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Dilemmas of Opportunity: Social Sciences in CRSPs

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Formal involvement of social scientists in agricultural development projects largely began in the late 1960s, after the first critical questions concerning the unanticipated social consequences of the green revolution were raised. Such works as *Blossoms in the Dust* by Kusum Nair (1961) stimulated inquiries as to whether purely technological approaches could solve world hunger problems. While recognizing that the green revolution had achieved enormous gains in food production, critics such as Nair also observed that it came at a rather large social cost. Coupled with some notable failures in other agricultural development projects, the "unanticipated consequences" of the green revolution caused development planners to look for ways to improve their track record. Sociologists and anthropologists came to be perceived as the "silver bullet" that would cure all development planning ills. Perhaps the apex of this wave of good feeling was reached in the 1970s when the U.S. Agency for International Development (USAID) began to require that all proposed USAID projects include an assessment of their economic and social soundness at the project paper stage. If nothing else, this provided a considerable number of employment opportunities for sociologists and anthropologists, as social soundness analyses were not something USAID was particularly adept at doing "in-house."

In the same period, Title XII and the Collaborative Research Support Programs (CRSPs) were initiated. They evolved from the changing directions of U.S. international development efforts in the early 1970s. At the time, policymakers and researchers were becoming increasingly aware that development efforts often overlooked the needs of small-scale farmers and the rural poor who compose the vast majority of the population in developing countries (DCs). Earlier models of international agricultural assistance, such as the modernization approach, emphasized technology transfer and diffusion. However, these approaches began to be perceived as increasing, rather than decreasing, the gaps between rich and poor and urban and rural sectors (Mickelwait et al. 1979). In 1973, in response to these concerns, Congress passed the New Directions mandate, which amended the Foreign Assistance Act of 1961.

The new legislation specified that more emphasis should be placed on "expanding their [the poor's] access to the economy through services and institutions at the local level, increasing labor-intensive production, spreading productive investment from major cities to small towns and outlying areas . . . by sharing American technical expertise, farm commodities and industrial goods and less on large-scale capital transfer" (Mickelwait et al. 1979:3). The implications of the mandate were twofold. First, the "poorest of the poor" were formally acknowledged and targeted for development programs. Second, there was a shift from technology transfer toward host country self determination. As stated in Section 102, Chapter 1:

> United States bilateral development assistance should give the highest priority to undertakings submitted by host governments which directly improve the lives of the poorest of their people and their capacity to participate in the development of their countries (cited in Mickelwait et al. 1979:3).

New Directions represented a major step in expanding the scope and focus of development. Yet its larger significance perhaps lay in sensitizing U.S. foreign policy to host country needs and goals rather than imposing rigid guidelines on how development programs would or should be implemented. Within months of its passage, critics of the legislation (notably land grant universities) expressed concern that implementation still concentrated too heavily on capital transfer rather than on research and institution building as intended in the mandate. Coupled with the concern that USAID budget reductions in the early 1970s were slowly diminishing university participation in development activities abroad, there was a concerted effort through legislative channels to reverse these trends and expand the parameters of development assistance (Comptroller General 1981).

This push for additional legislation had its roots in two institutions. First, there was a belief within USAID that world food problems could be solved only through basic research to create a new and/or expanded knowledge base of local conditions. Second, Congress moved to bring together the expertise of U.S. agricultural universities and USAID in implementing development assistance (Luykx 1978). Both initiatives were in part motivated by the success of the 1887 Hatch Act, which created the U.S. system of state agricultural experiment stations. The Hatch Act recognized the primacy of research in solving agricultural problems; it thus allocated federal funds to land grant universities to conduct research relevant to domestic agricultural issues. Using the Hatch Act as a model, support grew to mobilize the scientific and technical expertise of land grant institutions within a formal policy framework aimed at eliminating world hunger.

Along with a major lobbying effort by the land grant universities, these initiatives resulted in passage of the International Development and Food Assistance Act of 1975, formally submitted to Congress by Senator Hubert Humphrey and Representative Paul Findley. The Humphrey-Findley Bill amended the Foreign Assistance Act of 1961 by adding Title XII—Famine Prevention and Freedom from Hunger. Title XII specified:

> Congress declares that, in order to prevent famine and establish freedom from hunger, the United States should strengthen the capacities of United States land grant and other eligible universities in program-related agricultural institutional development and research, consistent with sections 103 and 103A, should improve their participation in the United States Government's international efforts to apply more effective agricultural sciences to the goal of increasing world food production, and in general should provide increased and longer term support to the application of science to solving food and nutrition problems of the developing countries (U.S. Congress 1975:23).

USAID was responsible for the overall administration of Title XII. To ensure adherence to the spirit of the legislation, however, Congress authorized the president to appoint a Board for International Food and Agricultural Development (BIFAD). The board would be a permanent participant in Title XII planning, program development, and budgeting. BIFAD became a fully functioning, seven-member unit in early 1977. Shortly thereafter, it created two advisory committees to implement Title XII policy. The Joint Research Committee (JRC) was responsible for all research to promote the discovery of new knowledge and the development of technology useful to DCs. The Joint Committee on Agricultural Development (JCAD)[1] was given responsibility for adapting research results and technology to the needs of developing countries. Title XII mandated the creation of collaborative research programs that addressed issues of food production, distribution, storage, marketing, and consumption. Thus, collaborative research fell under the purview of the JRC. In 1977, the JRC met to discuss how collaboration would be organized and managed. Its deliberations gave birth to the Collaborative Research Support Programs.

OVERVIEW OF THE CRSPs

The CRSPs were charged with creating structures to facilitate collaboration among U.S. land grant universities, USDA, international agricultural research centers (IARCs), DC institutions, and other research entities "on a problem-oriented basis in a common research and development program to solve a priority food and nutrition problem" (Hutchinson 1977:49).

While the JRC was granted authority to organize CRSPs, general guidelines were provided within the language of Title XII. Congress made it clear that this development mode should: be directly related to the food and agricultural needs of developing countries; be carried out within developing countries; be adapted to local circumstances; provide for the most effective interrelationship among research, education, and extension in promoting agricultural development in developing countries; and emphasize the improvement of local systems for delivering the best available knowledge to the small farmers of such countries (22nd U.S. Congress Section 220b (c), cited in Comptroller General 1981:3-4).

In the organizational phase of CRSPs, the JRC identified a number of priority research areas. As of 1987, eight such areas have been incorporated into fully functioning Collaborative Research Support Programs (Table 1.1). All are still operative, with the exception of the Nutrition CRSP, which was planned for only five years and is presently in a close-out stage. To date, 40 U.S. land and sea grant universities, as well as other institutions, have officially collaborated with 66 host country institutions in 30 countries.

Although each CRSP has a unique research agenda, they all share certain basic organizational assumptions. In the early 1970s, however, these assumptions represented major departures from USAID's previous research strategy. First, whereas earlier agricultural R&D programs had relied on

TABLE 1.1. ESTABLISHMENT OF THE COLLABORATIVE RESEARCH SUPPORT PROGRAMS

Program	Date Established	Funding through 1985[a] (in millions)
Small Ruminant	Oct 1978	45.2
Grain Sorghum/Pearl Millet	Jul 1979	34.0
Bean/Cowpea	Oct 1980	21.3
Tropical Soils Management	Sep 1981	19.9
Nutrition	Dec 1981	14.8
Peanut	Jul 1982	15.9
Pond Dynamics/Aquaculture	Sep 1982	5.6
Fisheries and Stock Assessment	Jul 1985	1.7

Source: NASULGC n.d.

[a]Includes AID, U.S., and host country contributions.

yearly budgetary allocations, CRSPs received firm 5-year budgetary commitments, with the opportunity for extensions. Thus, USAID formally recognized that research is not only vital to successful development, but also that it is long-term in nature. Second, as their name implies, CRSPs are collaborative ventures between and among scientists and researchers in U.S. universities, IARCs, and host country institutions. As part of this collaboration, U.S. participants are required to match 25% of the cost of any project funded by a CRSP. Similarly, host country institutions are expected to contribute to the cost of the research, either financially or in kind. Third, CRSPs are explicitly multidisciplinary, bringing together scientists from numerous social and biological fields in a cooperative working relationship with common objectives. Some sense of the breadth and depth of both the collaborative and the multidisciplinary foundations of CRSPs is given in the following overview of the five CRSPs represented in this volume.

ORGANIZATIONAL STRUCTURE OF CRSPs

Structurally, each CRSP is intended to be autonomous, with its own administrative board, a program director housed in a management entity (ME) office, and a technical advisory committee. While funds flow from USAID/Washington, resource allocation decisions are made by the CRSP participants. Thus, each CRSP reflects a complicated negotiation process among scientists and administrators from varying disciplines and institutions. A total of eight programs have emerged, all developed from the same mold, but with distinct personalities and agendas representing the concerns and interests of their project participants.

What follows is a brief summary of the technical and administrative structures of the five programs represented in this volume: the Small Ruminant, International Sorghum/Millet, Bean/Cowpea, Nutrition, and Peanut CRSPs. Only their *formal* multidisciplinary and collaborative relationships are overviewed (see Table 1.2). However, it should be noted that many other informal links exist that expand the scope of CRSP research and the potential for meaningful results. For instance, while one of the formal disciplinary components of the Small Ruminant CRSP (SR-CRSP) is rural sociology, anthropology also forms an integral part of the program's social science research. While the Sorghum/Millet CRSP has formal collaborative relationships with four host countries, plus the Centro Internacional de Agricultura Tropical (CIAT), in actuality, informal collaborative research projects are under way in over 13 DCs. Often informal collaborative relationships are as important as formal ones in realizing CRSP objectives.

In interpreting Table 1.2, some caution should be exercised. First, the columns in the table are ordered alphabetically and are independent of each other. Second, only very general structural comparisons can be made across CRSPs since each program has its own unique set of organizing principles. For example, the SR-CRSP was planned around four ecological zones, with any particular site having a complete array of discipline-based projects (e.g., a rural sociology project, an economics project, a veterinary health or range management project) deemed essential to study small ruminant production at that site. In this program, "projects" and "disciplines" are nearly synonymous. By contrast, other CRSPs tended to organize themselves around broadly framed projects that often included scientists from a number of disciplines. Such projects might well be the only ones operating at a particular overseas site. Thus, while Table 1.2 and the following summary descriptions[2] capture certain key organizational structures of the various CRSPs, the reader should refer to individual CRSP publications for more detail about how sites, disciplines, projects, and institutions are melded into a coherent program.

Small Ruminant CRSP

The goal of the SR-CRSP is to improve milk, meat, and fiber production of sheep, goats, and alpaca in order to increase the food supply and raise the income of smallholders in developing countries. The scope of work is organized by production systems (intensive versus extensive) and ecological zones. Based on these considerations, research activities have been developed in five countries. In the program planning stage, it was determined that research should include all disciplinary aspects of the production process—from animal genetics and reproduction studies aimed at improving local breeds, to feasibility studies aimed at determining socioeconomic constraints on improving small ruminant production and utilization. At its height, the SR-CRSP included 10 disciplines and 13 U.S. institutions. However, recent funding cuts have curtailed activities both in the United States and abroad. Only one SR-CRSP discipline operates across all five sites: sociology. Others are involved in specific projects in one or more countries.

On an administrative level, each participating U.S. institution is responsible for at least one disciplinary component of the research agenda. Each also has a principal investigator (PI), who oversees the conduct of her/his disciplinary research at home and abroad. In the case of institutions housing two disciplinary activities, PIs are assigned to each research component. A technical committee (TC) is responsible for addressing research concerns and making recommendations to the program board concerning budgetary matters. The committee consists of one PI from each SR-CRSP discipline. The board is composed of one member from each participating U.S. institution and host country. Within this framework, the social science component has full participatory privileges with its

TABLE 1.2. FORMAL ORGANIZATIONAL COMPONENTS OF THE FIVE CRSPs[a]

U.S. Institutions	Disciplinary Areas	Host Countries
Small Ruminant CRSP -- University of California-Davis, ME		
U. of California-Davis California Polytechnic U. Colorado State U. U. of Missouri-Columbia Montana State U. North Carolina State U. Ohio State U. Texas A&M U. Texas Tech U. Tuskegee Institute Utah State U. Washington State U. Winrock International	Agricultural Economics Animal Breeding and Genetics Animal Health Animal Nutrition By-products and Nutrition Production Systems Range Management Reproductive Physiology Rural Sociology Systems Analysis	Brazil Indonesia Kenya Morocco Peru
INTSORMIL -- University of Nebraska, ME		
U. of Arizona Kansas State U. U. of Kentucky Mississippi State U. U. of Nebraska Purdue U. Texas A&M U.	Agronomy/Physiology Economics Entomology Food Quality and Utilization Plant Breeding Plant Pathology Sociology/Anthropology	Botswana Honduras Niger Sudan
Bean/Cowpea CRSP -- Michigan State University, ME		
Boyce Thompson Institute for Plant Research U. of California-Davis U. of California-Riverside Colorado State U. Cornell U. U. of Georgia Michigan State U. U. of Nebraska U. of Puerto Rico Washington State U. U. of Wisconsin	Agronomics Economics Entomology Food Technology/ Nutrition Genetics and Plant Breeding Sociology and Anthropology	Botswana Brazil Cameroon Dominican Rep. Ecuador Guatemala Honduras Kenya Malawi Mexico Nigeria Senegal Tanzania
Nutrition CRSP -- University of California-Berkeley, ME		
U. of California-Berkeley U. of California-Los Angeles U. of Connecticut Purdue U. (U. of Arizona) (U. of Kansas)	Anthropology Data Management Medicine Nutrition Psychology	Egypt Kenya Mexico
Peanut CRSP -- University of Georgia, ME		
Alabama A&M U. U. of Georgia North Carolina State U. Texas A&M U. (Purdue U.)	Breeding and Cultural Practices Entomology Food Technology Plant Pathology Socioeconomics	Burkina Faso Caribbean Niger Nigeria Philippines Senegal Sudan Thailand

[a]All institutions, disciplines, and host countries that have been formally involved in the five CRSPs at any point in the life of the programs are listed. Items in parentheses represent subcontractor institutions.

biologically oriented counterparts, on both the technical and administrative bodies governing SR-CRSP activities.

International Sorghum/Millet CRSP

The primary objective of INTSORMIL is to develop technology for increasing the production and utilization of grain sorghum and pearl millet worldwide. To this end, both formal and informal collaborative research activities have been initiated around seven multidisciplinary objectives involving eight U.S. universities and 17 host country institutions. Formal collaborative relationships have been established with four host countries and with CIAT, which conducts agronomic research throughout Central and South America. Since INTSORMIL's inception in 1979, research agendas have been modified and budgetary constraints have reduced both the number and disciplines of program participants. Yet, INTSORMIL continues to stress the need for multidisciplinary research and multi-institutional input to alleviate major constraints to improved sorghum and millet production.

Administratively, technical and operational concerns are addressed by a committee composed of representatives from each disciplinary component that is active in the program at the time. Thus, all disciplines are fully integrated into the decision-making process. The program board is comprised of one member from each participating institution. An added committee, the Ecological Zone Council, plans and implements identified host country and U.S. collaborative research activities based on ecogeographic zones. The council consists of one representative from each zone with ongoing INTSORMIL activities, plus one member at large. In sum, the administrative bodies of INTSORMIL are structured so as to integrate and give full voice to disciplinary, institutional, and host country concerns. Although the social sciences are presently being phased out of the International Sorghum/Millet CRSP, historically they have been structurally incorporated into the administrative process.

Bean/Cowpea CRSP

The primary goal of the Bean/Cowpea CRSP is to improve the availability and utilization of beans and cowpeas in DCs. The University of Puerto Rico, the Boyce Thompson Institute for Plant Research, and nine other U.S. institutions have taken the lead in developing collaborative research programs in 13 host countries, primarily in Africa and Latin America. In addition, collaborative research has been carried out with the Instituto de Nutrición de Centroamérica y Panamá (INCAP), the International Institute of Tropical Agriculture (IITA), and CIAT. Originally, 18 priority projects involving six disciplines were identified and implemented in 13 host countries. Presently, 13 research projects are in operation, three of which focus on social science issues (Ferguson this volume).

The Bean/Cowpea CRSP has rotating membership on a technical committee, and a board to direct program activities. The committee is comprised of seven members—five from participating U.S. institutions, one host country representative, and a grain legume specialist from either CIAT or IITA. The board is composed of five U.S. institutional participants representing disciplinary concerns of the program. While membership is rotated, certain disciplines are given a permanent voice in decisionmaking: food technology/nutrition, entomology, and crop production. Within this framework, the interests of the social sciences are represented on the technical committee by a Women in Development (WID) coordinator from Michigan State University who holds ex officio status.

Nutrition CRSP

Unlike the other seven CRSPs, the Nutrition CRSP was designed as a terminal 5-year program. It focuses on issues related to marginal human food intake in DCs characterized by different subsistence commodity foods. Nutrition CRSP studies follow a standardized research design overseen by four U.S. universities across three sites. Five functional research components are included in the program design: resistance to disease, reproductive lactation, work productivity, cognitive development, and social competency. This CRSP is expected to yield results that will determine whether comparable human nutrition problems exist across regions. Also, findings from the Nutrition CRSP should prove instrumental in helping set food policy in DCs.

Technical matters pertaining to the Nutrition CRSP are addressed by the Scientific Coordination Board, composed of one representative from each host country and U.S. institution, including subcontractors. Since each site is allocated one vote on the board, unlike INTSORMIL and the SR-CRSP, emphasis is placed on site rather than disciplinary concerns when technical issues must be resolved.

Peanut CRSP

The primary goal of the Peanut CRSP is to maximize the production and utilization of peanuts in DCs. To this end, the program planning entity identified 13 constraints to peanut production, targeting six as priority research concerns. Twelve projects involving five disciplinary domains have been initiated in Africa, Latin America, the Caribbean, and Southeast Asia. Four U.S. universities serve as lead institutions on the Peanut CRSP. Unlike the other four CRSPs described here, the social sciences were never considered a separate disciplinary component of the Peanut CRSP. Rather, social science activities were integrated into the food science component at Alabama A&M University or initiated under a separate contractual agreement between Purdue University and the ME office at the University of Georgia.

The Technical Committee of the Peanut CRSP is composed of the PIs from each lead U.S. university. The board is likewise composed of one representative from each participating U.S. university. Within this framework, the PI from Alabama A&M is the principal spokesperson for the social sciences. However, in order to ensure that the social sciences have a voice in program decisionmaking, the outside review team that evaluates the progress of the Peanut CRSP includes a social scientist.

SOCIAL SCIENCES IN THE CRSPs

The multidisciplinary structure of CRSPs arguably represents one of their greatest assets. This approach to international agricultural R&D implies that truly effective development must utilize expertise from many different fields. It assumes that study of "the whole" must include its many parts; conversely, study of a part must take into account the whole. Thus, whether the research topic be small ruminants or human nutrition, useful results can be achieved only by examining all factors—sociological, biological, technological, economic—that may impede or encourage change.

The success of the CRSPs in incorporating the multidisciplinary concept into their research agendas has been variable. Clearly, such integration takes time and patience on the part of researchers and administrators alike. While individuals are willing to commit themselves to a concept and an ideal, actual implementation often requires negotiation and compromise, as a number of the chapters in this volume attest. Even prior to the birth of CRSPs, this issue has been particularly relevant for sociologists and anthropologists. Proving that their disciplines are worthy of an equal partnership with biological sciences in international agricultural programs has taken years, and the process is still incomplete. However, the CRSP mode of agricultural research has gone far toward demonstrating, refining, and institutionalizing the need for multidisciplinary work. Moreover, it has offered social scientists more, and more varied, opportunities than did many technical assistance programs in the past.

As the preceding section has suggested, the social sciences have been incorporated into the individual CRSPs in several different ways. The first two CRSPs (Small Ruminant, Sorghum/Millet) were constructed with explicit social science projects built into the program plan. Some of the later CRSPs (e.g., Peanut, Bean/Cowpea) included social science components as part of more broadly framed biological projects. This distinction is not trivial. If incorporated as separate and autonomous entities with their own subgrants, social science projects are automatically accorded a certain visibility and institutional status. The principal investigator on such projects is therefore a member of the program technical committee, and her/his institution is represented on the CRSP's governing board. This status does not automatically accrue to the social sciences when they form subcomponents of other projects. Structurally, when social sciences are accorded full project standing, they enjoy more legitimacy and power. Yet, as components that cannot themselves produce new technology, CRSP social science projects are particularly vulnerable to reduction or elimination when budgets shrink.

The roles of sociologists and anthropologists within the CRSP structure were not clearly defined at the outset. In part, this is due to the fact that social impacts are so much more difficult to anticipate, measure, and predict than, say, economic or agronomic effects. To illustrate from the SR-CRSP's experience, the pervasive view in the program's early stages was that social scientists' primary responsibility was to determine how best to transfer biological scientists' innovations to the limited resource farmer (McCorkle and Gilles 1987, Nolan 1985). Only with persistence and persuasion did this view change, ultimately evolving into a recognition that the production of research innovations should itself be informed by social science research. In those early days, all SR-CRSP scientists, social and biological alike, tended to see the world very much through disciplinary blinders. It was not until members of each discipline gained some degree of self-assurance that we began to function more as a team on projects, rather than merely as a collection of representatives of disciplines competing for scarce resources.

For example, SR-CRSP biological scientists working in Peru initially concentrated their efforts on small ruminant production systems associated with large cooperatives. However, research by SR-CRSP social scientists, who were working in peasant communities (where the poorest of the poor reside) revealed that peasant systems of animal husbandry were very different from those of cooperatives. Moreover, SR-CRSP sociologists demonstrated that peasant communities accounted for more than half of the total small ruminant production in Peru (Jamtgaard 1986). These findings were communicated to the other program scientists, and research activities were subsequently reoriented to give more attention to community production systems. Establishing this kind of constructive dialogue between social and biological scientists early in the program resulted in greater agreement on the appropriateness of research topics vis-à-vis the CRSP mandate to improve the well-being of small producers.

As CRSPs matured, social scientists also came to play an increasingly important role in what can be termed "integration," or the interpretation of research results within a broader production context. On the SR-CRSP, the reason for this was very simple: the animal scientists, by and large, were not particularly sensitive to production issues beyond the animal units they were studying. In general, the biological scientists were all specialists in livestock-related disciplines such as range management, veterinary medicine, animal breeding, genetics, or nutrition. Thus, they tended to ignore the plant-crop components in farming systems. Yet, farmers routinely make trade-offs among crops, livestock, and human resources. It fell to SR-CRSP sociologists and anthropologists to ensure that the *whole* farming system was clearly conceptualized, particularly insofar as cultivation impacted on the livestock sector, and to determine the dynamics of trade-offs between the two (Primov 1982).

For example, social scientists provided an early insight into the farming system of Andean agropastoral communities. They found that one of the primary purposes of small ruminant production systems was to maximize the production of collectable manure rather than wool or meat (Jamtgaard 1984, McCorkle 1983). This meant that in contemplating possible changes in the production system, biological scientists needed to take cognizance of what the farmers were trying to achieve. For example, a range management strategy that called for animals to graze far from the community would probably have little chance of being adopted because the herds could not be returned to a family corral at night to deposit their manure for later collection.

In the same vein, social scientists were often called upon to coordinate the testing and implementation of new technologies in the field. Because the research of biological scientists tended to be "station oriented," social scientists were among the first to collect data directly from farmers and to act as a bridge between the on-station biological work and the small farm setting. Later, when on-farm testing of biological innovations commenced, social scientists played a pivotal role in establishing a mechanism for testing and evaluating results. Often it was their responsibility to establish lines of communication among the biological scientists as well as between the biological scientists and the farming communities in which the on-farm research was to be done. For example, coordination of village farmer meetings on the SR-CRSP in Indonesia was the responsibility of the collaborating in-country sociologist (Knipscheer and Suradisastra 1986).

This multiplicity of integrative, communicative, and evaluative roles (McCorkle et al. forthcoming) leads to what is probably the greatest dilemma faced by social scientists within programs such as the CRSP: the types of knowledge they are asked to produce.

SOCIAL SCIENCE, BIOLOGICAL SCIENCE, AND KNOWLEDGE PRODUCTION

Following Bonnen (1986:5), three broad types of knowledge resulting from scientific research can be identified. The first, "disciplinary knowledge," consists of theory and methods used to explain the fundamental class of phenomena of concern to such disciplines as physics, botany, economics, and philosophy. It serves to push back the frontiers of knowledge in that discipline. The second, "subject-matter knowledge," is multidisciplinary information useful to decisionmakers in solving a set of problems. This type of knowledge is organized under such headings as marketing, animal nutrition, or farm management. Most departments in colleges of agriculture are organized around subject-matter knowledge systems. Finally, "problem-solving knowledge" intervenes between subject-matter knowledge and decisionmaking. As Bonnen writes:

> Before even multidisciplinary, subject matter knowledge has direct relevance to a specific problem, it must be fashioned into multidisciplinary, problem solving knowledge . . . i.e., "should" or "ought" statements to which knowledge of values is essential (1986:5).

The gulf between disciplinary or even subject-matter research objectives and problem-solving (programmatic) research objectives is especially large for social scientists within CRSPs, although it impacts biological scientists as well. While R&D programs may seek to blend the three knowledge types, it is our impression that CRSP biological scientists have been more successful than have social scientists in melding disciplinary and problem-solving research goals. Even where this has not been possible, as in studies on the genetic origins of prolificacy in sheep, the biological scientists have consistently devoted a higher percentage of their budgets to research agendas that produce disciplinary or subject-matter knowledge versus only problem-solving knowledge.

By contrast, because of the multiplicity of roles explicitly and implicitly assigned to them, social scientists have found it difficult, if not impossible, to engage in disciplinary or even subject-matter research. Politically, this has been difficult because of the relatively weak position of social science projects within most CRSP research and administrative structures. This sometimes required social scientists to forsake their own scientific interests for the interest of the program. In some CRSPs, social scientists became increasingly identified as key actors in the process of on-farm testing and evaluation; hence a greater proportion of their budgets was allocated to these activities. On the SR-CRSP, discussions have even been held as to whether it is the intrinsic role of the sociology project to pull together "technology packages" combining the research of all disciplines working at a particular site. Yet, such program goals and research expenditures often do not contribute to any disciplinary goals that the social science projects might have had at the outset. Opportunities for publication and disciplinary recognition deriving from these kinds of activities are correspondingly limited since they are often seen as insufficiently academic.

The challenge for both biological and social scientists within this organizational framework is to understand each other's motivations and to reach some agreement on appropriate program responsibilities. This can be accomplished only through dialogue and negotiation. The perception of some biological scientists that social scientists should play a "service" role in what is essentially "their project" clearly must be altered. Likewise, social scientists must be willing to work with biological scientists to understand their disciplinary perspectives and to act as guides to contextualize their work within the "human" experience. Meeting biological scientists at their own level is essential so that social scientists can be effective. This implies a rudimentary knowledge of biological terminology, research methods, and approaches to problem solving. In addition, both groups will need to surrender some of their disciplinary objectives for the greater problem-solving goals of the program.

CONCLUSION

After nearly a decade's work with CRSPs, it seems appropriate to ask how and if the social sciences have made a difference. Unfortunately, the answers are not straightforward; and they involve considerable post hoc analysis and anecdotal information. Moreover, the question can be posed at multiple levels—e.g., research, training, institution-building, and program or project versus personal levels.

It is difficult to cite examples wherein one piece of sociological research directly altered the course of a biological project. On the SR-CRSP, however, we believe that the sustained interaction of our Sociology Project team with program biological scientists has redirected the work of the latter in significant ways, causeing them to look at issues that might otherwise have been ignored. In many respects, however, we feel our greatest contribution has been to stimulate contact between biological scientists and farmers. In a number of cases, this has been an eye-opening experience for both groups.

A further evaluation question is: How can we effectively measure our contribution to institutional development? In the case of the SR-CRSP, a social science research unit has been established in every collaborating host country with which we are working. Although often understaffed, the creation of such units nonetheless marks a significant step in the direction that host country research programs are likely to take in the future. This could be one of the most lasting contributions of the CRSP social science projects.

Additional evaluation questions deserve consideration. First, as a result of participation in CRSPs, have we, as social scientists enhanced our credibility within our home institutions and colleges of agriculture? Have we, as a group, developed skills in working with biological scientists on other international or domestic food production issues? Finally, how has the CRSP experience impacted our own long-term career development?

In reflecting on our experience, it is relatively easy to remember the countless frustrations, the incredible amount of time invested in initiating any overseas work, and the inadequate resources we had to fulfill the responsibilities given to us. But when we ask ourselves whether we made a difference, it is people and professional linkages we must first think about. On the SR-CRSP, the relationships our project team has developed with biological researchers, host country scientists, USAID mission personnel, and the students who have come to study at our U.S. universities, as well as our continuing ties within the Sociology Project team, are among our most enduring contributions. While we may never know for certain whether we as social scientists have exerted an influence on all aspects of our CRSP, we do know that the CRSP certainly had a major influence on us. In some cases, it radically altered the careers of some program social scientists, launching them in new directions they had not previously considered.

In a more positive vein, we believe we *have* stimulated our biological science colleagues to recognize that "bringing people in" to commodity-oriented projects increases their chance of success. Certainly this is the case within the SR-CRSP. It is easier now than it was five or six years ago to sell such concepts as farming systems research, on farm testing, and studies determining who benefits. In sum, our contributions clearly consist of more than just a change in our personal worldviews. The chapters in this volume seek to document these contributions in a variety of contexts. It is hoped they will allow those who follow us to learn from our experience and perhaps, too, from a few of our mistakes.

NOTES

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1. In 1982, the JRC and JCAD merged into the Joint Committee on Agricultural Research and Development (JCARD).

2. Information regarding the five CRSPs was obtained from the following sources: for the SR-CRSP, Blond n.d.; for INTSORMIL, Winn n.d. and personal communications with Joan Frederick, administrative officer for the ME; for the Bean/Cowpea CRSP, the 1984 Annual Report (ME, eds.) and personal communications with Ann Ferguson, WID Coordinator at MSU, and Barbara Webster, PI at the Department of Agronomy and Range Science, UCD; for the Nutrition CRSP, NASHLGC n.d. and personal communications with AID/Washington Program Officer Samuel Kahn; and for the Peanut CRSP, the ME's 1987 report on program years 6, 7, and 8, and personal communication with Program Director Tommy Nakayama.

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