provided refugees with land, housing, and the basics to begin farming operations.

Two distinct leadership patterns developed. One was a natural leadership pattern, whereby the
natural leaders, the outspoken and innovative persons of each village, assumed the leadership role and usually were elected president of the local village cooperative. The second leadership pattern was a structured one, developed by the CCFU when it sent civil servants to each village to serve as village managers. These village managers were directly responsible to a Circle Officer (10-20 villages comprised a circle), who, in turn, was directly responsible to the CCFU Director in Khanewal.

B. Comilla

The participants in the Comilla Project had a tight knit village social structure.

The villages are divided into two or more paras (sections), either on a geographical basis or on the basis of kinship locations. Sometimes there may be another basis for social relationship whereby certain baris (families with equal status and similar background, though not necessarily related by blood) are contiguously located. In every village there are a few prominent families that have for decades guided village politics. (Zaidi, 1970, p. 17)

Village leadership usually consisted of an informal council of elders who "prescribe social controls in the village" (Zaidi, p. 18). Membership in this council was retained in a family by having the oldest son inherit the council position
from his father. However, village councils were beginning to lose their effectiveness because of "various modernizing influences . . . and the presence of numerous factions in the villages" (Zaidi, p. 18).

Question: Were the farmers consulted and were their needs for innovation ascertained?

Answer: A. Khanewal

The farmers participating in the Khanewal project were not consulted during the planning or the implementation of the development project. For example, in the farm mechanization project, the project development was conducted by government planners. Implementation of the project was undertaken by CCFU without any input from the farmers. The farmers sometimes did not even know that the tractors were coming until they arrived in the village.

During the initial stages of the project, the amount of land, types and style of structures, and other necessities given to the refugees, were all predetermined by government officials. For example, when the government decided to introduce the new high-yielding varieties of wheat, they simply ceased to make available varieties other than the high-yielding varieties. As far as can
be determined, no one ever approached the farmers to ascertain their needs and plans for change or innovation.

B. Comilla

Two assumptions were made by the Comilla Academy staff regarding the requirements for successful rural development. The first assumption was that progress depended upon the willingness of the villagers to be innovative. Therefore, one of the first actions taken by the staff was to ascertain the attitudes and priorities of the village leaders.

The second assumption was that once the villagers adopted a small innovation and realized its success, that they would be more likely to accept larger, more complicated innovations leading to major change. Consequently, the Comilla rural development projects were designed to make the farmers aware of the innovative economic, political, and social activities that were adaptable to or specifically created for their local culture.

Question: Did the innovations take into account regional and local differences in ecology, economy, farming habits, and cultural norms?

Answer: A. Khanewal
The high-yielding varieties of wheat had been acclimatized for the region. However, recognition was not given to the facts that: (1) the farmers required the buffalo for other things besides plowing land, and therefore, would not give them up; (2) the high-yielding wheat did not correspond with the local variety's hardness, color, or taste; (3) the new varieties were short stemmed and resulted in decreasing an important fodder crop; (4) the farmers felt the plowing date was critical to a good harvest, and therefore, everyone wanted the tractor at the same time; (5) the tractor size and their accompanying implements were unsuitable for use in 1/4 acre plots of land, the traditional division size used to accommodate flood irrigation; (6) the farmers could not afford the greater inputs of fertilizer and irrigation water required by the new wheat varieties.

B. Comilla

The rural development projects that were developed by the Academy were designed, made adaptable to, or were specifically created for local cultures. As such, the village was recognized as the basic unit of development, and local ecology, economics, and agricultural methods were taken into account.
Question: What were the feedback possibilities and channels for the farmers to communicate their needs and results to the innovation sources and policy-makers?

Answer: A. Khanewal

Theoretically, a feedback structure existed in the CCFU organization. An individual farmer could and sometimes did communicate his needs or complaints to the village cooperative president. The village president, if he could not solve the problem, was to pass the request or complaint on to the village manager, who passed it on to the Circle Officer, who passed it on to the Cooperative Director in Khanewal. In reality, a request or complaint rarely got beyond the village manager because a fear of the immediate superior existed at each bureaucratic level of the cooperative hierarchy. A criticism, complaint, or even a request for assistance was regarded by the individual civil servant as a sign of his being unable to handle the situation. As a result, feedback to the program organizers was virtually non-existent.

Further, there existed in the culture of rural West Pakistan, the phenomenon of holding in awe, persons of higher political, governmental, or economic rank. Consequently, on the rare occasion
that the Circle Officer or the Director visited a local village or individual farm family, the local villager, unless extremely agitated, would remain silent or even praise a situation he really found abhorrent.

B. Comilla

The village cooperative system, as initiated by the Comilla Academy for Rural Development had at its core two key persons. The first was called the organizer. Organizers were selected by groups of farmers themselves, and their function was to serve as liaison between the village cooperative society and the Academy.

The second key person in the village cooperative was the model farmer. The model farmer served essentially as the local agricultural extension agent, and one of his responsibilities was to serve as the innovator and to provide a direct link between the village farmers and the Academy. The organizer and model farmer positions were later combined to a single position of manager.

Question: What were the relationships between the processes of human development, formal education, organization, politization, and technification of the rural population?

Answer: A. Khanewal

Within the Khanewal project, the processes of
human development, organization, and technification were the responsibility of the CCFU. Formal education was the responsibility of the Ministry of Education, although the formal technical education of the tractor drivers and mechanics was conducted by the CCFU. Politization was undertaken by the various competing political parties.

B. Comilla

From 1959 through 1971, numerous experiments and pilot projects were undertaken by the Comilla Academy. Of these, six were considered of major importance—the Agricultural Cooperative, the Thana Training and Development Center, the rural public works program, the thana irrigation program, the women's program and family planning, and rural education experiments. Thus, all processes except politization were integrated through the Academy staff.

Category II: Economic

Question: Did the majority of the farmers own their land, either individually or cooperatively?

Answer: A. Khanewal

The ownership of the land was a complicated matter in the Khanewal project. One of the stipulations made by the Pakistan Government, through
the CCFU, when the 12 1/2 acres of land was given to the refugees was that the land could not be divided. For a man with more than one son, however, this stipulation was in direct conflict with a Moslem law which stated that a man's land should be divided equally between his sons. Therefore, the title of the land remained with the government, but the farmers were given the right to the land in perpetuity.

B. Comilla

An East Pakistan village is a small unit containing roughly between 50 and 125 families who own the land adjoining their village, about 200 or 250 acres. In a village, there are three classes of people, of farmers. First, there are the landless laborers, about 20% of the population, who might own their household but little, if any, land. At the other extreme, about 5% or 10% of the farmers might own 10 to 15 acres or more, which would classify them as rich farmers. Then there is the vast majority of farmers, 70% to 75%, who are small farmers, owning one and a half to three acres of land. (Khan, 1964, p. 12)

Question: Who controlled the economic institutions, particularly the market, credit, and input supply organizations?

Answer: A. Khanewal

For the farmers in the Khanewal project, the economic institutions were controlled almost exclusively, both directly and through the CCFU, by
the national government. For example, an individual farmer's cotton crop was collected by the CCFU, weighed, recorded, and sent to a centrally located godown where it was stored until purchased by government cotton mills. The price was established by the national government economists. Purchase of seed and fertilizer on credit was available through the Ministry of Agriculture's facilities. Amounts and types were strictly regulated and during times of shortage, black market operations were common. General loans were also available through the CCFU organization at reasonable interest rates, but were not easy to secure.

B. Comilla

Prior to the Comilla project farmers who owned their land were often in debt, and were required to pay, on the average, about 40% of their harvest to the moneylender. Tenant farmer contracts called for a payment of 50% of their harvest to the landlord.

In 1962, as part of the Comilla project, the Kotwali Thana Central Cooperative Association (KTCCA) was formed. The Association's function was to support the activities of the local cooperatives by providing such services as the promotion of savings, crop-production loans and credit to the
local societies, bulk marketing and purchasing activities, and so on.

Question: Did [the adoption of the proffered innovations] promote employment or unemployment, fixation of the rural population or migration to the cities, enrichment of the already rich or better income distribution?

Answer: A. Khanewal

The Khanewal project's innovations in general were employment producing. The farm mechanization project created jobs for drivers and mechanics. The cooperative itself developed positions for civil servants, construction workers, community development workers, teachers, health workers, and clerks. Because of the nature of the project, it tended to take people out of the cities and return them to rural areas. The project also had the potential for aiding in the redistribution of wealth. One of the goals of the project was to aid the subsistence farmer in growing a surplus of wheat that could be sold in the market.

B. Comilla

Many of the Comilla project's activities also promoted employment in the local area. Persons were hired to serve as extension agents, organ-
izers, managers, tractor drivers and mechanics, family planning leaders, and so on. It also helped to stabilize the population and did nothing to promote migration to the cities. And like the Khanewal project, the Comilla project had the potential for aiding the redistribution of wealth by providing a way for subsistence farmers to grow surplus crops for market.

Category III: Educational

Question: How adequate were the change agents or extension service personnel as a two-way communication channel?

Answer: A. Khanewal

The role of the change agent in the Khanewal project was the responsibility of U.S. Peace Corps Volunteers, and civil servants employed for the Basic Democracies and agricultural extension programs. None of the training programs for the personnel involved in these programs emphasized the need for the workers to be the means for a two-way communication system. Rather, emphasis was placed on the change agent's role of bringing the government's programs to the people, a definite one-way communication channel.

B. Comilla
The central concept of the Academy from its beginning . . . has been to regard Comilla as a laboratory for social and economic research, and to enlist the people of the thana, the staff of the Academy, and the local officers of government in a joint program of research and experimentation. And the staff members of the Academy . . . had to start by listening to the villagers because that was the only way to find out where the process of change had to begin and--furthermore--the only way to persuade the villagers that the people from the Academy might be worth listening to. (Bell, 1970, p. viii)

Clearly, the personnel involved in the Comilla project were charged with the obligation to develop and keep open, a two-way communication channel.

Question: Were [the change agents or extension service personnel] technically competent, ideologically oriented to the welfare of the farmers, methodologically adequate?

Answer: A. Khanewal

To be qualified for employment in the program, the change agents were required to have successfully passed through the normal academic training program (agriculture, health, social work) plus successfully complete the special training of the specific agency they would be employed by. Often, however, the training, while technically sufficient, failed to emphasize the economic and social plight of the rural subsistence farmer. As a re-
result, the agents saw the persons they were sent to help as lazy, ignorant, resistant to change, and socially, less acceptable.

B. Comilla

The change agents involved in the Comilla project were not all required to have had strong academic experience in a technical area. Instead emphasis was placed on training those villagers selected by their peers to serve as change agents. The Academy required the chosen villagers to attend weekly classes to upgrade their level of expertise. Regarding the government-hired change agents,

with the creation of the Thana Training and Development Center all of the thana representatives of the various government departments concerned with development were brought together in one location for the first time. This association with the Academy staff led to a changing attitude on the part of the government officials; they began to be concerned with teaching better methods of rural development as well as with regulation. (Raper, 1970, p. 14)

Question: How did farmers diagnose and solve their problems?
Answer: A. Khanewal

There was little evidence available to suggest how the local farmers diagnosed and solved their problems prior to the Khanewal project. In many ways their lifestyle was not very different from
that of subsistence farmers 2000 years ago. Today's subsistence farmer still lived in a mud hut with a dirt floor and straw roof, and plowed his land using a water buffalo and a wooden stick.

The Khanewal project rarely provided the subsistence farmer with the opportunity to solve his own problems. For example, the vast majority of development projects in the area were always giving and telling rather than asking and acquiring. Secondly, local education used the rote system, which provided little experience for analyzation or problem-solving. Thirdly, an expression commonly heard in the area was Inshallah, meaning "God willing" or "it is God's will." The term was often applied when the subsistence farmer was confronted with a problem.

B. Comilla

Prior to the Comilla project, the local subsistence farmers were also living much like their ancestors of 2000 years ago. The advent of the organizer and the model farmer schemes, however, plus several rural education experiments, provided new impetus for the rural subsistence farmers in the Comilla project to begin to look at their problems differently. A few early successes helped to show the farmers that they themselves could con-
tribute to the solutions. One example was the decision by the farmers to temporarily replace their earthen field dividers with wooden stakes while the fields were being plowed with a tractor.

Question: How did [farmers] search for extracommunity resources and help?

Answer: A. Khanewal

In the majority of the cases, the rural Pakistani farmers and their families were not aware of the outside resources available to them. Information regarding these extracommunity resources was not related to the villagers, nor were visits made to any but a few nearby or wealthy villages by the resource personnel who were located in the larger cities.

B. Comilla

With the creation of the Thana Training and Development Center all of the thana representatives of the various government departments concerned with development were brought together in one location for the first time. (Raper, p. 14)

As a result of this consolidation, extracommunity resources were not required.

Question: How well developed [was the farmers'] communication ability?

Answer: A. Khanewal
Verbal communication was the only communication system open to most farmers in the Khanewal project. Less than 20% were literate, and even for those who could read, printed materials of any kind were not available on a regular basis. Television, telephone, and telegraph were not available in the villages, and the only source of non-local information was the radio or a traveler who brought printed or verbal information to the village.

B. Comilla

In the villages of the Comilla project, weekly newspaper distribution was slight. Electronic media was non-existent with the exception of a few radios. During the period of flooding, the isolation of individual villages was often total. The Academy, however, had instituted a two-way verbal communication system between the villagers and itself and was responsible for instituting a similar system between the other government agencies and the villagers.

Question: What were the personal and group roles in farmers' problem-solving?

Answer: A. Khanewal

In general, the CCFU as a unit assumed the major role of problem-solving in the Khanewal project.
The individual farmers lacked the training, experience, and facilities for solving their own problems.

B. Comilla

In the Comilla project, the focus was on developing within the village cooperative, the techniques, training, and experience to solve local problems. A second focus was also placed on individual problem-solving in several of the rural education projects.

Question: Were the skills necessary for [the] maintenance [of adopted innovations] available?

Answer: A. Khanewal

Using the CCFU farm mechanization project as an example, at the outset of the project, the necessary skills for maintaining or properly using the adopted innovation were not observable because: (1) the tractor drivers assigned to each tractor were uniformly unskilled in proper cultivation and tractor maintenance problems; (2) the implements were not suited for the way the land was divided; (3) the closest fuel supply was from 20 to 40 miles away; (4) there were no repair shops, trained mechanics, or tools and equipment to do major or even much minor repair work.
As the project progressed, however, the necessary skills were developed as was seen by the hiring of mechanics by the CCFU to begin repairing the tractors; centrally located fuel dumps were set up; centrally located workshops were built; drivers were recalled for a short, intensive training session in periodic maintenance procedures and proper cultivation techniques; a monthly maintenance check was instituted; and the implements were modified for use in small areas.

B. Comilla

Using the Comilla farm mechanization project as an example, the necessary skills for maintaining or properly using the adopted innovations were not observable because: (1) the drivers were forced to spend too much time traveling from village to village to plow an individual's land; (2) the land was divided into plots too small for economic tractor plowing; (3) the drivers disliked rural farm living and the long work hours they were expected to work.

As the project progressed, however, the necessary skills were developed as was seen when the Academy staff required that tractors not go to a particular village until at least five farmers had
signed up to have their fields plowed; the farmers themselves suggested that the earthen field-dividers be replaced temporarily with wooden stakes during the plowing of contiguous fields; a tractor driver training school was set up to train local youths in the care, maintenance, and proper use of the tractors so they could replace the government drivers.

Category IV: Political

Question: How autonomous or independent was the country from external forces which affected its economy and its political decisions?

Answer: At the time of these development projects, the country of Pakistan, both East and West was under the conflicting influences of the United States and China. Both countries were attempting to win Pakistan's favor by implementing favorable economic assistance and trade programs. The purpose was to receive in return, favorable political decisions from Pakistan.

Question: What criteria were used to guide the choice of innovations for diffusion--(a) the common welfare, (b) the increase of production for export, (c) the maintenance of low prices for urban consumers,
(d) the profit of big commercial farmers and landowners?

Answer: A. Khanewal

It appears that the choice of innovations in the Khanewal project were made primarily to aid the common welfare and as an attempt to maintain low food and clothing prices for urban consumers.

B. Comilla

It appears that the reason for the innovation choices made by Akhter Hameed Khan and the staff of the Pakistan Academy for Rural Development were solely for the common welfare.

Question: What effects did the adoption of certain innovations have on regional and national development in the short, medium, and long range?

Answer: A. Khanewal

This scheme was introduced in 1961-62 with the following objectives:
(a) to provide tractor power for farm operations and thereby reduce bullock power by 50%;
(b) to replace 50% bullock power by milch cattle for the benefit of members.

Experience showed that individually, the farming societies could not take up mechanization effectively. Farming societies (129) therefore federated into the Colony Cooperative Farming Union Limited, Khanewal in 1962. Besides arranging essential inputs and services like supply of agricultural machinery, tubewells, seeds, fertilizer, the Union is providing repair facili-
ties for tractors and other agricultural machinery purchased by the societies, the Union has set up a full-fledged tractor repair workshop at Vehari and two field workshops. (Planning and Development Board, Government of the Punjab, 1974, p. 164)

Allocations for fiscal year 1972-73 for this project was .560 million rupees. But for fiscal years 1973-74 and 1974-75, no allocations were indicated. On the other hand, .307 million rupees were allocated for fiscal year 1974-75 to implement a farm mechanization project in the Sialkot District under the auspices of the Zarai Cooperative Union, "specifically . . . organized to undertake ploughing in Bajwat and Shakargarh areas of Sialkot District" (Planning and Development Board, Government of the Punjab, 1974, p. 165).

B. Comilla

"In the long run, the importance of the Comilla program depends on whether, with adaptations to local conditions, the principles and procedures worked out there can be applied elsewhere in East Pakistan and perhaps in other areas" (Raper, 1970, p. 232). In 1962, three other thanas began Comilla-like development programs. By 1968, they collectively had 641 agricultural societies; 32 non-agricultural societies; 16,927 members; and 3,575 acres under cultivation (Raper, 1970, p. 236).
In 1965, seven additional thanas began operating Comilla-like development programs. By 1970, these seven thanas averaged 196 agricultural societies and 5,620 cooperative members in each thana (Stevens, 1976, p. 101).

Question: Was there communication monopoly, censorship, blockage, or distortion?

Answer: A. Khanewal

Communication in the villages of the Khanewal project was extremely limited. The nearest place to obtain a newspaper or magazine, the city of Multan, was a minimum of 20 miles away. Visitors, with the exception of CCFU personnel were extremely rare. Therefore, the villagers had to rely on information supplied to them by fellow-villagers who made the bus trip to Multan and back, an all day affair, government controlled radio programs, and CCFU visitors. This situation resulted in a communication monopoly by the Pakistan Government and, although not necessarily deliberate, censorship, blockage, and distortion.

B. Comilla

Despite the high population density, communication links were poor between individual villages and between the villages and the outside world.
Annual flooding often made footpaths between villages impassable, newspaper distribution was meager, telephone and telegraph available only in the larger cities and towns, and ownership of radios was still not common. The only regular visitors to these villages were the personnel from the Pakistan Academy for Rural Development. This situation created a natural environment for communication monopoly, censorship, blockage, and distortion.

Question: Were farmers organized in pressure groups that could exert influence on the social structure of land tenure, on the production infrastructure, and on the marketing system so as to facilitate the diffusion of appropriate innovations?

Answer: A. Khanewal

The formation of the cooperative unions appeared to give villagers the power to make social and economic changes. However, CCFU officials simply overruled or ignored actions taken by the union members that were not to their liking. For example, when the villagers petitioned to have the tractors removed from their villages, the petition was ignored and the government shortly after purchased even more tractors for the area.

B. Comilla
Perhaps the most striking departure from ordinary efforts at rural development has been this emphasis on developing new local leadership. Rather than concentrating on sending extension officers and other government aid officials "into" villages, the Comilla program has encouraged village Cooperatives to choose their own leaders for specially created roles such as Cooperative "Organizer," "Accountant," and "Model Farmer." (Schuman, 1967, pp. 4-5)

Category V: Psychological

Question: Was there any degree of coercion necessary for the adoption of an innovation, either by the market situation, the credit institutions, the government, the landlords?

Answer: A. Khanewal

The major coercive element in the Khanewal project was the Pakistan Government, both directly and indirectly through the CCFU. It was the government that decided the tractors would be distributed through the cooperative system; it was the government that made only the short stemmed, high-yielding varieties of wheat available; and it was the government that originally required the refugees to become members of the cooperative societies.

B. Comilla

Indications of coercion could not be found while studying the Comilla project.
Question: What was the role of mass media advertising?
Answer: Since mass media was not available to the participants of either project, mass media advertising played no role in the selected development projects.

Question: Was mass media persuading farmers to adopt innovations that they really needed or that they did not need?
Answer: Mass media was not available to the participants of either selected development project and therefore played no role in persuading farmers.

Question: Were the products and techniques being diffused adequate to the stage of technological, economic, and social development in the nation?
Answer: A. Khanewal

To the planners of the Khanewal project the answer to this question appeared to be affirmative for the following reasons:

1. The Punjab was the breadbasket of Pakistan and this project would mean thousands less tons of wheat would have to be imported.
2. The new innovations and techniques would mean better plowed fields and less work for the farmer.
3. Some of the innovations and techniques had been especially adapted for the country (Mexi-pak wheat seed).

4. An already established social structure was available through which to disseminate the new products and techniques.

However, in terms of technical education, technical communication, and infrastructure support systems, the nation was inadequate.

B. Comilla

The Comilla project focused on providing the participants with the needed support systems and technical education. It did not matter to the planners whether or not the nation was in an adequate situation or not. The project was essentially designed to be self-supporting, and would progress as rapidly or as slowly in technical, economic, and social terms as the participants desired. Some pressure was applied by the Academy staff, but it appeared to have been stimulating rather than stifling.

Question: [Did the new innovations] require the establishment of new systems of credit, land tenure, technical assistance, marketing, and insurance?

Answer: A. Khanewal
The Khanewal project required the establishment of a new system of increased technical assistance. The project was designed to work within the existing credit, land tenure, and marketing systems.

B. Comilla

The rural development schemes of the Comilla project were designed to make the farmers aware of innovative economic, political, and social activities that were adaptable or specifically created for their local culture. In addition, these programs were designed to introduce new technology to the farmers.

Question: How adequate were the communication channels' content and treatment of the innovation in relation to the needs of the farmers?

Answer: A. Khanewal

The communication channels' (the CCFU staff) content and treatment of the innovations in relation to the needs of the farmers was extremely poor. For example, there was little, if any, warning of the tractors' arrival; no discussions were held so that the farmers could learn of the tractors' or the new seed variety's positive potential; no technical training was conducted; a feedback channel through which villagers could ex-
press concerns was not established.

B. Comilla

The communication channels' (Academy staff) content and treatment of the innovations in relation to the needs of the farmers was excellent. The entire project was based upon continuous two-way communication between the Academy staff and the villagers.

Category VI: Sociological

Question: How was the rural social structure organized, and what influence did it exert over individual decision-making?

Answer: A. Khanewal

The rural social structure for the participants of the Khanewal project centered around a village headman, an informal position. He was usually also the president of the village Cooperative, but when these positions were held by two different men, conflict was common. A third influential figure in the village was the Cooperative manager. Although usually an outsider, because he was a government employee, the Cooperative manager could more easily coerce the farmers than could either of the previously mentioned leaders. A fourth influential figure was the village imam, or religious
leader. This person, however, rarely became involved in conflicts unless directly related to the Moslem religion. Generally, the older a person was, the greater was the deference paid him, but this did not mean he was automatically sought as a figure of authority. All women in the village were in purdah and did not seem to have much influence even behind the scenes.

B. Comilla

In most East Pakistan villages a few prominent families could be found that had been directing the village for decades. Representatives from these families (usually the elders) formed an informal village council. It was this council that made the social, judicial, and often even the political decisions for the entire village.

However, this system was weakening because of modernizing influences and the presence of numerous factions. Replacing this council in many villages participating in the Comilla project were the organizers, model farmers, and managers that were trained by the Academy staff. One of the major innovations of the Comilla project was the training of individual local leaders.

Question: Who decided what kinds of innovations would be
diffused and developed?

Answer: A. Khanewal

On a descending order of influence: the national government; the provincial government; the district government; the CCFU staff; and the villagers.

B. Comilla

For the most part, the villagers of the Comilla project themselves, with the support of the Pakistan Academy for Rural Development, decided on the kinds of innovations that were developed and diffused.

Question: What effects did the adoption of certain innovations have on individual and family welfare:

Answer: A. Khanewal

The farmers produced more wheat as a result of the introduction of the new seed varieties, increased use of fertilizer and irrigation water, and tractor-plowed land. This surplus crop provided increased welfare to the farmer's family in terms of increased food or cash.

B. Comilla

Rice yields were moderately increased by seedbed preparation, line sowing, weeding, more fertilizer, and better insect control; rice prices to the farmers were raised by cooperatively keeping the crop off the
market in the low-price harvest season; production credit was secured at less than a third of the annual cost formerly prevailing; encumbered land was redeemed from the moneylenders as debts owed them were paid with cooperative loans. Family incomes and levels of living began to rise as production increased, prices improved and the debt burden shrank. (Raper, 1970, p. 271)

Question: What kind of living and learning adjustments did the innovations require from the farmers?

Answer: Both projects required that new living and learning techniques be developed for the innovations to be successful. The difference between the two projects was that in the Khanewal project the farmers resisted the new techniques, while in the Comilla project the farmers readily accepted the new techniques.

Question: Who controlled the sources and channels of communication for the innovations?

Answer: A. Khanewal

The national government, both directly and through the CCFU staff in Khanewal, controlled the sources and channels of communication for the innovations.

B. Comilla

For the most part, the Pakistan Academy for Rural Development controlled the sources and
channels of communication for the innovations.

Question: [Was mass communication] at the service of all the farmers or mainly at the service of the government, the input industries, the buyers of farm products, the larger farmers, the consumer groups?

Answer: Given the isolation of the villages, the large number of illiterate persons in these villages, the primary use of radio (for pleasure), and the almost complete lack of other electronic mass communication devices in the villages within both of the selected projects, neither could be said to have benefitted from the mass communication systems of either East or West Pakistan.

Question: Which were the institutions that directly or indirectly transferred technology to the farmers?

Answer: A. Khanewal

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B. Comilla

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Question: What . . . conditions affected the continued availability of auxiliary technologies?

Answer: In both projects the major condition that affected the continual availability of auxiliary technologies was the support of the national government. It was the national government that developed, transferred, or secured the required auxiliary technologies, either directly or indirectly through the CCFU or PARD.

Category VII: Technical

Question: Did [farmers] own their agricultural tools?

Answer: A. Khanewal

Individual farmers owned all of the tools necessary to prepare the land for flood irrigation and planting, and for harvesting the crop in the traditional manner. The tractors and implements were owned jointly by individual village cooperatives.

B. Comilla

The farmers in the Comilla project individually owned the tools necessary to farm their crops in the traditional manner. The tractors, however, were the property of the Department of Agriculture, on loan to the project through the auspices of the Central Cooperative Association (KTCCA).
Question: How appropriate and well-proven were the products and techniques being diffused?

Answer: A. Khanewal

The appropriateness of the products and techniques in the Khanewal project was mixed. For example, the new varieties of wheat had been specially developed from a Mexican variety to fit the climate and environmental conditions of Pakistan. The fertilizer was also appropriate and had proven its usefulness. On the other hand, the tractors had not been proven useful and it was the opinion of many that they were inappropriate for the social as well as the environmental conditions of the Khanewal project.

B. Comilla

In the Comilla project fewer products and techniques had prior testing. However, the Comilla project included a large experimental component, both actual and attitudinal. Therefore, many products and techniques were tested on site. If they were successful they were retained. If they were unsuccessful, they were discarded and another product or technique was tried.

Question: Was technification promoted and executed without efforts for simultaneous [human development]?
Answer: A. Khanewal

Yes. During the introduction of both the improved wheat varieties and the use of tractors, no attempt was made to inform the villagers of the positive potential of these innovations. Nor was an effort made to educate them to even a basic understanding of things mechanical.

B. Comilla

No. The Comilla project was based on two assumptions. The first was that progress depended upon the willingness of the villagers to be innovative. The second assumption was that once the villagers adopted a small innovation and realized its success, they would be likely to accept larger, more complicated innovations leading to major change.

Question: What auxiliary technologies were needed to render the use of the proposed technology viable?

Answer: Using the case of the introduction of tractors in both rural development projects, maintenance and repair equipment and technicians; local fuel supply; technical training facilities; communication media and personnel to promote and explain tractor usefulness; storage and a marketing system for the increased harvest; and additional water
and fertilizer were all required to render the use of the proposed technology viable.

Question: From whom was [the proposed technology] obtained, an external or an internal source?

Answer: A. Khanewal

With the exception of the tractors and their implements, the initial supply of new seed varieties and Peace Corps Volunteers, other technical procurement was done on a local basis.

B. Comilla

Some of the early project equipment was procured through the Columbo Plan, and Peace Corps Volunteers were utilized initially. Beyond that, internal sources provided the remaining technical necessities.
CHAPTER V. FINDINGS

Introduction

Many international development experts involved in rural development projects had at the foundation of their projects, two basic assumptions. The first assumption was that development projects were multifaceted. The second assumption was that the success of such programs depended upon the participants' ability to identify the various factors involved and to take into account the interactions between and the contributions made by each factor.

From these assumptions, three propositions were put forth. They were:

1. During the planning and operation of a successful development project the many relevant dimensions would have been taken into account.

2. During the planning and operation of a development project that was eventually deemed unsuccessful, some of the relevant dimensions would have been ignored.

3. A proper accounting of the many dimensions of a development project could only be made using an interdisciplinary methodology.

To verify the first proposition, a case study of a recognized successful development project, the Comilla Project, was developed and analyzed. To verify the second proposition, a case study of an unsuccessful development project, the
Khanewal project, was developed and analyzed. To verify the third proposition, the two case studies were analyzed using a set of interdisciplinary questions that had been adapted from Bordenave's model for making interdisciplinary analyses.

**Proposition 1**

*During the planning and operation of a successful development project the many relevant dimensions would have been taken into account.*

The Pakistan Academy for Rural Development (PARD), Comilla, the developer of the Comilla project was founded on an interdisciplinary principle. Its purpose was to apply social science principles to public administration and to conduct research on the social and economic problems of rural areas. The program in Comilla was PARD's pilot project emphasizing interdisciplinary development.

From the very outset of the project, the social, cultural, and psychological aspects were taken into consideration by the developers. As was the case with most development projects, the project developers did not begin by telling the villagers how to solve their problems. Rather, the developers began by listening to the villagers, asking them what their problems were and what the villagers thought was needed to rectify the situation. The project developers' next steps were to develop local leadership and to establish a two-way communication system between the villagers and the Academy.
The leaders chosen by the farmers themselves, served as the communication link.

The project developers also introduced the new, innovative practices slowly, beginning with the less complicated techniques and advancing slowly to the more complicated ideas. The developers also adapted their transferred technology or innovation to the local setting, taking care to incorporate it successfully into the local social structure. Finally, the project developers made certain that the villagers participated in the problem-solving sessions whenever difficulties developed.

The project developers' realization of the multifaceted dimension of the project was also seen by the diversity of their schemes. Each of the six major schemes initiated by PARD was aimed at a different segment of rural life. One scheme was directed toward the formation of agricultural cooperatives, a second toward technical training, a third toward rural public works, a fourth toward irrigation water, a fifth toward a women's program and family planning, and the sixth toward rural education. Not only were these schemes initiated by the Academy, they were also coordinated with one another, to keep conflicting interests at a minimum.

When the agricultural cooperative scheme was analyzed in depth using Bordenave's series of interdisciplinary questions it was apparent that the project developers had taken into
account all of the relevant dimensions. For example, when answering those questions related to culture, it was found that the PARD officials effectively utilized local conditions. They capitalized on the weakening effectiveness of local councils by training new leaders; they paced their project on the recognized level of local innovativeness; they set up an effective two-way verbal communication system that did not require sophisticated technology; and most importantly, the project developers allowed the project to be directed internally, by the villagers themselves, thus automatically eliminating the chance of bringing into the system an innovation that would be culturally abhorrent to the villagers.

When answering Bordenave's questions related to economics it was found that the majority of the villagers involved in the scheme did own their land, although usually it was less than five acres and was usually mortgaged at the outset of the project. One of the project's major thrusts was to aid the economic plight of the local villagers, and they accomplished this goal by a variety of means. They included:

1. to promote a savings program;
2. to provide farmers with low-interest loans for the purchase of crop inputs;
3. to form new marketing systems whereby the crops were sold collectively rather than by each individual farmer;
(4) to promote employment;
(5) to help slow the urban migration in the area;
(6) to aid in the redistribution of wealth by making cash available to former subsistence farmers.

Regarding the education category of Bordenave's series of questions, it was found that the project developers had taken this area into consideration. For example, emphasis was placed on training selected farmers to serve as the project's extension agents. And those Academy staff members who were from outside the area, were given special training designed to acquaint them to the local conditions. The villagers were encouraged to solve their own problems, using the Academy staff as resource persons rather than persons who would tell them what to do. Verbal communication was the communication mode the Academy staff relied on because the villagers had so few other communication devices and so little experience with other communication systems. This was an effective communication channel under those circumstances.

Politics entered the project in both a positive and a negative way. On the positive side, it was noted that the project was a government-sponsored scheme designed to aid the common welfare of the people. The project's major goals were to develop methodologies and techniques for modernizing the farming practices of the subsistence farmer, to improve the purchasing, marketing, and other economic activities, to formulate pressure groups to help regulate the local commun-
ity, and to generally upgrade the standard of living of the local farmers. In addition, it was anticipated that these newly developed methods and techniques would be adaptable to other regions throughout the country.

On the negative side was that the government retained almost complete control of the communication system to the outside world. With electronic media almost non-existent, with literacy at about the 20% level, and few outside visitors so that even verbal communications were almost exclusively with government officials (PARD staff), there was virtually no way for the local villager to receive unbiased news. However, since the project outcome was not dependent upon outside communications, this was not a factor.

The psychological element of the project was recognized by the Academy staff in that they did not attempt to coerce the villagers into trying the new methods. As noted earlier, they took great care to have the farmers totally involved in the project, especially in the leadership, problem-solving, and decision-making areas. The various innovations themselves were designed to be easily adaptable into the culture and social structure, and easy for the villagers to comprehend why a change was being made.

The sociological dimension of the Comilla project was its strongest area. Many of the positive aspects of the project that have already been mentioned, also had sociological
overtones or components. For example, the replacing of the council members with the newly trained local leaders was a social as well as a cultural activity. The use of these local leaders, who were totally familiar with local customs and local ways, not to mention the idiosyncracies of the local people, as change agents gave the project a strong local impetus. The emphasis on local decision-making and problem-solving also helped to incorporate the project into the social structure. Of course, the major goal of the project was to upgrade the family welfare of the local villagers by applying the principles of social science to public administration, and to research local social and economic problems.

The technical aspects of the project were also given much consideration. One of the most important technical considerations was the complexity of the innovation. The project developers always introduced a new innovation by using the most easily understood concepts. They then progressed slowly to the more complicated concepts. Accompanying the introduction of the new innovation were stated reasons why it was better than the old method as well as a provision for necessary technical training in the operation, care, and maintenance of the technical apparatus.

However, the introduction of the technical hardware was not seen as the ultimate reason for the project's existence. As noted earlier, the welfare of the village families was the
major concern. The technical devices were simply one means of acquiring improved family welfare.

Proposition 2

During the planning and operation of a development project that was eventually deemed unsuccessful, some of the relevant dimensions would have been ignored.

The planners of the Khanewal project had good reasons for developing the project as they did. The country was in desperate need of more food, particularly wheat; the Punjab was the breadbasket of the nation; bullock or water buffalo fodder crops were utilizing 1/3 to 1/2 of the total land under cultivation in the area; land cultivation practices had not essentially been changed for 2000 years; modern technology was required for land reclamation. It seemed that the introduction of high-yielding seed varieties and modern tractors would serve the dual purpose of modernizing the farm sector while dramatically increasing the yields per acre, and the acreage under cultivation.

However, the farmers had a number of counter reasons that appeared to show that the project was not what they needed at that time. In the first place they utilized the bullock for many things other than plowing; they did not understand the need for or how the tractors would benefit them; they disliked the wheat the new varieties produced; and the short
stem of the wheat deprived them of part of their fodder crop.

One of the errors made by the Khanewal project developers was to disregard the farmers' complaints. They failed to see or understand the social, psychological, educational, cultural, economic, and even some technical aspects of the project that needed to be solved before the project could begin to operate with a minimum of success. Rather than face the problems and solve them jointly with the villagers, the project planners chose instead to force the project on the farmers. The planners saw the farmers' resistance to the project's innovations as being an indication of their backwardness, called them lazy, and considered them socially and intellectually inferior.

The extent to which the project developers failed to recognize the relevant dimensions of the project was seen when the project was analyzed using Bordenave's set of interdisciplinary questions. For example, regarding the cultural dimensions of the project, the planners ignored that the villagers found the wheat hard to grind, difficult to make chupattis with, and not as good tasting as the old varieties. They also ignored or were not cognizant that the buffalo was also used as a food source (its milk and meat), as a beast of burden, and as a fuel source (its dried dung).

In addition to these problems, the project planners chose to ignore the local leadership which had developed over the years. Instead of looking to these leaders to support
their projects they instead brought in their own bureaucratic structure to each individual village in the form of a village manager. These managers had no place in the local culture or social organization. Consequently, they proceeded to provide additional irritation to the local farmers.

Economically, the Khanewal project had both a positive and a negative effect. The project did promote employment, and thus, slow the migration to urban areas. It also aided in the redistribution of wealth by allowing subsistence farmers to acquire cash from their surplus crops. On the negative side of the economic picture, the farmers technically did not own their land. They could farm the land in perpetuity but they could not sell it nor could they divide it among their sons. The 12 1/2 acres had to remain intact. Consequently, the farmers never really felt the land was theirs, and many believed that once the land became highly productive, that the government would take it over. Others believed that if they did not do what the government demanded, that they would lose the land.

Also on the negative side of the economic dimension, the CCFU and the national government controlled all of the market prices, the surplus crops being sold as well as the cash crops. They also jointly controlled the sale of seed and fertilizer, setting the price as well as the amount that could be purchased by any one farmer. In addition, the government
controlled the amount and cost of the irrigation water that the farmers required to grow their crops.

The developers of the Khanewal project also failed to consider many educational aspects of the project. For example, although the change agents working in the project were technically competent, they were inadequately prepared to work in the local environment. They felt the farmers were socially and intellectually inferior and thought that being educated meant that they never got their hands dirty or participated in hard, manual labor.

The project developers also failed to initiate any programs in which the farmers could make their own decisions or participate in the problem-solving process. Consequently, the villagers had little knowledge of outside resources or places where they could go for lack of communication sources available to the local villagers. Less than 20% of the villagers were literate, electronic media was virtually unknown, and visitors were rare. The result was that the villagers had little knowledge of modern technical innovations, and few ways of learning about them.

Politically, the project was designed to aid the family welfare of the local farmer and to aid in the lowering of food prices in urban areas. If effective, both goals would have given strength to the political party then in office. However, the two goals were somewhat conflicting, since lower food prices would have a negative effect on rural family wel-
fare, and higher rural family welfare meant higher urban food prices.

With the government controlling the markets, the necessary crop inputs, the little communication there was with the outside world, and strongly advocating a project that the farmers disliked intensely, the politicians in power at the time found few friends in the villages of Khanewal.

Regarding the psychological dimension of the project, it was found that the coercive aspects helped to create in the villagers a negative attitude toward the goals, objectives, and personnel of the project. The villagers felt that the project was being forced upon them and that they had no voice in the decision-making process. Further, when the villagers did make the attempt to voice their opinion, it was ignored. Examples of this were seen when they petitioned to have the tractors removed and again when they wanted to have the young men of their villages trained to be the drivers of their tractors.

Also, the CCFU managers in each of the villages, instead of attempting to integrate themselves and their duties into the local societal structures, chose to remain aloof from it. This helped to create feelings of competition, mistrust, and conflict. The villagers felt they had to choose between two factions, that they could not remain neutral.

Finally, the project did very little to satisfy the villagers' "need to know." In many instances the villagers
did not even know that the tractors were coming. When the tractors did arrive, no one explained how the tractors could be beneficially used, or how they functioned, or needed to be maintained. This failure on the part of the project planners helped to increase the well-recognized psychological reaction of mistrusting and down-grading things that are not understood.

When answering Bordenave's questions related to the social dimension of the project it was found that the increased wheat yield from most farmers' fields did increase the welfare of most village families. It also provided a source of badly needed cash for the subsistence farmer. However, the project created much conflict within the local social structure. In essence, the project planners rejected the local social system, assuming it to be inadequate for undertaking and supervising the project's activities. The planners also did nothing to rectify this feeling since they neglected to train a local leadership or to allow for local participation in the decision-making and problem-solving processes related to the project.

The findings related to the technical dimensions of the Khanewal project were also voiced. The new varieties of short stemmed, high-yielding wheat that were introduced had been specifically developed for the local environment. But it did require greater technical inputs in terms of well-pre-
pared land, commercial fertilizers, and increased use of irrigation water. The failure of the project developers to adequately relate this technical information to the villagers helped to ensure the failure of the project.

The greatest technical failure of the project, however, was the tractors themselves. Although the tractors were purchased from two different companies for purposes of comparison, no experimentation took place prior to their purchase regarding the tractors' ability to withstand the extraordinary local environmental conditions. These conditions included an extreme amount of dust, temperatures commonly above 110°F, a heavy, clay-base soil that dried brick-hard, and inadequate maintenance support and repair facilities. Coupled with the unavailability of trained drivers and mechanics, these extreme environmental conditions resulted in many technical difficulties.

Proposition 3

A proper accounting of the many dimensions of a development project could only be made using an interdisciplinary methodology.

Two major assumptions made by development planners who advocate an interdisciplinary method for development projects were verified during this study. The first was verified by finding that there were many dimensions in each of the selected Pakistani rural development projects. Seven spe-
pecific categories were identified—cultural, economic, educational, political, psychological, sociological, and technical. In addition, an eighth category, communication, was found to be an important element in each of the recognized categories.

The second assumption verified during this study was that the various dimensions of a development project were interrelated. The interrelatedness, and the need to take it into consideration during the formation of a development project, was witnessed many times during the comparison of the two projects examined in this study. It was difficult to imagine how these many dimensions and their interrelationships could be identified without using an interdisciplinary methodology.

In summation, the case studies of the selected rural development projects were analyzed to discern their accountability toward the project's cultural, economic, educational, political, psychological, social, and technical dimensions. Regarding the first proposition, it was found that in the Comilla project, used to exemplify a successful development project, the relevant dimensions had been taken into account. Regarding the second proposition, it was found that in the Khanewal project, many of the relevant dimensions had not been taken into account. Regarding the third proposition, it was found that because of the number of dimensions involved in a
development project and their interrelationships, a proper accounting of a development project could only be made using an interdisciplinary methodology.
CHAPTER VI. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Statement of the problem

The problem of this study was to analyze a farm mechanization project conducted in the Punjab region of West Pakistan and an integrated rural development project conducted in the Comilla thana of East Pakistan, using an interdisciplinary methodology.

Purpose of the study

The purpose of this study was threefold:

1. to discern the successful and unsuccessful elements of the specified rural development projects and the reasons behind their success or failure;

2. to ascertain if elements of an interdisciplinary approach could be recognized as having been incorporated within each project's design and implementation;

3. to explore linkages between the success or failure of a project and the incorporation of a multidimensional aspect within the project.

Propositions of the study

The propositions put forth in this study were directly related to the purposes of the study. They were:

1. During the planning and operation of a successful development project the many relevant dimensions would have
been taken into account.

2. During the planning and operation of a development project that was eventually deemed unsuccessful, some of the relevant dimensions would have been ignored.

3. A proper accounting of the many dimensions of a development project could only be made using an interdisciplinary methodology.

Reviews of literature

Three reviews of literature were undertaken during the course of this study. The first review was conducted to discern the different approaches to interdisciplinary development that were being advocated by various development experts. The other two reviews were conducted to ascertain the settings within which the two selected rural development projects were undertaken, as well as to discover the planning and implementation procedures of the projects themselves. Government documents, relevant periodicals and journals, case studies, research reports, unpublished Ph.D. dissertations, and general texts were studied during each of the reviews of literature.

During the review of literature regarding the various approaches to interdisciplinary development it was revealed that the call for an interdisciplinary approach to development had been made as early as 1958 by Hirschman. The interdisciplinary approaches put forth by development experts since
1958 were many and varied. Most of their approaches, although interdisciplinary overall, still emphasized a particular dimension of development. These emphasized dimensions included communications, socio-cultural, educational, political, psychological, and technical. Those experts emphasizing the economic dimension of development while advocating an interdisciplinary approach, claimed that economics was being overemphasized in development planning and analysis. However, the majority of writings found in the relevant literature depicted single-discipline, economic-oriented studies, approaches, and analysis of LDC development projects.

Case studies were developed with the information acquired from reviews of literature. One case study was of the Khanewal Rural Development Project undertaken in the Punjab Region of the former Province of West Pakistan (now Pakistan). The second case study was of the Comilla Rural Development Project undertaken in the Comilla District of the former Province of East Pakistan (now Bangladesh).

**Case studies**

**The Khanewal Project** West Pakistan's economy was overwhelmingly dependent upon agriculture: more than 45% of the provincial income was derived from agriculture; approximately 60% of the workforce was employed in agriculture; virtually all of West Pakistan's exports were agriculture-related; much of the government's revenue was derived from
taxes on land under cultivation and the products produced there; even the industrial sector was largely dependent upon agricultural products. The major crops grown were wheat, cotton, rice, millet, sugar cane, and tobacco.

Despite the importance of agriculture in West Pakistan, it lagged behind the rest of the economy, mainly because the industrial sector was receiving much of the economic and technical assistance provided by various local, national, and international support agencies. Major problems in the agricultural sector included salinity and water-logged land, an inadequate supply of chemical fertilizers, insufficient irrigation water in many areas, poor seed, inadequate technical support, and unequal land distribution.

During the late 1950's, the neglect of the agriculture sector, a rapidly expanding population, and a drought, combined to cause a serious food shortage in Pakistan. Pakistani development planners in the early 1960's suggested that wheat production in the Punjab region could be significantly increased if the preparation and cultivation of the land were mechanized. Their reasons for choosing this area were:

1. The Punjab was the nation's breadbasket.

2. The farmers were currently cultivating their land using water buffalo as their power source. From 1/3 to 1/2 of the land under cultivation was being devoted to fodder crops for the buffalo.

3. The primitive wooden plow being used by Punjabi
farmers did little more than scratch the surface of the local, heavy clay base soil, thus much of the scarce irrigation water evaporated instead of soaking into the ground.

4. It was hypothesized that much of the land already lost to salinity and water-logging could be reclaimed during the off-season through a process of repeated heavy irrigation and deep plowing.

5. The newly developed high-yielding, short stem varieties of wheat were susceptible to improperly prepared land.

6. The cooperative unions, a well-established local infrastructure was available to disperse the tractors and collect payments.

As a pilot project, the Government of Pakistan purchased 50 John Deere Lanz diesel engine farm tractors from Germany and 50 International Harvester diesel engine farm tractors from England. The tractors and accompanying implements were distributed throughout the Punjab region under the auspices of the Colony Cooperative Farming Union (CCFU).

From the very beginning the tractors were not well received by the villagers. First the Pakistani planners never involved the villagers in the project planning. Many villagers never knew the tractors were even coming until they actually arrived. Therefore, many villagers felt the tractors were being forced on them. A second problem also arose from the lack of village involvement; no one had prepared
the villagers in understanding how the tractor might be beneficial. Third, the villagers disliked the idea of having to give up their buffalo since it performed many other services besides being a draft animal. Fourth, the tractors meant a new and unexpected financial burden at a time when the villagers were only a few years away from paying off their land debts. Fifth, the villagers saw the tractors as a weapon used by the cooperative union to accelerate the introduction of another technological innovation they were not particularly fond of--high-yielding, short stemmed varieties of wheat.

When the farmers did attempt to use the tractors (regardless of their opposition, they could not afford not to use them) the following technical flaws became apparent:

1. The tractor drivers the CCFU assigned to each tractor were uniformly unskilled in proper cultivation and tractor maintenance procedures.

2. The implements which accompanied the tractors were not suitable for working quarter-acre plots of land.

3. The closest fuel supply was from 20 to 40 miles away.

4. There were no repair shops, trained mechanics, or tools and equipment to make major or minor repairs.

One, or a combination of these flaws, resulted in nearly 90% of the tractors being in a state of disrepair within the first six months. Despite the villagers petitions to have
the tractors withdrawn, the CCFU attempted to correct some of the project flaws. But it took a great deal of time and money. All the villagers saw was an increasing financial burden with no real return. Consequently, the tractors and everyone associated with them were met with increased hostility; some farmers refused to use the tractors, while others continued to use them only under duress. The Khanewal project continued to function in this environment until government support was dropped in 1973.

The Comilla project East Pakistan's economy was also extremely dependent upon agriculture. Nearly 95% of the Province's population lived in rural areas, which produced 95% of the value of exports and was responsible for some 70% of the annual gross domestic product (GDP). Despite this importance, for the first three five-year plans, East Pakistan's agricultural sector was awarded only 17% of the Province's total investment allocations.

In sharp contrast with this rather negative attitude toward rural development was the establishment of the Pakistan Academy for Rural Development (PARD) in Comilla. Opened in 1959, the Academy's first director was Akhter Hameed Khan, who dedicated PARD to the application of social science principles to public administration and to do research on village social and economic problems.

Two assumptions were made by the Comilla Academy staff regarding the requirements for successful rural development.
The first assumption was that progress depended upon the willingness of the villagers to be innovative. The second assumption was that once the villagers adopted a small innovation and realized its success, that they would be more likely to accept larger, more complicated innovations leading to major change. Consequently, the rural development projects that emanated from the Academy were designed to make the farmers aware of innovative economic, political, and social activities that were adaptable to or specifically created for their local culture.

From 1959 through 1971, six major experiments or pilot projects were undertaken by the Comilla Academy. They were the agricultural cooperatives, the Thana Training and Development Center, the rural public works program, the thana irrigation program, the women's program and family planning, and the rural education experiments. Because of its similarities to the Khanewal project in West Pakistan, the agricultural cooperative project was examined in depth.

To formulate their development strategy, Khan and his staff met with individual farmers, village groups, and local leaders. These informal consultations, in conjunction with surveying actual village conditions, led to the formulation of six basic hypotheses:

1. A viable private economic organization was needed.
2. The village would be recognized as the basic unit.
3. Linkages were needed between the villages and the Academy.

4. The training methodology would involve model farmers going to the Academy for instruction and returning to the village to relay the information learned to the other participating villagers.

5. The early technical inputs would be provided by a team of Japanese experts working under the auspices of the Columbo Plan.

6. Early emphasis would be given to simple techniques with the more complicated ones left for a later time.

The village cooperative system had two key persons at its core. One was called an organizer whose function was to serve as liaison between the village cooperative society and the Academy. The second key person was the model farmer who served as the local agricultural extension agent. Later, in many villages the organizer and model farmer positions were combined into a single position of manager.

By mid-1960, seven village-based cooperatives had been formed in addition to a vegetable growers society, a women's cooperative, and a weavers cooperative. By 1970, over 300 agricultural cooperatives were operating in the Comilla thana. Virtually all of the cooperative members were farmers whose landholdings were five acres or less.

In January, 1962, the Kotwali Thana Central Cooperative Association (KTCCA) was formed. The Association's function
was to support the activities of the local cooperatives by providing services that individual cooperatives could not provide and to serve as a cohesive coordinating unit. In addition, the KTCCA was to provide general rules and regulations, discipline, training, and credit.

Among the first projects supported by the KTCCA was the training of drivers for tractors assigned to PARD by the Department of Agriculture. Originally, the introduction of tractors produced little interest among the farmers. Within a short time, however, having witnessed cultivation demonstrations and having heard positive reactions from the farmers who had used the tractors, the villagers began to request the tractors for their fields.

But the project was not without its faults. To keep the two tractors from spending most of their time driving from one village to another, the Academy required that at least five farmers from the same village, having a minimum of eight contiguous acres, jointly request the tractors before allowing the tractors to go to a village. In addition, the plots of land owned by each individual farmer were too small to be economically plowed with a tractor. The farmers, therefore, were required to plan cooperatively to get the tractors to the village, and then allow the tractors to plow contiguous lands as one large plot instead of individually, efforts entirely new to their custom. By being allowed to work out the details of these new innovations themselves, the vil-
The Comilla project continued to function until 1971 when the Province of East Pakistan seceded from Pakistan and formed the independent nation of Bangladesh.

Analysis

An interdisciplinary technique was formulated to analyze the specific data within the case studies. This technique consisted of applying a series of 39 questions regarding the design, organization, and functions of the selected rural development projects. The questions were adapted from D. Bordenave's "Communication of Agricultural Innovations in Latin America: The Need for New Models," in Communications Research, Volume 3, 1976, and P. Hill's "Diffusion of Innovation qua Transfer of Technology: Critique, Comments, and Recommendations," an unpublished casual paper, Journalism Department, Iowa State University, 1976.

The 39 questions were clustered into seven categories—cultural, economic, educational, political, psychological, sociological, and technical. When data related to a particular question could not be found in the case study, a thorough search of relevant literature was conducted in an attempt to adequately answer each question.

Findings

The findings of the study were directly related to the three propositions put forth:
Proposition 1. The analysis of the Comilla project was used to verify the first proposition regarding a successful development project. When the agricultural cooperative scheme was analyzed in depth using Bordenave's series of interdisciplinary questions it was found that the project developers had taken into account all of the relevant dimensions.

For example, when answering those questions related to culture, it was found that the PARD officials utilized local conditions to enhance the project's effectiveness. When answering Bordenave's questions related to economics, it was found that one of the project's major thrusts was to aid the economic plight of the local subsistence farmer. Regarding the education category of Bordenave's questions, it was found that emphasis had been placed on the training of selected farmers as extension agents, PARD staff was given training to understand the local living conditions, technical training was emphasized, and the villagers were encouraged to solve their own problems whenever possible.

Politics entered the project in both a positive and a negative way. On the positive side was that the government-sponsored project was designed to upgrade the overall standard of living of those villagers most in need of assistance, the subsistence farmers. On the negative side was that the government retained almost complete control of the communication system to the outside world. The psychological element
of the project was recognized by the Academy staff in that they did not attempt to coerce the villagers into trying new methods, the usefulness of the new innovations were emphasized, and the staff took care to involve the villagers in every aspect of the project.

The sociological dimension of the Comilla project was its strongest area. The use of local leadership, emphasis on local decision-making and problem-solving, as well as the major goal of upgrading family welfare all helped to infuse the project activities into the local society. The technical aspects of the project were also given ample consideration as witnessed by the consideration given to the complexity levels of the innovations offered, and the technical training that correlated with the technical hardware. However, their early emphasis on imported foreign technical apparatus and expertise was a negative aspect of the project.

**Proposition 2.** The analysis of the Khanewal project was used to verify the second proposition regarding an unsuccessful development project. When this agricultural cooperative scheme was analyzed in depth using Bordenave's series of interdisciplinary questions it was found that the project developers had taken very few of the relevant dimensions into account. For example, regarding the cultural dimensions of the project, the planners ignored the villagers' dislike for the wheat varieties being introduced and that they used the bullocks for many other purposes besides plowing the land.
Economically, the Khanewal project had both a positive and a negative side. Positively, the project promoted employment and slowed migration to urban areas, and aided in the redistribution of wealth. Negatively, however, the farmers felt they would never own their land outright and the government controlled the prices of both the input and output markets. From an educational standpoint the project developers failed to educate their staff in the understanding of the local conditions, and they failed to educate the villagers in the usefulness of the innovations being introduced, in related technical education, or in the methods for solving their problems themselves.

Politically, the project had conflicting aspects. It was designed to upgrade the welfare of the rural family while lowering the urban food prices, an exceedingly difficult task in an LDC. In addition, with the government controlling the market prices, the crop inputs, and communications, and advocating a project the farmers disliked intensely, creating a positive political situation was virtually impossible. Regarding the psychological dimension of the project it was found that the project's coercive aspects helped create a negative attitude toward the project, as did the presence of the CCFU managers, and the failure of the project developers to involve the villagers in the project's planning and implementation.

When answering Bordenave's questions related to the
social dimension of the project it was found that the standard of living in the village was improved somewhat. However, the project planners rejected the local social system as a structure for undertaking and supervising the project's activities. The findings related to the technical dimension of the Khanewal project were also mixed. The new varieties of wheat being introduced had been specifically developed for the local environment, but they required supporting technical knowledge and increased inputs the villagers rarely had. Also, the tractors were not the appropriate technology for the local environment.

Proposition 3. Bordenave's set of interdisciplinary questions was used to verify the study's third proposition regarding the proper accounting of a development project. Two major assumptions were made by the development planners who advocated an interdisciplinary method for development projects. The first assumption was that there were many dimensions to a development project. The second assumption was that the various dimensions of a development project were interrelated. Both of these assumptions were found to be true during the analysis of this study. 

Conclusions

The conclusions were drawn in relation to the three propositions set forth in this study. The first proposition stated that during the planning and operation of a successful
development project the relevant dimensions would have been taken into account. It was found that during the planning and implementation of the Comilla project which was used to exemplify a successful project, almost all of the dimensions had been taken into account. The cultural, economic, educational, psychological, and social dimensions of the project appeared to have been fully emphasized. Some faults were found in relation to the political and technical dimensions, but they also were found to have had positive aspects as well. Therefore, it was concluded that the Comilla project confirmed the first proposition.

The second proposition stated that during the planning and operation of a development project that was eventually deemed unsuccessful, some of the relevant dimensions would have been ignored. It was found that during the planning and implementation of the Khanewal project, used to exemplify an unsuccessful project, three of the dimensions had not been taken into account. Very little evidence was found that supported the planners giving any thought to the project's educational, psychological, or cultural dimensions. Mixed results were found regarding the project's economic, political, social, and technical dimensions. Therefore, it was concluded that the Khanewal project confirmed the second proposition.

The third proposition stated that a proper accounting of the many dimensions of a development project could only be
made using an interdisciplinary methodology. Using Bordenave's revised set of 39 interdisciplinary questions to analyze the two selected rural development projects, it was found that each project had numerous interrelated dimensions. It was concluded that only by using an interdisciplinary methodology could these many interrelated dimensions be fully taken into account, thus confirming the third proposition.

In summary, three major conclusions were made as a result of this study. They were as follows:

1. It was concluded that a sufficient number of relevant interdisciplinary dimensions were taken into account during the planning and implementation of the Comilla Rural Development Project.

2. It was concluded that the failure to take into account the relevant interdisciplinary dimensions of a development project, during its planning and implementation stages, decreased the chances for successfully integrating innovative practices into the target society.

3. It was concluded that an interdisciplinary methodology can provide a proper accounting of the many dimensions of a development project.

Constraints of the Study

1. The interdisciplinary methodology used to analyze the two case studies developed during the research was adapted from the works of Bordenave and P. Hill.

2. The research revealed that the project used to exemplify a successful development project (the Comilla
Project) was developed using an interdisciplinary technique.

Recommendations
This study produced the following recommendations:

1. It is recommended that the planners of development projects to be undertaken in LDC's become fully aware of the many interrelated dimensions of their programs.

2. It is recommended that the persons responsible for the implementation of development projects in LDC's become fully aware of the interdisciplinary aspects of their project.

3. It is recommended that an interdisciplinary methodology be utilized in the analysis of LDC development projects.

4. It is recommended that other LDC development projects be analyzed using Bordenave's revised set of interdisciplinary questions to verify the methodology of this study.

5. It is recommended that other interdisciplinary methodologies be used to analyze the two Pakistani Rural Development Projects selected for this study, and that the findings and conclusions from that study be compared with the findings and conclusions of this study.

6. It is recommended that further attempts be made to integrate the many components to the development problem into a scientific assessment model.


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Vance Packard, in his new book, *The People Shapers*, states that "there are already a host of technologists in a variety of fields who qualify as . . . people shapers." In academia, the people shapers clearly are those persons who serve on the committees of Masters and Ph.D. candidates.

It has been my good fortune to have had an excellent group of people shapers to guide me through my Ph.D. program. For this reason, I would like to express my appreciation to the following persons:

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APPENDIX

ORIGINAL FORM OF QUESTIONS USED IN INTERDISCIPLINARY ANALYSIS OF CASE STUDIES


1. How autonomous or independent is the country from external forces which affect its economy and its political decisions?
2. How is the rural social structure organized, and what influence does it exert over individual decision-making? What is the historical genesis of this situation?
3. Do the majority of the farmers own their land, either individually or cooperatively? Do they own their agricultural tools?
4. Who controls the economic institutions, particularly the market, credit, and input supply organizations?
5. Who decides what kinds of innovations should be diffused and developed?
6. Are the farmers consulted and are their needs for innovation ascertained?
7. What criteria are used to guide the choice of innovations for diffusion - (a) the common welfare, (b) the
increase of production for export, (c) the maintenance of low prices for urban consumers, (d) the profit of big commercial farmers and landowners?

8. What effects will the adoption of certain innovations be likely to have on individual and family welfare? On regional and national development in the short, medium, and long range? Will they promote employment or unemployment, fixation of the rural population or migration to the cities, enrichment of the already rich or better income distribution?

9. Do the innovations take into account regional and local differences in ecology, economy, farming habits, and cultural norms?

10. Is there any degree of coercion necessary for the adoption of an innovation, either by the market situation, the credit institutions, the government, the landlords?

11. What is the role of mass media advertising? Is it persuading farmers to adopt innovations that they really need or that they do not need?

12. How appropriate and well-proven are the products and techniques being diffused? Are they adequate to the stage of technological, economic, and social development in the nation?

13. What kind of living and learning adjustments do the
innovations require from the farmers? Do they require the establishment of new systems of credit, land tenure, technical assistance, marketing, and insurance?

14. Who controls the sources and channels of communication for the innovations? Is there communication monopoly, censorship, blockage, or distortion?

15. How adequate are the communication channels' content and treatment of the innovation in relation to the needs of the farmers? Are they at the service of all the farmers or mainly at the service of the government, the input industries, the buyers of farm products, the larger farmers, the consumer groups?

16. What are the feedback possibilities and channels for the farmers to communicate their needs and results to the innovation sources and policy-makers?

17. Are farmers organized in pressure groups that can exert influence on the social structure of land tenure, on the production infrastructure, and on the marketing system so as to facilitate the diffusion of appropriate innovations?

18. How adequate are the change agents or extension service personnel as a two-way communication channel? Are they technically competent, ideologically oriented to the welfare of the farmers, methodologically ade-
quate?

19. Which are the institutions that directly or indirectly transfer technology to the farmers? What are the present relationships between the processes of [human development], formal education, organization, politization, and technification of the rural population?

20. Is technification promoted and executed without efforts for simultaneous [human development]?

21. How do farmers diagnose and solve their problems? How do they search for extracommunity resources and help? How well developed is their communication ability? What are the personal and group roles in farmers' problem-solving?

II. Questions as cited in Hill, P. "Diffusion of Innovation qua Transfer of Technology Critique, Comments, and Recommendations." Unpublished casual paper, Journalism Department, Iowa State University, 1976.

22. What auxiliary technologies are needed to render the use of the proposed technology viable? From whom will they be obtained, an external or an internal source? What conditions could affect the continued availability of these auxiliary technologies? Are the skills necessary for their maintenance available?