
UNIVERSITY OF MISSOURI-COLUMBIA
COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION
ROGER L. MITCHELL, DIRECTOR

An Alternative To Research,
Develop and Deliver:
Rural Development In Missouri
As A Case In Point

Herbert F. Lionberger and Tso Sang Wong



ACKNOWLEDGEMENTS

Special recognition is due to Janice Allen and Melissa Baumann of the Department of Rural Sociology, for expertise exercised in the repeated Word Processing operations required for completing the manuscript and to Professor Don Esslinger of the College of Agriculture editorial staff, for making the document more readable.

Finally, central and crucial was the willingness to be studied and the full cooperation of Professor Daryl Hobbs, the person administratively responsible for the innovative information generating-utilizing system which served as the focus of this study.

AN ALTERNATIVE TO RESEARCH, DEVELOP AND DELIVER:
Rural Development In Missouri As A Case In Point

	<u>Page</u>
1. INFORMATION MACROSYSTEMS IN HISTORICAL PERSPECTIVE.	1
Antecedents	1
Toward Institutionalization of Information Development and Delivery.	1
Information Macrosystem Requisites.	3
The Theory-to-Practice Sequence of Activities.	3
Functions That Must be Performed.	5
Operational Rules	6
2. THE SEARCH FOR NEW MODELS	6
From Pioneers to Lethergy in the Agricultural Sector. . .	6
Conceptualization of the Problem.	7
The Social Invention Stance	8
The Old and the New	8
Information Macrosystems Perspective	9
3. THE MISSOURI RURAL DEVELOPMENT OPERATION IN HISTORICAL PERSPECTIVE	10
From a Social Experiment to a Social Invention.	10
Why the Innovation Label?	10
4. METHODOLOGICAL ISSUES	11
Special Methodological Problems Posed in Defining the Normative Structure.	12
Defining the Idea Universe.	12

	<u>Page</u>
The Statement Sample	13
Selection of Key Concepts	25
Acceptance of the Participant Role	26
5. STRUCTURE OF THE MISSOURI RURAL DEVELOPMENT SYSTEM	27
The Relatively Permanent Coordinating and Linking Mechanism	27
The Missouri Rural Development Office	27
The Executive Board	28
The State Rural Development Advisory Council (SRDAC)	30
The Coordination Committee	30
The Matter of Autonomy	31
The Less Tangible Dynamic Network of Agencies and People	32
The Temporary Task Force Design	32
6. PROCESS CONSIDERATIONS (THE OPERATIONAL FEATURES OF THE SYSTEM)	33
The Problem-Solving Focus	33
Emphasis on People Participation	34
Low In-Field Differentiation	36
7. LEADERSHIP REQUIREMENTS	38
The Leadership Situation	38
Tasks to be Performed	39
Appropriate Leadership Qualities	40

	<u>Page</u>
Generalist Capability	40
A Humanistic Orientation.	40
Credibility	41
An Action Orientation.	41
Toward a Specification of Credentials for the Directorship.	41
Characteristics of the MRDP Director as a Case in Point	42
Prior Socialization.	42
Formal Education	42
Occupational Experience.	42
Suggested Qualifications and Prospects	44
8. THE CONCEPTUAL UNDERPINNING OF THE RURAL DEVELOPMENT INFORMATION MACROSYSTEM.	45
Its Content.	45
Discussion	47
Implications	47
9. PARTICIPANTS AS ADOPTER CLIENTELES	48
The Campus Based Faculty	49
Reasons for Becoming Involved.	49
Satisfactions and Perceived Rewards.	51
Willingness to Participate Again	52
Conditions Posed	53
Local People as Participants.	55

	<u>Page</u>
10. AN EMERGING NEW MODEL FOR ACHIEVING THE OLD PEOPLE-SERVICE IDEAL	56
Salient Features	58
Implications	58
For Servicing Informational Needs.	58
Implementing the Model Within the Existing Land-Grant University System.	63
Compatibility Considerations	63
Feasibility Considerations	65
REFERENCES.	66

1. INFORMATION MACROSYSTEMS IN HISTORICAL PERSPECTIVE

Antecedents

When land-grant universities assumed responsibility for providing information and services to "ordinary" people, they had to build a system for that purpose. This emerged, part by part, over a period of some 50 years. Surely, the mandate to provide a college education to any who wished to obtain it was an important factor in their emergence as true "people service" universities. Movement to this end, began at a time when most people were farmers and when most believed that any useful farm information would be developed by and communicated among farmers. Knowledge of the ages was passed from one generation to another by means of participatory learning. Books on agriculture were few and book learning for farming had little credance. Accordingly, the faculty had little new information to teach and even less of a science-based nature upon which to draw.

After struggling with the problem of too little information for about 25 years, publicly supported agricultural experiment stations were added to generate it. Then as unused information accumulated with little success in getting it out to farmers, a cooperative extension service was added in 1914. This Service and its staff were expected to communicate the newly generated information to farmers and get it used. This completed the trio of resident teaching, research and extension for which land-grant universities are uniquely noted.

Toward Institutionalization of Information Development and Delivery

Perhaps for the first time, in man's history, there was a system created in land-grant universities was created that could simultaneously extend the frontiers of basic science knowledge, transform a portion of it into usable practice and disseminated it to users. This social invention enormously facilitated the process by which new information and technology could be developed and delivered to users. When disseminated to other sectors of society the effect was to institutionalize change, i.e., to insure that it would happen. In agriculture, it meant that farmers could depend on a continuous supply of locally validated, science-based information.

*Herbert F. Lionberger (Professor) is on the staff of the Department of Rural Sociology, University of Missouri (Columbia campus) and Tso-Sang Wong is a Post-Doctoral fellow in the Scripps Foundation Gerontology Center at Miami University.

Somewhat simultaneously with the emergence of the organizational development of land-grant universities, there also developed a set of ground rules and principles that specified how and for whom these universities were to work. As with most new social inventions, ideas existed mostly in the minds of those responsible for their operation.

Knowledgeables today hold that land-grant universities must, first of all, be a sanctuary for the greatest diversity of thought, the freest exchange of ideas, the most painstaking search for truth and thus a repository of scientific knowledge second to none. They were to operate at all points of concern on a theory-to-practice information-technology development-delivery continuum (Lionberger, Pope and Reddy, 1979).

Proceeding from a deeply held view that there were extraordinary possibilities in ordinary people, they were to maintain a two-way exchange of ideas between themselves and the people--to operate as true knowledge systems in which highly abstract (basic science) knowledge developed at the university is transformed and disseminated outward to all points of practical concern of people. The vision was an integrated resident teaching research and extension program that would draw upon and mutually support each other.

Furthermore the university and its faculty were expected to find solutions for major economic, social and political problems of the day and thus provide guidance for future policies and action. The knowledge that was generated there was to be freely available to all and the university was to assume responsibility for getting it out to the people who might use it. One proponent contends that their central purpose was and continues to be to democratize knowledge (Breimyer, 1978).

At the theory end of the theory-to-practice continuum, on which the universities operated, basic scientists were expected to create a mutual communication and exchange system throughout the world. Accordingly, they (the faculty and the universities) were to become part of a world-wide system for information development and flow.

The universities provided a facility with increasingly capable professionals, jointly financed by the federal, state and local governments. They operated by a set of rules which would permit, if not actually require, rendering of services to the people of the respective states in which they are located.

From the beginning, and to this day, local participation in the extension part of the system was and is required. Initially, the university's representatives in the local community (county agent) and their educational plans, had to be acceptable to local sponsoring groups. If they were not, either or both had to be changed.

Thus to the degree that these systems were operationally perfected and publicly supported they had the capacity for drawing on a world-wide scientific knowledge base while simultaneously extending and

transforming a part of what was learned into usable product for the use of all people. This, of course, is not to suggest that any one or even the total aggregate of public universities achieved the proficiency level for information generation supply and use of which they were collectively capable. But it is to contend that shortfalls are more a fault of those who run the systems than of the system itself. Yet, meeting the information supply challenges of an increasingly differentiated society with pluralistic interests and problems meant that certain system changes were also required. The system that worked very well to supply many of the informational needs of agriculture did not work equally well where problems were less well defined and where information had to be more location specific. Also, as information development became increasingly specialized the information delivery part of the system had to be changed if the informational needs of all people in the state were to be met. It is to the emergent system issues and their resolution that this treatise is addressed.

Information Macrosystem Requisites

Problems can best be addressed in the context of information macrosystem requirements for science-based information development flow and use, a brief look at what we regard these requirements to be is needed.

For this model, we propose three basic features, namely:

1. a theory-to-practice sequence of activities from science-based information development and transformation through delivery to its users,
2. a sequence of functions that must be performed along this transformation continuum for information development, flow and use to occur, and
3. a set of norms that specify how the system should operate and for whom.

The last, in essence, focuses on the conceptual underpinning of rural development informational systems quite analagous to a specification of guiding principles for the operation of land-grant universities (Lionberger, Pope and Reddy, 1979).

The Theory-to-Practice Sequence of Activities. Perhaps this sequence can best be well visualized by asking and answering the question of what kind of people have become involved in doing what over what period of time to make it possible for us to have many of the things that we regard as necessary. This, of course, takes us back to the time when we depended on individuals to do our inventing. Whatever item or artifact that we may choose, be it a radio, a high yielding wheat variety, a new contraceptive or an antibiotic, the story is much the same.

Using radio as an example, a historical examination of the sequence would reveal that several centuries ago there were curious individuals who were concerned with the nature of electricity, i.e., what it is, whether it can be generated, stored and controlled. They seemed to have little concern with developing something useful. Today, we would refer to them as scientists and their work as basic research. But there are almost always others, as in the case of electricity, who are interested in trying to put the new knowledge to use. What they did about it we would today call applied research. Invariably, there were those who saw possibilities in the use and distribution of new things developed from research—in the case of the voice box. This was the name by which the first radios were known. Local feasibility trials disclosed that it was something people wanted and would use. Developers (in this case manufacturers) then produced it for mass distribution. Still others usually distributed it to people who put it to use. So it was with radio.

From universities new discoveries are usually distributed as information. Manufacturers distribute much of the "new information" in the form of products. With radio, as with the development and distribution of many other useful innovations, the sequence becomes:

- Theoretically oriented (basic) researchers - working to extend the frontiers of basic science knowledge
- Applied researchers - putting some of the information to use and testing it locally to see if it will work
- Developers - producing it in quantity for distribution
- Distributors - disseminating the information or new product to potential users
- Users or adopters - putting it to use.

Basically the same sequence applies to information development and distribution in universities as for product development and distribution in industry.

In the case of radio, as in most others, the whole theory-to-practice process took many years (perhaps several hundred). It involved many people in many countries and situations where communication among each was at a minimum. In fact, it is not unusual for the same invention to be developed by more than one person at or about the same time (Ogburn, 1966). The land-grant university research, teaching and extension trio, of course, put most of this theory-to-practice sequence together in a single system.

If we look at how land-grant colleges and universities emerged and ultimately achieved some degree of perfection as a system for information generation, transformation and flow and observe what

diffusion researchers found (Rogers and Shoemaker, 1971), we can abstract certain functions that became necessary for information development, flow and use to occur.

Functions that must be Performed. First, the problem of getting information to teach students and distribute to farmers had to be resolved. This was achieved by adding a research activity, thus the innovation function.

Since the inclination so often has been to assume that new information or innovations from research sources are directly usable by people for whom they were prepared and since this turns out so often to not be the case, it seemed necessary to add a validation function. This specifies that all innovations (information or inventions) must be tested for local adaptability before they are recommended for use.

Early researchers in land-grant universities found that even when innovations were tested the information they were developing didn't reach farmers. This led to an addition of an extension service to get the information out. Thus the dissemination function was added to the list of requirements for information generation and use.

Problems encountered in getting farmers to use new information led to research on how this might be better done. The research showed that acceptance of new ideas and practices involved a process, i.e., a series of influences and events operating through time in which two things had to happen; namely, that the adopting individual had first to become informed and second persuaded to accept the new information or technology before he would use it. Thus, we add the

information function - i.e., the process of becoming informed, and

persuasion function - the process of becoming convinced.

Although both of these must be done under conditions acceptable to the potential adopting individuals, and basically on their terms, it was also apparent that the agricultural research and extension system could contribute to both functions on behalf of the individual.

But there is another function, long known to and regarded as essential by anthropologists but not actually conceptualized either by extension workers or diffusion researchers until recently (Lionberger and Chang, 1970)--the integration function. This refers to the requirement of putting bits and pieces of information together into a workable combination for meeting the goals of potential users. Once the importance of this function was conceptualized and its significance understood, it became possible to ask questions and get answers to how assistance could be rendered to help perform this function. This, in essence, was the last in the series of functions that had to be performed in the theory-to-practice sequence, i.e., from information development to actual use.

But there had to be some coordination and control of this sequence of activities to make the system operate properly. Where this is vested makes a lot of difference on how, by whom and for whom it will work. Thus we must pose governance as another functional requirement.

We hold that all of these functions must be performed to make any system for information development and flow to work properly. But we must remember that there are organizational and procedural alternatives for making this happen. Thus, functions are seen as requisites. None of them can be neglected. Accordingly, as we look for alternative models the search is for differences in system organization (structure) and procedure (process), not function. At the same time, we recognize that there are degrees to which these functions may be separated or combined for a particular kind of purpose or mode of operation. Thus, in the recent past when society depended mostly on individuals to invent and develop new knowledge, most of the functions were actually combined into a single individual. At the other extreme, there are likely to be degrees of specialization of function and sub-functions much beyond those currently in use and feasible.

Those who devote themselves to the study of information macrosystems and issues will surely refine and extend this list. But until this is done, we think they should serve as the central conceptual scheme for describing and assessing the utility of information macrosystem models, for whatever place and purpose.

Operational Rules

Finally, there must be a normative structure to specify how the system should operate and for whom. It may exist only in the minds of those who are a part of the system or it may be more formally specified. In its formative stage there may be differences of opinion with regard to what the basic concepts are and about their relative importance. But whatever the state of belief in relation thereto they constitute an important and essential part of what the system is all about and how it should operate. This is illustrated by the conceptual underpinning of land-grant universities previously described.

2. THE SEARCH FOR NEW MODELS

From Pioneer to Lethargy in the Agricultural Sector

U.S. agriculturalists were pioneers in the development of an operable system for science-based information development and flow. This system has accordingly received much favorable attention from admirers and those who tried to adapt the model to other needs and purposes. But in this comfortable and pleasant position, those in charge of operating the agricultural informational systems became complacent and confirmed in their thinking. In the meantime, viable information

macrosystem innovations were occurring elsewhere. Accumulated experience had shown that the system that worked very well for U.S. agriculture worked less well for supplying the informational needs of education, public health and in fact third world agriculture (Rogers, Eveland and Bean, 1976; Ruttan, 1968; Havelock, 1971; Interstate Project on Dissemination, 1976). Model changes were introduced and tried in many places with varying degrees of success. But those of most concern to us emerged in the rural development context (Madden et al, 1977). At the same time, a similar type of model was emerging in agriculture (Hildebrand, 1978; Gostyla and Whyte, 1980). The first was developed in the rural development context, and the second emerged as a kind of a maverick development in agriculture. Both failed to attract much attention outside of the local setting where they emerged except for papers read at professional meetings.

The search for viable new information macrosystems models that got under way in education soon after sputnik (Havelock, 1978) was slow to start in the land grant university setting (Meehan and Beal, 1977; Lionberger and Chang, 1970; Coughenour, 1967). Among some extension administrators and experiment station directors, the need for such a quest is recognized, nevertheless. Also, the Council of the Rural Sociological Society has gone on record as supporting such an endeavor. All of this coupled with a long standing personal interest in information macrosystem as social inventions, the enthusiasm of Sower (1962) and ourselves concerning the unrealized potential of these universities for services to society, provided the climate of public and professional concern out of which this study evolved (Edmund, 1978; Kellog and Knapp, 1966).

Conceptualization of the Problem

But in the search for innovative information generating-utilizing arrangements, there is the continuing question of how much modification there must be in an old or existing model to warrant its designation as an alternative one rather than an updated old one. Invention by its very nature is mostly a recombination of old elements for a new purpose or perhaps only for serving an old one better (Linton, 1936). Their simultaneous emergence rather than isolated single occurrences seems to be more the rule than the exception (Ogburn and Thomas, 1927). Thus as we look at the experimental rural development program as a prospective emergent new model it is not surprising to find others of a similar nature simultaneously emerging elsewhere.¹

¹Wong (1981) quite conclusively builds a case for treating rural development in Missouri as an innovation or social invention and its present director as an innovator. Although that is the position taken here, there remains the difficult question of determining whether the innovation (social invention at issue here) is more in the nature of a new model or a substantial revamping of an old one.

As we look at the university associated rural development program in Missouri, the reader is urged to remember that the search is basically for model features suited to servicing a particular kind of informational need of which those in rural development are examples. The innovative rural development operation in Missouri served as the vehicle for this search.

But as we proceed questions emerge about what orientation and what analytical framework should be used for research. For this a social invention perspective and information macrosystems conceptualization is central. All require some additional explanation.

The Social Invention Stance. Just as innovations occur in the material world of reality, so also do they in how man organizes and pursues objectives of collective concern. As we proceed in this vein several characteristics of inventions should be noted:

1. Basically an invention is a new combination of old elements (ideas, material gadgets and/or instrumentalities) to achieve a purpose (Linton, 1936). In a sense they are blueprints for goal achievement (Coughenour, 1967).
2. Historically they have tended to occur almost simultaneously and perhaps independently at more than one place (Ogburn and Thomas, 1927).
3. They consist of two basic components. One is quite clearly tangible. In the case of social inventions the more tangible part consists mostly of a unique set of roles, positions and/or relationships. The other is ideational and less tangible. It consists of norms which specify how the innovation should fit into the existing social milieu and should operate (Rogers and Shoemaker, 1971).

The first characteristic, in a sense, specifies that the central features of an invention must be viewed as an interrelated entity, not in terms of its elemental components. Most of these are almost certain to be old.

The second tells us that whenever we find an invention emerging, similar ones are likely to be occurring elsewhere simultaneously or even a little before the one identified. Thus the one labeled as the innovator may not be the actual first.

Third, we are reminded to search beyond the more tangible aspects of an innovation--in this case beyond its structure and mode of operation--to the less tangible rules (or norms) by which it operates, how and in what context.

The Old and the New. Until the turn of the last century, development of new knowledge and technology was basically a matter

left to individuals. Some students of social change even discounted the possibility that invention could ever become a successful organized effort of mankind (Linton, 1936). But gradually there emerged in the land-grant university context, a capability to generate new knowledge and pass it on not only to students in residence but also to people in the state who might be interested in using it. This organizational arrangement undoubtedly constituted one of the most powerful social inventions of mankind in recent years. In addition to insuring a continually updated supply of science-based information in the agricultural sector where it originated, it provided the means for institutionalizing rapid social change and an informational servicing capability perhaps limited only by man's ability and will to put it to work on behalf of people generally.

The land-grant university's organization for information generation, distribution and use was in distinct contrast to the traditions of the time. But in a few years it came to permeate most sectors of society. To what extent this development is the product of diffusion from a single source of origin or that of independent inventions is a question beyond resolution in this study. It need not be a matter of major concern. But today at least one land-grant university is in operation in every state of the Union.

However, conditions emerged for which the system proved inadequate. One was the need for information and action in rural or community development for which changes in the system were necessary and made. These changes provided the context for studying what we see as an emerging new model for information generation and use that has much broader applications than for rural development.

Information Macrosystems Perspective. Once the questions about being or not being an innovation are satisfactorily answered there is the problem of an appropriate conceptual scheme for describing and analyzing the essential aspects of the system and its operation. Our sociological orientation leads us to include elements of structure (organization) process (procedure) and norms (the rules by which the system works). We use these as major divisions for both conducting the study and reporting the results. This in turn brings into the picture the conceptual scheme that we have specified for identifying and examining the essential features of an information macrosystem. For this, we regard our theory-to-practice specification of activities and "functions to be performed" as central.

Finally, there is the matter of acceptance of a new innovation and by whom. Far more complex inventions such as this one, adoption centers around acceptance of new roles or changes necessary to make operation of the new rural development system possible. For this, the concepts of diffusion, acceptance and adopter clientele are relevant.

3. THE MISSOURI RURAL DEVELOPMENT OPERATION IN HISTORICAL PERSPECTIVE

From a Social Experiment to a Social Invention

The Missouri Rural Development Program (MRDP) was established for the purpose of putting into place a rural development oriented information generating and delivery system, i.e., a system for integrating research and extension to address problems that emerge in rural Missouri (Hobbs, 1978; Gelfand, 1977). Initial planning and development of the idea was lodged with a rural development committee appointed by the Dean of the College of Agriculture, University of Missouri, Columbia Campus. The Committee (chaired by Daryl Hobbs) functioned during 1972 and 1973. The Missouri Rural Development Office (MRDO) was established in January 1974, with Daryl Hobbs appointed as the director (also known as the program leader of the Title V program). It was given the authority and responsibility of supervising day to day programming activities and operations of the program.

At the same time, the Meramec area of East Central Missouri was selected as the initial demonstration site for the systems experiment. This site was preferred over others because of:

- A. its diversified economic base,
- B. its economic needs (as determined by a variety of criteria),
- C. its proximity to the cooperating institutions, (the University of Missouri's, Columbia and Rolla campuses and Lincoln University),
- D. its potential for change, and
- E. its essentially rural nature (Gelfand, 1977).

The MRDO subsequently carried out approximately 30 sub-projects (depending on how they are counted). Most actually occurred in the demonstration area as part of an integrated procedure for indentifying problems, generating information and addressing rural development issues. This, as we will argue subsequently, represented a significant break from the most used way of generating and delivering information in the land-grant university context. As a result, the MERDP became widely regarded as an innovative model, i.e., as a social innovation (Gelfand, 1977).

Why the Innovation Label?

Even though the Missouri Rural Development program emerged and functioned in the context of a land-grant university, its organization and

mode of operation was sufficiently different to warrant the innovation label as we shall see. What these differences are and their significance for addressing unique kinds of informational problems is a central focus of the study.

We mention just a few differences to support the innovation contention. In the typical land-grant university operation, researchers in a specially equipped subsystem generate the information and a separate specialized extension service delivers it to users.

But in the rural development operation:

1. the innovation function is mostly the joint responsibility of researchers, extension workers and local people in the field instead that of research specialists working in a centrally located research station,
2. the linking activity of extension extends to the entire system rather than being reserved mostly to a specialized extension organization,
3. the validation function is provided by a joint activity of extension workers, researchers and local people rather than by researchers alone,
4. the integration function neglected in the traditional system becomes central in the rural development operation.

These alone would seem to justify the social innovation designation.

4. METHODOLOGICAL ISSUES

As we have noted, proper description of the emerging model required identification and specification of its salient and essential organizational, process and normative features. Additional matters of acceptance by participants are also at issue.

Resolution of each required somewhat different research methods, all simultaneously focusing on one rural development operation as something of a case study. Wong (1981) refers to this as methodological triangulation.

The formal structural features of the system were quite apparent from the office graphics and position papers to which the researchers had ready access. In depth interviews with administrators either in charge of or closely involved in the program provided the additional needed detail and clarification. The same indepth interviews, time sequenced records, and personal observation provided the process data needed to describe how the program actually operates.

Special Methodological Problems Posed in Defining the Normative Structure

For defining what may be regarded as its normative underpinning (the ideational component) and its interrelated elemental mix we choose to use Q-methodology. Its utility for defining the normative underpinning of a social invention resides both in the actual Q-sorting process and what is required for getting ready to use it. These basic requirements are:

1. definition of the diversity of views about what is being studied--in this case, systems to development transform and disseminate information for rural development
2. appropriate sampling of these views
3. determination of what concepts are regarded as central, and in turn how they:
 - a. are interrelated to each other, and
 - b. how those elements regarded as central fit into the total context of views about what a rural development system should be and do.

How these methodological requirements were met are discussed in turn in following paragraphs.

Defining the Idea Universe. The first methodological requirement was to identify the rural development systems idea universe. For this, we had to identify and record, in self-referent form, as many ideas as reasonably possible about rural development systems initially without regard to preconceived categories. Here the most important need was to obtain a maximum diversity of views from which a purposive sample could be selected. This search took two general directions:

1. intensive interviews with knowledgeable either known or thought to hold diverse views about rural development informational macrosystem options from which statements were abstracted as nearly verbatim as possible (most generally by use of tape recordings), and
2. a search of the literature on rural development and rural development information macrosystems, again with an emphasis on diversity of views.

The emphasis was on published and unpublished position papers and speeches.² Sometimes statements were lifted directly from the text, sometimes changed slightly to self-referent form or sometimes improvised to clearly state a position taken or idea presented. The search was discontinued when the ratio of ideas obtained to time spent approached zero.

Interviews were conducted with:

- The Director of the Missouri Rural Development Office
- A research assistant associated with the Missouri Rural Development Office
- A professor in the Community Development Department at the University of Missouri-Columbia campus
- The director of the Missouri Division of Community Development
- The manager of the Community Betterment Program, Missouri Division of Community Development (state government office)
- Former State Director of Extension and University of Missouri system president
- The project leader of community development programs of the University of Missouri (Columbia Campus) Extension Division

The Statement Sample. The second procedural step was to draw a statement sample from the idea universe. This, first of all had to represent essential functions for information development, testing, flow, and use--innovation, validation, dissemination, information, legitimation (persuasion) and integration--plus an overall directing function labeled governance (Lionberger, Pope and Reddy, 1979; Lionberger and Gwin, 1982).

²Documents examined included the following:

Bentley, 1973; Breimyer, 1978; Cherns, 1979; Edwards and Jones, 1976; F.A.O., 1978; Gessaman, 1976; Heady, 1978; Hobbs, 1978; Lele, 1975; Lindblom, 1979a and 1979b; Lionberger and Gwin, 1982; Long, 1977; Meehan and Beal, 1977; Madden et al, 1979; Moe, 1978; Mosher, 1976; Nelson, 1979; Perelman, 1977; Phifer and List, 1970; Rich, 1970; Rodefeld, Flora, and Henry, 1978; Scott and Shore, 1979 and Zaltman, 1979. Many others were examined and cast aside.

Secondly, the items selected had to represent elements necessary for implementing the science-based information development-utilization sequence; namely,

1. a properly articulated system (or organization),
2. proper procedures,
3. properly selected and trained personnel, and
4. proper involvement of the information users.

These, much more tenuous than the functional specification, were selected by a combination of predispositions about what these must be and categories suggested by the items themselves (See figure 1). These four elements provided a compatible set of categories for including virtually all items collected from the idea universe, thus lending credence to the adequacy of the classificatory scheme.

The seven functions as one dimension on a balanced block design and the four elements on the other provided 28 cells into which the statements had to be fitted (See Figure 1). Each statement, accordingly, had to represent an element and a function. Ninety statements are regarded by Kerlinger (1973) as an absolute upper limit. Beyond that reliability of response is said to deteriorate rapidly. Some Q-sort proponents prefer an upper limit much below the 90 figure. Our decision was to aim at three items in each cell (84 total) with an approximate plus-minus balance within cells. Operationally, this was defined as making certain that no cell included all plus or all minus statements.³ Since the respondents in this study were to be committed professionals who were asked to respond to professional concerns of high interest to them and who were also above average in verbal skills and attention span, we expected to encounter little reliability loss attributed to sorting slightly more than an ideal number of statements.

The sample so chosen from a total of 271 items was assumed to include the elements essential for the conceptual underpinning of a rural development operation from any currently held perspective - thus also for defining the ideal, both in terms of (a) component elements and the configuration in which they exist, and (b) the conceptual combination in relation to the view-universe about rural development. Those chosen are enumerated in Table 1.

³Plus designations indicate features or conditions conducive to information generation distribution and use in rural development, i.e., to the operation of the system. Minus designations indicate conditions or features detrimental to the operation of the system; zero, those that are mainly neutral.

FIGURE 1. THE BALANCED BLOCK DESIGN MODEL FOR SELECTING RD STATEMENTS FOR THE Q-SORT

Elements	Functions						
	(a) Innovation	(b) Validation	(c) Dissemination	(d) Information	(e) Legitimation	(f) Integration	(g) Governance
(1) The rural development system	4*	4	4	4	4	4	4
(2) Procedure, process activities	4	4	4	4	4	4	4
(3) The rural development professional staff	4	4	4	4	4	4	4
(4) The users social system	4	4	4	4	4	4	4

*Number of statements chosen for each cell

TABLE 1. RURAL DEVELOPMENT VIEWS AND CONCEPTS ARRANGED
IN HIGH TO LOW ORDER IN ACCORD WITH THE
MRDP DIRECTORS RATING

Plus six (two statements)

- 11.* An objective of rural development extension should be to expand the capacity of the local people to generate part of the information to solve their own problems.
- 27.* The best way for universities to address rural development objectives is to set up organizational structures which can integrate knowledge and expertise across departments and divisions.

Plus five (four statements)

39. If a University is to serve the needs of rural development it's basic mission (teaching, research and extension) and its organization must be changed.
- 22.* If universities hope to maximize their contribution to development they must teach people to become generators of information as well as users of what others have developed.
- 29.* Assistance with problem-solving research should be a regularly provided service for rural development clients.
- 75.* In rural development the norm should be temporary assignment of the professional staff to problem-solving task forces as needed rather than employment of specialists in permanent rural development positions.

Plus four (five statements)

- 8.* It is imperative that subject matter specialists (both on and off campus) understand that they are a part of a continuing process of creating new knowledge.
- 84.* In rural development we simply have to believe and act as if there are local groups and organizations which provide appropriate entities for social planning and action.
- 15.* Rural development success should be assessed mostly in terms of putting in place an essential process, i.e., one that is constructive, comprehensive, inclusive and objective.
- 26.* The pipeline idea of extension was all right for disseminating agricultural technology, but it is inappropriate for rural development.

- 61.* The worst thing that could happen to rural development is to get it lodged in a single department or even a division within a university.

Plus three (seven statements)

- 23.* Research done on behalf of people in rural communities should take indigenous ways of doing things as its starting point.
79. If you have the right kind of person in charge, any rural development model will succeed.
- 51.* We need to develop new innovative institutional arrangements to help communities improve their ability to identify problems, evaluate alternatives and to arrive at workable solutions.
- 58.* In rural development there should be no attempt to encourage the acceptance of new ideas or knowledge before those to be affected are consulted about their suitability and utility.
- 65.* The central and perhaps the best measure of rural development success is whether the problems addressed were solved or not.
- 2.* In the real world, the dichotomy of applied and basic research makes no sense. In rural development, some basic research is useful and some applied research is not.
- 1.* Information generation for rural development must be based mostly on an on-going activity in which researchers, information specialists, extension workers, agency representatives and concerned persons jointly participate.

Plus two (eight statements)

- 32.* Rural development specialists ultimately must become advocates for the economically disadvantaged segments of the population, often intervening with them to solve their problems.
- 67.* One requirement for rural development is to have access to funds which can be used as seed money to encourage new experiments, the application of existing knowledge, and needed research.
60. Professionals in rural development have to be sensitive to and concerned about the way people make choices. As long as they are not in violation of the rights of others we must defer to them in addressing their concerns.
- 42.* The way issues are usually researched by academic departments in a fragmented manner creates problems for rural development. All of the pieces do not add up to the whole.

- 82.* Intended users of information or their elected representatives should sit on boards that decide on which research projects are to be funded and how the research results will be used.
- 19.* Extension specialists working in rural development should be evaluated on the basis of the same criteria as any other faculty. The opportunity for them to publish is equally good if not greater.
- 62.* For rural development the closer you can keep research, development and extension together the better. I suppose if you could have one person who could do it all that would be ideal.
- 66. When two kinds of knowledge come together, e.g., indigenous and professional, the objective in rural development specialists should be to work for a synthesis of the two rather than promoting the one they regard as superior.

Plus one (ten statements)

- 36.* One function of the university rural development program is to democratize knowledge, i.e., to make it equally available to every one. This includes being sensitive to the needs of people and developing knowledge suited to their needs.
- 46.* In the problem-solving context of rural development listening for the field staff is more important than telling. The volume of communication is more from client to the staff than the reverse.
- 20.* Rural development specialists should be sent to the field periodically for extended periods of time for re-education.
- 38.* One research objective in rural development should be to determine what can be substituted for costly crises as a means of making people aware of important community problems and a dedication to do something about them.
- 54.* An essential feature of any university based rural development program is an advisory board council to provide legitimacy for programs undertaken and participation of professionals in them.
- 10.* Although technical assistance of the university is necessary for rural development, most of the information needed must be generated locally in cooperation with users.
- 70.* In rural development, it is very important to increase the capacity of both clients and the rural development system to generate appropriate information and for its application.

52. Since some people don't recognize a problem until they experience its effects, one rural development objective might be to selectively promote situations where people can actually experience conditions like they might face such as in the energy shortage.
- 18.* The objective of research and extension in rural development should be to prepare locally validated solutions to problems that can be recommended to users.
- 69.* Any university associated rural development office should maintain only a small core staff whose primary purpose is to facilitate integration, coordination and application of existing effort rather than carrying out research and development programs of its own.

Zero (twelve statements)

- 64.* Rural development specialists are more likely to be at their best when they are examining problems than when they are trying to provide answers to them.
- 57.* One reason why valuable indigenous knowledge is crowded out on the local scene is that professionals, research workers, extension staff, planners and so-called experts--depend on professionals and agency knowledge to legitimate client dependency on them.
- 34.* In selecting community development projects on which to work the criterion of potential transferability of the knowledge developed should be a central concern.
- 43.* What rural development subject matter specialists need to know most is how to help people critically analyze situations and identify real problems.
63. The primary contribution of a rural development office should be to help pull together existing knowledge for use in addressing problems that arise in the country.
50. Use of information that has not been validated by science will in the long run destroy the credibility of the rural development efforts of a university.
3. Land-grant universities must anticipate and do the research needed to provide a factual basis for improved decision making in rural development.
- 5.* The scientific method is yet to be surpassed as a means for generating knowledge and searching for solutions to problems. The problem for rural development is how the method is generally used.

16. In generating new information for rural development "modern" science should replace indigenous beliefs as the standards by which it is developed and evaluated.
- 74.* Unless you really know what kinds of projects you are going to implement in the field, you cannot design an appropriate administrative structure.
- 24.* Information for non-scientist users should be generated and selected for distribution on the basis of indigenous definitions of what information is and how it should be generated.
- 17.* Adaptive testing of new information and technology that has here developed wholly or partly outside of the users own social system should be a joint activity in which researchers, extension workers and users participate as equals.

Minus one (ten statements)

- 40.* One mistake in rural development is an inclination to clearly distinguish what is useful information for users, rather than leaving them to discover this through informal learning.
- 76.* A little authoritarianism in extension work is needed, i.e., putting pressure on those who do not do what they are supposed to do.
78. Continuity is required in rural development. You've got to have someone constantly prodding and feeding in information and help from the university. You also need some prodding back at the university.
83. If there is no political commitment to rural development, there is little that communication strategies can accomplish.
- 21.* You really learn to do community development only by in-field experiences. You get advanced degrees only for the credentials.
- 30.* For rural development a lot of things have to happen. It isn't too important which you do first.
73. The whole rural development effort seems so uncoordinated you could not expect it to work. How can you expect it to accomplish anything without knowing who is responsible to whom?
- 12.* Involvement in problem-solving research has a worthwhile ritualistic value in community development much as dancing in tribal societies. It makes people feel better about the whole thing.
33. The notion of rural development specialists is inappropriate for a land-grant university because it suggests a body of substantive knowledge which does not exist.

81. Somebody has to be in charge so that everybody can recognize where the responsibility lies.

Minus two (eight statements)

- 59.* Legitimation of new knowledge for rural development is best accomplished through the application of indigenous standards of acceptability and suitability.
72. In rural development the key issue is to get as much as possible from the outside, rather than judicious use of locally available resources.
80. Until you have a clear national policy on what rural development should do and what its objectives are, not much progress can be expected.
71. After an innovation has been tested for local adaptability and found suitable in all essential respects, resolution of problems associated with using it locally should be left to the user.
13. A central function of a university associated rural development program is to test ideas, not to develop a geographic area or even formulate alternative models for development.
- 47.* Improve the general knowledge level of a people and quality of life issues will take care of themselves.
53. In rural development research done by professionals should be used to facilitate adoption processes rather than trying to achieve acceptance directly on the basis of the research done.
35. One requirement that should be built into any rural development program is that the local area or community should pay for the professional services rendered.

Minus three (seven statements)

49. The controversy on what information is and its utility can best be resolved by application of the rules of science.
56. Salaries and living conditions of the extension field staff must be improved with care to avoid feelings of superiority and differences in living conditions that in turn create friction between them and the local people.
44. The primary role of on-campus rural development specialists is to provide answers to problems that arise in the field.

- 68. Now that information development has become a specialized activity the field staff on the end of the delivery line must be subject matter specialists. Generalists of times past will no longer suffice.
- 45. One thing that rural development professionals have going for them is their superior knowledge. They should use the prestige that goes with it to teach information users the superiority of science based information over folk knowledge and practice.
- 41.* The inclination of rural development specialists to talk while clients listen, a game played by both, is necessary. Otherwise, people might complain that the specialists brought them nothing.
- 48. Once solutions to complex rural development programs are worked out in one place, they can be transferred to solve similar problems elsewhere.

Minus four (five statements)

- 14. All parties involved in rural development should remember that most of the information and technology they need comes from the basic science and the scientific method of generating it.
- 55. Just as farmers have sometimes said, a little education is OK but too much will ruin a boy for farming. In a like manner, too much schooling anywhere in the system (R.D. specialists or administrators) will create more trouble than help.
- 4. Rural development agencies have enough to do to use information already available. They had better leave research and surveys to researchers who are specialists in such matters.
- 7. The intent and purpose of rural development can best be served by leaving knowledge generation to researchers who are specialists in this matter.
- 25. If we ever expect to really get what the university has to offer to rural development used, we must put specialists in the field. We cannot rely on generalists.

Minus five (four statements)

- 28. When a subject matter specialist goes to the field he should go as an expert who has answers to problems or he/she shouldn't go.
- 31. If no supply of on-campus knowledge about rural development exists, there is nothing for extension to extend. University extension should be confined to areas where there is a substantive information base available from the university to extend.

6. Because there is so little known to extend in rural development it should not be regarded as part of extension.
9. With local matters as complicated as they are, planning is something that had best be left to professional planners.

Minus six (two statements)

37. The assumption that information from the University is directly usable for rural development is basically valid.
- 77.* What you need most in rural development are well formulated programs that are placed in the hands of administrators who are able to carry them out promptly. Most of the effort placed on educating and involving people is a waste of time.

*Items labeled by the director of the MRDP as basic to the proper operation of rural development information macrosystems.

Use of the theory-to-practice transformation continuum recognizes an inclination to use science-based information common to most sectors of society. This view is also included in the thinking of a number of students of rural development, who see much the same paradigm operative and functional in this area also (Moe, 1978). At the same time, this is not to deny the importance of indigenous knowledge or the methods by which it is generated and utilized in rural development. There are two places in particular where such knowledge is strongly at issue. The first is at the validation and legitimation function positions in the theory-to-practice continuum. At the validation function position, which is ideally a joint research-extension and user responsibility, the norms of indigenous knowledge operate to define what, from science-derived knowledge, is worth testing, to specify what adaptations are necessary, and finally, whether the knowledge formulated and tested meets local needs.

The second place at which indigenous knowledge enters is at the legitimation function where the norms specified by individuals for acceptance of an innovation prevails exclusively. This frequently includes a combination of local trial evidence, own participation in generating the innovation, and the judgement of trusted peers, which usually carries a strong component of indigenous knowledge. In any case local norms of what qualifies as acceptable knowledge is likely to prevail.

A problem-solving function was initially considered and quickly discarded when it was determined that it could easily be included under the integration function. Resolving rural development issues invariably requires the adaptation and combination of a variety of informational and other resource inputs.

A content or goal element was retained as one possible category until the final phases of the item selection process. There are many views about what rural development is--democratization of knowledge, expansion of the capacity of clients, jobs, improving agriculture, economic development, achieving equity, widening the range of choices for rural people, legitimation of local effort, i.e., credentialization, improving the general knowledge level of local people, solving problems, humanizing people, social change, and increasing the quality of life. All could not be included. An attempt to resolve the goal diversity including only those of a fundamental operational nature in so far as the rural-development-oriented information macrosystem is concerned. Of these social equity and "expansion of the capacity of clients" were prime examples. Most of the time, and most acceptable to the local power figures, rural development operates within the existing social system. In contrast, the social equity goal requires programs and procedures that question the legitimacy of the existing power structure and its elite representatives. But this more restricted definition of goals resulted in a very few suitable items in most of the cross-referenced cells. The goal or content classification was accordingly abandoned and the items contained therein were moved to system and process (mode of operation)

categories where they also fit. This resulted in the exclusion of no item regarded as essential to the informational generating and processing features of the system.

In the final analysis the issues of for whom the system works (i.e., for the "biggs" or the "littles" or what social class or category of people), and what goals should be stressed (attracting industry, increasing farm income, improving local living conditions, etc.), are matters of governance, in which people as users or potential users of the information should participate. Alternately, governance can be left to the devices of reseachers, extension workers, or even some level of government. Thus, with people participating in governance, rural development can be mostly of, by and for them.

An issue of what appropriate knowledge is and for whom was addressed by items selected for the information function and by indicators included in the validation and legitimation functions.

In general the bases on which statements were eliminated were:

1. Duplications in which items best suited were selected.
2. Items relating to specific goals of rural development.
3. Statements about what is wrong or right about land-grant universities and of education and educational institutions, generally.

Selection of the Key Concepts. If and as social inventions become institutionalized we may expect that those who are highly knowledgeable about them can quite clearly specify, from the comprehensive idea universe sample, those things that are central and necessary to its existence and operation. As the system and mode of operation become institutionalized a high degree of agreement among knowledgeable, as in the case of land-grant university concepts, might be expected (Lionberger, Pope and Reddy, 1979). In the absence of this type of institutionalization varying degrees of indecision about what is central and crucial, and therefore should be included, would be expected.

Thus it was from the idea universe sample our operationally designated innovator, (director of the Missouri rural development program) was intent on specifying how central he thought each of the concepts he identified were to the rural development effort rather than a clear cut and confident specification of what is in and what is not. Thus it would hardly be tenable to maintain that specifically designated items from the 84 item samples are indeed distinct and necessary as opposed to ideas and concepts that are not. The items labeled by the director as being in some degree in, are designated by asterisks on the attached Table 1.

Acceptance of the Participant Role

For a system of this type to work, some on-campus faculty who have resident teaching and research appointments only (under presently existing conditions) must be willing to serve on task forces needed to address problems that arise in the field and/or help define what these problems are. Secondly, the users of rural development services in the respective communities, must accept a type of service to which they have not been traditionally accustomed. This, of course, is not synonymous with acceptance of the new rural development model as such. Effective participation is not contingent on such acceptance.

To assess faculty acceptance of the new service role, those who had agreed to and were actively involved in rural development task forces during the past years, completed questionnaires. Most of them had been associated with projects concerned with a broad spectrum of issues ranging from school drop outs to soil fragipan problems directly related to growing grapes. The faculty involved were from the soil sciences, agronomy, plant pathology, entomology, rural sociology, agricultural economics, agricultural engineering, farm management, educational guidance, engineering, industrial education and agricultural journalism. They came from three University of Missouri campuses and many divisions therein.

Each faculty member was asked questions about how they became involved in the respective projects. They were also asked about their involvement, their reactions to their involvement, rewards they derived from participation, professionally and personally, whether they would become involved again, and finally the conditions under which they would do so.

Although reactions of the faculty, who refused to serve or who became so peripherally involved as not to become a matter of record in the respective project proceedings, would have added a desirable dimension to the faculty response, their identification did not prove to be feasible. Yet in another sense, their exclusion posed no serious analytical problem. One would never expect all faculty to become involved in such task force assignments. The central question was and remains, are there enough who would service the informational needs generated in the field and would they again become involved if requested to do so to sustain such an operation. There is the additional matter of whether those who become involved, perceive themselves as having been sufficiently rewarded to sustain their interest and participation.

Acceptance of the new type of participatory services by local people most centrally involved in their respective communities was assessed by relatively unstructured telephone interviews in which matters of participation in the project task forces, the help received from the university faculty, and the utility of the services rendered were ascertained. Although those included could in no sense be regarded as a

representative sample of the local people who became involved, some needed qualitative judgements about the program was possible.

5. STRUCTURE OF THE MISSOURI RURAL DEVELOPMENT SYSTEM

The structure of the organizational design consists of:

1. a relatively enduring tangible coordinating linking structure with its supporting-directing-legitimizing committees, and
2. a fluid and much less tangible network or professionals which form, disband and reform as the service needs evolve, flourish and wane. These two aspects are noted in turn.

The Relatively Permanent Coordinating and Linking Mechanism.

The Missouri Rural Development Office. The responsible operating unit of the Missouri Rural Development program was the Missouri Rural Development Office staffed by a director, an assistant and a secretary. Additional temporary clerical personnel was hired as needed. The staff was kept deliberately small to keep operational costs low and avoid threats to others that otherwise accrue from empire building. It stood as the functional and operational core of the organizational design. Officially, it was designated to carry out the Title V Rural Development program in Missouri and the Director was assigned as the program leader. In terms of the Office's relation to the Title V program, the primary responsibilities of the MRDO were to:

- a. set priorities for research and extension projects related to the Title V Rural Development objectives,
- b. initiate research and extension projects,
- c. establish working relationships with research and extension faculties and with rural communities,
- d. provide liaison between research and extension components of the Title V program (Gelfand, 1977).

In terms of organizational design, the major functions of the MRDO were broadly defined. Broadly speaking, this relatively permanent organizational unit was responsible for:

1. coordinating and integrating research and extension efforts in the land-grant university system for the purpose of addressing recurrent community social, economic and cultural problems (Hobbs, 1976), and

2. coordinating temporary task forces for helping to resolve them.

Structurally, the organizational arrangement of the MRDO was very innovative compared to most other states (Gelfand, 1977). Although the Office was located within the land-grant university system and appeared to be very similar to the organizational arrangements adopted elsewhere, it was unique in some respects. First of all, in addition to its position within the land-grant university institutional network, which permitted convenient access to the information resources and the extension system, the MRDO was placed at a position structurally independent of any academic division or department or even of a single campus. This meant easier access to the program for faculty members not related to the College of Agriculture and other colleges and universities in the State. In other states, the Title V Rural Development Office was positioned within a college of agriculture or an ongoing, affiliated research or extension program (Gelfand, 1977). This was a distinctive feature noted in the National Evaluation Report (Madden et al, 1977).

In this relatively autonomous position the MRDO operated under the general direction and guidance of:

1. an Executive Board
2. the State Rural Development Advisory Council and
3. the Coordination Committee.

These serve mostly as legitimating, facilitating, planning and policy forming agents within the broad context of what was permitted by the federal legislation.

The Executive Board The Executive Board was comprised of:

The Dean, of the College of Agriculture of the University of Missouri-Columbia.

The Dean, The College of Business and Public Administration, the University of Missouri-Columbia.

The Dean, The College of Home Economics, the University of Missouri-Columbia.

The Dean, The College of Public and Community Services, the University of Missouri-Columbia.

The Dean, The College of Engineering, the University of Missouri-Columbia.

The Dean of Extension, The University of Missouri-Columbia.

The Dean, The School of Engineering, the University of Missouri, Rolla campus.

The Dean of Extension, the University of Missouri, Rolla campus.

The Dean of Agriculture, Lincoln University.

The Assistant to the Vice President for Extension, the University of Missouri.

The Director of Extension Programs, University-wide Extension, University of Missouri.

According to the original formulation, the functions of this board were to:

- a. serve as the primary planning body with authority to implement plans,
- b. provide legitimacy for Missouri's experimental Title V Rural Development program, and
- c. determine program priorities and projects (Gelfand, 1977; Hobbs, 1979).

In practice, the Executive Board served mainly as the source of legitimacy for the projects recommended and conducted by the MRDO and for funding of project proposals. Although the Executive Board gave the MRDO and its program leader a relatively free hand to plan, recommend program priorities, and take major initiative for project identification and formulation, it responded to proposals and recommendations for priorities. Even though the support provided by the Executive Board was mainly symbolic, it was of vital importance when the experiment was still in its initial stages.

Although the role of the Executive Board in the daily operation of the MRDP was not particularly visible, some of the members of the Board--deans of various divisions in the land-grant university system--occasionally helped to make faculty members in their respective colleges or schools aware of opportunities for participating in MRDP projects. It could initiate policies to induce a more enthusiastic and wider faculty participation in the rural development projects. It also could assume an active part in planning and determining the program priorities, also to further institutionalize the program in the land-grant university system.

In recent years, the Board has tended to be more active in planning and in decision making, indicating the beginning of institutionalization. This may have occurred in response to the growing interest expressed by the faculty. On the other hand, it may have been a natural reaction to the increasingly favorable national recognition that the program

received. One member of the Board agreed that this did inspire the enthusiasm of the Board members.

The State Rural Development Advisory Council (SRDAC). This council was mandated by the Rural Development Act of 1972, which provided for Title V funds. It was composed of representatives from relevant government agencies such as the Missouri Division of Community Affairs, Missouri State Rural Development Committee, Missouri Association of Councils of Government (formally Regional Planning Commissions), Missouri Association of Counties; representatives from farming and from business organizations such as agribusiness and banking; and citizens representing the designated districts of the demonstration area, as well as deans of the engineering schools and college of agriculture on the Columbia and Rolla campuses.

The designated functions of the SRDAC were to:

1. help legitimize the experimental program in Missouri,
2. provide advice on program planning priorities, and decision-making, and
3. provide additional linkages between "the experiment" and the resources of the state and between the MRDO and the rural communities of the state.⁴

The SRDAC also served an additional important function of helping to legitimize the MRDP in Missouri. Such legitimation was indispensable for the success of the experiment among agencies, the University faculty and the public generally. It provided a mechanism for involving agents and agencies upon whose support the program was predicated.

In addition to its collective action, some members of the Council individually helped in linking the experimental projects with state and local resources and in providing the necessary bridges between the MRDO and local people and communities. Quite characteristic of the entire operation this was often done through the informal contacts they maintained with the director of the MDRP.

The Coordination Committee. The Coordination Committee was formed to facilitate access to appropriate faculty experts for the MRDO's projects and to provide coordination between the MRDO's rural development efforts and ongoing activities of the university. The committee was composed of:

⁴One of the most visible accomplishments of the Council was the selection of Meramec area as the demonstration site for the first rural development experiment.

The Associate Dean for Extension, The College of Agriculture, the University of Missouri-Columbia.

The Associate Dean for Extension, The College of Home Economics, the University of Missouri-Columbia.

The Associate Dean, The College of Public and Community Services, the University of Missouri-Columbia.

The Director, The Agricultural Experiment Station, the University of Missouri-Columbia.

The Assistant to the Vice President for Extension, the University of Missouri.

The Director of Extension Programs, University-wide Extension, the University of Missouri.

The Dean of Extension, Lincoln University.

Quite different from the members of the Executive Board, these people were very active in the day-to-day activities of their respective divisions and departments and thus were in a better position to coordinate the MRDO's experimental rural development programming effort with on-going efforts of their own academic or administrative divisions. The most important functions of the Committee were to assist the MRDO program leader to obtain faculty support from the respective university campuses, divisions and departments, and to avoid duplication and interference with the existing programs and efforts.

The Matter of Autonomy. There are four salient features of the relatively permanent coordinating and linking mechanism design of the MERDP that emerged from its relatively autonomous position with reference to resource systems:

1. it was located within the land-grant university institutional network, so that it had ready access to its informational resources and extension services;
2. it had administrative blessings to seek out appropriate faculty and recommend their assignment to task forces for specific rural development projects;
3. it was an extradepartmental and non-divisional unit relatively independent and autonomous from any academic division or department. Thus, it could interact with and draw support from faculty members across campus, divisional and departmental boundaries; and finally,

4. it functioned as a coordinating, linking and integrating mechanism within the land-grant university system and between that system and external support groups and agencies.

These features endowed the MRDO with a unique ability to draw upon resources anywhere within the system without constraints imposed by vested interests and operational features within the system and to avoid the reputation of empire building that often accrue to newly created organizations. The MRDO was also in a position to freely draw on agency and personal resources outside the university.

The Less Tangible Dynamic Network of Agencies and People

The informal networks among people, agencies and resource persons constituted the structure through which rural development objectives were generated, implemented and achieved. They were the source of popular support for the rural development effort.

The networks did not just happen. The ones that were operational were built and maintained. Others potentially useful were cultivated and ready for use, if and as needed. The network was punctuated by sociometric stars that multiplied access to resources and influence represented within the network.

The director and the specially constituted task forces provided the primary means for accessing this network to obtain needed information and services. The task force also became an instrument for expanding the network itself and accordingly the resources upon which the system could draw.

The Temporary Task Force Design. The task force design was the organizational feature most central for providing interdisciplinary information. In a broader sense, it was the central instrument for gaining access to other resources. It was the instrument through which integration of research and extension was accomplished. In a very real sense, task forces were mechanisms for overcoming integration problem difficulties created by the discipline-based structure of the university. In the absence of such a capability the university informational resource system would be at a loss to address complex local problems. In its broadest sense, the task force included all project participants, i.e., the network of clients, professionals and agency representatives. In a narrower sense, they included only the research and extension faculty who had the responsibility for generating and delivering interdisciplinary information to bear on the problem defined in each project. The more restricted membership of task forces was designated by the program director in collaboration with local leaders agency representatives, extension specialists, and on-campus faculty knowledgeable. The task forces themselves were:

1. problem directed and goal oriented,
2. usually composed of both research and extension faculty,
3. temporary in that they are disbanded when the task for which they were appointed has been completed,
4. composed of volunteers.

Although the use of task forces to deal with situations requiring multiple expertise is not new, an organizational design to integrate information fragments and coordinate research and extension efforts is not a regular feature of the land-grant university mode of operation. It indeed helps correct some of its dysfunctional features created by specialization along academic lines and the academic orientation of the entire system.

6. PROCESS CONSIDERATIONS (THE OPERATIONAL FEATURES OF THE SYSTEM)

Wong (1981) initially chose to discuss and analyze process features of the program under the following three headings:

1. the problem-solving aspect of the Missouri rural development program,
2. the active involvement of local people in defining problems, generating information and putting it to use,
3. the low in-field differentiation features of the information generation-distribution-use process--the generalist approach.

The Problem Solving Focus

Most of the working hours of the staff--provided when and as needed rather than on an 8-hour day, 5-day-per-week basis--was dedicated to anticipating informational needs, maintaining potential agency and personal networks upon which to draw, and to actually working on community problems. Projects were usually initiated after a need or problem had been communicated to the Missouri Rural Development Office, either directly by the people or indirectly via the University faculty. Most were generated by the former. This is not to imply that the MRDO was entirely inactive in identifying problems and generating locally felt needs for information and action. The process by which projects emerged and were carried to completion generally involved:

1. doing feasibility assessment to determine whether to proceed on a matter which had been brought to the attention of the office,

2. defining and/or clarifying the problem,
3. involving appropriate resource people (researchers, extension workers and local people and agency representatives) in the effort,
4. instituting an information retrieval and/or generation activity,
5. integrating information retrieved and/or generated into workable combinations for local use,
6. using follow-up with needed resources and information,
7. emphasising the involvement of local people and the use of local resources,
8. ultimate withdrawal of special university services from the project.

In the problem-solving context the problem is central. The procedure tends to insure that problems will be relatively well understood and pertinently addressed by all participants--researchers, extension workers and local people--and thus that the information generated will be useful for its intended purpose. This increases the probability that it will be used.

For researchers in the land-grant university setting, development of science-based knowledge rather than the problem often is central. Such a philosophy tends to assume that scientific information is likely to be ultimately and universally useful and that the major educational problem is to persuade potential users to use it. In contrast, the problem-oriented mode of operation tends to assume that information is useful and pertinent only in the context of solving specific problems.

Here the Holzner and Marx (1979) view seems to prevail. They hold that knowledge production and utilization operates within differentially structured social systems. It is assumed that some of it will be useful only to a particular group while for others information pertinent to the solution of their problems may not be available at all. It accordingly would have to be developed--at least in part--as the Missouri Rural Development Program generally assumes. It is in this sense, that the problem-oriented mode of operation represents a break with the research, development, and delivery mode.

Emphasis on People Participation

People participation is common to most extension teaching but not to the same extent as in rural development. The emphasis here is on what tends to be distinctive in the rural development setting.

Most of the local participants interviewed reported that they had been involved in identifying local problems and the needed information, in doing research to generate the information that was lacking, and in evaluating project outcomes. Some said that they also got involved in the decision-making processes, e.g., discussing issues; setting the objectives and determining the appropriate ways for implementing action programs. Most thought that the information they had helped generate was relevant to local needs and problems.

Perhaps no change strategy is more central to the success of action programs than the extensive involvement of the people affected in the planning, legitimation and execution of them (Morss et al, 1976; Mosher, 1976; Cohen and Uphoff, 1979). Such involvement:

1. builds commitment to programs undertaken and decisions made (Lewin, 1947),
2. facilitates the quality of decisions made,
3. makes precise pre-planning less necessary because interactive people participation exchange carries it's own self correcting potential,
4. provides prompt and effective feedback to all involved in the information generating-disseminating-use process and thus facilitates mutual understanding,
5. places clients in partial control of the information generation process otherwise labeled as elitist, "top down" and often actually inappropriate (Beltran, 1976; Bordenave, 1976; Roling, Ascroft and Wa Chege, 1976),
6. provides a vehicle for enhancing the ability of clients to identify and resolve their own problems, and
7. provides a setting for small scale social movements to emerge and flourish (Castle, 1977; Hobbs, 1980).

Thus, information generation-flow-use must be understood as a strategy for planned change as well as one for problem-solving (Havelock and Bennis, 1971; Rothman, 1974).⁵

⁵An action research group under the direction of the Rural Development Committee at Cornell University is in the process of defining the parameters within which people participation can be used as a change strategy and of finding better ways of doing it. Many of the results growing out of this effort are currently appearing in Rural Development PARTICIPATION Review, published by this Committee at Cornell University, Ithaca, NY.

Low In-field Functional Differentiation

Land-grant universities typically operate in a functionally and structurally differentiated manner. Research (the innovation function) is assigned to researchers, who are specialists. They do this in their own specialized subsystem. Extension (the dissemination function) is done mostly by extension workers who are specialists assigned to another semi-autonomous extension unit. Academic specialties lodged in disassociated administrative units (academic departments) cross-cut both the research and extension structures. Validation of new information and technology resides mostly with the experiment station where the research is done. Except for the academic specialty of farm management, a subdivision of agricultural economics, the integration function is mostly neglected or ignored.

The MRDO operation puts all of these activities back together again. Although researchers and extension workers continued mostly as specialized researchers and/or extension workers, they for a time joined local people and groups in the field to collectively select old and generate new information specifically suited to local needs.

The Grape Project is a good example. In this case, off-campus researchers from the Columbia and Rolla campuses of The University of Missouri, studied the problem of improving the quality and productivity of grapes in six Missouri vineyards. With the cooperation and active participation of the growers, the scientists from the relevant disciplines studied various aspects of the problem, clarified local informational needs, tested 18 grape varieties, experimented with local soil conditions and designed new irrigation methods. All of these activities were performed in the field. This is typical of the way information generation in other projects was handled. In this way researchers are able to gain a better understanding of local conditions and problems as they exist or emerge. This increases the capability of all participants for conceptualizing the problem in terms of the local perspective and for developing a clearer idea about its existing and likely informational needs. The importance of this joint activity can hardly be overstated (Powers, 1978).

In contrast to the traditional land-grant university mode of operation joint activity provides mechanisms:

1. for utilizing heretofore neglected indigenous knowledge and enhancing its importance in the whole scheme of things
2. for integrating fragmented knowledge from many academic disciplines into workable combinations to address local needs.

The problem of properly utilizing indigenous knowledge is addressed by including local knowledgeable on the project task forces to assess problem issues, identify information needed and make recommendations for getting it. Of necessity indigenous knowledge

impacts heavily on understanding local problems, local technological systems, and local cultural and socioeconomic conditions. Exogenous expertise is useful mostly as an input for developing locally relevant information and supplying some that might be.⁶

In a sense, indigenous knowledge becomes the final arbiter of what is acceptable and what is not.

The task force's utility as an integrating mechanism for information (also as a generator of the new) was apparent for 28 of the 30 rural development projects examined in this study. Here again the Grape Project serves as a good example. Before the project was started, the grape growers had contacted the subject matter specialists in the Meramec Extension Area for information to help them solve problems of improving the quality and quantity of grape production. However, they were frustrated by information fragments and the piecemeal manner of the services provided by the specialists. They were simultaneously discouraged by difficulties encountered in putting the information fragments together to attack the problems. At the same time, some faculty members on the University of Missouri - Rolla campus, realized the complexity of this problem and accordingly the need for interdisciplinary effort. But they did not have an appropriate operational format to coordinate the effort needed to generate interdisciplinary information needed for solving the problem and to provide continuing help to resolve others that emerged. It was not until the MRDO was established and became involved in providing a proper coordinating mechanisms for organizing an interdisciplinary task force that the problem was properly addressed.

The first step was to assemble faculties from 10 different academic disciplines whose expertise was presumed to be relevant to the problem and getting them involved in formal or semiformal meetings to discuss the nature of the problem (clarification of the problem). With the participation of the growers they identified 21 subproblems, classified into 4 categories:

1. Production--rootborer, irrigation, soil fragipan and soil profiling for new or additional vineyards, and optimal combination of agricultural and tillage practices.
2. Product Quality--quality of product (hybrids varieties), quality of processed products, legal and other limitations to expansion of processing and technical requirements for processing.

⁶Lindblom and Cohen (1979) contend that in social problem situations professional social science knowledge serves only to supplement ordinary (indigenous) knowledge. They further argue that ordinary knowledge is still the main source of professionally developed social science knowledge.

3. Economic and marketing--credit (financing for present and potential growers), potential long term demand for grape products, existing product outlets and alternatives, complementarity or compatability of the grape production activity with other farm and nonfarm enterprises in the area, transportation system and costs, and economics of grape technology generally.
4. Miscellaneous Issues--grower and processor cooperation, the proper place of grape production in relation to other development alternatives, soil elevation, slope and drainage for the vineyards, staying capacity of the grape industry in the Ozark area, and cultural problems including change in ethnic groups.

As we have noted, the information needed for helping to solve these problems came or evolved from the collaborative efforts of the task force members.

7. LEADERSHIP REQUIREMENTS

Leadership requirements are present in any organization designed to achieve specific objectives or goals. What the nature of these requirements are can probably best be understood in the situational context in which leadership is exercised (Gouldner, 1954). Hollander (1978) proposes that the inquiry as to what these are can be sharpened by:

1. specifying the situation in which leadership is exercised,
2. identifying tasks that are imposed, and
3. noting the leadership qualities that are required for performing them.

The Leadership Situation

In a sense, this has been detailed in the preceeding sections. Succinctly stated, the leader must operate in a relatively autonomous low power position in a general structural context of a public university where he, with very limited financial resources, must draw on personal, agency and university resources to achieve developmental goals that originate mostly outside his office. This office serves as an agent for accessing, coordinating, linking and integrating informational expertise and agency inputs to service the developmental or problem resolving needs that arise. For this, a network of interpersonal relationships that can be obligated if and as needed must be maintained.

The informational expertise upon which the leader must draw is often highly specialized and is usually the product of a highly differentiated system for information generation composed mostly of academic departments. Each department in a sense represents a unitary community of scientists and professionals governed mostly by a set of norms that emphasize autonomy and academic freedom. The faculty who occupy positions in the departments often have only teaching and research appointments. Their operational norms generally specify either a disregard for, or service to society at a level of academic abstraction that would not be regarded by the public as service. The fragmented on-campus information generating organization, ill suited to solving problems in the outside world of reality, is extended to the local community where it is expected to do so.

Functioning in the kind of organizational context described here, the program leader must rely heavily on informal and interpersonal relationships to solicit involvement in the projects rather than power exercised through formal administrative channels. To the last his office has limited access.

Tasks to be Performed

Tasks are determined mostly by the program's goals and mode of operation (Pettit, 1975). Title V of the Rural Development Act specifies that the rural development activity is expected to make University and agency resources more available for solving rural development problems (University of Missouri System, 1977). It is in the context of this broad direction that the Missouri Experimental Rural Development Program emerged and operates. Wong (1981) identified four major tasks that the leader must perform:

1. Interact with faculty and rural people in identifying problems that need to be addressed.
2. Recruit and coordinate the activities of appropriate faculty members and other resource people to serve on project task forces,
3. Bring agency resources to bear on the rural development projects. This assumes a linking role between rural people and government and private agencies of many kinds and levels as well as the university. It requires sustained interaction with agency representatives and sometimes writing program or research proposals on behalf of clientele groups.
4. Direct the day-to-day operation of the Missouri Rural Development Office, i.e., processing proposals and office reports and; supervising the core staff.

The subtle importance of maintaining an interpersonal network potential upon which resources can be drawn must not be overlooked. This requires sustained informal contacts with community leaders, university faculty and agency representatives at all levels of operation (local, state and national). This in turn envisions the formation and maintenance of obligated relationships upon which to draw if and as needed.

Appropriate Leadership Qualities

For attempting to define these, we drew mostly on an in-depth study of the characteristics of the innovator--the director of the Missouri Experimental Rural Development Program--as detailed by Wong (1981). We chose to conceptualize needed personal qualities under generalist, humanistic orientation, credibility and action-orientation headings.

Generalist Capability. The program director has to quickly establish procedures that will lead to understanding the complexity of variables (cultural, social, economic, political and technical) that operate and interrelate over time in problem or developmental situations that ebb and flow. This requires considerable prior knowledge of the variables that are likely to operate. The director must be sufficiently cognizant of academic specialties and what they can offer, to be able to detect where a particular academic input might be useful, to initiate contacts for obtaining this expertise and to facilitate its use once it is recruited. This must be done in a context of highly specialized persons and opinionated local citizens none of whom are likely to have the ability to put all of the needed inputs together or even the imagination of how this might be done.

In this context of general knowledge, there must also be an understanding of and an appreciation for process considerations, i.e., the dynamics of social change and of how to intervene and subtly direct them. Thus, the director must be a person that knows a great deal about a lot of things, who has ideas about how they can be put together and who has the ability to facilitate the interpersonal interaction required.

A Humanistic Orientation. The leader must have a genuine and abiding concern for people and their problems. Quite in accord with a central land-grant university concept, the leader must believe so much that there are extraordinary possibilities in ordinary people that it shows through in everything that he or she does and says. This kind of orientation tends to insure a continuing egalitarian stance at every juncture in the problem-solving process.

In the context of a situation where special interests of necessity are represented, often representing divergent views, the humanistic stance is probably the only one to which none can object and few can

argue. It provides an island of neutrality in an atmosphere of potential conflict around which all can comfortably rally.

Credibility. The person who occupies the rural development directorship position must relate both to the lay public and to academia. Credibility with both is required i.e., his or her own academic colleagues and off-campus people and agency representatives that constitute the consuming-helping public. In this context expertise and practicality are both important. To command the respect of academic colleagues one must have established a place in the profession through recognized scholarly achievement (expertise). The practicality component of credibility is especially important in the rural development setting. This is heavily contingent upon demonstrated ability to apply academic knowledge and vision across a broad spectrum of academic specialties. The faculty also respect this capability, which many have in short supply. Agency representatives, many of whom are products of the academic setting respect excellence, but for carrying out their respective agency assignments they know that they also must have someone who can facilitate its application.

An Action Orientation. Ability to apply academic knowledge to the action setting and a commitment to do so are necessary. Such an ability and orientation is generally lacking in academicians. They usually defer to academia and strive for recognition among their own colleagues. This is a natural consequence of doing what a faculty member is supposed to do (Havelock, 1971; Lionberger, Pope and Reddy, 1979). The norms of academia ordinarily do not encourage and reward an active involvement of academicians in solving the problems of people (who are non academics) much less deference to their needs.

There must be something in the personality of an individual that inclines him or her not only to a concern for people and their problems but also to becoming involved in doing something about it. To the extent that the views of our task force participants about rewards received are typical, little help in creating this quality can be expected from academia. Later we shall see that the faculty felt that their task force participation contributed little or nothing to their professional advancement.

But quite aside from how an action orientation is acquired and maintained--this when combined with a strongly held humanism quality provides an excellent personal ideology for the program directorship.

Toward a Specification of Credentials for the Directorship

First we briefly enumerate qualities that we think positively contributed to the director's leadership qualities. This is done under categories of prior socialization, formal education and occupational experience.

Characteristics of the MRDP Director as a Case in Point

Prior Socialization

On-farm childhood and boyhood experience in a rural community

Father's occupation as a farmers cooperative manager

Sustained participation in local and state activities and political campaigns

Active involvement in programs to help economically and socially disadvantaged people

Formal Education

BS degree in agriculture with a major in agricultural economics from an academic department recognized for its applied orientation

Undergraduate minors in psychology and statistics plus a broad range of supporting courses in the social sciences and communication skills

Graduate degrees in rural sociology from an academic department widely known for its emphasis on the application of sociological knowledge particularly communication and social change

Occupational Experience

Distinctive experience and leadership in a 10-county, extension sponsored, rural development project

Visiting professorships in prestigious rural sociology departments in the United States

Service as President, Vice President, elected Council member of the Rural Sociological Society

Continuing rural development and rural cooperative consultancies on behalf of diverse groups, agencies and governments, domestic and foreign

A teaching career in social change and development that attracted and favorably impressed U.S. and foreign graduate students who either already occupied or came to occupy leadership positions in government and private agencies

Chairman of the joint departments of General and Rural Sociology which greatly broadened interpersonal contacts with faculty and administrators in the Arts and Science College and The College of Agriculture and where influence more than power was necessary

Service on advisory and policy forming committees within the university system, the state, the nation and foreign governments

Service on numerous doctoral and masters committees in departments other than Rural Sociology

Involvement in developmental programs that created working relationships in the schools of Forestry, Medicine, Education and Public and Community Services

Work on task forces (state and national) involving such problems as re-organization of federal governmental agencies, youth unemployment, agriculture, aging, and public health

Frequent personal administrative and telephone contacts with agency personnel and administrators at all levels for obtaining and giving information and for exchanging opinions about matters of mutual concern; also for negotiation on behalf of developmental programs in process or contemplated

The broad educational background and action oriented work experience shaped the director's generalist and humanistic orientation. At the same time these equipped him with a capacity for effectively performing the functions imposed by the diverse situations encountered in the rural development setting. His rural background and experience increased his ability to speak the language of rural people, understand their problems, and facilitate community development processes.

The director's undergraduate and graduate training in the rural sociology and agricultural economics enabled him to relate well to other academicians, particularly those in the social sciences. A broad exposure to production agriculture, as a part of his undergraduate program, enabled him to understand the problems of rural people and rural communities, and to recognize the potential of many agricultural related academic disciplines for addressing these problems.

The director's credibility with the university faculty, the public, the agency representatives was achieved by a combination of demonstrated expertise as a rural sociologist and ability to relate the knowledge of many academic disciplines to the practical problems of society. Ability to use communication skills and social change strategies provided another important assist.

The director's capability in building an interagency interpersonal network is likely the product of his own personal qualities and work experience. These attributes permitted him to establish and maintain,

sometimes in latent form, a network of interpersonal relations upon which he could draw for idea exchange, resource acquisition and legitimating support.

His joint department chairmanship provided an opportunity to develop leadership and management skills needed to administer programs requiring use of diverse human and very limited financial resources. This required the development of skills in the use of influence in a mostly egalitarian setting rather than power.

Suggested Qualifications and Prospects

Throughout the study, the question of whether all of these qualities could be realistically expected in a single individual was repeatedly raised. Translated into the within state rural development setting the question became one of whether the success of the rural development program could be replicated without the charisma and supporting qualities of the particular director. Despite doubts expressed, the prevailing opinion was that although few in number, properly qualified professionals could be found. Our position is that the prospects for doing so would be increased by imposing the following requirements:

- On-farm and/or rural life experience
- College training in technical agriculture, the social sciences and communication skills
- PhD in rural sociology, agricultural economics, political science or community development with minors in one or more of the others
- Academically recognized expertise in one of above academic disciplines
- A college experience that exemplifies an interest and skill in working with people, in goal-oriented situations
- Occupational experience which shows ability to

Work in an adult educational or community developmental setting

Apply diverse academic knowledge to the resolution of complex problems

Exercise personal influence in an egalitarian setting

Establish and maintain an interpersonal network of obligated relationships

- A life history that demonstrates a commitment to helping others through volunteered effort and/or use of personal resources

8. THE CONCEPTUAL UNDERPINNING OF THE RURAL DEVELOPMENT INFORMATION MACROSYSTEM

We have examined the organization of the system (structure), how it operates (process) and its leadership requirements. Now we turn to the basic ideologies that specify how the system should operate and for whom. In emerging new systems and often also in the old ones such specifications exist only in the minds of those responsible for the system's operation. The focus here is on what the innovator (MRDO Director) thought. The cues came from the way he rated 84 views about rural development informational systems in a forced choice Q-sort format. This required placement of a few items in the strongly agree and strongly disagree positions with progressively more toward the middle neutral position. This, of course, required the rater to make judgements about the importance or unimportance of certain ideological features of the system and their inter-relationships.

Its Content

What then did the innovator - director's placement of these views reveal?

First and foremost, the rural development operation must build the capacity of local people to solve their own problems and thus become generators of locally usable information as well as users of what others have developed (11, 22, 70).⁷

This capacity building must take precedence over mere delivery of information. People accordingly must be helped to identify problems, evaluate alternatives and arrive at workable solutions (51). Thus, problem-solving becomes a vehicle for increasing this capacity.

The organizational context of the information macrosystem must be able to integrate fragmented knowledge and expertise across departmental and divisional lines. There must be a capability to combine expertise in ways that impinge on the multiple dimensions of problems. Herein lies the structural change challenge of the University. Thus any inclination to assign the rural development activity to a single academic department or division must be religiously avoided (61).

⁷The numbers in the parenthesis identify the statements as they are listed in Table 1).

The organizational norm should be temporary assignment of university faculty to task forces as needed, rather than employment of specialists in permanent positions to carry out rural development objectives. When the problem for which a task force was formed is resolved, the task force should be dismissed. Those involved revert back to their regular university assignments. Only a few staff members should be maintained to facilitate integration, coordination and application of existing knowledge. They should not develop and carry out research programs on their own. This in the university setting means that responsibility for rural development must be assumed mostly by the regularly appointed research extension and teaching faculty.

At the same time, the autonomous side of the university i.e., the part that pursues knowledge for knowledge's sake must be preserved (Castle, 1980). But when a university assumes a public service responsibility it is obligated to organize for that purpose. It must have the capacity to draw upon and integrate resources from its departments and divisions to help people achieve their goals while at the same time increase the people's capacity to do so. Herein resides the university's public service responsibility to rural development.

The traditional "people service" orientation of land-grant universities remains the central guiding principle (Lionberger, Pope and Reddy, 1979). The problem is that the people service mission is not taken seriously. Rural development oriented informational macrosystems must see that it is. This suggests that the research done must take indigenous ways of doing things as the starting point (23), that no attempt should be made to encourage the acceptance of new ideas or information before the people affected are consulted about its suitability (58). Communication should be more from the people to the faculty than the reverse (46). Furthermore, it must be interactive. This means that when one talks the other listens and in turn responds accordingly. The communication interaction stance must also carry over into the action taken.

Other requirements somewhat less urgent but important nevertheless, relate to matters of governance, resource allocation, and how to work at the local level. Although the key issue in rural development is not to get as much outside help as possible, ready access to limited resources to encourage local research experimentation and application of new knowledge to problem situations is needed (67). To insure that this activity is properly oriented to the intended information users they should participate in all operational decisions that impact on what is done on their behalf. This includes decisions on what research is to be funded and how the findings are to be used (82).

Elitist ideas of information, development and delivery must be strongly rejected. More specifically, rural development must proceed from a position that information developed at the university may not be directly usable (37), that external program planning and top down administration is not appropriate (77) and that planning should not be left

to professionals simply because they are assumed to be more competent than locals (9). Neither should subject matter specialists go to the field as experts (in a subject matter area) or not go at all (38, 45). Also, it should not be assumed that the interests of rural development can best be served by leaving knowledge generation to researchers who are specialists (7). Strong rejection of these views is equivalent to strong rejection of the "pipeline" notion of information, generation, development and delivery from extension as sometimes suggested because there is so little known to extend (6, 21). Its major contribution is putting in place a process that will help achieve the goals of clients and their coping capabilities.

The anti-pipeline idea of extension further holds that generalists, not narrowly trained specialists, are needed in the field if the university is to fulfill its mission of service to the public. With the greatly emphasized integration function, generalists are more able to help combine resources into a workable arrangement for locals (25, 68).

Discussion

Thus, with a central extension philosophy to help people increase their capacity to deal with problems, the land-grant university "service to people" philosophy remains alive and well. This requires that its information development and delivery capabilities differentiated along functional and academic lines be brought together again in an interactive trio among information developers (researchers), information users and extension workers.

Although achievements in rural development tend to be assessed mainly in terms of success in resolving problems, the problem-solving activity is first and foremost a mechanism for building the problem-solving capacity of people. Although in this, the means (process by which it is done) seems to take precedence over ends (problems solved), it is possible that the joint activity provides an ideal setting for both

1. solving problems, and
2. increasing the capacity of locals to solve their own problems.

It also puts in place a ready-made mechanism for successfully addressing important issues that subsequently arise.

Implications

Why the lengthy ritual for defining underlying philosophies and/or operational concepts of a social system such as this one. In view of the time and effort required there needs to be a good answer.

Perhaps most fundamentally this ideational underpinning provides the evaluative framework from which system and operational decisions proceed. It specifies the ethos of what rural development information macrosystem ought to be and do. Q-methodology provides a means of defining and ordering the ethos and peripheral components of its content. In addition to the evaluative part of the ideational component, it is also possible to specify what the key built-in concepts are. The operational blueprint will then begin to emerge in its most fundamental form. Perhaps there is no way of specifying more with fewer words about what the fundamental nature of a complex social invention like an information macrosystem is, than by precisely defining what their concepts are and how they fit into the larger idea structure (in this case concerning rural development) of which they are necessarily a part and to which they must relate.

It is likely that we can only approximate what the concepts are in the early stages of the institutionalization of new social systems. But at the same time, Q-methodology provides a means of facilitating the definition process. It permits an assessment of how the ethos is being defined and the unanimity with which it is held. In the absence of such a unanimity of views an assessment of emerging schools of thought in relation thereto can be defined. This is the subject of a current study of views about rural development informational systems held by rural development system knowledgeable in the United States.

9. PARTICIPANTS AS ADOPTER CLIENTELES

For all innovations there are potential adopters, of the innovation itself or of the resulting changes that it requires. So it is for systems to generate and utilize science-based information and the roles people must play to make the system work. For the new rural development system there were university administrators, local people as users, and the campus-based faculty who were asked to volunteer their services on behalf of the program. The faculty had to accept new helping roles and users had to accept new roles and services to which they were not accustomed.

In a sense, deans of university divisions and university presidents were coopted by involving them in the developmental, advisory, policy and administrative decisions that had to be made. Any systematic assessment of administrators acceptance of such a model as the one developed here would have to transcend the Missouri setting. Attention is here focused on faculty and participant acceptance of new roles necessary to make the system work and on acceptance of location specific modes of generating information by local people.

The Campus Based Faculty

The faculty who had participated in one or more of 30 rural development projects were asked to indicate their:

1. reasons for becoming involved in the programs,
2. satisfactions from participating in them, and
3. willingness to become involved again on a volunteer basis.

Discussion of the responses follows.

Reasons for Becoming Involved. As previous studies have suggested, social responsibility and humanitarian concerns of the involved faculty are very strong motivating forces for accepting "people service" assignments (Havelock, 1971; Holzner and Marx, 1979; Lionberger and Cheng, 1980). Thus it was with faculty task force involvements here. "Desire to make what I know useful to people" was the most highly rated reason; 72.1% of the faculty participants rated it in the "much or very important" category (See Table 2). The percentage was a little higher for those with extension than with teaching and research appointments only. Next in rank were "Opportunity to become involved in developmental work" (47.5% much or very important) and "Opportunity to learn more about how knowledge in my own academic discipline can be used to help people" (44.3% much or very important). Again those who had extension appointments were more inclined, compared with those who had no such appointments, to rate these reasons in the "much or very much" importance categories. It is significant that all of the foregoing reasons were of basically a "help people" nature.

"Getting ideas about problems in the field to investigate" and "opportunity to work with faculty in other academic disciplines" also had considerable appeal. Almost 38% rated the first as being of "much or very much" importance and 36.1% the last. Opportunity provided to do research and publish had the designated strong appeal to only about one fourth (24.2%) of the teaching and research appointed faculty. Almost 40% of the teaching and research faculty said it had little or no appeal. The comparable percentages for the extension faculty was 67.9 (Wong, 1981, p. 144).

The least attractive incentive was "opportunity to work with graduate students". Slightly more than 62% of the faculty considered it of little or no importance. But since students were not involved in most projects the relevance of the response was problematic.

TABLE 2. PERCENT OF FACULTY RATING DESIGNATED REASONS FOR BECOMING INVOLVED IN RURAL DEVELOPMENT TASK FORCES AS BEING OF MUCH OR VERY MUCH IMPORTANCE CLASSIFIED BY TYPE OF APPOINTMENT

Major Reason for Accepting the Task Force Assignment	All Task Force Participants (%) (N=61)	Type of University Appointment	
		Some Extension (%) (N=28)	Teaching and Research (%) (N=33)
Desire to make what I know useful to people	72.1	75.0	69.6
Opportunity to become involved in developmental work	47.5	53.6	42.3
Opportunity to learn more about how knowledge in my academic specialty would fit in	44.3	50.0	39.4
Get ideas about problems in the field that I may investigate	37.7	35.7	39.3
Opportunity to work with faculty in other academic disciplines	36.1	32.1	39.4
An invitation to become involved	31.2	28.5	33.4
Its part of my job	31.1	39.3	24.3
Opportunity to do research and publish	16.4	7.1	24.2
Opportunity to work with graduate students	13.1	17.8	9.1

Satisfactions and Perceived Rewards. For all, rewards of an unofficial nature were important. But for those who had only teaching and research appointments it was essential. Unlike the extension faculty, service on a task force was not an officially assigned responsibility. Any hope for their continued involvement had to be predicated either on satisfactions that made involvement seem worthwhile or on the fulfillment of previously incurred personal obligations to the director who requested the help. Only the first is likely to remain a strong motivating force over time. What then were the rewards, if any, that accrued to the participating faculty.

First we note from Table 3, that the appeal of personal satisfactions exceeded many times over the prospects for professional advancement as a reward for task force participation. This differential was even greater for the faculty with extension appointments than for those with research and teaching appointments only. "Opportunity to help people with their problems" topped the "much or very much personal satisfaction" list. Much the same theme was evident in those that followed. In descending order they were:

<u>Opportunity to help people with their problems</u> (About the same for both extension and non-extension appointed)	67.2%
<u>The people I am associated with</u> (nearly equal for both)	59.0%
<u>Opportunity to try out some of my ideas</u> (much higher for the extension appointees)	50.9%
<u>Learn more about how knowledge in my academic discipline can be applied to real problems outside of academia</u> (a little higher for those in extension)	50.8%
<u>Opportunity to become involved in development work</u> (much the same for both)	48.9%
<u>Opportunity to work with colleagues in other academic disciplines</u> (much the same for both)	44.2%

TABLE 3. AMOUNT AND KIND OF REWARDS THAT THE FACULTY THOUGHT THEY RECEIVED FROM PARTICIPATING IN RURAL DEVELOPMENT TASK FORCES CLASSIFIED BY TYPE OF APPOINTMENT

Kind of Reward (type of appointment)	Amount of Reward They Thought They Received			
	Total (%)	Little or none (%)	Some (%)	Much or Very Much (%)
Personal satisfaction (all)	100.0	9.9	31.1	59.0
some extension	100.0	7.2	25.0	67.8
teaching & research only	100.0	12.1	36.4	51.5
Increased prospects for professional advancement(all)	100.0	59.0	24.6	16.4
some extension	100.0	64.3	25.0	10.7
teaching & research only	100.0	54.5	24.2	21.3

Thus, knowledge application in an interdisciplinary, help people, developmental setting provided the context for obtaining highest personal satisfactions.

Matters having to do with research and publication opportunities were rated universally low, (40 to 50% in the "little or no satisfaction" column and less than 12% on the "much or very much"). The great priority of personal satisfaction over professional advancement as a reward for participation was further indicated by how little they saw their high priority satisfaction sources contributing to prospects for professional advancement (Wong, 1981, pp. 155-156).

Willingness to Participate Again. For many of the involved faculty much time and effort was required to participate. For those with only teaching and research assignments, this was in addition to already officially prescribed duties.

Perhaps the most crucial acceptance question for the campus based faculty was "would you become involved again if requested to do so?" To this over 70% said "yes" and imposed no condition; 18.0% said yes with

conditions attached. Only 4.9% expressed unwillingness to become involved again.

Conditions Posed. At the top of the conditions list (49.2%) was "request or invitation from the MRDO director." The percentage for those with extension appointments (50.8%) was only slightly higher than for those with other appointments (48.5%) (see Table 4).⁸

The condition second in line was "request from the people" (39.3%); 32.1% for those with extension appointments and 45.5% for those with only teaching and research appointments gave this reply.

Third was "approval and encouragement from my superior." Presumably in most cases, this would be the department chairperson. About 31% of them gave this response. Percentages were somewhat higher for the extension appointed faculty than for others.

Next in order were:

prospects for a salary increase or promotion	21.3%
prospects for publication in an academic journal	19.7%
some relief from other duties	18.8%

The extension appointed faculty were somewhat more concerned with relief from other duties and salary increase than their teaching and research counterparts. In contrast the later were understandably much more concerned with prospects for publication in academic journals (See Table 4). Finally a few would like to have additional clarification about what is expected of them as a condition for accepting another task force assignment.

Understandably over half (53%) of the extension faculty would say "no conditions imposed because it is part of my job." What is surprising is that 36.4% of the teaching and research faculty responded likewise. This suggests that the task force participants were well socialized into the land-grant university view that "all faculty have extension responsibilities."

Fulfillment of obligations incurred either to a cause or to a person as a reason for participation should not be overlooked. The "research

⁸All of the participating faculty responded to the "conditions imposed" question. Even though over 70 percent stated that they would not impose any condition for farther involvement, their responses suggested conditions that may make the faculty more willing to participate in the program on a long term basis.

TABLE 4. PERCENT OF TASK FORCE INVOLVED FACULTY
CLASSIFIED BY CONDITIONS SPECIFIED FOR
FUTURE INVOLVEMENT AND TYPE OF
APPOINTMENT

Condition Specified for Future Involvement	Type of Appointment		
	Total % (N=61)	Some Extension % (N=28)	Teaching & Research & Only (N=33)
None, its part of my job	44.3	53.6	36.4
Request or invitation from the RD Director	49.2	50.0	48.5
Request from people	39.3	32.1	45.5
Some relief from other duties	18.0	21.4	15.2
Offer prospect for publication in academic journal	19.7	7.1	30.3
A different task force	4.9	0.0	9.1
Clearer specification of what is wanted	9.8	10.7	9.1
Someone clearly in charge of operation	14.8	14.3	15.2
Approval and encouragement from our superior	31.1	35.1	27.2
Potential salary increase or promotion	21.3	17.9	24.2

and teaching only" faculty who said that serving on the task forces is part of their jobs, must be doing so out of a sense of service responsibility to the public. Although a majority of them (54.0%) did not see their task force involvement as personally beneficial to them, and it was not part of their officially assigned responsibility, 42.6% nevertheless felt that they would be obligated to participate again if asked to do so. The "being asked" as a condition for participation suggests the importance of obligations to the director as a reason. This, as a reason, was cited with about equal frequency for both the extension and non-extension faculty. But the proportion who saw no personal gain in task force involvement was much higher for those with research and teaching appointments only, than for those who had some official extension responsibilities.

We can only speculate about obligated relationships as a reason for participation. But it is significant that it appeared with considerable frequency as a condition. It suggests that in personally obligated relationships situations such a request may be sufficient to gain recruits. It also poses questions about how the obligated relationships can be formed and maintained.

Local People as Participants

Another adopter clientele for rural development programming are the people who are presumed to be the recipients of the services rendered. True, they were only being asked to participate in a joint effort in which they as local community members would be expected to benefit. But at the same time they are being asked to accept a service that is different from that generally offered by the Cooperative Extension Service. Instead of being passive recipients of services, they were asked to become active participants in an on-going information generating, problem-solving activity.

They were expected to:

1. provide indigenous information for defining, clarifying and ultimately solving local problems,
2. assume a major role in maintaining a central focus on the problem in whatever is done,
3. provide quick and accurate feedback on local reactions to what is being done or proposed,
4. develop and maintain a sufficient understanding of the problem-solving, information-generating process to maintain some influence and control over both the process and outcomes, and finally

5. increase their own capability to deal with issues requiring much the same process.

The reactions of local program participants were very favorable. Most reported that they had participated in identifying the problems and needed information, doing research to generate the information, and evaluating the project outcomes. Some said that they also got involved in the decision-making phase of the projects, e.g., attending meetings about issues such as formulating objectives of the projects and making decisions on how to carry them out. Many thought that local people, as information users, had some influences on these matters. On the whole, the local participants' reactions to their participation experiences were positive and their attitudes enthusiastic. Most also thought that the information generated by their joint effort was relevant and pertinent to the problems specified and useful for their solution.

10. AN EMERGING NEW MODEL FOR ACHIEVING THE OLD PEOPLE SERVICE IDEAL

In their long history of adjustments to fulfill mandated people service objectives, land-grant universities were and are being called upon to address the informational needs of an increasingly diverse clientele. For many types of problems and groups, the initially devised mode of information development and delivery will not suffice. New models had to be found or adjustments made. Even so, the traditional land-grant system remains very well suited to providing usable new technology and meeting many technical informational needs of many people. There will always be those who want answers to questions and immediately usable information. The traditional develop-transform-and-deliver model has and surely will continue to make a substantial contribution to this general need. Agriculture and medicine are cases in point. But informational deficiency problems tend to arise where:

1. the information available from the research source is either not suited for direct local use or simply is not available,
2. potential users don't know what questions to ask and accordingly may ask the wrong ones,
3. professionals have only limited knowledge of the local situation and the informational needs of the potential users, and
4. all parties involved (researchers, extension workers and users) find it difficult to communicate with each other.

A promising new model for addressing such informational needs seems to have emerged and to have demonstrated its utility in the rural development context of which the Missouri system is an example. Similar models seem to have been emerging elsewhere (in rural

development) in the U.S. and in some third world agricultural situations where informational need conditions approximate those of rural development in Missouri (Hildebrand, 1977; Gostyla and Whyte, 1980; Whyte, 1981).

The Missouri Rural Development Program was chosen as an appropriate study site and vehicle for examining a model which is presumed to have application beyond the substantive area of rural development and to places other than Missouri.

Quite typical of all purposive organizational arrangement there was a need to observe the system's:

1. organizational structure
2. mode of operation (process considerations) and
3. normative nature, i.e., the rules by which it is operated and for whom.

As for all systems with a capacity to generate transform and disseminate science based information this one had to:

1. have a capability to operate along a science theory-to-practice continuum (Lionberger and Gwin, 1982; Lionberger, 1982), and
2. be able to perform the functions necessary to make this possible.

These were presumed to be:

1. Innovation function - generating new information and technology.
2. Validation - testing the new information and technology for local adaptability and suitability.
3. Dissemination - getting it disseminated to users.
4. Information - helping potential users become informed about what is new.
5. Persuasion - helping potential adopters become persuaded to accept or use the information.
6. Integration - fitting the new information or technology into the users own social system to achieve their own goals.
7. Governance - exercising some purposive control over and/or direction of the developmental - use sequence of activities.

This general conceptual scheme was assumed to provide a sufficient basis for specifying what is unique, central and crucial about any information macrosystem and for defining how it should operate.

Salient Features

What then are the salient features of this new informational macrosystem for rural development? Is it run by a new and distinct set of rules? Is it organizationally and procedurally different from what has come to be referred to as the traditional land-grant model? Most of all is it sufficiently different to be labeled a new model for information, generation and use or is it mostly an improvement of an old one? These are questions addressed in this section.

A new invention or an improved old one? This question remained basically unanswered until most of the facts were in. Since rural development in Missouri remains associated with its land-grant university base upon which it continues to draw heavily, for specialty information and expertise, we think it can be more properly thought of as a new kind of interface (improving invention) between the university informational and user social systems than as an alternative model (to land-grant university) for information generation and use. The research, development and delivery capability of the university remains and continues to operate. The university appointed faculty who take temporary assignments to participate in specially constituted problem-solving task forces remain attached to their respective academic departments. By design and necessity, they continue to be mostly dedicated to their officially assigned teaching, research and extension duties. Even so, there are marked differences between the way the traditional system alone and the old system with the added interface works. Some of the more salient differences and some of the centrally important similarities are listed in Table 5.

Implications

For Servicing New Informational Needs. What then may we expect from a new interface between the information user and the university resource system attached to land-grant university system that operates along research, development and delivery lines? First it has the advantage of leaving intact a highly specialized system very well suited to the extension of basic science knowledge and the academic support structure that provides a reason for extending the frontiers of academic knowledge. It provides acceptable rewards to scientists for contributing to basic science knowledge. The reference groups that form outside of academia provide rewards for doing associated applied research (Lionberger, Pope and Reddy, 1979). This, the research and development part of the university system, is capable of developing locally validated information of a directly applicable nature.

TABLE 5. SALIENT FEATURES OF THE TRADITIONAL
LAND-GRANT UNIVERSITY AND RURAL DEVELOPMENT
MODES OF INFORMATION GENERATION AND USE

TRADITIONAL L.G. UNIVERSITY FEATURE	RURAL DEVELOPMENT FEATURE
Structural Features	
High functional differentiation and specialization for information development (research) and delivery (extension)	Little functional differentiation and specialization
Innovation function assigned to an on-campus subsystem (Experiment Station). The dissemination function assigned to a specialized extension subsystem manned by specialists (the Cooperative Extension Service)	Information generation, validation and dissemination a joint responsibility of researchers, extension workers and information users
Linking responsibilities largely restricted to the Extension Service	Linking relationships extended to support and supply agencies, local leaders and academicians
Integration function responsibility neglected or left to integrative kinds of academic disciplines, e.g., farm management	Integration function assumed as a central system responsibility
Positions, duties, responsibilities and relationships specified and adhered to	Mostly an informal network of persons and agency representatives
Extends the highly differentiated generating organization in straight line fashion, through information delivery to the field	Builds features into the development and delivery systems to integrate information and services

 Operational Features

Information development and delivery separate operations but linked

Information development and delivery combined with user help to achieve their goals

Emphasize generating and delivering answers to questions that people raise or having them ready to deliver when they do

Emphasize bringing university resources to bear on problems that people have

Clients mostly individuals

Clients mostly aggregates of people, e.g., communities, schools acting collectively

Integration of inputs left mostly to the user

Integration of informational inputs and inter-agency linkages emphasized

Concern mostly with production agriculture and home science

Concerned with all aspects of rural life - economic, social, cultural, environmental and political

Participation of people mostly limited to prescribed roles

Relatively unrestricted people participation in all aspects of information generation and use

 Normative Features

Differences

Inclination to believe and act as if research based knowledge is superior to indigenous knowledge

Indigenous knowledge respected and used as a necessary input into the solution of local problems

University generated and locality tested information assumed to be directly usable	Further adaptation is required as necessary before local use
--	--

Place specialists in the field as university representatives	Place generalists in the field as professionals in first contact with people
--	--

Maintain a permanent staff of capable researchers and extension workers	Use regularly appointed faculty to serve on temporary task forces, if and as needed
---	---

Shared Philosophies

That there are extraordinary possibilities in ordinary people

Building the capacity of people to solve their own problems is a central extension objective

Relationships with clients should be egalitarian and interactive rather than "tell and sell"

Opportunity to help people with their problems seen as the chief reward for extension participation

*Philosophies reflected in the organizational and operational features of the two systems are not again listed.

The new interface leaves the more traditional part of the university free for information development and delivery to specific user clienteles who want immediate answers to their questions.

At the same time the new interface provides a means for generating and supplying information where:

1. specialty bits and pieces of information do not fit existing information needs,
2. no one seems quite to know what the problems and alternatives are, let alone the informational resources that might apply,
3. many informational inputs must be used to address specific needs, or
4. some of the information needed must be generated locally.

If land-grant universities are to fulfill their service mission to people for needed information in situations of this kind, the new linking arrangement is essential. At the same time it would be highly improper to use all university resources to generate location specific knowledge particularly when the prospects for applying it elsewhere are low.

Together the traditional research, development and delivery capability plus the functionally undifferentiated interface provides the university with a capability to:

1. anticipate and provide answers to many questions that people ask
2. bring informational resources to bear on solving the ones for which there is no ready answers, and
3. retrieve and appropriately consider indigenous knowledge in the information generating and use processes.

Surely this combination approaches the ultimate for an information macrosystem with maximum capability for servicing the informational needs of the public.

In the comprehensive scheme presented here the frontiers of basic science knowledge must continue to be extended even though it may at times appear to have no immediate practical use. Research must not be downgraded just because it doesn't seem to be immediately useful. With most scientists of the world now living and working in universities and likely to continue, surely universities are appropriate sites for doing this type of research (Havelock, 1971). With applied research and extension added a capability is created to translate some of the basic science knowledge generated into useable practice and to deliver it to users.

The task forces of the new operation draws upon the expertise of academia to solve problems without greatly diminishing the university's capability to generate basic science knowledge upon which much applied knowledge must draw. At the same time it provides a mechanism for generating new location specific information and for getting both the new and the old adapted to the solution of practical problems quickly. The temporary task force is accordingly very well suited to performing the commonly neglected integration function, i.e., getting the informational inputs built into user plans for their goal achievement plans.

The task force approach also reduces the need for precise prior planning before starting to work. The interactive mix of professionals and lay persons provides its own built-in self correcting mechanisms. Questions can be asked about matters not understood and to the extent that actions already taken do not preclude changes in courses of action, corrections can be made. This means precision in advanced planning is less necessary. Additionally, people participation enhances commitment to a cause.

The task force provides a nuclei for action that tends to activate the multiply effects of interpersonal networks of people who talk to and influence each other. At the same time, the faculty are provided with a mechanism to use their knowledge to help people. Apparently many have a desire to do this and in turn find this type of activity very rewarding.

Implementating the Model Within the Existing Land-Grant University System. Here elements of compatibility and feasibility apply (Rogers and Shoemaker, 1971). The first poses questions of how well the new interface fits into or as a minimum is not contrary to the existing system to generate and supply specialty information to people. The second relates matters of practicality for introducing such a system.

Compatability Considerations. The underlying philosophy of the new interface, we have seen, is merely an extension of the basic land-grant university philosophy (Lionberger, Pope and Reddy, 1979). It offers no challenge to the basic land-grant philosophy other than to make it work better.⁹

The predominant "capacity building of people" orientation of the Missouri Rural Development Program is an extension of a central land-grant university concept; namely, that there are extra-ordinary possibilities in ordinary people. This presupposes a belief in their ability to solve their own problems (Lionberger, Pope and Reddy, 1979). The program's philosophy of service to the people is also compatible with the strongly held view that a university should first of all be a sanctuary for

⁹If there exists an incompatibility problems it most likely resides in an understanding of what basic land-grant university concepts really are and an appreciation of their significance by system decision makers.

the greatest diversity of thought, the freest exchange of ideas, the most painstaking search for truth and thus be a repository of scientific knowledge second to none.

The problem-solving emphasis of the program is compatible with the traditional mode of information development and delivery. Actually, the last turns out to be more interactive and egalitarian and thus less "pipeline" and "hard sell" than some critics would have us believe (Lionberger and Cheng, 1982).

The new interface is in addition to the more direct "develop, transform and delivery" operational mode that continues to perform a useful service to clientele wanting information and answers to specific questions. The new interface allows the university resource system to address informational needs of people not otherwise served. Neither interface can substitute for the other. The new one draws very heavily on the more traditional system for most of its needed expertise and services. The two compete with each other only for funds. Even here competition involves only a matter of management.

Some faculty have feared that a highly process-oriented extension operation that emphasizes maximum participation of people and their ultimate assumption of program responsibility would not create loyal clientele who are willing to come to the aid of the Service in times of need. This seems to have been unfounded. Supportive clientele seem to emerge and persist as in agriculture where clientele seek and know they receive information that they can use.

But there are system resource differences that make for incompatibility. Some of the faculty have to do things they have not done before and for which they are not well trained.

Subject matter specialists are required to operate somewhat as generalists in interactive group situations. They have to learn how to adapt their specialty information to situations where specialty informational inputs must be combined, often with difficulty. However the Missouri experience shows that some academic specialists can make this adjustment and like it well enough to try again given an opportunity to do so. Such an approach further implies the need for working with people in groups. But again this is not novel to extension in Missouri (Lionberger and Wong, 1981).

Within the system and hopefully in the directorship itself there must be a high interpersonal, interagency network capacity. But again clientele in community development and even agriculture are so diverse and interactive that it is difficult to determine who is information receiver and who is information donor (Lionberger and Cheng, 1982). Thus again the MRDO does little more than systematize and enhance the informal network capacity of the system upon which both heavily depend. Thus, problems of compatibility with existing systems (not

necessarily of boundary maintenance prone administrators) would seem to be small indeed.

Feasibility Considerations. But feasibility poses different issues. It's concern is with the appropriateness of what is being proposed. Human and financial resource issues thus come to the fore; also the matters of restructuring faculty roles and within system rewards. If even a small fraction of the problems of a collective nature that people in the state have, were to surface (or would be made to surface by techniques well known to extension) the demands on faculty time would exceed that which is immediately available. Already many faculty participate on an overload, no extra pay basis. Also many of the teaching and research staff have no official ties to extension. But again joint extension appointments are not new to the University.

Nevertheless getting resources to support the needed extra staff is a problem that would have to be seriously considered. On the other hand, returns to people in the state could be enormous. In fact, realization of the university's potential for public service is not possible without this type of interface. Its' potential for service to people, which has never yet been approached (Sower, 1962), is much more limited by the imagination and ingenuity of the faculty and people of the State than the capability of the system itself.

If the extension activity is able to realize its central goal of increasing the capacity of people to solve their own problems what they are called upon to do may ultimately be decreased. This, of course, has to be weighed against the tendency for problems identified to increase as people develop a faculty for recognizing them. But in any case increased capacity of people to recognize and solve their own problems and the multiplying effect of people participation which extension greatly stresses can result in local life quality improvement increments that far exceeds the profession resource inputs that are expended.

REFERENCES

- Anderson, Lester (ed.)
 1976 Land-Grant University and Their Continuing Challenges. East Lansing, Michigan: Michigan State University Press.
- Ashby, Eviz
 1974 Adapting Universities to a Technological Society. San Francisco: Jossey-Bass Publishers.
- Barnett, Homer G.
 1953 Innovation: The Basis of Cultural Change. New York: McGraw-Hill.
- Beal, Lucrece
 1979 People to People: The Role of State and Land-Grant Universities in Modern America. Washington, DC: National Assoc. of State and Land-Grant Colleges.
- Beltran, Luis Ramiro
 1976 "Research ideologies in conflict", in Journal of Communication, 25:187-193.
- Benor, Daniel and James Harrison
 1977 Agricultural Extension: The Training and Visit System. Washington, DC: World Bank.
- Bentley, Orville G.
 1973 "National outlook and perspective." Pp. 3-9 in Larry R. Whiting (ed.) Rural Development: Research Priorities. Iowa: The Iowa State University Press.
- Blakely, Edward
 1979 Community Development Research. New York: Human Science Press.
- Bordenave, Juan Diaz
 1976 "Communication of agricultural innovations in Latin America: the need for new models." Pp. 43-62 in Everett M. Rogers (ed.) Communication and Development. Beverly Hills, California: Sage Publications.
- Breimyer, Harold F.
 1978 "Outreach programs of the land-grant university: which publics should they serve." Paper presented at the conference on the Campus of Kansas City University.

Castle, Emery N.

- 1980 Agricultural Education and Research: Academic Crown Jewels or Country Cousin? Kellogg Foundation Lecture, National Association of State Universities and Land-Grant Colleges, November.

Cherns, Albert

- 1979 Using the Social Sciences. London: Routledge and Kegan Paul Ltd.

Cohen, John M and Norman Uphoff

- 1977 Rural Development participation. Concepts and measures for project design, Implementation and Evaluation. Cornell University. Monograph Series No. 2, Rural Development Committee.

Coughenour, C. Milton

- 1967 "Some general problems in diffusion from the perspective of the theory of social action." Pp. 5-21 in Diffusion Research Needs, Columbia, Missouri: Missouri Agricultural Experiment Station, North Central Regional Subcommittee for the Study of Diffusion of Farm Practices, North Central Regional Research Bulletin, 186.

Edmond, J.B.

- 1978 The Magnificent Charter: The Origin and Role of the Morrill Land-Grant Colleges and Universities. Hicksville, New York: Exposition Press.

Edwards, Allan O. and Dorothy G. Jones

- 1976 Community and Community Development. The Hague, Netherlands: Mouton and Co.

Ensminger, Douglas

- 1981 "Extension's mission." Prepared for publication in KIDMA, Israel Journal of Development.

Flora, Jan and Jim Converse (eds.)

- 1978 Outreach Programs of the Land-Grant University: Which Publics Should They Serve? Proceeding of a Conference on the Campus of Kansas State University.

Food and Agricultural Organization of the United Nations (FAO)

- 1978 Integrated Rural Development: Core Elements of Rural System. Rome: FAO.

Gelfand, Steven

- 1977 "Missouri Title V Program." Pp. 245-261 in Madden *et al.* (Eds.), Rural Development and the Land-Grant University: An Evaluation of Title V of Rural Development Act of 1972. Washington, DC: National Rural Center.

Gessaman, Paul

- 1976 "A conceptual framework for rural development." Pp. 1-18 in Daniel Badgen (ed.), Rural Development in the Great Plains: Problems and Potentials. Oklahoma: Oklahoma State University Press.

Gostyla, Lynn and William F. Whyte

- 1980 "ICTA in Guatemala: The Evolution of a New Model for Agricultural Research and Development", Rural Development Committee, Center for International Studies, Cornell University, Ithaca, NY.

Gouldner, Alvin

- 1954 Patterns of Industrial Bureaucracy, New York: The Press Fress.

Hassinger, Edward W.

- 1981 Rural Health Services. Ames, Iowa: Iowa State University Press, forthcoming.

Havelock, Ronald and Kenneth Benne

- 1969 "An exploratory study of knowledge utilization." In Bennis, W.G. Benne, K.D. and Chin Robert (eds.). The Planning of Change. New York: Holt, Rinehart and Winston.

Heady, Earl O.

- 1973 "New priorities." Pp. 102-111 in Larry R. Whiting (ed.). Rural Development: Research Priorities. Iowa: The Iowa State University Press.

Hightower, Jim

- 1978 Hard Tomatoes, Hard Times. Cambridge, MA: Schenkman Publishing Co.

Hildebrand, Peter E.

- 1977 Generating Small Farm Technology: An Integrated Multidisciplinary System, presented at the 12th West Indian Agricultural Economics Conference, (April).

Hobbs, Daryl

- 1978 "Extending the land-grant universities to new publics: High school dropouts and others", Pp 2.2-226 in Jan L. Flora and Jim Converse (eds.), Outreach programs of the Land-Grant University. Which publics should they serve. Proceeding of Conference, Kansas State University.

Hobbs, Daryl

- 1979 Summary Report of the Missouri Title V Rural Development Program. Columbia, Missouri: Missouri Rural Development Office.

- Hobbs, Daryl
1980 "Rural development: Intentions and Consequences." *Rural Sociology* (Spring): 1-25.
- Hobbs, Daryl and Vicki M. Hobbs
1979 "A research and development approach to rural development." Paper presented at the American Education Research Association Meetings. San Francisco.
- Hollander, Edwin P. and Raymond G. Hunt
1972 *Classical contributions to Social Psychology*. New York: Oxford University Press.
- Hollander, Edwin P.
1978 *Leadership Dynamics*. New York: Free Press.
- Holzner, Burkart and John Marx
1979 *Knowledge Application: The Knowledge System in Society*. Boston, MA: Allyn and Bacon, Inc.
- Holzner, Burkart and Evelyn Fisher
1979 Knowledge in use: Considerations in the sociology of knowledge application." *Knowledge: Creation, Diffusion, Utilization* (Dec.): 219-244.
- Howes, Michael
1979 The Uses of Indigenous Technical Knowledge in Development. *IDS Bulletin*.
- Howes, Michael and Robert Chambers
1979 Indigenous Technical Knowledge: Analysis Implications and Issues. *IDS Bulletin*.
- Huie, John
1978 "Local reseach and information needs." Pp 23-32 in David L. Rogers and Larry R. Whiting (eds.), *Rural Policy Research Alternatives*. Iowa: The Iowa State University Press.
- Human Interaction Research Institute
1976 *Putting knowledge to use: A distillation of literature regarding knowledge transfer and change*. Los Angeles: Human Interaction Institute.
- Kerlinger, Fred K.
1973 *Foundations of Behavioral Research (Second Edition)*. New York: Holt, Rinehart and Winston, Inc.
- Kellogg, Charles and David Knapp
1966 *The College of Agriculture*. New York: McGraw-Hill.

- Leithwood, K.A.
1981 "Mamaging the Implementation of Curriculum Innovation," Knowledge, Creation, Diffusion, Utilization, Vol. 2, No. 3, pp. 341-360.
- Lele, Uma
1975 The Design of Rural Development. London: The John Hopkins University Press.
- Lewis, G. J.
1979 Rural Communities. London: Davis and Charles.
- Lindblom, Charles and David K. Cohen
1979a "The use, nonuse and abuse of social science knowledge: A review essay." Knowledge: Creation, Diffusion, Utilization (Sept.): 164-176.
- Lindblom, Charles E. and David Cohen
1979b Useable knowledge, Social Science and Social Problem Solving. London: Yale University Press.
- Linton, Ralph
1936 The Study of Man. New York: D. Appleton-Century Company, Inc.
- Lionberger, Herbert F.
1982 "Toward an idealized systems model for generating and utilizing information for a modernizing agriculture: a third attempt." Paper prepared for the Conference on Knowledge Utilization: Theory and Methodology, Communication Institute, East-West Center, Honolulu, Hawaii, April 26-30.
- Lionberger, Herbert F.
1980 "Toward an appropriate interface between social science knowledge and utilization use." Paper presented at the Fifth World Congress of Rural Sociology, Mexico City.
- Lionberger, Herbert F.
1977 "Developing and disseminating information for modernizing societies: Toward an ideal system model." Paper prepared for a joint student-faculty seminar sponsored by the Center for International Programs and Studies, Columbia, Missouri.
- Lionberger, Herbert F. and Wei Yuan Cheng
1982 Agricultural and Community Development Extension in Missouri from an Information Macrosystems Perspective: Columbia Missouri Agricultural Experiment Station Research Bulletin 1041.

- Lionberger, Herbert F. and Wei Yuen Cheng
1980 "Job satisfaction as a function of choosing extension work as an occupational career: A study of organizational and community development specialists in Missouri." Paper presented at the annual meeting of the Rural Sociological Society. Ithica, New York.
- Lionberger, Herbert F. and Paul H. Gwin
1982 *Communication Strategies: A Guide for Agricultural Change Agents*, Danville, Illinois, The Interstate Printers and Publishers.
- Lionberger, Herbert F., LaVern A. Pope and B. Anji Reddy
1979 *Information, Development and Flow: A Study of the Communication Behaviors of Social Scientists in a U.S. Land-Grant and Two Taiwan Universities*. Columbia, Missouri: Agricultural Experiment Station Research Bulletin 1033.
- Lionberger, Herbert F. and Tso Sang Wong
1980 "The integration function in community development: The Missouri system as a case in point." *Journal of the Community Development Society* 11 (Spring): 35-48.
- Long, Norman
1977 *An Introduction to the Sociology of Rural Development*. Colorado: Westview Press.
- Louis, Karen and Sam Sieber
1979 *Bureaucracy and the dispersed organization*. Denwood, New Jersey: Ablex Publishing.
- Madden, Patrick J. et al
1977 *Rural Development and the Land-Grant University: An Evaluation of Title V of the Rural Development Act of 1972*. Washington, DC: National Rural Center.
- Meehan, Peter M. and George M. Beal
1977 *Knowledge Production and Utilization: A General Model. Third Approximation*, Iowa Agricultural and Home Economics Experiment Station, Ames, Iowa, Project No. 2218.
- Moe, Edward O.
1978 "Communicating research results for policy purposes." Pp. 78-92 in David L. Rogers and Larry R. Whiting (eds.), *Rural Policy Research Alternatives*. Iowa: The Iowa State University Press.

- Mosher, Arthur T.
1976 Thinking about Rural Development. New York: Agricultural Development Council, Inc.
- Nagel, Uwe Jens
1979 "Institutionalization of Knowledge Flows: An Analysis of the Extension Role of Two Agricultural Universities in India." In Quarterly Journal of International Agriculture, Special Series Issue 30.
- Nelson, Stephen D.
1979 "Knowledge creation: An overview." Knowledge: Creation, Diffusion, Utilization 1 (Sept.): 123-149.
- Ogburn, William F. and Dorothy Thomas
1927 "Are invention inevitable?" Political Science Quarterly 30 (Jan.): 83-93.
- Ogburn, William F.
1966 Social Change. New York: Delta Press.
- Petit, Thomas
1975 Fundamentals of management cooperation. New York: John Wiley and Sons, Inc.
- Phifer, Bryan and Fred List
1970 "Community development: A new dimension of extension." Extension Division University of Missouri-Columbia, prepared in cooperation with the Extension Service, U.S. Department of Agriculture.
- Powers, Ronald
1978 "Preface." In Rogers, Davis and Whiting (eds.). Rural Policy Research Alternatives. Iowa: The Iowa State University Press.
- Rich, Robert F.
1979 "The pursuit of knowledge." Knowledge: Creation, Diffusion, Utilization 1 (Sept.): 6-30.
- Rodefeld, Richard, Jan Flora, Donald Bith, Isao Fujimoto and Jim Converse
1978 Change in Rural American. St. Louis: C.V. Mosby Co.
- Rogers, David L.
1978 "Suggestions for integration of information generators and information consumers: An overview and summary." Pp 231-244 in David L. Rogers and Larry R. Whiting (eds.). Rural Policy: Research Alternaitves. Iowa: The Iowa State University Press.

- Rogers, Everett M. and F. Floyd Shoemaker
1971 Communication of Innovations. New York: The Free Press.
- Roling, Niels G., Joseph Ascroft, Fred Wa Chege
1976 "The diffusion of innovations and the issue of equity in rural development." Pp. 63-76 in Everett M. Rogers (ed.) Communication and Development. Beverly Hills, California: Sage Publications.
- Rothman, Jack
1980 Social R & D: Research Development in the Human Service. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Rothman, Jack
1974 Planning and Organizing for Social Change. New York: Columbia University Press.
- Scott, Robert A. and Arnold R. Shore
1979 Why Sociology Does Not Apply. New York: Elsevier North Holland, Inc.
- Sower, Christopher
1962 "The Land-Grant University 'Development Organization' in Transition: The Case of the Cooperative Extension Service. Pp. 12-159 in Directing the Cooperative Extension Service." Selected papers presented at the Seventh National Cooperative Extension Administrative Seminar, Madison, Wisconsin.
- University of Missouri, Extension
1978 Annual Report 1976-77. Columbia, Missouri - University of Missouri Extension.
- Whyte, William
1981 "Participatory Approaches to Agricultural Research and Development: A State-of-the-Art Paper." Rural Development Committee, Center for International Studies. Cornell University, Ithaca, NY.
- Wong, Tso Sang
1981 Towards A Rural Development Oriented Information Macrosystem: A Case Study of A Social Innovation. Unpublished PhD dissertation. University of Missouri-Columbia.

The University of Missouri is an equal opportunity institution