

EWUP TECHNICAL REPORT NO. 13.



THE ROLE OF RURAL SOCIOLOGISTS
 IN AN INTERDISCIPLINARY ACTION ORIENTED PROJECT
 AN EGYPTIAN CASE STUDY

By

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Abstract

Rural sociologists involved in an action-oriented interdisciplinary project perform a variety of roles. This paper examines how the rural sociologists working in an on-farm water management project in Egypt execute their tasks by fulfilling the roles of analyst, advisor, and innovator. Such roles are performed in two distinct contexts existing at the same time: in an interdisciplinary context and in a cross-cultural context. The rural sociologists of the project have to coordinate their efforts with agronomists, economists, and engineers who are all focusing on specific problems which need to be solved and who are all working on specific projects which are to be implemented. In addition, the sociologists must also direct their efforts to both Americans and Egyptians who are working together. How these different roles are performed and what they mean to the project, as well as to the sociologists, is analyzed in terms of how rural sociologists function as team members.

27 Pages, 5 Figures

مستخلص

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ان الاخصائيين الاجتماعيين الريفيين العاملين بمشروع بحثى تطبقى متكامل (متعدد) التخصصات لهم عدة ادوار هامة . ويبين هذا البحث كيفية قيام هؤلاء الاخصائيون الاجتماعيون الريفيون التابعون لمشروع ترشيد استخدام مياه الري بمصر بدورهم كمحللين ومستشارين ومجديين . وهذه الادوار تتم فى اطارين محددتين متواجدين فى نفس الوقت وهما : اطار تعدد التخصصات والاخر التبادل الثقافى .

ويجب على الاخصائيين الاجتماعيين الريفيين التابعين للمشروع ان ينسفوا جهودهم مع اخصائيو الري والزراعة والاقتصاد الذين يركزون على حل مشاكل معينة ويعملون على تنفيذ المشروعات المحددة . وبالإضافة الى ذلك فإنه يجب على الاخصائيين الاجتماعيين الريفيين أن يوجهوا اهتمامهم الى الامريكيين والمصريين الذين يعملون معا . اما كيف تتحقق كل هذه الادوار وما جدواها للمشروع وايضا للاخصائيين الاجتماعيين الريفيين انفسهم فان ذلك يتضح من تحليل عمل الاخصائيون الاجتماعيون الريفيون كأعضاء فى فريق العمل الواحد .

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I- Introduction

Rural sociologists involved in projects in the "developing" or "Third" world sometimes act as agents of change in addition to their primary role as researchers. These sociologists carry out jobs necessary to the implementation of their projects' objectives. The subject of this paper is that type of development project which requires that some type of change take place in the existing social framework. Rural sociologists working with such projects must, of necessity, become agents of change. Taking that general role of a change agent demands that the rural sociologist pursue a multifaceted program of activity which will require that person to perform many specific roles in order for him or her to accomplish the tasks assigned. The following paper will examine what roles rural sociologists participating in an action-oriented, interdisciplinary research project in Egypt perform, and how they execute those roles in the context of being change agents in an interdisciplinary team which focuses on solving particular problems.

The role of the rural sociologist as a change agent will be discussed in the first section of the paper. From this discussion, a framework emerges with which the roles of the Project sociologists can be analyzed. Next a description of the Project itself will be presented. This will set the stage for the discussion of what roles are performed by the Project sociologists and how they perform those roles.

II- The Role of The Rural Sociologist as an Agent of Change

"Planned change" is defined here as a deliberate effort on the part of an agent to create a modification in an existing social system which would result in the members of that system having to re-learn the way they are to perform certain roles (Zaltman and Duncan, 1977: 10). An agent of change, then, "assists a system to become more effective in problem-solving, decision-making and decision-implementation in such a way that the system can continue to be increasingly effective in these activities and have a decreasing need for the intervenor," (Argyris, 1970: 16). Without digressing to discuss the processes involved in social change, it should be stated here that an agent trying

to effect such change should first link into an existing social network in order to facilitate some planned change effort which is being introduced into that social network.

How an agent is to do this will depend, among other things, on the specific roles that person will perform. The roles that the change agent incorporates, and how those roles are performed, establishes the means through which activities can be transferred from the source introducing the new activity to the receiver. In looking at a change agent's activity, therefore, one should examine the specific roles that the change agent plays in order to improve one's understanding of how that activity proceeded. The question then arises as to how such roles can be analyzed. A role will be defined here as the functions a person performs when occupying a particular position within a particular social context (Shaw and Costanzo, 1976: 326). There are two parts to this definition:

- 1) Which persons fulfil a certain role, and the surrounding social context
- 2) The behavior of individuals while in that role.

The "role theory" outlined by Thomas and Biddle (1966) analyzes social roles in particular circumstances in terms of general categories, such as subject and non-subject, actor and target, individual and aggregate. They further categorize behavior with regard to performance, desired performance (prescription), authority to impose sanctions in the community, and the community's definition and evaluation of the actor's role.

Thomas and Biddle have developed a matrix which combines information on both aspects of social roles outlined above, giving a more complete definition of such roles (Figure 1). The matrix is composed of a set of behavioral characteristics attributable to a particular set of subjects. The subject set consists of individuals or aggregates of individuals who fall in the general categories mentioned above, i.e., actor and target, subject and non-subject. From these categories, positions are delineated (P_1, P_2) to describe the individuals who make up a social situation. Such position might be, for instance, employer

behavior is also divided into content units (C_1, C_2), such as hiring, directing, teaching--parts of the general categories already defined. The behavior of specific persons from the subject set (B_1, B_2) can be described as the *actual performance in a role which occurs in a particular circumstance*, or the "person-behavior segment."

In analyzing the roles performed by agents of change, one must first define which persons constitute the subject set, and which general content units will be used to define the behavior set given the social context in which the agent will be working. This kind of analysis should allow prospective agents of change to find the most acceptable and effective methods for achieving their goals.

		Subject Set					
		P_1	P_2	P_3	P_4	P_j	P_m
Behavioral Class Set	C_1	B_{11}	B_{12}	B_{13}	Person Segment	B_{1j}	
	C_2	B_{21}	B_{22}				
	C_3	B_{31}					
					Person-Behavior Segment	Behavior Segment	
	C_i	B_{i1}					
	C_N						B_{NM}

Figure 1: The Person-Behavior Matrix (Thomas and Biddle, 1966)

Rural sociologists take on the role of agents of change when their activities lead to a "deliberate modification in the process and structure of a social system," (Zaltman and Duncan, 1977). The rural sociologists presently working with the Egypt Water Use and Management Project (EWUP) have just such a role.

III. *The Context of The Rural Sociologist:*
The Egypt Water Use and Management Project

The Egypt Water Use and Management Project (EWUP) has as its major objective the bettering of social and economic conditions for Egypt's small farmers through the improvement of on-farm irrigation practices. In view of this objective, the Project has two major goals:

- 1) The development of an appropriate technology for implementation in the field,
- 2) The training of professional workers to carry on development work in the future.

This Project is jointly funded by the Government of Egypt (GOE) and the U.S. Agency for International Development (USAID), and is jointly staffed by Egyptians and Americans drawn from four academic disciplines: irrigation and agricultural engineering, agronomy, agricultural economics and rural sociology. Figure 2 shows the organizational structure of the Project.

The central administrative unit of EWUP consists of a Project Director who is Egyptian, and a Project Technical Director who is American. Directly below the directors are the senior staff, an Egyptian leader for each discipline, and an American counterpart. The Project operates on three field sites, chosen because they are representative of the various agricultural conditions encountered in Egypt. They are Abu Raya in Kafr el-Sheikh Governorate in the north-western Delta, El-Mansuriya in Giza Governorate outside Cairo, and Abyuha in El-Minya Governorate in Upper Egypt, about 250 km south of Cairo. Each field-site is staffed by an Egyptian Team Leader, an American Technical advisor, and Egyptian Professionals drawn from each discipline, plus supporting personnel.

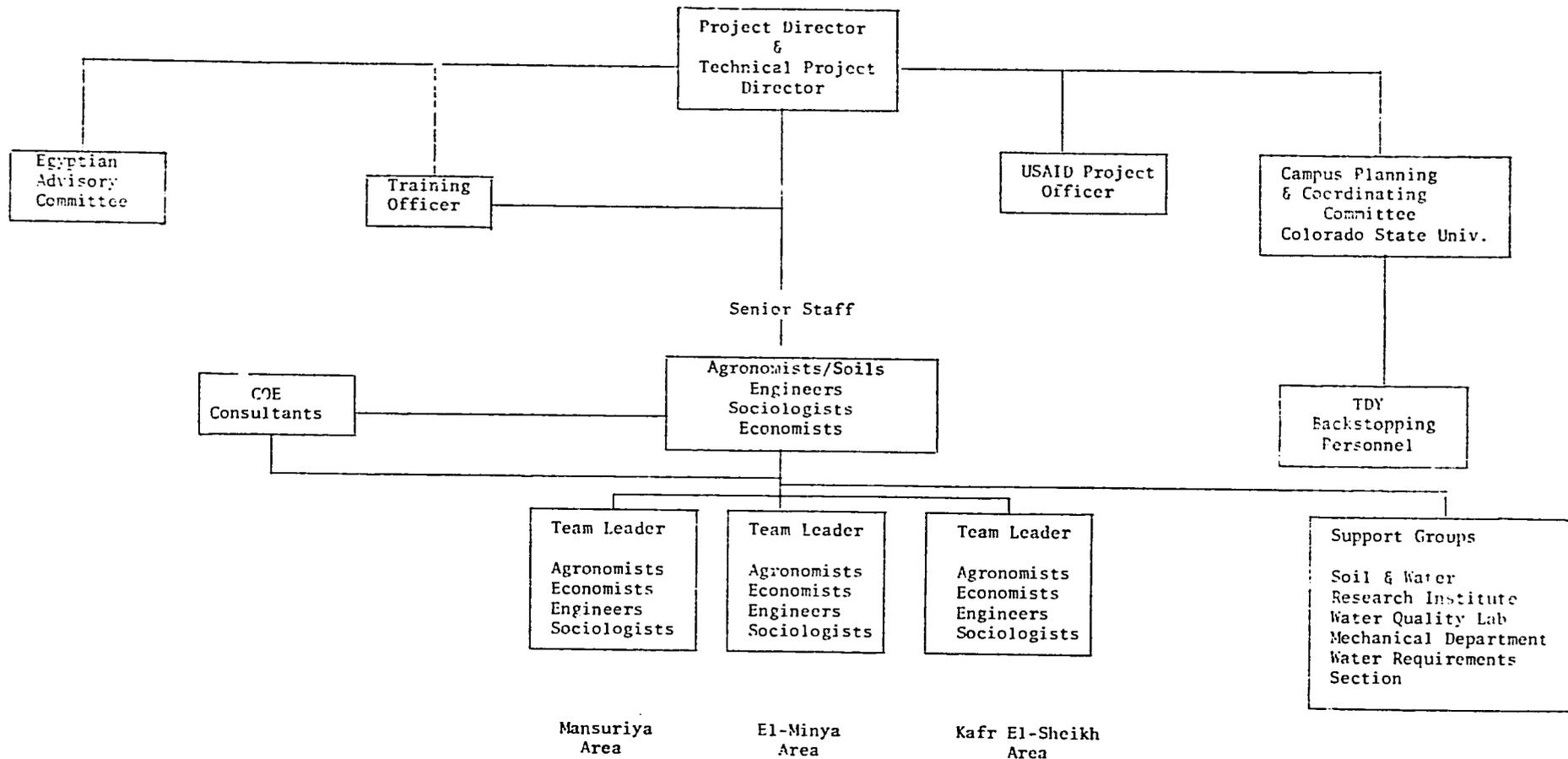


Figure 2. Organizational Chart for Egypt Water Use and Management Project (EWUP)

Work began on the Project in Fall 1977, and will end in June 1983. EWUP's work has been divided into three phases, two of which are virtually completed. The first phase consisted of "problem identification." The second phase was the "search for solutions," which included field trials on working farms of different methods for solving the problems identified in Phase 1. EWUP is presently focusing on Phase 3, which should see the implementation of solutions found during Phase 2. The Project is trying to introduce these solutions on all three of its test sites on a larger scale. The objectives of this final implementation stage are twofold:

- 1) To establish a package of improvements which can be realistically adopted by farmers throughout Egypt,
- 2) To demonstrate how these on-farm irrigation practices may be introduced in different areas of the country by the Egyptian government.

This paper is concerned with EWUP's activities in this final implementation stage of its existence. Figure 3 presents the general work plan for the remainder of the Project. Under each of the three major geographical divisions is listed a specific field site of an EWUP intervention, (Figure 3, top line). These interventions included the construction of a pipeline irrigation system, the transformation of a traditional delivery system (which required the lifting of water from ditch to field) into a gravity distribution system by raising the canal, instituting a regular canal cleaning and maintenance program introducing new field irrigation layout, and introducing to farmers an assortment of improved agronomic practices which complement the improved water management to give higher yields.

In the lefthand column problem areas are listed which have been identified as the fundamental concerns to be addressed by these pilot projects. Any recommendations given by EWUP concerning the improvement of on-farm water management must address these problems.

EWUP has appointed Task Groups, composed of both Egyptian and American senior staff, to work in each problem area. The rural sociologists

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Figure 3: EWUP TASK GROUP ASSIGNMENTS

Pilot Projects and Field Trials

Problem Areas for Task Groups	Mansuriya			Kafr El-Sheikh			El-Minya			
	Hamami Pipeline	Mesqa #10	Special* Studies	Manshiya Canal	Hammad Canal	Special* Studies	Abyuha Canal	Mesqa #26	Special* Studies	
1. On-Farm Irrigation										Final Report & Recommendations
2. Water Distribution Systems										Final Report & Recommendations
3. Farmer Organization										Final Report & Recommendations
4. Irrigation Advisory Service, Records, & Planning										Final Report & Recommendations
5. Water Budget										Final Report & Recommendations
6. Land Leveling										Final Report & Recommendations
7. Soil Fertility										Final Report & Recommendations
8. Soil Characterization										Final Report & Recommendations
9. Pest & Disease Control										Final Report & Recommendations
10. Conjunctive Use of Water										Final Report & Recommendations
	Final report	Final report	Final report	Final report	Final report	Final report	Final report	Final report	Final report	

* Field Trials and studies to provide answers to specific problems such as insufficient water at mesqa, tail end, conjunctive use, land leveling, etc.

deal primarily with problems involved in farmer organization and the development of an irrigation advisory service, but they are also involved in matters of on-farm irrigation practices, water distribution systems, land leveling and pest control. Each member of a Task Group team has been assigned specific duties and responsibilities so that the final results will come from a truly interdisciplinary effort.

From this brief explanation of EWUP, the specific roles which the rural sociologists perform can now be examined. The focus of the discussion will revolve around the sociologists as team members and the specific roles they perform in the research team, rather than their dealings with farmers. The reason for this emphasis is that work with farmers must be seen in the context of the whole interdisciplinary team, of which the sociologists are but one part. This paper briefly describes how the team interacts with farmers, but only insofar as this illustrates the kind of processes developed among team members for carrying out work in the field. It should be emphasized again that sociologists are acting as agents of change on behalf of the team; for they are actively engaged in an attempt to help establish the value of interdisciplinary efforts for the solution of Egypt's problems. Thus while the role of the sociologist is defined here in terms of his actions as a team member, he must also be recognized as an agent of change in the field where the roles he fills and his behavior in those roles inevitably affect both farmers and team members.

IV- The Roles of the Rural Sociologist in EWUP

The authors have used the Thomas and Biddle format in examining how rural sociologists on the EWUP team perform their roles as agents of change and as members of the interdisciplinary team. References to the "Project sociologists" refer to Egyptian and American senior staff members. The specific roles these sociologists perform to meet their responsibilities are integrated with one another, and it is the sum of these which is the frame of reference by which the work of the rural sociologist can be defined.

Figure 4 presents the person-behavior matrix in which the roles of the rural sociologists of EWUP are defined. The subject set has been divided

into two groups: the Americans and the Egyptians on the Project.

Egyptians	Americans
Project Director	Project Technical Director
Rural Sociologist	Rural Sociologist
Senior Staff	Senior Staff
Discipline Leaders	Discipline Advisors
Field Team Personnel	Field Team Advisor
	Temporary Consultants (TDY)

The behavioral class set consists of a set of change agent roles described by Santopolo and Johnson (1979) as analyst, advisor, advocator, and innovator. The role of analyst identifies the critical problems of the target group and also identifies the content, structure, and process associated with each problem. An advisor role allows the change agent to identify alternative courses of action to the target group and the problem consequences of each alternative. A change agent who is an advocate establishes the priority of the alternative action. The innovator role allows the change agent to create new systems necessary to carry out the course of action. Each behavioral category denotes specific behavioral patterns toward particular persons within the project which emerge as the different pilot projects proceed in the various field sites. While specific types of behavior have the same labels when carried out by either American or Egyptian team members, the approach by the sociologists toward the two general subject sets are different. They are, therefore, shown separately. What follows is a description of the particular roles of sociologists within the matrix of Figure 4 and an explanation of how those roles are fulfilled.

A. Analyst:

As an analyst, the task of the rural sociologist is twofold. First, sociologists must identify and define the discipline's general direction of work given Project objectives. Second, they must define the work in terms of specific tasks. Many of the problems identified by EWJP in its first year have direct, technological solutions. These technological solutions, however, need social support in order to ensure that they will indeed be carried out as they were intended. This question of how

Subject Set

Behavioral Class Set

	AMERICAN	EGYPTIAN
ANALYST	Identify Define Explain	Identify Define Explain
ADVISOR	Evaluate Discuss	Evaluate Discuss
ADVOCATOR	Legitimize Negotiate	Legitimize Negotiate
INNOVATOR	Create	Create

Figure 4: The Person-Behavior Matrix for the Rural Sociologist in EWUP.

the technological and sociological solutions can be integrated has vexed members of EWUP since its inception.

The sociologist must make a special effort to define the ways in which his discipline contributes to the overall activities of the team. In order to do this, the sociologist must first identify what his tasks are to be and then define the parameters of those tasks. Next, he has the critical job of explaining these tasks to other members of the team. Without such explanation, other members will never understand what the sociologists can and cannot do for the team.

The Egyptian and American sociologists held a number of brainstorming sessions to determine what must be accomplished and how the sociology work is to be integrated into the overall work program. These sessions took into consideration the expertise and experience available from both Egyptians and Americans and then varying points of view on how best to integrate technological and sociological work. In this case, the sociologists identified three general areas of concentration: *evaluative research, establishment of extension education activities, and farmer organization*. A program of *evaluative research* enabled the Project to estimate how farmers and their social institutional support system would react to practices introduced by the Project. All of EWUP's activities, both those in operation at present and those proposed for future implementation, had to be analyzed in this regard. The *establishment of extension education* services would enable EWUP to pass on any information it has gained concerning the nature of the problems facing farmers and the best known solutions for those problems.

The third area of concern to the Project sociologists is that of *farmer organization*. Many of the technological improvements suggested by EWUP require that the farmers who are responsible for water management on their fields be organized among themselves. The process of initiating, organizing, operating and sustaining farmer organizations is a major responsibility of EWUP sociologists, and one which requires the greatest part of their efforts.

These three general target areas are the work of the EWUP sociology team

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as defined by the senior staff sociologists. The duties of the entire team in accomplishing these goals are spread out over the six Task Groups of which they are members (see above, p.5 and Figure 3). After having specified the nature of their work and identified their own place in the Project's scheme, the EWUP sociologist as "analyst" must then make sure that his colleagues have a good understanding of the Project's sociological aims and work plans.

Once the discipline counterparts have identified their place in the Project to their own satisfaction, they must discuss their ideas with the Main Office senior staff, the administration, and the field teams. There is a need for the sociologists to discuss their role with other members of the team, because it has been observed that there are significant misconceptions and misunderstandings as to how a rural sociologist may be of benefit to such a team. Working to rectify some of these misconceptions has proved to be a constant necessity .

EWUP's Directors view the work in terms of the broad objectives of the Project, and, while they recognize the importance of "working with the farmers" and "organizing the farmers," there are many different ideas about how that is to be done. Furthermore, the Project has the problem of integrating its ideas on working with farmers with the activities of the Ministry of Irrigation. An explanation of the sociological theory behind our work is therefore necessary.

As of now, the administration of the Project has only an incomplete understanding of the rationale which guides the work of the Project sociologists. They see only the visible results of work already accomplished. The sociologists, occupied with constant business of solving daily problems and taken up with short-range concerns, have been unable to explain the discipline's perspective more clearly. In addition, there is a lack of feeling on all sides that EWUP staff should acquire an overall understanding of the perspectives of the various disciplines. This is a problem which should have been solved at the beginning of the Project. For their own part, the sociologists have defined their overall perspective, but there is no procedure whereby that perspective can be communicated to other members of the EWUP team. This lack is the cause of much of the misunderstanding which exists among the Project's disciplines today.

Figure 5: Contrasting Perspectives between the Technical Staff,
the Sociology/Extension Staff and the Farmers (Mayfield, 1976)

Program Manager/Technical Staff

1. Great pressure to justify the expenditure of funds through quick and observable projects in order to ensure that the program will be continually funded.
2. General awareness on the part of the project experts that the goals, techniques, and strategies being used are based upon solid scientific principles which have been empirically verified.
3. The technical expert's tendency to assume that any rational program or project will easily be accepted by the farmers once it has been explained and demonstrated to them.
4. The technical expert's genuine belief that he has something which the farmers will readily accept once it has been implemented. Thus, the crucial problem is getting the project completed as quickly as possible.
5. The technical expert's belief that the changes he is suggesting will be better for the farmers than the old way of doing things.
6. The general assumption that the innovations being suggested hold no risk for the farmer because the expert is confident that these changes will help the farmer.

Sociology/Extension/Farmer

1. Great pressure to go slowly to ensure that the farmers completely understand the purpose and goals of the project before it is implemented.
2. General awareness that regardless of technically correct the project's goals might be, their continued use over time requires that the farmers themselves see the value and utility of these innovations.
3. Recognition that the process by which farmers come to accept a change is not easy; that one or two meetings to explain a project can never be a substitute for the long-term need to allow farmers to observe the project in action, to experience some success with it, and to gain a complete awareness of why it is being suggested and how to use it.
4. A strong belief that any technical innovation must be introduced into a social environment in which political, cultural, economic, and social pressures exist quite independent of the project. Patterns of influence which lead to its acceptance or rejection are not based on scientific information, but upon human values, perceptions and emotions which must be understood and carefully considered both before and during its implementation.
5. The feeling that the old way is the best way, or at least a good way, because it is consistent with their past experiences their values and social forms, and the social realities of their community.
6. The widespread anxiety that any shift from the "tried and true" way of doing anything may be disastrous, especially for the farmer living at the near subsistence level.

The general direction of a discipline's work is inevitably tied to its specific tasks on the field sites. Each discipline has its own goals. The work of the engineering and agronomy disciplines is fairly definite and proceeds in a direct manner. The economists depend on the collection of farm records for data on the economics of farm management, but again their work is easier to define than that of the sociologists. Sociologists are required to assess the relevance and applicability of abstract notions to actual situations--such as the implementability of a new technology, or the effect of a given social organization on farm work. Sociologists work on the principle that these intangibles can be identified, measured, and manipulated to solve specific irrigation problems. While EWUP's sociologists have been able to use some of the general procedures previously put forth in sociological literature or developed out of other experiences in Egypt, they have often had to develop new procedures to deal with the step by step work in the field. For this reason, their efforts have not followed any strict pattern. The difference in the type of base knowledge from which the different disciplines work, and the difference in their working procedures often lead to misunderstandings.

Such misunderstandings arise not only among members of different disciplines, but also between Americans and Egyptians. Many American Project personnel have already worked in interdisciplinary efforts and are familiar with the contributions of fields outside their own speciality. This may not eliminate the misunderstanding but it does create a greater sensitivity to see how the work of various disciplines can be integrated to achieve general goals. Most Egyptians on the EWUP team, on the other hand, have not had the opportunity before now to do interdisciplinary work. One of the Project's primary goals has been to demonstrate to its Egyptian staff how an interdisciplinary team can function, and how involving each discipline contributes to the process of identifying problems, working out solutions and implementing them in the field.

The role of EWUP's sociologists have evolved over time. At the beginning of the Project, their work was defined totally in terms of their contact with the farmer. The sociologists were to make first contact with farmers, to introduce much of the Project's work to them, and to solve many of the problems which emerged on the spot from EWUP's work. During the "problem

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identification" and "search for solution" phases, the sociologists' role became cemented into this mold in the Project's procedures. Furthermore, the field sociologists did not have the formal training of American rural sociologists. As the Project has proceeded, however, field sociologists have received training the sociological methods and theory. The senior sociologists of the Project have also worked to define the sociologists' contributions to planning with regard to specific problem areas, the actual operation and implementation of pilot programs, and the evaluation of such program.

At the same time that sociologists are defining the general direction of their work, they are also defining it in terms of specific tasks. These tasks have been assigned to Task Groups described above. The sociologists, always keeping to their general direction and to general Project goals, made specific work assignments and projects for each of relevant Task Groups. The sociologists carry the major burden on two of the Task Groups, while deal with specifically "sociological" matters, i.e., farmer organizations and the establishment of an irrigation advisory service.

To construct these assignments, sociologists held many meetings and informal discussions among senior staff and field team leaders. The procedure followed by the two sociologists was as follows: The Americans discussed the sociological plans with the American side of the Project, and the Egyptians did the same with his fellow countrymen. At the meetings of each Task Group involving sociologists, they expressed their opinions jointly. Through this planning effort, the purpose and scope of the sociological work was defined, and both American and Egyptian views were taken into account.

As the Project's work in specific tasks proceeds, the sociologists have established a working procedure that defines the responsibilities of both field and office sociologists in regard to research and field work. Tasks of problem conceptualization, research design, data gathering, and the writing of reports have been distributed among the sociologists to exploit the strengths of each individual. Similar responsibilities have been assigned in terms of field work for the implementation of specific projects. The American sociologist concentrates his efforts on the conceptualization and analysis of problems, and the writing of reports.

The Egyptian sociologist is involved with planning the work, coordinating Egyptian and American efforts, designing research projects, and directing the work of the field sociologists. He also is heavily involved in farmer organization work. The field sociologists are the link between the Project and the farmers. They help to construct data gathering instruments, gather the data and work with the farmers in the implementation of organizational plans. What the rural sociologists are attempting to do is to integrate the efforts of the sociology team through these various tasks with those of the overall Project. They have defined the specific tasks which need to be accomplished and explained the purpose of these tasks in terms of EWUP's objectives.

One final note on the role of the sociologist as an analyst concerns the nature of sociological reports to come out of the Project. The sociologist must remember that he is a member of a team and that what he produces must be relevant and understandable to his teammates. Reports are to be short and specific. There is no room for abstract "think pieces". The Ministry wants answers to specific questions, and it is the responsibility of the sociologist, insofar as possible to provide them. Sociologists write technical reports, basic research reports, staff papers which present data gathered in the course of specific studies, and policy papers. Policy papers are instructions on how the Project should work in specific instances. (One policy paper on how Project machinery is to be used has been written and another on the degree and type of Project intervention in the farmer's normal activities is being prepared). The sociologists can write professional articles for their colleagues within the discipline, but their efforts for EWUP must be directed toward meeting Project's needs.

The role of the sociologist as an analyst demands not only that he identify and define the work with farmers which needs to be accomplished, but also that he explain his work to other members of the EWUP research team. What tasks the sociologist will perform, depends on the goals identified by the team as a whole. The sociologist must adapt the discipline's work to the overall objectives of the team and must do so in a manner which can be understood by all its members. If he is successful in explaining the nature of his activities and the reasons behind them, his work in accomplishing his other roles as a sociologist will be facilitated.

B. Advisor and Advocator

These two roles are described together because they address the same issues from different vantage points. As an advisor, the rural sociologist must evaluate the effect of technical work in the field on the farmers, and how that technical work is to be introduced to the farmers. As an advocate, the sociologist must help to decide which of the proposed interventions should be pursued by EWUP and how they should be implemented. They must first confirm their own position, and then negotiate with the other team members as to what cause of action should be taken.

Given the nature of EWUP, the solutions proposed are not merely single-dimension interventions, but are packages which incorporate social, economic and agronomic aspects as well as engineering practices. As can be seen in Figure 3, Task Groups also go beyond the limits of individual pilot programs. Each pilot program is designed to encompass two or more of the Task Group areas, using the expertise of the various disciplines of the Project. The evaluation of pilot programs must also, therefore, be interdisciplinary in nature, for the Government of Egypt will need to know every aspect of such a program before introducing it in other areas of the country.

The sociologists are the evaluators for their sections of the pilot programs. Evaluations take into consideration the perceptions of the farmers involved in the programs, the interaction between the farmers and EWUP, how the practice is introduced to the farmer, and how farmers adopt to it. The Egyptian and American senior sociologists discuss between themselves the criteria, design, and possible implementation of the evaluation and then work closely with their field teams to conduct the work of the evaluation. The senior sociologists then discuss their ideas on evaluation design with the field sociologists until they reach a consensus. Such an evaluation is generally done through a combination of questionnaires and observation. The field Team Leaders help the field sociologists to integrate this evaluation work with their normal workload. Before the final report is completed, the Team Leaders review the manuscript for any mistakes in the technical information. Such reviews in the past have been helpful even though none of the findings have been questioned, because mistakes have sometimes arisen from the numerous translations which had to be done. The Team Leaders' corrections have, therefore, made the re-

Those evaluations which have already been completed have been simple in structure and straightforward in design. Future evaluations are going to have to be more sophisticated if they are to take into account all the constraints under which pilot programs work; constraints of time, scheduling, external influences, and internal problems. Some of the areas to be evaluated may give rise to further conflict within the EWUP team than exists at present.

EWUP has two major areas where conflicts with sociologists could arise: among the discipline and among the Egyptian professionals. Mayfield (1976) summarizes the inherent potential stress between technical and the extension/sociological components of the Project (Figure 6). While stress exists to some degree among the Americans, it is in the Egyptian context that conflict visibly manifests itself. Sociologists must legitimize their position to the Egyptian staff, and must negotiate to have their methods of implementing the pilot programs accepted. The major source of contention is (1) the amount of time needed for technical work vs. the amount of time needed for the sociological work; and (2) the sociologists' approach communicating with the farmer.

Conflicts concerning the matter of time arise from differences in planning schedules, natural and man-made deadlines, and mutual misunderstanding as to constraints imposed on others. Planning for specific activities is still done discipline by discipline with little coordination. Because of this situation technical plans are made with little, if any, sociological input until it is time for implementation, when the sociologists are given the package to introduce to the farmers. Sociologists have taken issue with this procedure, the situation is gradually being rectified. As time has progressed, the sociological input is being recognized and integrated into the plans. Some legitimization has taken place. Because technical interventions must be introduced under the constraints of cropping seasons, canal closure periods, the schedules of contractors and other organizations involved in the Project's work, negotiations will always be necessary at the planning stage, all members of the Project must strive to minimize conflicts among themselves.

Such mutual understanding is specially crucial in the Project's dealings

with farmers. Significant problems exist in the designing of a method for getting information to the farmer, which is accurate and not contradictory. In order to do so, the field teams need to plan what to say to the farmer and establish a procedure on how that information will be communicated. Up to this point, the field sociologist has been in charge of speaking to farmers and has developed the closest relationship with them. In Egyptian professional society where engineers have the highest status and do not always take part in the actual work on the sites, the field sociologists for the most part have not been able to transfer their communication skills to other team members. As the Project moves into the implementation phase, field teams increasingly feel the need to establish a means of communicating with the farmer in a more effective manner .

Again, this is an instance where the sociological point of view has been accepted, and the disciplines' work been legitimized. The sociologists' views have also been legitimized to some degree through discussions among the professionals of the Project, but the most effective means for legitimization has been through problems created by improper implementation of field trials. Through such mistakes, the other disciplines within the Project have discovered that the process of interacting with the farmer is crucial to the adoption of various innovations and that the Project must concentrate on such interaction in order to be successful. On the other hand as an advisor and an advocate, the sociologist must be aware that procedures for implementation must be negotiable, and that every pilot program which is implemented is the result of a process of negotiation among senior staff and field team leaders. The sociologists have been negotiating for more time to carry out their work using correct procedures. These procedures, however, must be carried out within a tight time frame and in an environment where a number of external and internal influences prevail. The sociologist as an advisor and as an advocate, then, must work with his team members to achieve the goals of the discipline, while at the same time keeping in mind the goals and constraints which guide other members of the team.

C. Innovator

EWUP itself is an innovator in Egypt, for it is establishing new working procedures. The Project's rural sociologists also play a role as innovators, not only within the Project, but also in terms of subject's position in Egypt. The sociologists have attempted to create in other professionals an understanding of how sociology can be used in solving Egypt's most pressing problems. They are doing this, not only through the work of the Project itself, but also through a special training course offered by EWUP over the last few years.

In addition to increasing the sociological sensitivity and understanding of other professionals, the rural sociologists have also trained a small core of practicing field sociologists in basic sociological principles and methods. They have taught the principles used to evaluate a system from a sociological perspective, and how to use such information and skills for the implementation of technological programs. A number of EWUP's field sociologists have attended Colorado State University for one year of advanced sociological training, which has greatly improved their professional competency. Finally, these field sociologists are learning to work as members of a team, and their work is vital for the success of the teams and of the Project as a whole.

While the Egyptian sociologists improve their professional skills, and gain valuable theoretical and methodological background, American sociologists gain much valuable experience by applying the knowledge learned in school in actual field situations. Both are expanding their basis of knowledge through mutual interaction, and through the process of integrating their discipline into the overall work of the Project. In addition, the sociologists are increasing their knowledge and appreciation of how other disciplines contribute in an action-oriented research program.

Although changes in attitude and methodology among the members of the EWUP research team have been the subject of their report, this is not the only area where changes have occurred. EWUP has introduced, and will introduce, a number of changes for the farmers, and it is hoped that, by the end of the Project, the Egyptian Government will have a feasible package of improvements for on-farm irrigation which it can apply throughout the nation.

V- Conclusion:

In conclusion, this paper has presented a description of how the rural sociologist has acted as an agent of change in EWUP, an action-oriented interdisciplinary project. The sociologist has four major roles, that of analyst, advisor, advocator, and innovator. These roles are performed in an interdisciplinary and cross-cultural environment, and as a member of a team. Through these roles, the sociologist is able to integrate his skills with those of the team and to help create a viable program which initiates, develops, implements, and sustains technical and social change in a particular social entity. Team work is often frustrating, but the results of treating problems in a comprehensive manner have proven to be both valuable and edifying.

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AMERICAN EQUIVALENTS OF EGYPTIAN ARABIC
TERMS AND MEASURES COMMONLY USED
IN IRRIGATION WORK

<u>Land Area</u>	<u>in sq meters</u>	<u>in acres</u>	<u>in feddans</u>	<u>in hectares</u>
1 acre	4,046.856	1	0.96335	0.40469
1 feddan	4,200.8335	1.03805	1	0.42008
1 hectare (ha)	10,000.00	2.47105	2.38048	1
1 sq kilometer	100 x 10 ⁴	247.105	238,048	100.00
1 sq mile	259 x 10 ⁶	640.00	616.4	259.00

Water Measures

1 billion m ³	=	810,710	acre-feet
1000 m ³	=	0.81071	acre-foot = 9.72852 acre-inch
1000 m ³ /feddan	=	0.781	acre-foot/acre = 9.372 acre-inch/acre (= 238 mm of rainfall)

Other Conversions

1 ardeb	=	198	liters = 5.62 bushels (U.S)
1 ardeb/feddan	=	5.41	bushels/acre
1 kg/feddan	=	2.12	lb/acre
1 donkey load	=	100	kg
1 camel load	=	250	kg
1 donkey load of manure	=	0.1	m ³
1 camel load of manure	=	0.25	m ³

Egyptian Unit for Field Crops

<u>Crop</u>	<u>Eg. Unit</u>	<u>in kg</u>	<u>in lbs</u>	<u>in bushels</u>
Lentils	ardeb	160.0	352.42	5.87
Clover	ardeb	157.0	345.81	5.76
Broad beans	ardeb	155.0	341.41	6.10
Wheat	ardeb	150.0	330.40	5.51
Maize, Sorghum	ardeb	140.0	308.37	5.51
Barley	ardeb	120.0	264.32	5.51
Cottonseed	ardeb	120.0	264.32	8.26
Sesame	ardeb	120.0	264.32	
Groundnut	ardeb	75.0	165.20	7.51
Rice	dariba	945.0	2081.50	46.26
Chick-peas	ardeb	150.0	330.40	
Lupine	ardeb	150.0	330.40	
Linseed	ardeb	122.0	268.72	
Fenugreek	ardeb	155.0	341.41	
Cotton (unginned)	metric qintar	157.5	346.92	
Cotton (lint or ginned)	metric qintar	50.0	110.13	

Egyptian Farming and Irrigation Terms

fara ¹	=	branch
marwa	=	small distributor, irrigation ditch
masraf	=	field drain
mesqa	=	small canal feeding from 10 to 40 farms
qirat	=	cf. English "karat," A land measure of 1/24 feddan, 175.03 m ²
qaria	=	village
sahm	=	1/24th of a qirat, 7.29 m ²
saqia	=	animal powered water wheel
sarf	=	drain (vb.), or drainage. See also masraf, (n.)