# Communication Strategies for Rural Development

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# Preface

AGRICULTURE continues to be the way of life for the bulk of the world's population, especially in the developing countries. Since the amount of arable land is limited, agricultural technology is being pressed to provide the quantity and quality of food demanded by the ever-increasing population. As these nations strive to be more self-sufficient in food production, they try to create the conditions which will enable their farmers to adopt new technology. Among these conditions are suitable communication systems between a nation's rural areas and its agricultural and scientific "knowledge centers," and there are new developments in this direction.

Effective communication with rural people is important for another reason. Traditionally, agricultural societies have encouraged large families to insure enough labor to work the fields. This pattern continues today even though better health standards and agricultural technology make it less necessary than before. Yet, in many rural areas the traditional patterns continue and many fail to share in the benefits which have come from agricultural innovation and family planning. For the developing nations to continue to achieve gains at least at the same level as in the past, creativity, ingenuity, effort, and expense will be required to bring those people into the mainstream of their societies.

Closely related to the issues of agricultural productivity and family planning are the broader goals of increasing career opportunities in agriculture and improving the nutritional status of people. Achieving of these objectives involves gaining wider use of available food resources through nutrition education, on the motivation of farmers to shift to new and more nutritious crops, and on more effective communication in the development and implementation of public policy in the area of nutrition.

In addition to information being disseminated from various centers, the communication process is a two-way phenomenon, often operating in rather subtle ways. People have to be informed, convinced, motivated, and instructed. On the other hand, planners, change agents, government agencies, and scientists must understand the needs, desires, and rationales which guide the behavior of those they wish to change. It logically follows that communication should be considered from the standpoint of changing or influencing human behavior and being concerned with improving the communication systems, broadly defined, and the competence of the persons who staff these systems.

Understanding these processes, improving them when necessary, and putting them to work for development should have a high priority. Regrettably, it is in the geographic areas where change is so essential that regular communication facilities and knowledge about informal communication systems are most limited.

Knowledge of and ability to apply communication principles also are instrumental to effective interaction between technical assistance agencies and host governments, coordination and cooperation among development agencies and components within a country, and efficient flow of information and instructions within each agency.

Coupled with the problem of developing effective communication techniques is that of creating the manpower resources needed to skillfully run communication programs and constantly carry out evaluation and applied research in communication. These talents are not widely available, yet they are crucial to rural development.

Because of these situations, the international symposium on Communication Strategies for Rural Development was designed with these five objectives:

(1) Report and analyze recent research findings which bear on solving the problems

of communication with rural people, especially those who are out of the mainstream of modern channels of communication.

(2) Exchange ideas and strategies for improving communication systems and information programs based on experiences of participants and case studies.

(3) Focus attention on ways and means to enhance the flow and improve the quality of communication to and from rural populations, such as new channels of communication and training programs.

(4) Explore and discuss feasible procedures for developing more training and research to meet rural communication needs of the field.

(5) Explore and discuss ways to improve communication within rural development agencies and among such agencies and other components of the system.

Whether or not these objectives will be attained depends on the participants at the symposium and many others throughout the world. The papers published here are another step forward in this process.

*July 1974* The Editors

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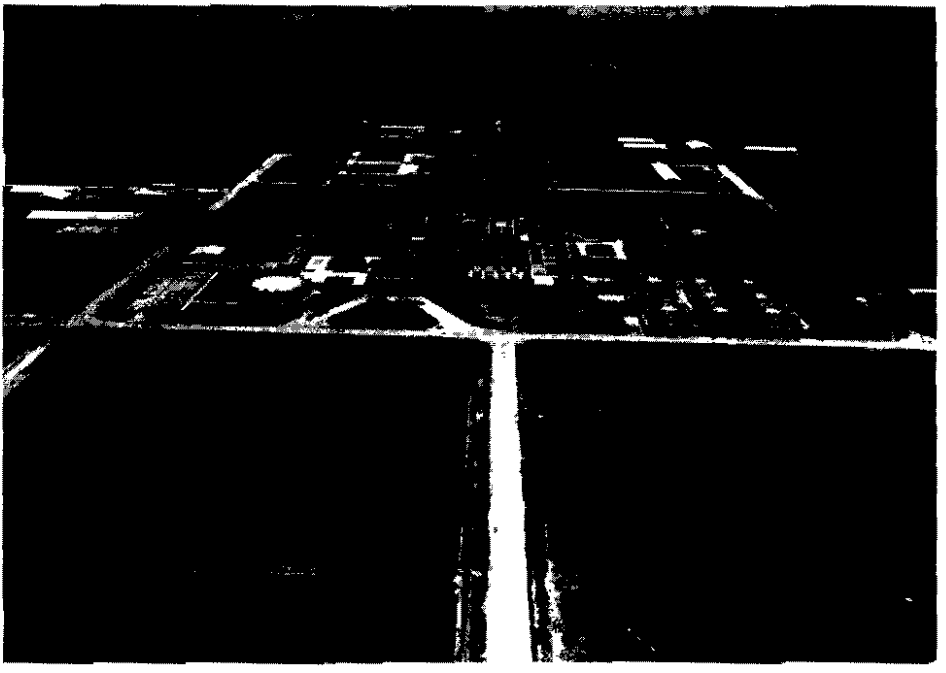

*An aerial view (top) of CIAT headquarters at Cali, Colombia, and a close-up of the amphitheater and principal reception center.*

*Two views of the general sessions at the symposium attended by 58 participants and 46 observers. Papers presented by the participants totaled 480 typewritten pages and 144,-000 words; 30 hours of discussion added another 270,000 words.*

# Opening Statement

U. J. GRANT*

WE in CIAT consider it an honor and a privilege to have this opportunity to co-sponsor an international communication symposium with Cornell University and hope that all of you will benefit from this effort.

As we start the week together, I would like to share with you a few of my thoughts about communication. It seems to me that we often use wonderful terminology such as "changing the change agents" and "the green revolution" and many other cliches. I think we are pretty good at communicating among ourselves, but when we get out into the remote rural areas it is very obvious that we are not quite so expert in communicating there—where communication is so vitally needed.

This institution is regularly contacting people on ranches and farms who can neither read nor write—not even numbers. We find that, in general, when our trainees go to the ranches they must start by holding Spanish lessons and teaching people the use of numbers—one, two, three, four—and how those numbers relate. Many of the campesinos, for example, cannot have a numbering system for their animals and have to name them Guillermo, Mario, Pablo, Jose, etc.

Now if a large portion of the people in the world today are in this condition and if this is a major problem area, then what's wrong with us? What's wrong with us if, with all the wealth there is in the world, we can't begin to change these farmers instead of worrying about changing the change agents or changing something else? How do we begin to be able to change these people who are in such serious need of help?

Of course, the problem is not only one of communication, but I think it certainly starts at that level. I don't intend to make a speech about this, but I hope that in the deliberations of the coming week some really serious thought will be given to how we begin to contact the other half or more of the world population that does not enter into the economics of most countries, the new technology, the benefits of modern medicine, or any of the other things you and I take for granted. How can we begin to help these people to realize some of the benefits of today's world?

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*Director-General, Centro Internacional de Agricultura Tropical (CIAT).

# Introductory Comments And Welcome

KENNETH L. TURK*

ON behalf of my associates in the administration and faculty of the New York State College of Agriculture and Life Sciences at Cornell University, I extend to all of you a most cordial welcome to this symposium on "Communication Strategies for Rural Development." As you know, this symposium is sponsored jointly by CIAT and Cornell University. Naturally, we are happy to team up with CIAT in sponsoring it.

When Cornell's Program in International Agriculture was organized in 1963, we believed that we should sponsor a conference, workshop, or symposium from time to time to examine in depth a topic of major importance to world agriculture. We thought much could be gained by bringing together a group of qualified people who could contribute to better understanding and to help provide solutions to the problems of food and people of the world.

This is the fourth in a series of international conferences sponsored by our Program in International Agriculture. The three previous ones were held on the Cornell campus. The first, held in 1965, dealt with the "Potentials of the Hot-Humid Tropics in Latin American Rural Development." The second in January, 1968, concerned itself with "Strategies for Behavioral Change in International Agricultural Development." The third workshop in 1970 considered "Issues Emerging from Recent Breakthroughs in Food Production." The proceedings of each of these conferences were published in book form.

With the success of these previous international conferences, Dr. Charles E. Palm, Dean of our College, suggested late in 1970 that we might want to consider an international communications workshop within the next two or three years. He had seen the proceedings of a successful Inter-American Communications Research Symposium organized by D. T. Myren and others in Mexico in 1964.

In a letter to me just before I left for this conference, Dean Palm said, "You are dealing with a recognition of the need for communication among representatives of the nations of the world on the basic issue of the world food supply. . . . There can be nothing of greater importance than to make progress in assuring humanity of a better lot in its food resources. I'm certain that it will take many more meetings and the cooperation among people on a continuing basis. But to peg a high hope for a start is a recognition by all and a point of departure for the attainments of the future." So, after more than three years of planning you are here for this symposium.

We are honored by your presence and appreciate your willingness to share your knowledge and experience involving communication strategies for rural development.

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*Director of the Program in International Agriculture, New York State College of Agriculture and Life Sciences at Cornell University.

# I. Challenges and Opportunities

# The State of Rural Development: Time for Action

GABRIEL VELAZQUEZ*

THE planning committee suggested that this initial session be concerned with a general overview of progress in rural development with emphasis on problems that need to be solved, the need for prompt action, existing opportunities, and the role that communication sciences should perform. In my presentation I will stress the different problems related to rural development and possible courses of action.

There is great difficulty in determining the extent of rural development in LDC's (less developed countries). When talking about rural development we are confronted with many problems. First is that of defining development, quite a difficult and controversial issue. Then there is a lack of a data base concerning this issue. Detailed statistical studies should be performed to quantify the factors that are relevant. Also, we do not have adequate indicators, and the multiple variables involved in this system and their interrelationships should be given considerable thought.

In this paper rural development refers to the "improvement of the well being of the people *living* in rural areas" (not landowners living in big towns). I believe also that to accelerate rural development a well integrated interdisciplinary and multi-institutional approach is needed.

From my previous experience in two programs in Colombia (one in Candelaria, the other in Norte del Cauca) and another that is beginning in Bahia, Brazil, I would like to suggest that at the beginning at least we avoid struggling with vague definitions and to use a series of different variables or factors as measuring sticks in the evaluation of rural development.

The different factors that we should consider are closely interrelated and are the following:

(1) The economic system (farm productivity, income, and employment.
(2) Education (general and specialized)
(3) Nutrition and population growth
(4) Health
(5) Environmental quality (housing, water, sewage facilities)
(6) Values: recreational, cultural, individual, group

One advantage of this approach is that investigators, perhaps with less difficulty, will come up with ideas on how to organize practical programs to improve the well-being of people living in the rural areas.

In this presentation I will consider how these different variables determine rural development, hoping that this will stimulate thinking on how to identify some practical approaches to solve the problems.

To facilitate the discussion following this paper, I have divided the presentation into several parts; in each part a brief summary of the principal problems is presented, followed by recommendations for possible action.

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*Representative of the Rockefeller Foundation, Salvador, Bahia, Brazil.

## *Economic Problems*

Robert McNamara in his Nairobi speech last September[1] presented some of these very strikingly when he said:

> "Clearly the bulk of the poor today are in the rural areas. All of our analysis indicates that this is likely to continue to be the case during the next two or three decades. . . . In the year 2,000 more than half of the people in the developing world will still reside in the countryside.
>
> "Within the rural areas the poverty problem revolves primarily around the low productivity of the millions of small subsistence farms. . . . Without rapid progress to small holder agriculture throughout the developing world, there is little hope either of achieving long-term stable economic growth or of significantly reducing the levels of absolute poverty. The fact is that very little has been done over the past two decades specifically designed to increase the productivity of subsistence agriculture."

Speaking about the scope of the problem McNamara said that it is immense in the developing countries that are members of the Bank. "There are well over 100 million families involved—more than 700 million individuals. . . . More than 100 million farms are less than 5 hectares; of these, more than 50 million are less than 1 hectare."

And quite often these small holders do not even have clear title to their parcels.

But what impresses me more in McNamara's address and clearly represents a challenge, is when he admitted in all honesty: "Neither we at the Bank, nor anyone else, have very clear answers on how to bring the improved technology and other inputs to over 100 million small farmers."

A study made in Colombia by the International Labour Office[2] mentions:

> "The concentration of income among the very rich seems to be much greater in agricultural than in urban centers. In rural areas, the 5 percent of the population with the largest incomes receive over 40 percent of the total farm income, and have an income which is twenty times as high as the median income of the agricultural population—a rather striking ratio."

Also in Colombia, the National Planning Office[3] shows the economic contrast between urban and rural populations:

| | *Urban* | *Rural* |
|---|---|---|
| Families with less than US $12 per month | 23% | 58% |
| Families with more than US $40 per month | 27% | 6% |

Aggravating the other economic problems, and perhaps the most difficult to solve, is the inadequate land tenure structure existing in many developing countries. In spite of many laws and promises, very little has been achieved.

McNamara pointed out that "the possession of land, and hence of political and economic power in the rural areas, is concentrated in the hands of a small minority."

An FAO survey shows that in Venezuela the wealthiest 20 percent of the landowners own 82 percent of the cropland, in Colombia 56 percent and in Brazil 53 percent.[4]

I think, then, that perhaps the key issue is distribution of income.

### Time for Action

In relation to the need to improve the economic conditions of people in rural areas, the Rockefeller Foundation Committee on the Conquest of Hunger[5] presented a remarkable list of recommendations. Let me summarize them:

(a) The capacity to study (research) and seek solutions for rural areas in LDC's needs to be enhanced and LDC's need to be supported until they can do research by themselves.
(b) Linkages between the International Centers, such as CIAT, and the national programs need to be strengthened.
(c) Research should be oriented to meet the needs of various users.
(d) The capacities of the universities of the LDC's to do research and training for rural development needs to be expanded.
(e) Management training and organizational capacity to organize, plan, and administer rural development programs need to be created.
(f) Priorities in research for some problem areas are:
  (1) Analysis of the interrelationships between the agriculture sector and small farmers.
  (2) International trade relations and policy and the impact on agricultural and rural development.
  (3) Finding ways to overcome "peak" season labor constraints and absorb "seasonal" surplus labor.
  (4) Socio-economic research to guide livestock production, with special attention to product costs, marketing, and international trade trends.
  (5) Research on employment and migration in rural areas.
  (6) Research on interrelationships between the small farmer sector and the broad political and economical context where the small farmer operates.
(g) Integrated rural development and small farmer development are fundamentally interrelated, not alternative approaches.

McNamara in his Nairobi address asked the question, "What can the developing countries do to increase the productivity of the small farmer?" He presented a very well organized list of measures and strategies to increase the productivity of small holder agriculture that is worth close study.

## *Failures of Educational System in Rural Areas*

I am sure that you are well aware of the failures of the educational systems in rural areas of LDC's.

Before mentioning some of the problems, and to stress the need for action, I will indicate a few selected possibilities: (1) innovative approaches in education can be applied to the problem of the low income of rural people; (2) if rural development is accepted as an integrated effort to improve the life of rural people it is essential to improve the educational system; and (3) communication sciences can and should play a vigorous role.

A recent UNESCO study in Colombia[6] shows the contrast between urban and rural children:

| | *Urban* | *Rural* |
|---|---|---|
| 1st Grade repeaters or dropouts | 35% | 62% |
| 2nd Grade | 23% | 73% |
| 3rd Grade | 22% | 60% |

Fifty percent of all rural children of school age never enter school, or they drop out before finishing second grade.

A paper by Machado de Souza[7] mentioned the fact that in Bahia, Brazil, 90 percent of the rural children that enter elementary school never finish four years of primary school. This is consistent with a study of the International Council for Educational Development which indicates that only 10 percent of all the rural children in LDC's finish the fourth year of elementary school.

Another Colombia study[8] shows the inequalities in education between urban and rural

areas:

| | *Urban* | *Rural* |
|---|---|---|
| (1) Population over 15 who have never been to school | 14.0% | 35.0% |
| (2) Attending secondary school | 22.8% | 2.7% |
| (3) Attending higher education | 3.2% | 0.7% |

But what impresses the researchers even more who have studied the educational system of rural areas in developing countries is the rigidity of the system. The type and quality of the educational experiences are not oriented to meet the needs of the people to give them the basic skills needed to progress, to obtain reasonable earnings, and to lead a successful life.

### Need for Action to Improve Rural Education

Innovation and flexibility are urgently needed to tackle the problem of inadequate rural education. Changes in the existing formal system and development of all types of non-formal educational initiatives are desired. Perhaps the creation of a totally new system of four or five years of rural basic education oriented towards providing the skills and motivation needed would solve part of the problem.

Philip Coombs in his report to ICED on Non-Formal Education for Rural Development,[9] a document well worth reading, makes very interesting comments and suggestions. When talking about minimum requirements for changes in education in rural areas, Coombs insists on the need: (1) to develop positive attitudes toward cooperation with the rest of the community; (2) to develop functional literacy; (3) to understand the process of nature; (4) to acquire functional knowledge and skills to raise a family; (5) to acquire functional knowledge and skills to earn a living; and (6) to develop civic participation.

He insists on some critical issues including the need for a massive approach and the need to concentrate in more neglected groups. Among these are pre-school age children and girls who later will be mothers responsible for raising a family.

In his final suggestions Coombs recommends: (1) a well conceived strategy tailored to the special circumstances of each rural area; (2) development of a multi-purpose well integrated educational system; (3) need for innovation; (4) looking for initiatives from the rural people; (5) choosing right early actions; (6) avoiding pitfalls; (7) looking for ways to follow primary education; (8) focusing on realistic employment possibilities; and (9) strengthening formal and non-formal education.

## *Problems Related to Nutrition and Population Growth*

Although rapid population growth is a problem that affects all the variables in this presentation, I prefer to analyze it together with nutrition, or rather malnutrition, because rapid increase of population in rural areas creates minifundios, affects small holders' productivity, and contributes to world food shortages.

You are all familiar with the problems associated with rapid population growth. As an example, Colombia with 23 million people has a growth rate of 3.2 percent per year. One of the worst consequences is the age structure with young people predominating and a very high proportion (22 percent) of fertile women.

The following figures are interesting urban-rural contrasts taken from a study by the National Planning Office:[10]

| | *Urban* | *Rural* |
|---|---|---|
| Population distribution | 51.0% | 49.0% |
| Population under 15 years of age | 44.7% | 48.8% |
| Average family size | 5.7 | 6.1 |

| | *Urban* | *Rural* |
|---|---|---|
| Birth rates (per 1,000) | 31.3 | 56.1 |
| Fertility rates (per 1,000) | 129.4 | 211.3 |
| Abortions (per 1,000 women between 15–44 years) | 204.2 | 79.6 |
| Number of children (per woman between 15–44 years) | 4.7 | 7.7 |
| Annual growth rate | 5.0% | 1.5% |

Although the natural increase is higher in rural areas, the annual growth rate is a lot smaller. This is due to migration to slums in middle and large cities. The concentration of income in the hands of a few, the inequalities of land distribution, poor provision of educational, housing, and health services are factors that are pushing poor, ignorant rural people to slums around cities creating severe social and political problems.

Close to 50 percent of the children admitted to hospitals in rural areas suffer from malnutrition. Moreover, there is increasing evidence of the impact of malnutrition on psychosomatic development of children.

In the Final Report of the Rockefeller Foundation Program Review Committee[11] it is stated that in spite of considerable gains in farm productivity, food production is barely keeping pace with population growth. World production of basic food crops must be doubled in the next 18 years and quadrupled in the next 36 years if only modest improvement of the diet of the poor is to be achieved. A formidable task indeed.

## Suggested Action

A combination of efforts specifically oriented to increase the production of food with high nutritional value has been suggested by different agencies and experts. Here I see a clear role for communication sciences.

One of the most difficult problems is how to organize programs to reach thousands, in some countries millions, of small landowners. It is necessary to organize many intermediate institutions to provide credit, fertilizers, technical advice, marketing, and storage of surplus products. Experience in some of the most successful projects has demonstrated the advantages of stimulating participation and leadership among farmers.

One of the best comments in McNamara's address is: "No program will help small farmers if it is designed by those who have no knowledge of their problems and is operated by those who have no interest in their future."

Communication between small landowners, usually illiterate, with technocrats and representatives of government agencies is difficult and requires painful work and innovation. I have no doubt that during this week we will learn from different successful experiments.

The Rockefeller Foundation Committee on the Conquest of Hunger[12] has made these very interesting recommendations:

(1) On research and training priorities: (a) continuing attention should be given to some problems not yet solved, such as improving yields of better nutritional quality and intensifying disease and insect resistance of the basic food grains; (b) the long-neglected food legumes and certain oilseed crops should be improved to increase yields and nutritional quality; (c) animal health and production, particularly in Africa, should be emphasized; and (d) world efforts to control plant pests and pathogens should be initiated.
(2) Assistance to nations, or to groups of small nations, which give high priority to better organization for orderly and accelerated rural development is an urgent need.
(3) Formulation of strategies and low-cost techniques which can be employed effec-

tively by poorer nations to improve the quality of life of rural dwellers should be given priority.

(4) Concentrate on experimental and demonstration projects giving simultaneous attention to problems of small farmers income generation, education, nutrition, health, family planning, and housing.

(5) Certain issues that need to be investigated include sources of income generation, rural employment and unemployment, marketing, credit, land tenure arrangements, the impact of farm mechanization, adoption of seed varieties and fertilizers, availability of inputs, and policies affecting trade, distribution, and storage of basic food products.

## *Health Environmental Conditions*

Because there is such a very close relationship between health and environmental conditions, I will take these two variables together.

Here again there is a great contrast between urban and rural conditions. As an example, I will use data taken from Colombian studies.[13]

| *Health Conditions:* | *Urban* | *Rural* |
|---|---|---|
| Rate of illness (per 1,000) | 378.0 | 398.0 |
| Chronic conditions (per 1,000) | 61.3 | 63.2 |
| Restricted activity (per 1,000) | 104.0 | 115.0 |
| Parasitic infections (ascaris) | 34.2% | 62.7% |
| *Health Services Utilization:* | | |
| (a) Health manpower and facilities: | | |
| Physicians per population | 1:884 | 1:15,400 |
| Nurses per population | 1:3,552 | 1:63,913 |
| Public hospital beds | 1:3,824 | 1:12,612 |
| (b) Health Services Utilization | | |
| Medical consultants (per 1,000 population) | 96 | 33 |
| Non-medical consultations (midwives, quacks per 1,000) | 22 | 24 |
| Persons using hospitals (per 1,000) | 295 | 169 |
| (c) Persons without social security: | 80% | 90% |
| *Housing and Public Services:* | | |
| (a) Living in houses or rooms | 85% | 51% |
| (b) Living in tugurios (slums) | 10% | 44% |
| (c) Intradomiciliary potable water | 69% | 16% |
| (d) Extradomiciliary potable water | 20% | 29% |
| (e) Without potable water | 10% | 54% |
| (f) Flush toilet | 72% | 7% |
| (g) Latrine | 14% | 15% |
| (h) Without toilet facilities | 14% | 78% |

These figures clearly show the deep inequalities that exist between the urban and rural areas, and, together with the other socio-economic variables described above, explain the "push" factor that is influencing the migration to cities and creating very severe urban problems.

Before attempting to indicate some solutions (Time for Action), I would like to present to you some of the concepts of Oscar Echeverry, one of my former students and now a colleague and Chairman of the Department of Social Medicine at the Universidad del Valle.[14]

In talking about underdevelopment, Echeverry recognizes the difficulty in defining de-

velopment. Attempts to define it as a process oriented to create well-being are likely to meet with controversy. So he proposes that we use both terms (development and well-being) as a dynamic and positive process of man's interaction with his environment. And well-being (or development) is considered as the desired result of the developmental process in which economic, social, educational, technological, and political actions are aimed at improving the level of living, the social status, and happiness of a society. He considers health also as the result of man's interaction with his environment.

Echeverry and an interdisciplinary group of professors from Universidad del Valle working in a research program toward rural development believe that health and development have a common ground (the environment) and a common subject (man). Perhaps this may help to explain why some scholars say that socio-economic development leads to better health levels, while doctors claim that without adequate health level national or rural development is not feasible.

In the paper mentioned previously,[15] Echeverry illustrates that relationship of health and development by the interesting diagram that is reproduced here (Figure 1.).

Although I am convinced that recreation, cultural and individual values, human dignity, and capacity for self-destiny are all important aspects that deserve study, and efforts to provide these to small farmers should be made, I will not suggest anything in this paper because I have the feeling that we do not have enough experience in the programs in which I have participated.

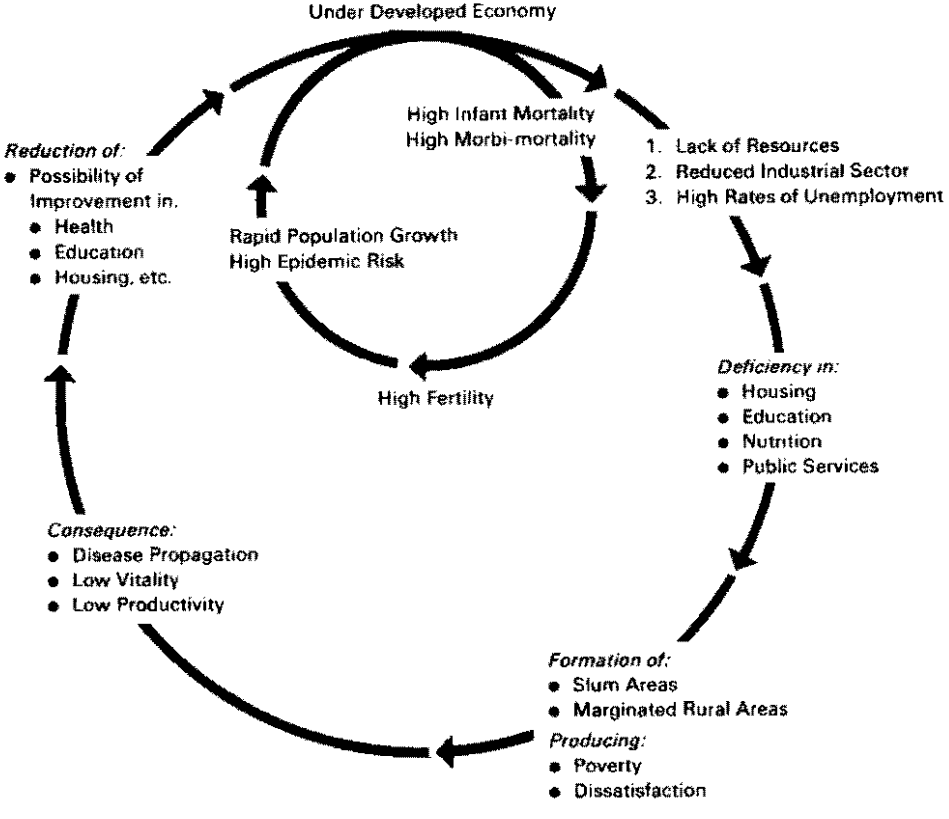


Figure 1. *The health-well-being cycle in developing countries.*

## Time for Action

From the very brief and superficial analysis made so far, it is evident that the problem of rural development is a very complicated one requiring a well integrated approach dealing with the multiple variables mentioned at the beginning of this paper.

Action is needed to improve income, employment and economic conditions of subsistence farmers, to increase farm productivity, to provide farmers with adequate knowledge and skills, with food and nutrition, with good health, and better environmental conditions. They have the right to develop their cultural values, to use their free time in the way they like best. There is no doubt that the rapid population growth prevalent in rural areas needs to be slowed down. The farmers themselves are aware of this and asking for help.

To accomplish the goals described, a great variety of complex actions are needed. There are technological, behavioral, social, and political problems. A great deal of research and experimentation is needed. It is necessary to organize multi-disciplinary and multi-institutional teams with participation of students and university professors, of government and private agencies. But we should remember that perhaps the most important element, as was recognized in a seminar of the Agricultural Development Council,[16] is that "farmers must develop the feeling that they can control their own destiny."

I hope the burden of my message has been correctly interpreted: Communication sciences are crucial, but I am sure you will agree that communication is a means to an end and by no means an end in itself.

In conclusion, I wish to make three observations. The first is to direct your attention to a thoughtful paper by a colleague of mine, Walsh McDermott.[17] He noted that although the system of land-grant colleges in the United States began in the 1870's, the average production per acre in the nation only rose markedly in the 1940's, some 70 years later. This leads me to wonder if during these 70 years there was something really crucial to communicate. Similarly, there are now many agencies and scholars concerned with the challenge of how to accelerate rural development, of how to improve the well-being of subsistence farmers. We need to be sure before attempting to communicate that what we plan to communicate will really work.

The second observation is that in the process of rural development, communications are needed along at least three-way channels: (1) between professionals, agricultural experts, and farmers; (2) between these experts and government agents; and (3) between these agents and farmers.

Thirdly, while many believe that farmers need to listen, others believe that it is even more important that we learn to listen to farmers. There is a lot of wisdom in Milton Esman's proposition in his paper[18] in which he says: "Government agencies must become active information seekers, rather than only information purveyors, in order to insure that their services and advice to small farmers actually reflect the latter's specific needs and possibilities."

It seems to me that if this conference can give us guidelines as to how communications can furnish rural people, government agents, and experts with better information to make their choices, it will certainly be an important step in the whole process of improving life for the majority of the people in the Third World.

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[15]Ibid.

[16]The Agricultural Development Council Inc., "Small Farmer Development Strategies," (A seminar report, The Agricultural Development Council Inc., New York, July 1972).

[17]Lathem and Newberry, *Community Medicine* (New York: Appleton-Century-Crofts) pp. 7–8.

[18]Milton J. Esman, "Popular Participation and Feedback Systems in Rural Development," (Cornell University, Ithaca, N.Y., October 1, 1973).

# Rural Development and Social Communication: Relationships and Strategies

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MY task here, as I understand it, is one of exploring the mutual influence that is assumed to exist between rural development and social communication. Moreover, I am supposed to do so chiefly in terms of how rural development strategies seem to affect social communication in the rural environment, as well as in terms of how—in reverse—do social communication strategies affect rural development. Reliable knowledge about the process of "rural development" appears to have reached already a considerable level of accumulation. And so has knowledge about the process of "social communication." But the same may not quite be said about knowledge of the relationships prevailing—in general—between the two processes. And even much less advanced is the accumulation of knowledge about the specific connections between "strategies" for one and the other.

It would not be possible for me to speculate about relationships and strategies between the two mentioned processes without first attempting to somehow define what I understand "development" and "communication" to be. The definitions are required to avoid confusion in the dialogue. Otherwise, the same data may lead each one to different conclusions.

Analysis and interpretation being never truly and fully free from bias, allow me, please, to put from the start my pertinent prejudices on the table.

## *What Is Development?*

The developed world has produced several major conceptions of the nature of national development. With a few exceptions, however, most of the prevailing conceptualizations—be they capitalist or socialist—tend to have common detectable elements to a degree that they may be subsumed into a general model. Let me call it the "classical materialistic model."

The central features of that model can be summarized as follows: National development is fundamentally a process—spontaneous or induced—of economic growth; economic growth generates the material advancement or physical improvement of a country; material advancement, in turn, makes possible improvements in the general well-being of the population; material advancement producing well-being may by itself lead to social justice, cultural freedom, and political democracy. In light of those premises, the chief goals of development-seeking efforts according to the model are: To increase production of goods and services; to facilitate the widespread distribution of them; to expand their consumption; to save and invest at continuously increasing rates.

Consequently, increased financial investments and improved technological inputs, along with better marketing structures and techniques, become the key tools to attain these goals.

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Lastly, the measurement of goal-attainment within this model is naturally done, as a rule, in terms of gains in production-productivity and distribution-consumption terms.

## Model Has Many Faults

It goes without saying that development policies, strategies, plans, and projects are usually patterned after such a philosophy of man's life and societal progress. What is wrong with such a model, so long in practice in the world's most developed countries and eagerly adopted by so many underdeveloped ones? "Nothing," many would say. "Almost everything," a few would contend*. I tend to join the latter. In doing so, I would like to recruit some authoritative assistance. In support of my position, I will cite a few leading specialists.

Economist Robert Heilbroner[1] contends that:

> "Economic development is not primarily an economic but a political and social process. Thus we deceive ourselves when we think of economic development in pallid terms of economics alone."

Banker David Rockefeller,[2] in the same line of thinking, states the following:

> "Growth is primarily an economic phenomenon, a process of expansion or improvement of the basic productive elements of land, labor and capital . . . Development, on the other hand, is much broader in scope and concept. It is often used as a synonym for progress, and progress involves a host of social, cultural, political and psychological factors that may be much more significant over the longer run than purely economic factors. But by confusing the ends with the means, by confusing development in the broad and proper meaning of the term with growth, it seems to me we have again fostered an illusion while at the same time belittling the real achievements that have been made."

Norman Uphoff, Chairman of Cornell's Rural Development Committee, claims that:

> "there can be growth without development (changes only in scale) and development without growth (changes only in structure) . . . there is no assurance that resources generated from a "growth" strategy will or can be diverted or devoted to developmental investments as is commonly assumed by conventional economists . . . Development to be productive must of course lead to growth in some longer run."[3]

Economist-development Planner Roberto de Oliveira Campos provides a Latin American corroboration of the above concepts:

> "There is indeed the implicit assumption that the problem of development is primarily economic. In fact however it may well be said that crucial issues of Latin American development are *motivational* and *political* in nature."[4]

Views of the Ministry of Agriculture of Colombia[5] coincide with the arguments so far presented:

> "The aspect which influences most the definition of an agrarian policy is precisely the conception that one has about development and its relationship

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*Among the studies analyzing the case of the Latin American country which has applied to a great extent the classical model, three are readily available: C. Furtado, *Análise do modelo brasileiro*, 2d ed. (Rio de Janeiro: Civilicao Brasileira, 1972); R. Ghioldi, et al. *El modelo brasileño*, (Buenos Aires: Centro de Estudios, 1972); M. Melo Filho, *El desafío brasileño*, (Buenos Aires: Pomaire, 1972.)

> with social justice. Those who believe that what matters is only economic growth will necessarily oppose all such regulations seeking to change the structure of land tenure as, for them, agrarian policy becomes confused with the policy for agricultural production. They will always rate as bad any system or practice which does not demonstrate in the short and in the medium run a positive result in the improvement in the Gross Product, without being concerned with the manner in which it is distributed among the different income strata or with the way it is shared by the two main factors concurrent to production: capital and labor."

In summary, the "classical materialistic model" of national development is objectionable on many serious grounds. It entails a dehumanized vision of progress which stems from the eminently mercantile mentality that rules much of life in the nations which have reached the highest levels of advancement. It equates having more with being better. It does indeed confuse means with ends, sacrificing the highest values of human beings—dignity, justice and freedom—to abundance and prosperity at any price . . . for the privileged minorities. It wrongly regards as accessory and derivative the reorganization of society in terms of changes in the distribution of power and wealth as well as in the democratic expansion of social and cultural opportunities.

No wonder, then, that the efforts of the "First Decade of Development" have mostly brought further stagnation, increased concentration of income and of decision-making, and an acute shortage of food production to the majority of the so-called "developing" countries.

### New Model Needed

It follows that a new conceptual model of national development is urgently required before it is too late. Certainly, I do not pretend to have one ready now. But my hope is that when such a model becomes finally available through the effort of highly qualified designers, it may be describable, in summary, somewhat as follows:

> National development is a directed and widely participatory process of deep and accelerated socio-political change geared towards producing substantial changes in the economy, the technology, the ecology and the overall culture of a country, so that the moral and material advancement of the majority of its population can be obtained within conditions of generalized equality, dignity, justice, and liberty.

This model would be a humanized, democratic, structural, and integral conception of a nation's development based on a reverent vision of man's life and destiny. No matter how schematic it may yet be, I confess to be—wholeheartedly—an avowed subscriber to it.

## *What Is Communication?*

It must be acknowledged, once again, that also in the case of "communication" there are numerous and diverse conceptualizations of that process. Again too, however, some features will easily be found to be central to many of the varying definitions. And, just as in the case of the concept of "development," the prevailing one of "communication" appears to have been born in the world's most advanced countries and then adopted, rather indiscriminately, by those not so advanced. The autocratic, elitist, and materialistic characteristics of the classical "development" concept are not at all alien to what I should call the "classical mechanic-vertical model of communication."

The model's key features can be synthesized in three premises: (1) social communication is a process of transmission of modes of thinking, feeling, and behaving from one or more persons to another person or persons: (2) the paramount goal of communication is persuasion, so that the "transmitting" person, or persons, will obtain from the "receiving"

person, or persons, given intended behaviors; and (3) two-way communication through "feedback" is important chiefly as a message-adjusting devise enabling the "transmitter" to secure the performance of the expected response from the "receiver."

## Upper-Class Orientation

What is wrong with this model that we have embraced and put into practice for so long most everywhere in the world? Plenty, I would venture to say. When observing, in every-day life, the consequences of the application of the classical communication model, one finds indications that it stems essentially from an upper-class orientation, a will of political domination and the interests of industrialists and merchants.

In fact, as the late C. Wright Mills once contended, in societies where the voice of individual and democratic groups does not count, the communication media facilitate a sort of "psychological illiteracy" in the service of subtle but strong manipulation of the people by power elites.

Mills[6] saw the mass media as performing the following functions in the interest of those elites:

(1) To tell the man in the mass who he is—give him identity.
(2) To tell him what he wants to be—give him aspirations.
(3) To tell him how to get to be that way—give him techniques.
(4) To tell him how to feel that he is that way even when he is not—give him escape.

Was he wrong or was he at least exaggerating? I shall later attempt to give an answer to this question in the case of Latin America.

What often takes place under the label of communication is little more than a dominating monologue in the interest of the starter of the process. Feedback is not employed to provide an opportunity for genuine dialogue. The receiver of the messages is passive and subdued as he is hardly ever given proportionate opportunities to act concurrently also as a true and free emitter; his essential role is that of listening and obeying.

Such a vertical, asymmetric and quasi-authoritarian social relationship constitutes, in my view, an undemocratic instance of communication. Those few who concentrate in their hands financial, cultural, social, and political power concentrate also the message-emitting opportunities. And the many who are low in income, education, status, and power are condemned to be only receivers . . . if and when someone really cares to reach them. Indeed, as David K. Berlo[7] asserts: ". . . nearly everything we do now is couched in terms of how a small number of people can get the rest of the people to do what the small number wants—whether it is in the interest of the large number or not."

## Moral Implications

Is that what we wish to keep on doing as professional communicators? Are we no more than signal-generating technicians who could serve equally well any type of interests? Are we conscious enough of the fact that, while technically it may be the same to sell bread as to sell poison, ethically it is not? Can we indefinitely help sell dogmas, abuse, and oppression to the masses? Are we in reality so ideologically aseptic—as perhaps dentists or carpenters can afford to be—that we do not care what we are helping someone to communicate for?

I resist to believe we are so. I prefer to think that what happens is that we are barely beginning to understand some disquieting moral implications of our profession. And I hope that, once we have found ourselves doing wrong, we will have the courage to stop it. Thus I join Berlo[8] in feeling that:

> "We need now to concentrate on the functions of communication, on ways in which people use messages—not, as we have in the past, on the effect of communication, on ways in which messages can use people."

In other words, just as in the case of development, we must first be able to build a new concept of communication—a humanized, non-elitist, democratic and non-mercantile model. It is no small challenge but I have faith that it will be met soon. Meanwhile, let me again expect this model will be such that its essential elements could be summarized somewhat as follows:

> Social communication is a process of democratic interaction, based upon the use of systems of symbols, by means of which human beings freely interchange—in a dialogical and proequalitarian manner—affective, attitudinal and behavioral experiences, mutually influencing their conduct with several different purposes.

To stress just a few of the principal components of this sketchy attempt at reaching a new definition of communication, let me point out that it implies a horizontal social relationship based on genuine dialogue, involves a free and proportioned opportunity for persons to exert mutual influences, and denies persuasion the role of chief aim of the sociocultural transaction.

Having expressed my understanding of what development and communication should be but so seldom attain, I now feel that, in appraising relationships and strategies related to those processes, I can deceive no one as to the optics I apply to the analysis and interpretation of pertinent data.

## *Development and Communication: Their Relation*

At three levels of analysis, research has found substantive evidence in many countries of the world that development and communication are strongly correlated.

At the individual level, there are many factor-analytic studies—including two in Latin America—showing communication variables to be in a significant interplay with development variables in general.

At the village level, Rao[9] found, in a comparative study of two Indian villages, clear correlations between communication and social, economic and political development. So did Frey[10] in a survey of nearly 460 villages of Turkey.

At the national level, several multinational studies came up with similar correlations. One of the earliest was that of Lerner[11] who found, in more than 50 countries, media participation highly correlated with urbanization (including industrialization), literacy, and political participation. He also found that the degree of change in communication behavior appears to correlate significantly with other behavioral changes. An index of communication development was found by Cutright[12] highly correlated with indices of political development, economic growth, education and urbanization in more than 70 countries. A UNESCO[13] study concentrated in the underdeveloped countries of Latin America, Africa, the Middle East, and Southeast Asia, found a strong correlation between mass media factors and economic factors in general development. Similar findings were reported by, among others, Schramm and Carter[14] for 100 countries and by Farace[15] for more than 50 countries, as well as by Schrone[16] and Deutschmann and McNelly.[17]

Hence, as Fagen[18] concludes: "Although the correlations themselves tell us nothing about causality, it is clear that the mass media have been both cause and effect, both mover and moved, in the complex interplay of factors which we call the modernization process."

It is, of course, useful to count on reliable evidence of such correlation. However, for the underdeveloped countries, what is most important is to find the specific circumstances contributing to make social communication an impactful stimulator and accelerator of national development.

### Direction of Inquiries

Research exploring all major aspects of communication's contribution to development is not comprehensive yet, and it has not been sufficiently accompanied with inquiry in a critical reverse direction—the influence of the social structure on the communication process. Nevertheless, certain studies have led some researchers to formulate a series of plausible propositions on the roles of communication in development. Distinguished among these are the works of scholars such as Lerner, Schramm, Pye, Pool, Frey and Rao, along with the many studies pertaining to the diffusion of agricultural innovations school represented by researchers such as Rogers.

To summarize in some detail the findings of all those researchers is a task outside the scope of this paper. Here it should be sufficient to say that the main prospectors of the relationship of interest appear convinced that the roles of communication in the service of development are numerous and of decisive influence. With few exceptions, they seem to attribute to mass media so much and so great an ability to help generate national advancement that one is both delighted and a bit afraid that optimism may lead us to overestimate somewhat the mission and powers of our trade.

Hoping that such judgment in wrong one cannot avoid going back to the crucial question: What kind of "communication" in the service of which type of "development?" A nation is not developed when minorities in it can afford to squander fortunes on superfluous articles when majorities can barely buy bread. A person is not modern just because he is led to feel an urge to enjoy washing machines, have a bigger car than his neighbor's, or vacation in Acapulco. That is the kind of "development" to which the "developing" countries have no reason to subscribe. And mercantilist and undemocratic persuasion is not the type of communication from which those countries may profit most.

I acknowledge with pleasure the existence of a promising correlation between communication and development in general. I also share the faith that the former may indeed contribute much to the latter—under given circumstances. On that conviction, I wish to confront the postulations just briefly reviewed with information from one region of the world and in specific relation to rural development only. My experience in both fields being in Latin America, I now move on to a quick inspection of rural developmental communication in this part of the world.

## *Latin America: Communication and Rural Development*

What, in essence, is the nature of Latin America's overall communication system? What are the chief characteristics of the communication process in relation to the region's rural population? How do the system and process of communication appear to be related to the rural development process?*

A system of communication is a defined set of interrelated social entities—public, private, and mixed—specializing in serving as mediators among people participating in the communication process. The system is usually understood to be composed of three major subsystems: interpersonal, impersonal or massive, and a mixed one resulting from stable combinations of the former two.

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*The volume of data available today on this subject is more than one would suspect. Those interested in an extensive treatment of it may wish to see this author's "Communication in Latin America: Persuasion for Status Quo or for National Development," (Ph.D. dissertation, Michigan State University, East Lansing, Michigan, 1970) and, for a relatively extensive summary, his *La Problemática de la Comunicación para el Desarrollo Rural en América Latina*, 1972, Buenos Aires, Argentina, AIBDA and also *El Sistema y el Proceso de Comunicación Social en Latinoamérica y su Relación con el Desarrollo Rural*, 1973, Cusco, Perú, UNESCO.

Given the insufficient degree of integration among the three sub-systems, Latin America's communication system can be taken as an imperfect one. In fact, while the interpersonal sub-system can be seen in operation throughout the whole society, it is characteristic of the rural segment and shows minimal connection with the other two sub-systems. On the other hand, the impersonal sub-system is characteristic of the situation in the urban sector. And the mixed sub-system is mostly, though minimally, operating in the rural society. Important as the interpersonal and mixed systems are, I shall concentrate on describing the impersonal one. These aspects will be considered: availability, accessibility, content, and code.

## Mass Media Availability

In 1961, UNESCO set minimum desirable standards of mass media availability for each 100 inhabitants of the underdeveloped countries. They were the following: 10 newspaper copies, 5 radio receivers, 2 television receivers, and 2 cinema seats.

Latin America's figures for 1961 were: 7.4 newspaper copies, 9.8 radio receivers, 1.5 television receivers, and 3.5 cinema seats. The Latin American figures were, in the aggregate, higher than those for equivalent regions of Asia and Africa.[19]

In 1971, the figures for Latin America had become the following: 7.5 newspaper copies, 11.3 radio receivers, 5.7 television receivers, and 2.7 cinema seats.[20]

The first survey showed that Latin America then had mass media availability levels which were either clearly above UNESCO's minimum standards or only a little below them.

The second survey showed that the region remained below the minimum desirable in newspaper copies and decreased its figure for cinema seats but experienced significant growth in radio receivers and spectacular growth in television receivers.

The second survey showed also that half the total population was still left without access even to the most diffused medium, radio. Nevertheless, it is evident that the advancements in mass media availability have been, as a whole, impressing in this region in the last decade. However, before one jubilantly raises hands to applaud, an important question must be poised: Available to whom?

## Access to Mass Media Messages

Availability of mass media is not necessarily equal to access or exposure of people to messages. As a rule, the distribution of those messages in Latin America is uneven within groups of countries, within each country, and within each of the cities in them.

Research has found urban concentration of mass media messages to be particularly high in the larger cities, especially in the cases of television and press; concentration is appreciably less acute for radio and somewhat less acute for the cinema. For the most part, mass media do not reach the masses in rural Latin America. Communication in this region is but one more privilege enjoyed by the ruling urban elite.

Within each city, a minority of the population has far more access to mass media messages than the majority. And, within the rural areas, even smaller minorities have the privilege of access to those messages.

In general, then, the distribution of mass communication opportunities in Latin America follows the steep pattern of stratification that characterizes the socio-economic structure prevailing in the region. The higher the income, education, and status, the higher the level of access to mass media messages. People in the intermediate brackets of the scale have intermediate levels of access. And the great majority of the population—low class urbanites and the peasantry—have as low levels of access to communication as to food, shelter, and education.[21]

The rural population's access to mass media messages reaches such extremely low levels that most peasants can be said to be virtually outside the communication system.

Selected from among several studies, a few illustrations should suffice to document the point. Take one channel—the press—and one country—Colombia. We find that 83 percent of the circulation of 800,000 daily copies of 32 newspapers is found in the three largest cities—Bogotá, Medellin and Cali. The difference goes to the rest of the cities and to the rural areas.[22]

Of Mexico City's six largest newspapers' total daily circulation—665,000 copies— 80 percent is sold within that city itself, the rest being distributed in all other cities and in rural areas. Moreover, the daily average of copies sold per one thousand inhabitants reaches as high as 160 in the large commercial farming states of the North while in the Southern subsistence agriculture states the figure is as low as 9.[23]

Take another channel—radio which is supposed to reach "everybody" thanks to the transistor—and another country—Brazil—and you will find that the case is not very different from those of the press in Mexico and Colombia.[24]

Let's move to Peru and find, with Mejia,[25] some exposure figures for three channels in two small rural towns and two large farms (haciendas). None of the peasants (peones) in those haciendas saw movies or read newspapers and 85 percent did not listen to radio. But in the towns 20 percent of the independent small-land holders read newspapers, 50 percent listened to radio and 13 percent sometimes went to the movies. As this study, and those of Canizalez and Myren[26] in Mexico and of Blair[27] in Brazil show, communication is indeed more markedly stratified in rural than in urban areas of Latin America.

Attempting to go a bit beyond simple accessibility data, some researchers have gathered data on a "mass media used yesterday" basis so as to explore consumption levels. To take just one example, let us consider the findings of a USIS survey[28] of comparative intake between urbanites and ruralites in Argentina in 1961. Some indices of consumption standards for urbanites were: newspapers, 65 percent; radio, 59 percent; television, 32 percent; and cinema, 6 percent. The figures for ruralites were: 46 percent, 61 percent, 1 percent and 5 percent respectively. And this was in a country having then as low an illiteracy rate as 14 percent and not having an indigenous population.

Brazilian peasants living more than two hours from a large city acceptably endowed with mass media were once interviewed to find out their information level on matters which were often treated by those mass media. These were some of the results: 95 percent of the peasants did not know that coffee was the chief export product of their country; 80 percent of them had no meaning for the word "democracy"; and 48 percent did not know the name of the President of the Republic.[29] Other studies in Brazil itself, as well as in Mexico and Chile, found comparable results, verifying the acute state of sub-information in which the peasantry lives.

Compare that situation again with the one prevailing in the cities. A study obtained mass media consumption data of a "sub-elite" (professionals with studies in foreign countries) sampled from 14 Latin American countries and contrasted them with those pertinent to an equivalent U.S. sample. The Latin Americans not only were found to have, in general, as good standards as their U.S. counterparts but fared better in figures for books and radio.[30]

Lack of roads and electricity, poverty, and illiteracy are often stressed as explanations for the lack of access of ruralities in this region to mass media messages. Those factors have, indeed, a limiting influence, but one may ask why it is, in the first place, that peasants are deprived of education, income, and facilities such as roads and electricity. At any rate, those barriers are not always and necessarily adequate explanations. For, sometimes, even in the uncommon cases where peasant illiteracy is low and transportation and access to mass media is good, peasants say they do not buy newspapers or pay much at-

tention to radio messages. This is precisely what Gutierrez and McNamara[31] found in a Colombian village well linked to the country's second largest city. Could it be that peasants find nothing for them in those channels?

## Content of Mass Media Messages

Within the classical model of development the Latin American peasants do not constitute a "public" as they are clearly marginal to the "market." Concomitantly, within the classical model of communication, these peasants do not constitute an "audience" as little can be done to persuade them to buy. (In terms of consumption.)

In terms of production, however, peasants may, up to a point, be regarded as a "public" and an "audience" within those models. But the task of communicating with them is not directly or immediately lucrative. Therefore, the private mass media institutions leave it altogether to government rural education efforts.

Research already exists to demonstrate that the mass media are oriented, eminently and not accidentally, to the urban audiences that constitute the market. Therefore, sad as it may be, it is logical not to expect their content to include materials of interest for peasants—except in the cases of agricultural mass media or of farming sections of the general-audience media. Let's, consequently, restrict our brief analysis of mass media content to these two types of specialized channels.

Gutierrez-Sánchez[32] analyzed three months' content of the weekly agricultural pages of five Bogotá dailies and sampled materials from a national weekly rural newspaper, measuring volumes for ten categories. He found that the dailies gave first priority to meetings and organizational activities of large farmers (ranked sixth by the weekly), while the weekly gave most emphasis to public programs to aid agriculture. For both the dailies and the weekly, two of the top three categories were national government programs and foreign trade, and crops. News of rural education needs and other peasant community programs were ranked lowest, along with fishing, by both the dailies and the weekly. Clearly, then, what was most important to the majority of the rural dwellers was given least importance by those media.

A more complex and recent study, also conducted in Colombia, corroborated those findings. Fifty one editions of farm pages in eight dailies were content-analyzed over a period of eight years. On a scale of seven content categories, land reform was found to be the last. And, with a slight tendency of regional newspapers to publish rural educational materials, the dailies showed an exclusive preference for purely informative and promotional items.[33] Felstehausen[34] found comparable results for radio in a region of Colombia.

Brazilian, Chilean, and Mexican studies, including that of Ruanova[35] on farm magazines, produced similar results. And Cordero[36] found that in Costa Rica, a country whose livelihood is eminently based on agriculture, the dailies assign minimal importance to it. In fact, his content analysis revealed that the categories of agriculture, animal husbandry, rural community development, land reform, and agricultural economy occupied intermediate and low places on the scale. The lowest categories were conservation of natural resources and reforestation. The first category (occupying most of the space) in the farm supplements was commercial farm advertising.

Hence, whatever little the mass media do in relation to rural development is indeed addressed only to the few farmers who are not peasants, most of whom rarely ever live on the farms. But those few are the ones who can buy what the media helps sell.

This may be so not only in the commercial domain but also in the political sphere. It is something which communication research in Latin America has not yet empirically verified at the level of the rural society. There is, however, a very suggestive study conducted in Peru by Roca.[37] He hypothesized that the interests of owners of daily newspapers in Lima influence content orientation in them, especially when such interests are threatened.

The researcher content-analyzed six dailies for the six-week period of 1963 during which peasant invasions of large farms estates constituted a serious threat for the land-monopolizing interests in the country. Of the 391 items of news, editorials, and advertisements analyzed, 290 were in favor of the large land-owners, 39 for the peasants, and the balance were neutral. News content, in particular, markedly favored the landlords.

While those results were not surprising, their importance was raised when the researcher also found that the ownership of three of the six dailies studied was clearly related to ownership of large farm estates; and, as hypothesized, they accounted for 184 of the total of 290 items against the peasants.

Other than strongly documenting a case of bias, does this not suggest that the main commercial mass media in Latin America, in addition to being indifferent to the peasant's requirements for rural development, may be militant against the social transformations this would require?

Now, assuming that it was possible to reorient mass media content so that it includes the interests of the rural population, is the style of the messages adequate to the peasant's culture?

## Code of Mass Media Messages

We find here again the same situation: given that mass media are strongly urban-oriented, they codify their messages in styles corresponding to the urban audience. Thus, the rural population is ignored not only in terms of content but also in those of code. And this does not happen only in the case of private mass media but also in that of government produced massive agricultural communication materials.

Perhaps the earliest scientific verification of that problem was that conducted by Spaulding[38] in Mexico and Costa Rica. He tested how understandable were the visual illustrations in a series of fundamental education booklets. He found that effectiveness was dependent upon: (1) how well the booklets fit the intended audience's experience; (2) keeping the number of objects in each illustration to a minimum; (3) keeping also to a minimum the number of separate actions necessary to correct interpretation of the message; (4) using color realistically and functionally; and (5) portraying objects and inferred actions in a realistic and unambiguous way.

A later and more complex study in rural Brazil provided similar but richer evidence. This study[39] probably constitutes a pioneer case of inquiry on the semantics and semiotics of non-verbal communication for rural development.

Comparable studies for radio, television, and film messages are so far unavailable in Latin America. For press, however, there are several.

Using Spaulding's readability formula, Ruanova[40] evaluated seven of Mexico's fourteen agricultural magazines and found them beyond the understanding of most of that country's farmers. Amaya[41] analyzed a Spanish-language farm magazine by means of rewriting several articles in it and then testing the original and the simplified versions; she found the former located in the "extremely difficult" and "difficult" categories of comprehension. Comparable results were obtained by Magdub[42] in measuring, mostly by the Cloze procedure, technical and extension agriculture publications and one grammar school textbook. And his analysis of 122 articles of the agricultural pages of four dailies and one rural weekly in Colombia, led Gutierrez-Sanchez[43] to conclude ". . . that which may be of direct value in improving agriculture is beyond the comprehension of those who could best use the information."

Evidently, then, even in communication materials aimed at the rural audience, the code being used is one pertaining to urban culture and alien to the peasantry. Why? Is it accidental or deliberate?

Simmons and others[44] have proposed, in the case of dailies, this explanation: "Even in

developing nations, journalists seldom make great concessions in their level of presentation for the poorly educated or otherwise culturally deprived." It is not only journalists, however, who seem to behave in that manner; writers, illustrators, and other communicators in rural development government agencies also seem often unaware that they are actually writing, painting, photographing, or speaking in terms understandable only by urbanites. For some analysts this is just another expression of the domination that rural people suffer under the imposition of the urban culture. Research has yet to go into verifying hypotheses as important as this one.

Admitting that it has not been exhaustive, I must stop here the observation of the process of social communication in relation to Latin America's rural development process.

## *Communication Strategies for Rural Development*

I can now venture into discussing strategies. First, let's consider these definitions:

A strategy is a behavioral design involving decisions on how to use power and resources to attain given goals through certain instrumental actions.

A national development strategy is a statement of collective goals and implementing procedures to effect given changes in man and nature's behavior in the direction of given kinds and levels of improvement and growth identified with a certain state and type of modernity.

A communication strategy is a set of decisions on who is to communicate what to whom, what for, when, and how.

A developmental communication strategy is a set of decisions concerning communication behaviors directly instrumental to the attainment of a nation's development as conceived in the broader strategy.

"Rural development"* is a subset of overall national development. "Rural communication" is a subset of communication in general. Therefore, strategies for each need to be defined separately here.

### The View from Inside

Strategic communication behavior (i.e., rational, organized, efficient) in the service of rural development is still yet more the exception than the rule. I do not know how true this may be in the totality of underdeveloped countries. But I feel quite sure that the assertion holds well for those of Latin America. These are some indicators of it:

(1) As a rule, there are no overall yearly plans of communication in the service of rural development. (Initial attempts at formulating them have been recorded in Peru, Brazil, Chile, Colombia and Argentina).† In the absence of such plans,

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*It implies far more than agricultural growth. We see rural development as "a process in which a nation's agriculture becomes a continually more productive and rationally organized component of an emerging modern industrial state with the changes in the social and political structure, productive processes and values that this implies."

†The most comprehensive is probably that of Peru (Ministerio de Agricultura, "Plan Nacional de Comunicacion Agraria 1972," 1972, Peru). The Colombian attempt seems barely starting, and Argentina's efforts have been mostly at the level of extension projects. In a recent international meeting of experts a recommendation was approved in favor of the formulation of communication policies and plans in support of those of rural development. At a broader level, UNESCO has produced a basic guidance document for the formulation of overall communication policies for national development (United Nations Educational, Scientific and Cultural Organization, *Report of the Meeting of Experts on Communication Policies and Planning* (Paris, France: UNESCO, 1972)) and will conduct in July 1974 a Latin American experts meeting on the subject in Colombia.

communication activities support rural development actions on an insufficient, erratic, and unbalanced basis.

(2) Sometimes rural communication organs tend to operate by themselves; that is, with little regard for the requisites of the population to be reached and without proper adjustment to institutional objectives and demands of field personnel.*

(3) There is lack of coordination among the different organizations carrying developmental messages to the rural areas; duplication of efforts and even competitive rivalry are not necessarily strange phenomena.

(4) Functional priorities are set in arbitrary manners. Characteristically, and virtually without exception, the production function is assigned the highest priority.† The simplest inspection of operations, staff, and budgets makes this evident. Most human and financial resources are spent in producing messages without a worry as to their utilization and actual effectiveness. Only minimal energy is assigned to the distribution and evaluation functions and practically no resources go to the research and training functions. The materialistic vision of development and of communication accounts for the expenditure of large sums in communication equipment, buildings, and vehicles while basic non-hardware needs are grossly neglected.

(5) Media selection is equally arbitrary. For instance, an unduly high proportion of production resources is spent in printed messages in flagrant contrast with the high indices of illiteracy prevailing in rural areas. Mass channels are often blindly preferred by rural communication specialists while extension agents exaggerate their preference for the impersonal ones.

(6) Messages are geared almost exclusively to assisting the farmers with technological information for production purposes, thus disregarding the sociocultural dimensions of the development effort. In addition, messages are couched in terms of the urban culture, as previously shown.

(7) Political convenience and lack of comprehension of the nature of developmental communication often leads rural development agencies to spend much of their communication resources in public relations tasks. Important as those activities are for these institutions, they are also alien to the needs and interests of the peasantry.

There are several other similar shortcomings. But these suffice to indicate that, rigorously speaking, we cannot yet talk in Latin America of the existence of communication strategies for rural development. Improvization and arbitrariness still take much precedence over planning and rationality.

If this view is accepted, then it should be evident that it is not possible to tell here what the actual contribution of communication strategies to rural development strategies might be—at least not in reference to Latin America. Why is that so?

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*The content of educational publications of the Instituto Colombiano Agropecuario for three years was found not to be "... in complete conformity with the priorities of the Ministry of Agriculture ..." (A. R. and V. Alba Robayo and B. Novoa, *Analisis de Contenido de las Publicaciones Divulgativas del ICA y su relacion con los planes del Ministerio de Agricultura*, 1970, Bogotá, Instituto Colombiano Agropecuario). Similar findings have emerged in studies of farm pages in daily newspapers, and other media of agricultural communication.

†An appraisal of communication planning in a rural development organization in Colombia, performed exclusively on the basis of production analysis, showed the following: (1) more unprogrammed than programmed activities were conducted; (2) communication materials were required by the field project managers without adjustment to objectives, priorities, time, or resources; (3) of all forms of communication utilized, publications showed the highest volume; and (4) the need for a system of control, evaluation and follow-up was made evident. (Novoa y Vejarano, 1973.)

First, let me put the blame on ourselves—the specialists in rural development communication. Our fault is, however, one of immaturity only. Young as our sub-discipline is, we have not grown yet to the level of strategists. For about twenty years, we remained content with being able practitioners of media handling and message production. Then, starting some ten years ago, a few of Latin America's "agricultural communication specialists" became social scientists and started looking critically at communication as a process. The conjunction of art and science in our profession has meant, no doubt, a net gain. But we still have to make a third major move upwards: to learn how to use optimally our art and our science in the service of human and democratic rural development.*

Faith and enthusiasm will not be sufficient for the success of such a novel endeavor. We must become knowledgeable in the nature of underdevelopment in our society so as to be able to contribute to its real development. And the latter is something that we may never be able to accomplish unless, in addition to mastering communication, we train ourselves in the infant art of democratic planning† and apply it to our field.

The time available to do that is not ample. Social communication efficiently organized to help generate deep and accelerated societal change is the only alternative to abrupt and violent transformation. Inasmuch as we believe the former to be preferable to the latter, we must promptly meet the challenge of showing the people the viability of our choice. For people appear willing to wait no more. Realistically, however, we cannot possibly achieve this service goal unless those who command the development effort understand our trade and make possible for us to be fully useful to the attainment of their ends. For we have no ends of our own. Communication is indeed vital to the development of a nation. But it is only an instrument. It may be mighty but it is not magic: it cannot generate development by itself.

## The View from Outside

Unfortunately, the importance of communication has not been properly understood yet either by political leaders or general development strategists. Most of them seem not to have a proper understanding of it. Even more so, they fail to perceive what communication can do to help them obtain development. Thus, our first practical duty is to attain successful communication with those decision-makers.

On the other hand, it is not sensible to expect communication specialists to grow to the stature of development communication strategists in situations where integral development strategies, strictly speaking, do not exist either. And this deplorably, seems to be pretty much what happens still in most of Latin America with regard to the situation of rural underdevelopment. (Promising exceptions seem to be Project "Piaui" in Brazil and Project "Peifeder" in Peru.)

Dominated by the materialistic obsession, development strategy as a rule in Latin America has assigned a high priority to industrialization and urban growth‡ at the expense

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*An insightful analysis of the evolution of the profession in Latin America has been done by Diaz-Bordenave. ("New Approaches to Communication Training for Developing Countries," 1972, Baton Rouge, Louisiana.)

†A valuable contribution towards this end has been made by Carvalho (*Comunicacao e o Processo de Planejamento*, 1972, Brasilia, Ministerio de Agricultura.) (Textos técnicos.)

‡The sterility of strategies derived from the classical development model in Latin America was publicly admitted by a group of high level government experts invited by the United Nations to participate in a recent evaluation of this region's development. The experts acknowledged that: "Growth recorded in the economic variables often did not result in qualitative changes of equivalent importance in human well-being and social justice. This is demonstrated by the persistence of problems as grave as mass poverty; concentrated

of rural development, including agricultural growth. Where, one unavoidably wonders, is the rationality of such preference in the case of essentially agricultural countries in which about half of the threateningly growing population still lives in rural areas?

It is a rare event to find a country in this region in which rural development is given a top priority within the overall development strategy along with an adequate proportion of the national budget. And it is equally unusual to find a country in the area having a complete, solid, coherent, and durable policy for rural development. In the absence of it, what can communication strategists do?

Low priority, ill-financed, contingent, and partial rural development plans do exist in many Latin American countries. Many of them fail to involve systematically the totality of agricultural development agencies, particularly the mushrooming specialized autonomous ones. And some of those plans also fail to reach an acceptable degree of articulation with the overall development scheme. It is small wonder, then, that social communication is far from integrated to rural development and has not been granted the conditions upon which it can operate as stimulator, facilitator, and optimizer of development.

## Looking Ahead

A general strategy of developmental rural communication cannot be formulated in a vacuum. It has to be derived from an overall rural development strategy and be subservient to it. Improvements of the formulation of the latter must be effected in the countries, therefore, as a prerequisite for designing the one on communication.

Let us be optimistic about the likelihood of those improvements since the region counts on a number of competent rural development experts and since development planning would appear to be starting, at long last, to take a direction more concerned with human beings than with input-output ratios. Let us, therefore, assume that we shall soon have in a country a sound general strategy for rural development. Will we, the communicators, be ready and able then to derive from it a sound general communication strategy?

I think we will if we join efforts right away to prepare ourselves adequately for that moment. In fact, I would take this very symposium as the starting point of the urgent endeavor. For it will be here that central issues in the making of such a strategy will be dealt with, jointly, by experts in both areas and from several countries. I would suggest that right after the symposium, a small international task-force be established to carry the impulse all the way up to its culmination. By that I mean the production of a general (but concrete and detailed) guide to pattern the formulation, implementation, control, evaluation, and adjustment of a general communication strategy for rural development. This instrument would be a sort of universal springboard for the preparation of similar but particular ones at the level of each interested country. I am confident that the basic components of some such a guide will emerge here at the symposium.

I honestly believe that, once we are able to help at least one country to devise and successfully utilize the strategy in question, then we might, as true communication strategists, earn inclusion in propositions such as the following of economist-planner Roberto de Oliveira Campos:

> "Although there is no immediate danger that the economists will join the army of the unemployed, it is quite clear that they have left precious little that is new or unsaid on the mechanics of development. The floor must be given to social psychologists and the political scientists."

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urban growth; environmental deterioration; inability of the productive system to provide employment to the growing labor force; and lack of economic and social participation of broad strata of population." (Comision Economica Par America Latina, *Analisis y Proceso Economico y Social.* (Notas sobre la Economia y el Desarrollo de America Latina), CEPAL, 1973.)

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# The Frontiers of Communication

ROYAL D. COLLE*

WHEN we talk about rural development, we are speaking about change. The kind of change we have in mind often involves affecting the knowledge, values, motivations and voluntary behavior of many millions of independent and individual entrepreneurs. Communication clearly ranks with providing water resources, fertilizer supplies and contraceptives as a key development activity. Without communication, the others may not be necessary, because it is communication that influences the making of those millions of individual decisions that result in the growing of new plant varieties and the controlling of birth rates.

More and more the decision to go "modern" binds up the rural dweller in a web of complexities that increase his need for better communication systems. Take the case of agriculture. The introduction of modern techniques usually increases the sophistication of a farmer's operation. He must deal with fertilizer and its proper application, different tools and equipment, pest control, water supply, transportation, current and prospective market conditions, and special credit situations. These are only some of the elements of the "new" agriculture that demand more effective information links between the farmer and the systems in which he operates. The use of some chemical fertilizers involves danger—a danger that is magnified when the farmer cannot read warnings.[1] Similar complexities appear in nutrition, health, family planning and other rural development programs.

As we look to the development of rural areas, communication must be a major concern. This paper examines some of the technology on the frontiers of communication that may help provide better ways of reaching rural families with information that they can use—and better ways of getting information from them that others can use.

To give an idea of the costs of some of the equipment mentioned in the text, an appendix is provided which lists some of the items and their prices.

But let us be clear from the beginning about the word "technology." It refers to more than dazzling new equipment; in the context of this paper it refers especially to the creative application of materials and equipment.

## *The Frontier*

Where is the "frontier" of communication? Obviously it depends on where you are. For some areas, the use of direct broadcast satellites is surely on the frontier (Brazil, India); for other places satellites are already part of on-going pioneering programs (Canada, Alaska, Pacific Basin); and for other places it's just a fancy on the horizon. This paper will take considerable liberty and use a kind of world average for that frontier line, acknowledging that it is, at best, a hazy, ambiguous approximation.

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## *Meeting Communication Needs*

### Involving the People

To begin meeting the communication needs now and in the future, several goals should be pursued. One of the major issues that constantly emerges in the various papers of this symposium is the need to involve rural people in the communication process, not just as audiences, but as important participants in planning and producing messages. One superb illustration of how this can be done has been provided by Juan Flavier, who went into the Philippine *barrios* to learn from the people there how best to express the messages of family planning. Their analogies with common events related to agriculture and the home with which barrio dwellers are very familiar resulted in Flavier developing a whole series of illustrations which have seemed to clarify otherwise complex ideas in family planning.[2]

What are the important communication needs for the future? First, it is important that more control over the communication process be shifted from those doing the "sending" to those doing the "receiving." Examine closely what generally happens in information programs aimed at rural people. Whether it is radio, television, newspapers, bulletins, films, or field workers, the sending "apparatus" often controls when, how frequently and, where that communication takes place. The scheduling of the broadcast or of the visit by the field worker is frequently beyond the power of the rural family.

Furthermore the villager finds it difficult to get important or complex points repeated. He or she cannot have the station play a program, or part of a program again if a point is missed. And there is often reluctance or embarrassment in asking a field worker to go over information again.

Print media are impractical for much development work, because of literacy levels, and where they do reach a community, villagers must often depend on the convenience of someone in the community to read the message.

Thus, as we look to the future we have to put emphasis on technology that gives the target audience more of a chance to choose the circumstances in which communication takes place. If villagers can choose the time, frequency and place for receiving information, perhaps we can be assured of more effective communication programs. As I will point out later, I think we have the means now to do this.

### Local Production

Another goal is to emphasize and use more locally produced materials. Several years ago 14 communication specialists in rural development gathered for a day long conference to discuss some of the practical aspects of their work. The group generally agreed that locally produced materials are by far the most effective. "Locally produced" does not have to mean poorly produced: technology is here that permist exciting materials to be developed even outside the production centers of our capital cities. "Locally produced" does imply that there be more local participation in the development of communication plans as well as in the creative and execution phases. This means that urban-oriented office-bound officials should be willing to put greater faith in the ability of rural people themselves to take an active part in the communication process, rather than be only passive receivers.

### Help for Extension Workers

Another important goal we must try to achieve is to expand the role of the "grassroots" (village level) extension worker.* Whether the concern is agriculture, nu-

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*I use the term "extension worker" in a very broad sense: it includes various kinds of outreach or field workers, not just those in the formal Extension organization found in many countries.

trition or family planning there is no disputing the value of the person-to-person contact provided by these people. But we need to overcome some of the limitations found in the extension worker system, so that we can get full benefit from this scarce resource.

The scope of materials that extension workers provide their clients should be broadened in two ways. First, they should have greater command over their own professional field. They should be able to provide more specialized information to their clients without sacrificing the fundamentals. Second, they should be able to supply information from other professional fields. For example, an agricultural extension person should have the capability of providing families with nutrition and health information as well as farm-related information. Although there is quite likely to be resistance to this idea, it seems clear that in most rural development programs we simply do not have enough professionals or para professionals available to provide separate extension forces for agriculture, family planning, nutrition and health services. Yet, information and education in each of these is generally needed in rural development programs.

Another part of the extension system that needs attention is maintenance of quality control. Although there may be minimum standards in recruiting extension workers, and these workers may be given good training, we are unsure of how uniformly they perform in the field. Undoubtedly there are differences in the quality of work among extension workers, and there are differences in one extension worker's performance from one client to another. We need assurance that the family visited at the end of the day is getting just as high quality service as the family visited at the beginning of the day.

Ideally we can overcome some of these problems by expanding the number of extension workers, by improving training programs, and by providing higher pay to attract more competent people. It has been pointed out that we now have only one agricultural agent for every 8,000 farm families in the developing nations.[3] It is obvious that this data does not reflect the actual distribution of these workers; in many places this implied saturation is much more diluted, expecially where the needs are greatest. Realistically, the major problem that will face us for quite a few years to come is simply stretching and making more effective the resources we have. What we need to do is to apply mass media techniques without sacrificing the distinct advantages of the person-to-person contact found in the village level extension worker system. Such an "inter media" system is a possibility with our new communication technology.

We should also make an effort in our future rural development communication programs to tie rural life into the mainstream of the nation's life. One image of villagers and barrio dwellers is that they want no part of contemporary modern society. And there are those who are cautious (and with good reason) about showing to rural dwellers the temptations of the city, for fear it will increase the already substantial rural-urban migration. But many rural people want to share in some of the excitement and benefits of modernization in ways other than growing more wheat. Many people in rural areas of developing nations know little of their own nation beyond their own village. We should not take comfort in this, or treat it condescendingly as "quaint." It presents a challenge to all of us to use our technology delicately to provide links to the mainstream of the nation's life without filling the highways to the capital city.

These are some of the goals we should aim toward. I would like to shift now to some specific projects and proposals which involve new communication technology, and which seem to me to have potential value in reaching some of these goals.

## *Cassette Technology*

Among the most promising of the hardware on the near frontier is audio cassette technology. (I use the acronym ACT as an abbreviation.) Cassette machines now come in many shapes, sizes, and costs, but the most common are the portable units that measure approximately $3\frac{1}{2} \times 6\frac{1}{2} \times 12$ inches—not quite so large as a shoe box. They use mag-

netic tape which is packed in a small sealed case (hence "cassette") $\frac{3}{8} \times 2\frac{1}{2} \times 4$ inches in size. Tape cassettes have a variety of running times, the most popular standard lengths being 30, 60 and 90 minutes.

Magnetic tape recorders, of course, are not new. They have been available for about 25 years. But what makes ACT such a promising and exciting communication tool for rural development is, first, its simplicity. The user inserts the tape cassette in the machine in toto. No threading is required. The user than pushes a button or moves a small handle to put the tape into motion for recording—or listening. Experience in Pakistan and the USA indicates that illiterate and low literates can easily learn to manipulate the machines.

Another characteristic of the technology is that it is relatively inexpensive. Machines used in projects in India and the United States have been purchased for as little as US$17.50. These were "playback" units only without a recording capability. Other good quality machines with the recording capability added can be purchased for US$20–25. This may sound expensive for some budgets, but the potential benefits may easily balance this.

Cassette machines and tapes are also very portable and durable. They operate with four or five "C" batteries, or with standard electric power. Because the tape itself is mostly enclosed in the plastic cassette, it is generally not handled (or mishandled). Transistorized electronics make the equipment light yet strong enough to withstand hard use.

There are two other important characteristics of ACT. First, cassette units and tapes are all compatible. A recording made on a machine in Bogota can be played on a machine in Taipei. Philips Holland, the company that developed ACT, vigorously promoted compatibility by insisting that the manufacturers it licensed not modify the original standards without permission. Secondly, the plastic cassette tapes have little tabs which can be removed to prevent anyone from accidentally erasing or recording over what is already on the tape.

## Use in Rural Development.

The most important thing about ACT is how it might be used in rural development. Several patterns have been tried. These include projects in rural areas of Pakistan, India, Guatemala and the USA. The fact that ACT is an audio channel makes it especially important as a communication system for people who lack literacy, or lack the interest in using their literacy. These situations often prevail among the poor people in both developing and developed countries.

Cassettes have been used in several different ways:

### *ACT in Listening Groups.*

In this situation ACT is used in much the same way as radios in radio rural listening groups. The latter were first introduced in Canada and then had a major trial in India beginning in the mid 1950s. The general pattern is for villagers to gather with a convenor who operates the radio set. The group listens to a broadcast especially designed for such groups. After the broadcast the participants discuss the topics covered on radio and try to relate them to their own lives.

The cassette system offers several distinct advantages over radio in these discussion groups. First, the group can gather whenever it or the convenor wishes; the session is not tied to the schedule of a radio station. Furthermore, it is a simple matter to replay parts of the tape for whatever reason: to catch a point missed, for repetition, to solve disagreements over what was said, to take notes, etc. Another advantage is that a simple two-way communication system can be developed with discussion group members recording questions, experiences, or other messages on the blank side of a cassette.

In the radio forums, it has been a convenor's or other appointed person's responsibility to write down this kind of information. Obviously having these responses directly on tape captures the full essence of the communication and provides the project leaders the opportunity to use questions actually voiced by group members in later tape productions. (We have no indications that this oral feedback mechanism has been systematically used although some modest experiments in a similar vein have been tried. This will be mentioned in somewhat more detail below.)

Probably the largest project using ACT in a developing nation is being carried out by FAO in India. This is the Farmers Training and Functional Literacy project in which 1,800 cassette players and 15,000 cassettes are being used by local leaders for group listening. Technical subjects of a general nature, such as control of insects and plant diseases, are being prepared by the Union government; local problems, interviews with subject matter specialists and "progressive" farmers are prepared on a regional basis. Since the project uses the Philips N-2200 cassette unit, no feedback system is possible as the machine is playback only (no recording capability).

In a study in rural upstate New York, a group listening component was included in a larger ACT project. The study was one of several combined under a research program called CSCS, or Cassette Special Communication System. Conducted by the New York State College of Agriculture and Life Sciences at Cornell, it was particularly designed to provide information needed by low income people to help them cope with some of their problems in daily living. After listening to a tape the group discussed the issues presented—and these discussions were recorded on tape by the convenor. The purpose of taping the discussions was to provide the researcher some "feel" for the nature of the discussion that followed the listening. But it could have easily been used to feed information back to project leaders if it were an on-going program.

Another feature of this listening group experiment was the opportunity provided some of the participants to borrow a cassette unit and a duplicate tape to take to their homes and play it for themselves. It turned out that some group members used the borrowed units to play the tapes for other satellite groups. (The latter was not in the original research design and came about because people in the group felt that others they knew would benefit by the information.) More recently ACT was introduced into the "mothers clubs" in Korea in much the same way as the radio forum model.

*ACT in Training.*

A second major use-pattern for cassette technology in social development communication is for training of para-professionals. In West Pakistan where manpower to train personnel is scarce, audio cassettes have been used in the training of midwives in the Family Planning Program. In the words of one official, cassettes were used "to multiply the scarce skill of a few competent and trained personnel." A main feature of the training was the use in rural areas of pre-recorded skits. A project report presents data and then summarizes concisely that "It is possible to teach midwives with the help of pre-recorded material."[4] Presumably this training—given enough financial support—could be done with regular "open reel" recorders or even phonographs. However, these have been around for a long time without much use in training. The characteristics of ACT make it more convenient—and perhaps financially possible—to use them as a field training device.

*ACT as a Field Worker's Tool.*

Another way the cassette can be used is as a tool of a field worker. The field worker takes his/her cassette machine to households and plays a pertinent tape for the "client." Thus a field worker can play a message about a topic either he or the client feels is necessary, and the integrity of the message is protected by its being on tape. The format of the message can be put in more dramatic form (literally and figuratively) than field workers themselves might be able to do. The range or variety of information field workers

can deliver is no longer limited by their own training. (Of course, diversity of information has always been possible through use of other teaching aids such as printed material and films, but these are not really feasible options in the usual person-to-person contacts of field workers.)

Several projects have used this pattern. The Family Planning Program in Pakistan trained midwives (*dais*) to play tapes during home visits. (Among the project's findings: "Illiterate but moderately intelligent *dais* could use TPM [tape playback machine] in home visiting.")

One of Cornell University's CSCS projects has also used ACT as a tool to be played for the client by a paraprofessional field worker (i.e., a nutrition aide). A similar system was attempted by a family planning project in Taiwan but it was reportedly unsuccessful in getting the field worker to use it. The Taiwan experience requires further investigation but two factors might be responsible for the problem. First: Playing the cassettes pushes the field workers out from being the central attraction. They may feel "up-staged" by a machine probably carrying the voice of another person or persons. They may feel that being relegated to the role of simply operating a tape recorder through which another authority or attraction appears and then standing by while it plays is demeaning. Second: Boredom could easily engulf the field workers. If they have to listen to the same tapes over and over, their enthusiasm could easily wear thin.

*ACT as "Intermedia."*

The great potential of audio cassette technology may be in the convenience it gives rural people to tune in to a message when they are ready and motivated to listen. Another model for the use of cassette technology in social development is to build on this advantage: that is, to provide a system in which the "target" audience can absorb the proffered information at a time when it is most convenient (thus, presumably, when the information has the best chance of being absorbed). In short, by placing cassette units and tapes in individual households, the householders can listen when, where, and as frequently as they wish. Field workers can place the machines in the household and supply the appropriate cassettes and leave. They can return to answer special questions, get comments, and accept requests for additional information. Of course, they will also recover the cassette machine so that it can be left at another home.

Rather than being an imperfect master of one specialty (e.g. family planning or nutrition), field workers can, in effect, be masters of resources for many topics for their clients.

## Some Basic Principles.

The main thrust of the CSCS program uses this pattern and was built on these principles:

(1) Use cassette technology in conjunction with field workers, but shift control over the consumption of information to the household.
(2) Extend the usefulness of the field workers by expanding the information they can deliver to their clients, and eliminate, as much as possible, the boring repetitious material they have to deliver in person and orally. Let them put the time and energy into making more visits with more people, and/or into making more meaningful and helpful contacts with existing clients.
(3) Use pre-recorded cassettes to localize messages, by building local people, names, places, language, and culture into the recordings. Because of the low cost of audio production of this type, it is possible to cover a small area with a set of tapes tailored to that area.

Because audio cassettes used in this manner combine the characteristics of mass media (e.g., radio production) with those of interpersonal communication methods, CSCS might be called "intermedia." The strength of ACT in developing nations, and with some

racial and cultural minorities in developed nations, may be in harnessing its use as "intermedia."

## Preliminary Evaluation

While data is still incomplete, preliminary evaluation reports on CSCS in two rural communities in northeast New York State reveal:

(1) Strong acceptance of CSCS by low income people as a means for getting information. In some cases, ACT gets a message through where field workers (nutrition aides) may not. Aides themselves explain it by saying that when they visit a homemaker the communication flow is from client to aide rather than from aide to client, as is generally intended. The aide becomes a needed and sympathetic "listener." But the tape and machine she leaves behind does the sending and the homemaker than becomes the "receiver."
(2) Very evident use of the opportunity to listen when they wanted, and often more than once, to the cassette tapes.
(3) Attribution of *authority* to the tape by low income listeners. One of the aides' supervisors said: "In the long run [CSCS] presents things with more authority, less diversion, and more understandably than the aides can do with the same scope of information." Several aides themselves echoed this observation.
(4) Definite indication of both mental and behavioral activity as a result of hearing the tapes. Behavior ranges from writing down a recipe heard on the cassettes to having an IUD inserted.
(5) A significant amount of "spill-over" exposure beyond the persons to whom the machines and tapes are given. Family members and friends also listen.

Thus, we see in the application of ACT to development-type problems considerable opportunity to communicate with hard-to-reach people. A major difficulty is the skepticism and reluctance of intervention agencies toward having cassette units left in households. A typical statement by an official of an agency is the following:

(1) We think that the audio cassette technology will not work out as planned in the barrio setting for the following reasons:
    (a) It is a rather sophisticated piece of technology, unlike radio. The tape tangles and gets broken.
    (b) Programs can easily be erased, either intentionally or unintentionally.
    (c) The proposed audio cassette project can be very expensive. Cassettes can easily be sold.
(2) On the other hand, we think that the audio cassette technology can be best utilized in the training of small groups. (For example, in training programs conducted by the extension worker, health educator, etc.) The machine and tapes must, however, be in the hands of the training personnel.

Yet there is a small amount of evidence from some of the places where trials have been made to indicate that a more positive view is warranted concerning the survival of ACT in allegedly "hostile" social and physical climates.

For example, Pakistan:

> TPM [ACT] can be maintained in working condition even in dusty rural areas. The possibility of theft, breakage and misuse is minimal as no complaint of the sort was ever received. . . .

USA:

> In three projects, two in rural areas and one in an inner city, only about 10 out of approximately 250 units circulated have been lost. And all of that loss occurred in the first project which experienced a severe flood at the time the project was gathering up the equipment.

Clearly there is a need to conduct both simple feasibility studies using ACT systems, and more sophisticated tests of ACT systems which will help guide communication strategy and administrative policy decision.

## ACT IN FAMILY PLANNING

Audio cassette technology is particularly suited for communication of relatively sensitive topics, such as family planning, particularly when it is possible for the "receiver" to control the listening situation. The characteristics of ACT make this not only possible but feasible. Here's why:

(1) Recordings can "approach" either or both males and females about family planning and contraception. This may often be difficult for a field worker to do, especially if sensitive biological details are involved. Other channels of communication such as broadcasting and print are often unsuitable: broadcasting because of social and cultural taboos; print because of the disinclination of many to read.

(2) Cassettes can raise topics even field workers in face-to-face contact will not. In CSCS research, it was found that the cassette tapes prepared the way for nutrition aides and homemakers to talk about family planning. Apparently hearing it talked about on tape by people much like themselves encouraged homemakers to "open up" with the nutrition aide.

(3) Cassettes enable people to listen as frequently as they want to details of the family planning message without the embarrassment of asking for repetition of certain parts. While persons may not hesitate to ask a lecturer or field worker to explain more or repeat something about the functioning of a farm implement, they tend to be more inhibited about their own (or the opposite sex's) bodies.

(4) Cassettes provide an opportunity for intergenerational communication and husband-wife communication. Members of a family can bring the family planning message to others in the family without directly confronting them with the message. One CSCS project, for example, discovered some mothers giving the tapes to their daughters to listen to, even though they themselves couldn't talk (or initiate talk) about the subject.

(5) Cassettes, creatively programmed, allow the family planning message to be combined with other kinds of messages. This can have a number of advantages. For example, in the CSCS projects, the cassettes were not "family planning" tapes but covered a broad range of social development topics. Persons using the tapes didn't have to worry about a possible stigma from having "family planning tapes." Furthermore, by mixing family planning with other subjects, people might get exposed to the family planning message without deliberately meaning to.

(6) Underlying much of these advantages is simply the opportunity ACT provides to listen privately to something very private: to listen where and when one is ready.

A question can be raised about the lack of visuals in the audio cassette presentation. It has yet to be demonstrated how important intricate diagrams of the human "plumbing" system are to a person's acceptance and performance of family planning. With evaluation still incomplete on one CSCS project, its audio cassettes can claim at least two vasectomies and one IUD insertion without any visuals. It may be that the most important part of an organized communication program in family planning is the motivational and assurance side, rather than the technical "how-it-works" side. The latter might best be done in another context, such as a clinic A-V presentation coupled with professional personnel. This may be particularly true for less sophisticated audiences. Perhaps visualizing the conception and contraception process complicates the real importance of the family planning message for the low-income, semi-literate or illiterate person.

## OTHER USES OF ACT

Finally here are two additional ways that audio cassettes could be used in rural projects. First, take the use of cassettes in conjunction with a field demonstration ar-

ranged by agricultural people. When farmers visit a plot, and then return to their own farms, they may not be able to remember some of the important details of the demonstration, such as quantities of fertilizer, explanation of specific techniques, etc.

The farmers could be loaned cassette units and tapes to take home. The tapes can carry information (combined with some entertainment) that reinforces and supplements the information given at the demonstration. And there is a dividend: other family members (e.g. the wife) can also listen and share in the process. The wife may play an important part (though sometimes obliquely) in decisions about adapting innovations, and listening to tapes may help win her support.

Another method of circulating cassette machines in a community is the ESSEX pass-along system.* An extension person places a unit with one family and provides a complete set of the tapes prepared for people in that community. After that family finishes with it, they pass it to another family they think will benefit from the information. That second family then passes it to a third, and so on. There are two advantages to this system: first, "natural forces" within the community move the equipment from family to family; and second, the process of passing the cassette materials from one family to another carries with it an implied testimonial—a testimonial coming from someone known and probably trusted within the community. Will the machines be lost or stolen? That's usually the first question that arises. We should gather data rather than intuition to answer it. Our modest experience with the Essex system is, in fact, that we don't lose equipment.

Audio cassettes may be the most overlooked, yet one of the most significant, developments on the communication frontier. One major difficulty may be (as alluded to earlier) the skepticism over whether rural people are "ready" for this kind of technology. This is, of course, a legitimate research question. Unfortunately, pre-judgment by the urban "elites" tends to diminish opportunities to find the answer. It also may be that the very simplicity of ACT (which is why it is potentially so valuable) makes this kind of technology less dramatic than other more elaborate technologies. We are suspicious that major funding organizations don't really take audio cassettes seriously because of the very modest cost in conducting feasibility studies. (Range from $10,000–$20,000.)

We have much to learn about how cassettes can be used effectively and by whom.[5] ACT is not just another magnetic tape recorder; it is a new communication device with many ramifications.

## *Radio*

It surprises some to discuss radio in a paper devoted to the frontiers of communication. It is true that radio broadcasting has been with us for more than 50 years and that every nation has at least one radio station. Yet radio as a tool for rural development is on the frontier in many parts of the world. And in some places, there is danger that radio may be inadequately exploited or ignored because of the great fascination with television.

The invention of the transistor almost 30 years ago has had a tremendous impact on the design of radio receiving sets. They are smaller, portable and cheaper—and can run on simple flashlight batteries. Whereas only a few years ago many villages might be lucky enough to have a community receiving set, now personal "transistors" are penetrating many individual households, even when electrical power is not available.

I have discussed elsewhere the many advantages of radio in rural development.[6] Here I want only to indicate a few of the experimental ways radio is being used.

One of the ways radio can be made more effective is to increase its "local" character. All India Radio attempts to localize its radio service to rural people by creating farm

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*The name ESSEX comes from a rural New York county where it was first tested.

broadcasting cells at many of its stations. These cells, which include producers and script writers, are responsible for developing programming tailored to the interests of the villagers in the stations' listening areas. Because the cell is devoted exclusively to farm broadcasting there is little chance other kinds of demands will dilute the agricultural programming effort.

## Basic Village Education

Another approach is being tried in Guatemala where radio is at the heart of a pioneering project called Basic Village Education. It is aimed at discovering ways of using modern communication systems to educate the large mass of illiterate peasants in Latin America outside the formal education system.

The problem in Guatemala is a familiar one: limitations in resources and manpower for reaching rural people through conventional extension programs, and an urgent need to find effective low-cost means to supplement extension agents. And the rate of illiteracy is very high among the rural population. The decision was made to use radio to by-pass the literacy obstacle, rather than to take precious time to teach literacy first. A special station is being built for the project and its entire programming will be directed toward peasants in a highly limited geographic area. The content will deal with agriculture because officials developing the project feel that improvement in agriculture is basic to all other improvements in a subsistence peasant society. Consideration may be given in the future to health, nutrition, sanitation, and related topics. Program formats will include radio novelas, straight informational programs, spot announcements, and features that reflect local culture. Intensive pretesting of content is a vital part of the plan to insure that the target audience understands and will listen to what is produced.

Several variations in the project have been designed to test the value of support material. For example, one area will get only the radio broadcasts, another area will have the broadcasts plus local "monitors" and some additional audio-visual aid support. The monitors conduct radio forums where there is a suitable concentration of farmers, and work on an individual basis with others. A third area will receive more intensive audio-visual support for the radio broadcasts, as well as agricultural technicians who will reinforce the monitors with activities such as crop demonstrations. Cassette technology is also being used to provide additional exposure for the broadcasts, to record forum discussions to feed back to the project leaders, and to test other ways ACT can contribute to rural information programs.

The Guatemala Basic Village Education project, scheduled for a three year period, should provide us with a considerable amount of information on how to communicate effectively and efficiently to people who are hard to reach because of geographic and/or cultural barriers.

## Radio Schools

Another model for use of radio in development is provided by the "radio school." Groups of people are convened regularly as in a normal school situation, but the instruction comes via radio. A monitor also assists in the class. An example of this is the Honduran radio school movement which is credited with having considerable potential for linking the rural lower-status population into the processes of national integration. In various ways, the radio school helped overcome "the physical and cultural isolation of Honduran campesinos."[7]

The school was also successful in communicating "considerable information regarding improved health and agricultural practices," but it had less success in getting the information actually put to use unless there was an accompanying action program such as a rural housewives club.

## *Other Simple Technology on the Frontier*

Certainly one of the priorities for communication technology in rural development in the near future must be simplicity. Using visual materials tends to complicate things a bit, partly because visual production is generally more complex than audio alone, and partly because the cost of purchasing and maintaining projection equipment is higher than audio. This higher cost can be tolerated if the benefits are increased in at least the same proportion. Unfortunately greater cost may compel use of materials over a wider geographic area with the result that content usually must be made more general, and less local. But all visual production does not have to be costly.

We mentioned earlier that technology is not all hardware. It often involves techniques. Thus, it seems appropriate in this paper to highlight several interesting ways of creating visual materials for use in rural areas. These techniques are important because they can be carried out with relatively unsophisticated equipment and at low cost. This provides an opportunity to produce locally oriented materials—content that rural audiences can more easily identify with.

### Battery-Powered Projectors

We now have low cost equipment that will allow filmstrips to be shown in villages even where electric power is not readily available. A simple battery operated filmstrip projector, called the Crusader, can be easily carried and operated by any field extension worker. It is not much bigger than an ordinary flashlight. The Crusader was developed and pioneered by Father Edmund McClear, who has spent 30 years working in the highlands of Guatemala on communication problems. He has recently found an alternate power system for the projector which will permit showing filmstrips for less than two cents an hour. He is also exploring ways of using audio cassettes to provide sound tracks for the filmstrips.

Filmstrips can be secured from ministries, educational institutions, and international organizations, but their shortcoming is that they usually are not local enough. One technique is to make filmstrips from existing "photo-novela" magazines. These magazines are extremely popular in Latin America and parts of Europe and Africa. They consist of stories told in series of photographs—usually showing rather expressive people in various kinds of interaction. The dialogue is written in small spaces ("word balloons") in each photo.

The basic equipment for making a "film-novela" includes a 35mm camera and a copy stand. With these, one can easily copy some of the "frames" in the magazine, and produce the film strip.[8] Sound tracks can be recorded on cassette machines, possibly using local talent. Thus if the visual part is suitable for several localities but the language or dialect is different, locally produced sound tracks is one answer. This arrangement could also involve local people in the production. Not only may this insure suitable expression, but it may also generate profitable publicity. One way of increasing information flow from the audience would be to get some local people to help create the dialogue for the film novela. Of course the purpose is to make a sound track that goes with the pictures and which, at the same time, carries whatever development message is needed.

A variation of this technique is to start with a 16mm documentary of information film and, using a single lens reflex camera, shoot individual frames of the film. This converts a motion picture into a slide film. The advantage is that the latter can be projected in any rural area without the expense and logistics associated with "movies." Audio cassettes can be used to record parts of the original sound track, thus providing both pictures and dialogue from the 16mm film.[9]

## *Television*

A little farther out on the horizon for most rural development programs is television. Yet in some places, television is already being used to bring information and education to rural people. India has televised agricultural and related programs to approximately 80 villages around Delhi for several years.[10] Ghana, Senegal, the Ivory Coast and Tunisia have used television to provide programs for farmers, fishermen and others on technical subjects as well as literacy. Clearly television broadcasts are reaching some areas. In the Ivory Coast, the government turned to the nationwide television network to, among other things, train farmers in modern agricultural methods so that this country could sustain continuing development. One of the important aspects of the project, which has been in operation since 1971, is that people in the most remote villages were able to take advantage of adult education instruction in local and national, African and world affairs.[11]

The difficulty with television broadcasting as a tool in development is that it is not usually tailored to specific areas; in fact, the expense of production and the pattern of TV set distribution usually encourages rather general content. Broadcast television also tends to be unsuitable for specific physiological information on sensitive subjects such as family planning.

However there is new equipment becoming available which will give development workers more of an opportunity to use television in their work. Low cost portable television cameras and video tape recorders (VTR) make it possible for extension organizations to go to the field and make their own programming. For example, it would be possible to video tape a successful demonstration plot, including interviews with farmers and agricultural specialists, and then play these "programs" for audiences in all the surrounding villages where the content applies. Actually using television this way makes it a different kind of a medium. It can be localized in content and "talent"; and it can be played for people at times convenient to local conditions. Of course, video tape can be played back an instant after the recording is made so, unlike film, a person can tell immediately whether the recording is suitable or not. Learning to use this kind of television equipment is very simple and some day should be part of the training offered to field personnel.

Recently the organization Population Services proposed using the low cost portable VTR equipment to directly involve local village people in the promotion of family planning.[12] Its plan is to secure testimonials of key village people on video tape and then play these back for others in the same and neighboring villages. The locally produced material would be used as segments of a longer program, parts of which would be recorded by the production people before they actually reached the village. One intent of the project was to "open the way toward a whole new area of communication research designed to test specific hypotheses about VTR effectiveness as a community development tool in developing countries" and also gauge the reaction of rural people to television.

## *Simple Motion Pictures*

Another relatively new medium that presents the possibility of local production is 8mm film. I remember several years ago an Extension organization requesting foundation funds to have a film made on agricultural techniques that were relevant to a rather restricted geographic area. It seemed clear that the film would have little value after one or two years because it was so highly specific to the farmers in that region. And the cost of having a commercial producer make a film with such narrow use seemed unrealistic. The alternative was for the foundation to support a workshop on the making of "single concept" 8mm films that would be suitable for demonstration purposes. Thus, many Extension organizations could begin to make films for their peculiar soil, climate, and crop conditions at a fraction of the cost of commercially produced 16mm films. Unfortunately we

do not know of any effort yet to promote this kind of grass roots film production in a developing nation. Considerable experience in other places has demonstrated that students and community groups can use the new 8mm technology to produce films that communicate.

Given the high cost of film stock in many countries, 8mm films offer a promising alternative to other more expensive forms of film production, while at the same time getting local involvement and locally oriented content.[13]

## *Satellite Communication*

As we move farther out on the communication frontier, we must consider telecommunication satellites. Of course, satellites are being used every day in international communication. Indeed, there are at least nine earth stations in Latin America. But we are concerned particularly with how satellites can be applied to development problems. We can get some idea by looking briefly at four cases: Pacific Islands, Brazil, India and Alaska.

In India, the government plans to emphasize agriculture, family planning and "national integration" in a satellite communication project designed particularly for rural areas. This is an experimental program scheduled for 1975. It will attempt to provide programming to community TV sets in 5,000 villages around the country. Two reception systems will be tested. One system will originate programming at a studio on the ground and then relay the signal via satellite directly to the village receivers. The second system (operating simultaneously) will relay the signal via satellite to television stations from where the programs will be broadcast in a conventional way to TV sets in villages surrounding the transmitter. Thus the satellite will be used as both a "Direct broadcast satellite" (the first system) and as a "distribution" satellite (the second system).

The advantage of the direct broadcast system is that it allows even remote villages—those out of range of a conventional television station to have television service. The Indian Space Research Organization (ISRO) has already fully demonstrated solid-state TV sets for use in unelectrified villages, the electronics necessary for direct broadcast reception, and various other electronics for the project. The challenge, of course, is to produce content that is meaningful to the vastly heterogeneous population in those 5,000 villages. This is answered, in part, by programming to only some of the areas at a given time. For such programming to be effective it is necessary to have a tremendous amount of local "infrastructure" such as monitors, Extension workers, or some other supplementary communication system to localize the satellite message. For example, if the satellite program deals with agricultural credit, it would be important that viewers also get information on local conditions affecting the availability of credit as well as procedures for acquiring it. Incidentally, audio cassette technology is one possibility for producing and disseminating the local message. What all this points to is a need to have an "integrated communication system"—and that calls for an immense amount of planning, preparation and cooperation among many agencies.[14]

Not all satellite communication projects require the sophistication of live television transmission. Pioneering efforts have been undertaken in the Pacific Basin and in Alaska which use a satellite for relaying radio and other services (e.g. slow-scan television) requiring relatively simple ground stations to pick up signals from a low power (ATS-1) experimental satellite. Among the many fascinating uses made of the satellite was a "biomedical project" in Alaska. The satellite linked 21 health aides with a public health service doctor who provided medical counseling and diagnostic services. Health education programs were also being provided to village inhabitants.[15]

Much exploration is being done to discover ways of using satellites in development. Stanford University and Brazil are collaborating on a project "aimed at gaining the appropriate skills, knowledge and technical expertise, and the training of key personnel. . ."[16]

Satellite transmissions have been made on a regular schedule between Stanford and Brazil's Institute of Space Research. Ultimately the Brazilian government plans to have its own domestic satellite—probably in the middle of this decade—for use nationwide to provide greater educational opportunities for all Brazilians, including those in isolated rural areas.

One of the promising characteristics of satellite communication is that it allows people in remote regions to share more in national life. Just about two years ago the Honorable Robert Stanbury, Canada's Minister of Communications, visited the remote areas of his country in the Yukon and Northwest territories. His observations and thoughts are worth noting:

> I found that . . . people are looking forward to our Canadian satellite communications system. . . . The ANIK satellite will bring a new dimension in communications to many homes in the remoter parts of Canada. It will help them communicate by telephone with their neighbors and with the mainstream of life in the more densely settled parts of the country. It will give them live television for the first time as well as improved radio broadcasting services. People in the North expressed to me their keen expectation that the communication satellite will help them in very practical ways in their daily lives and bring them more closely into communication with their fellow-Canadians. . . . It seems that only a satellite can deal with the realities of the North—adverse climate and harsh terrain and great distances between communities.[17]

## *Conclusion*

So that is a bit of what the frontier of communications looks like. I have not dared to cover all that is new. Broadband cable communications systems, computer operated newspaper systems, holographic and lazer technology; these and many other recent developments will someday be felt in the countryside. But there are important frontiers to cross before that "some day" comes. And strangely enough, it may be that the most important things on those frontiers will not be the complex, sophisticated and expensive technology. Instead they may be the simple equipment and techniques that give rural people a chance, themselves, to have more control and be an important participant in the communication process.

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[1]The situation is described well in: David Hapgood and Max F. Millikan, *No Easy Harvest* (New York: Little, Brown, 1967), pp. 13–27.

[2]Juan Flavier, "The Agricultural Approach to Family Planning Communication," paper presented at Cornell/CIAT Symposium on Communication Strategies for Rural Development, Cali, Colombia, 1974.

[3]World Bank data quoted by Milton Esman, "Popular Participation and Feedback Systems in Rural Development," paper presented at Cornell/CIAT Symposium on Communication Strategies for Rural Development, Cali, Colombia, 1974.

[4]Edward Spicer, (ed.), *Human Problems in Technological Change* (New York: John Wiley, Science Editions, 1952), "Corn and Custom: Introduction of Hybrid Corn to Spanish American Farmers in New Mexico," by Anacleto Apodaca.

[5]Royal D. Colle, *CSCS: An Experimental System for Communicating with Hard-to-Reach People*, (Papers in Communication #1, Department of Communication Arts, Cornell University, Ithaca, NY [1973]).

[6]Royal D. Colle, *Telecommunications in Asian Development* Programs, (Papers in Communication #4, Idem.)

[7]Robert A. White, "The Adult Education Program of Accion Cultural Popular Hondurena. An Evaluation of the Rural Development Potential of the Radio School Movement in Honduras," Department of Anthropology and Society, St. Louis University, St. Louis, Missouri, and Center Loyola, Tegucigalpa, D.C., Honduras, n.d.

[8]Detailed instructions for making filmstrips starting with photo novelas and motion picture films are included in the following papers: Rivka Danziger, "Making Sound Filmstrips From Existing Photonovela Magazines," East-West Communication Institute, Honolulu, HI, 1973 (Mimeographed.) and Rivka Danziger and Sanford Danziger, "Making Sound Filmstrips from Existing 16mm Movies," East-West Communication Institute, Honolulu, HI, 1973 (Mimeographed.) A source of filmstrips appropriate for use in rural development is World Neighbors, (5116 N. Portland, Oklahoma City, Oklahoma, USA). WN also produces a newsletter called *Soundings* which provides descriptions of new materials available as well as new ideas in using audio and visual media at the village level.

[9]Another low cost technique which includes sound and visuals is "radiovision." Anna Fox, "An Experiment in Radiovision and Some Conclusions," *Educational Broadcasting International* Vol. 6, No. 3, September 1973. One drawback to radiovision, as in the case of any broadcast system is the problem of scheduling to meet the requirements of audience, station and agency.

[10]For a description and evaluation of India's experiment with rural television programming see: Chaman Lal, "A Review of the Delhi Pilot Rural Television Project and Its Lessons," Indian Space Research Organization, Department of Atomic Energy, New Delhi, India, 1970.

[11]Pierre A. Moser, "Television Brings Education to Ivory Coast Rural Areas," *UNESCO Features* No. 633 (1973).

[12]Population Services, Inc., "The Use of Video Tape Recorders as a Method of Directly Involving Local Rural People in Developing Countries in the Promotion of Family Planning," Chapel Hill, NC, 1972. (Mimeographed.)

[13]For an account of the use of 8mm films with low income audiences (but not made by them) see: Clifford Scherer, "Developing a Super 8mm Film System to Help Teach Nutrition to Low Income Audiences" in *Communicating with Low Income Audiences and Opportunities for Communication Research in Community Development*, Proceedings of the annual meeting of NCR-44, Regional Committee on Communications through Mass Media, University of Illinois, Urbana, Illinois, 1971. (Mimeographed.) Sol Worth and John Adair describe how inexperienced Navajo Indians were taught to produce films in "Navajo Filmmakers," *American Anthropologist*, Vol. 72, No. 1, February 1970. Several Cornell Scientists in the N.Y. State College of Agriculture and Life Sciences without special training are using Super 8 equipment to make short films for use in Extension and University instruction.

[14]For descriptions of the Indian satellite project see: Kenneth A. Polcyn, "The Joint United States—India Educational Broadcast Satellite Experiment," *Educational Technology*, June 1972. Also: Kiran Karnik, "Spotlight on Software Aspects," *VIDURA*, Vol. 10, No. 1, February 1973. In the same issue of *VIDURA*, Erskine Childers and Mallica Vajrathon discuss the need to have a "development support communication" system to meet the coordination problems. See: "Communication and Rural Development."

[15]"Alaska/ATS-F, Health/Education Telecommunications Experiment," Office of Telecommunications, Office of the Governor, State of Alaska, Juneau, Alaska, 1973. In-

formation on the Pacific Basin project is in "PEACESAT, Project Description and Overview," available from PEACESAT Project, University of Hawaii, Honolulu, HI.

[16]Kenneth A. Polcyn, "The Proposed Brazilian Educational Satellite Experiment," *Educational Technology*, July 1972; and Colin J. Warren, "Education and Telecommunications in Brazil: Some Cost and Policy Considerations." Report for the Academy for Educational Development, Washington, D.C. 1973. (Mimeographed.)

[17]Robert Stanbury, Opening address, Symposium on Communications into the Home, The Royal Society of Canada, Ottawa, March 1972, p. 8. ANIK, The name of the satellite, is the Eskimo word for "brother."

## *Appendix*

In the text, several simple relatively low cost systems were suggested for rural development communication programs. The following lists of equipment are intended to give a general idea of the cost involved in using these systems. Because there is such a great diversity of equipment available, as well as differences in import taxes, one must regard these figures as rough approximations. In listing particular models of equipment, we have tried to steer a middle course between lowest cost amateur equipment and expensive professional models. Emphasis has been placed on listing items that can be used by people without extensive training. One surely can find other manufacturers who provide equipment of comparable quality. This is a guide only.

### Equipment for Audio (Sound) Production.

This equipment can be used for producing tape for distribution via broadcast or cassette technology. It can also be used for a simple production studio for "live" broadcasts.

| *Quantity* | *Item* | *Approximate Cost* |
|---|---|---|
| 3 | Microphones, Electrovoice 635A and Switchcraft connectors | $200 |
| 1 | Audio mixer board, Sony MX14 (6 inputs) | 200 |
| 1 | Portable transcription player Benjamin VP25B | 250 |
| 1 | Headset, Telex 820 | 20 |
| 1 | Portable RxR tape recorder,* Sony TC800B | 250 |
| 1 | RxR tape recorder, Wollensak 6020 AV or VM 780 AV | 170 |
| 1 | Cassette tape recorder, Sony 110A | 130 |
| 3 | Microphone desk stands, University UDS 100 | 12 |
| 2 | Editing kits, Editall KS-3 | 20 |
| 1 | Cassette duplicator for RxR master, Wollensak 6030 AV | 500 |
| 2† | Cassette copiers Wollensak 2760 | 600 |
| x† | Cassette recorder/playback units Craig 2622 or Elgin RTC 5620 *each* | 20–25 |
| 1 | Cassette tape eraser | 15 |

*RxR refers to reel-to-reel or "open reel"

†Quantities depend on size of project, i.e. the potential audience, and whether clients or groups are provided with cassette units. There is a large range of tape recorder models in the under-$50 cost range.

| *Quantity* | *Item* | *Approximate Cost* |
|---|---|---|
| | *Equipment for Message Distribution Via Low Power Radio Broadcast.*‡. | |
| | Broadcasting transmitter 1000/250 watt | $US8400 |
| | Spare parts and accessories | 2068 |
| | Antenna | 675 |
| | Antenna accessories | 350 |
| | *Equipment for Producing and Projecting Filmstrips* | |
| | Single lens reflex camera with normal and telephoto lens, and a close-up lens kit. Tentax Spotmatic, Konica Autoreflex, Canon FT and F.1 series, and others in this price range are suitable. | US$400–500 |
| | Copy stand | 20 |
| | Crusader projector (uses standard batteries) | 12.50 |
| | Long life rechargeable battery (optional, only one needed) | 10.00 |
| | *Equipment for Super 8mm Film Production* | |
| | Super 8mm camera. Good alternatives include Kodak XL55, Bauer C5XL, Bolex Macrozoom, and GAF. Includes tripod. | 200–450 |
| | Viewer editor with rewinds: Alternatives include: Hervic Super 8 Minette and Hannel Super 8. | 50–60 |
| | Splicer, Bolex 732 | 50 |
| | Sound projector, magnetic—to provide possibility of adding sound track after film is developed. Good alternatives include Bolex and Kodak Supermatic. The latter uses film cassettes. | 400–500 |

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No. 48: Radio broadcasting serves rural development
No. 49: Radio and television in the service of education and development in Asia
No. 54: 8mm film for adult audiences
No. 62: Radio and television in literacy—a survey of the use of the broadcasting media in combating illiteracy among adults
No. 64: The role of film in development

# Comments on the Beltran and Colle Papers

D. T. MYREN*

GIVEN my time constraints I will spend a minimum of time underlining the positive contributions of the Beltran and Colle papers and focus instead, as I am sure the authors would wish me to do, on those points where I think that their arguments need bolstering or where I think that we need additions to the conceptual basis which they have provided for this conference.

## *Critical Look at Definitions*

In this paper, Beltran has taken us quickly to the heart of the rural development and communication problems of Latin America. Let me review briefly what he does. He looks critically at accepted definitions of development and then proposes content for an improved definition of national development. He looks at communication models and proposes an improved statement, more egalitarian in content and less oriented to persuasion. As an aside he stresses that the literature establishes a clear correlation between development and communication, but does not examine the direction of the cause-effect relationship.

Next he narrows his focus to Latin America and explains that a system of communication is composed of three major sub-systems: the inter-personal, the impersonal or massive, and the mixed one resulting from stable combinations of the former two. At this point he decides for practical reasons to limit his study to the impersonal sub-system. He does a good review of literature related to impersonal communication (though there are some items that can be added). Finally, he comments perceptively on the need for communication strategies related to development strategies.

### VALUE OF MATERIALISM

It is a good introductory paper. But let me point out a couple of the things that bothered me. In respect to development, the "rural" is somewhat neglected in Beltran's focus on national development. The bogeyman here is what he calls the "classical materialistic model." I am surprised at Beltran's strong rejection of the materialistic, not that I am opposed to spiritual development but because as I listen to the underprivileged, heavily concentrated in rural areas, I find them heavily preoccupied with the materialistic. They tend to think in terms of ways to obtain better distribution of the material—this would include more and better food, better health care, availability of good schooling, and/or money to buy those things which make life more pleasant. Thus, they would not fight "materialistic" growth but insist instead on better distribution. It seems to me that the problem here is not so much the elements included in the calculation of GNP as it is the fact that we are dealing with an average rather than a frequency distribution.

We also need to look for better indicators. AID has a contract with Iowa State University to develop a methodology that countries can use to develop their own social indicators. However, if it attempts to come up with a system for arriving at a single coefficient it will have the same problem of combining indices of well-being with dis-

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tribution—a most difficult task. The point I want to make is that the question of which index and that of distribution are two separate issues. The kind of development we want would take into account rural and urban; all ethnic groups; men, women, and children; all geographic areas, etc. What we are really arguing is that if the basic unit that we are concerned about is the person, then our analysis needs to at least use a frequency distribution rather than an average. Social indicators of development will have the same deficiency as GNP if they are allowed to have as broad a range of points and are then expressed as national averages.

The point that I hope that we can all agree on is that we do not object to material improvement; we do object to bad distribution of such improvement and would want to be sure that any index of development would not be based on national averages.

## Balanced Persuasion

On the communications side, Beltran comes down hard on what he labels the "classical mechanic-vertical model of communication." He holds that this model is based on a preference for manipulative and undemocratic persuasion and insists that "we need now to concentrate on the functions of communication, on ways in which people use messages—not as we have in the past,—on ways in which messages can use people." This is, of course the same kind of conclusion that has been coming out of the work of J. Grunig, H. Felstehausen, M. Brown, and others at Wisconsin, during the past decade. It is the kind of thing we learned very early in Mexico and that has served as the basis for the communication strategy within the Puebla Project. It is embodied in the concept of "development support communications" that E. Childers is working on in UNDP. Yet it is true that theory tends to lag behind and accommodate itself very slowly to what is being learned in the field. The reason for this, I think, is that a theory or model may still be correct in some sense of the word, but it may not be very useful for understanding a set of phenomena.

One of the serious errors in communication research has been the way we have gone about testing overseas generalizations based on research in the U.S. Several years of elated reports and journal articles were devoted to proving that the same generalizations applied overseas. It was only when we began to submit these generalizations to the acid test of usefulness that we found that we did not have a body of useful knowledge for the development goals at hand. An example is the oft-repeated correlations of income, education, size of farm, etc., in respect to communication behavior. These studies have been of limited use for planning how to introduce improved practices among poor illiterate farmers. The need is to construct a useful body of knowledge, not just one that also proves out overseas. There is a difference.

I think we should also look rather closely at persuasion, and perhaps Beltran would like to comment further on whether he intends to completely eliminate it from his communication model. Perhaps in the democratic planning that he refers to in his final chapter there will be strong efforts at persuasion, from both the national policy side and the farmers. Thus, we would not eliminate persuasion but ask for a better balance of power and consequently a better balance in persuasive ability, with messages being initiated from both extremes. This would, of course, require several situational changes which would tend to permit the desired change in communication behavior.

## Reaching Small Farmers

One final point, perhaps obvious, is central. Most rural people are farmers. They obtain the major portion of their income from agriculture. There will be a growing need for food worldwide, with needs doubling in less than 20 years. So one of the best possibilities for a better life will be through spreading the benefits of improved technology over the entire farming population. One of the important challenges for communicators is to see

that the information for this agricultural improvement is produced and incorporated into the farming systems of the numerous small holders.

## *New Communication/Technology*

Let me turn now to Colle's paper. Here is an excellent review of innovative research and pilot testing of new communication technology. This merits careful study because it reports innovative work with media technology which can broaden the parameters within which communication strategies are to be elaborated. My main concern here is not with what is said but with what is not said. In this early stage of the symposium we are concerned with more or less laying out the parameters and frontiers of the field of communication. This paper limits itself largely to technology.

It seems to me that in this opening session we have to define the "frontiers of communication" rather clearly in terms of communication strategies and methods to assist the large number of small farmers who have been largely left out of previous efforts. If we approach "frontiers" in this way we will begin by laying out rather carefully the general and specific objectives of the particular development being sought in terms of desired nutrition, health, literacy, general well-being. We will look for new ways to obtain the involvement of the intended users in this definition. In fact, in the process of specifying the rural development objectives we will have come a long ways toward the basis for a communication strategy. We will have identified who needs to know what. With this basis the communication strategist can select from his array of methods and technologies to arrive at decisions on which combinations, how much, timing, etc.

### Strategy Frontier

A related point on "frontiers" in the area of strategy is the point of departure. It is rather common to address communication opportunities by looking at the available media and technology and then consider what they can do for development. I would urge a "communication strategy frontier" based on identifying first the key rural development problems to be addressed and then working out a communication effort with the best fit to the situation.

We ought also to look at frontiers in terms of more useful models integrating knowledge production, dissemination, and use. I am thinking here of a concept more applicable to areas of great ecological variation than the old model of experiment station—adaptation trials—extension.

### Feedback

What are the frontiers in terms of obtaining from the farmers the enormous reserve of knowledge that they have accumulated on farming systems? This may well be the largest untapped reserve of knowledge available today.

One final point in regard to both papers and others to be presented: there seems to be some ambiguity in the use of the term "communication." Frequently, the term seems to be synonymous with "mass media." I would opt for a broader definition to include not only impersonal and mixed channels, but the whole knowledge continuum—production, flow, and use.

# II. Factors Involved in Communication Strategy

# Social Structure and Communication Strategies in Rural Development: The Communication Effects Gap and the Second Dimension of Development*

EVERETT M. ROGERS**

THE purpose of this paper is to show how social structure affects communication. Our main illustrations come from two selected aspects of this interrelationship: The communication effects gap hypothesis and the so-called second dimension of development effects and benefits. Our theme is that communication strategies are the most meaningful units for converting theoretical research-based understandings of human communication into a form that can be utilized in pragmatic development programs.

The tone of the present paper is frankly critical: We consistently see egregious errors in the use (more often the non-use) of communication strategies by rural development agencies in developing countries. There is a considerable potential for increased effectiveness of such programs.

## *Toward a Definition of Communication*

Communication is often defined as the process by which an idea is transferred from a source to one or more receivers, with the intent to change their behavior. This definition assumes that the purpose of communication is to bring about certain desired effects on the part of the receiver: Alteration of the receiver's knowledge of some idea, a change in attitude toward the idea, or a change in his overt behavior. Thus, a concern with communication implies an interest in behavioral change, as the purpose of human communication is change. Likewise, there is no way to understand the process of change without considering communication. Accordingly, most communication research has centered on studying the effects of communication; in the particular case of rural development, communication research determines how such "effects" variables as the adoption of innovations are associated with various combinations of source, channel, message, and receiver variables.

### SOME SHORTCOMINGS

The previous definition of communication, representative of those popular in our field for the past decade or so, suffers from several intellectual shortcomings:

(1) Although our definition stresses that communication is a process, communication scientists act otherwise. A process is never beginning, never ending, and flows through time. Yet models of communication specify certain stages in this process, and act to "stop-action." Most communication research is essentially "timeless."

(2) The predominant model of communication is a linear, left-to-right paradigm, that implies a transmission approach to communication, like a bucket carries water.[1] This mechanistic concept of the communication process aids understanding be-

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*This paper is based somewhat on Rogers (1974) and Rogers and Kincaid (1973).

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cause of its simplicity, but it does great harm to reality. Worse, the linear models imply an autocratic, one-sided vision of human relationships. "It assumes an active source operating on a passive receiver via the persuasive monologue. It thus suggests a vertical relationship in which the source will tend to direct or dominate the behavior of the receiver."[2] Communication, therefore, would amount to a special type of receiver manipulation by the source.

(3) It ignores social structure. Even though our simplified model of communication does not emphasize it, we should not forget that the source and the receiver are part of a system, and that this system has a structure or a pattern of relationships among its units. This structure has much influence on communication; imagine the difference in effectiveness of the same message when it is transmitted between two equals versus from a boss to his subordinate. Many early communication scholars came from psychological backgrounds, and perhaps this is one reason that structure was short-changed in their models of communication.[3]

### Some Possible Remedies

What can be done to overcome these shortcomings of our definition and model of human communication?

(1) Communication should be conceptualized as a system, thus putting the multivariable complexity back in communication models and emphasizing the synergistic interdependence of the elements in the communication process.

(2) We should add the element of feedback to our model, thus recognizing that the transaction is a dialogue in which receiver power may be important. Feedback is a response by the receiver to the source's message, which the source may subsequently use to modify his further messages. Emphasis on feedback assumes greater equality of the participants in a communication event; it also reflects a concern with the over-time aspects of communication. Receiver power must be recognized, albeit belatedly.

(3) The social structures in which human communication occurs must be studied as they impinge on communication and thus determine its effects.

Unfortunately, communication research has not yet very fully reflected the systemic, processual, and structural aspects of human communication. The research designs and measurement techniques of communication scholars almost never allow them to study the overtime aspects of communication, because data are gathered only at one, or at most two, observation points.[4]

In this paper we hope to take some small steps toward such amelioration of our conceptions of communication by focusing on communication strategies in rural development. We feel that strategies may be a useful unit for translating theoretic and research-based understandings of human communication, on one hand, into development-oriented communication activities, on the other.

## *Communication Strategies in Rural Development*

A communication strategy is a plan or a design for changing human behavior on a large-scale basis through the transfer of new ideas. We feel there are two essential ingredients for development to occur: (1) the appropriate technology, expressed in the form of innovations which are recommended for adoption by change agencies and which are designed to meet farmers' needs, and (2) the communication of these technological messages from development agencies to their intended audiences. The need for improved technology has received a great deal of attention by international agencies and by national governments. For instance, every less developed nation has an agricultural experiment station charged with conducting scientific research to develop agricultural innovations that can improve farm production, and, consequently, raise rural levels of living.

## Erroneous Communication Strategies

It is very easy to be critical of the communication strategies prevalent in current development programs. In fact, little explicit attention is paid to such strategies in most development programs; it is assumed that "good" innovations will sell themselves. The problem is that they don't.

### *The Large-volume Error*

An apparent strategy (really a non-strategy) of most development programs is that the more communication messages produced and aimed at the target audience, the better. Annual reports of change agencies tell of thousands of bulletins produced and/or distributed, dozens of radio programs aired, and hundreds of clients attending local meetings. But little or nothing is said about what effect these messages had in securing the adoption of innovations. Usually little consideration is given to exactly which type of message, carried via what particular channel, would be most effective in bringing about what effect (a change in knowledge, attitude, or overt behavior) among what sub-audience. The large-volume error is a broadside approach in that many messages are produced, with the assumption that some of them may have some effect on somebody. It is an extremely inefficient approach. It assumes that communication is a simple, direct cause-effect matter, something like a hypodermic needle injecting the message into the audience. The large-volume error ignores the fact that communication is a process, and that to be relatively effective, much planning and use of specific strategies is required. Audience segmentation is ignored, thus implying that each client is identical to every other client.

### *Over-dependence on Mass Media*

We can also criticize current development programs for their error in thinking that communication means only mass media. Mass channels like radio and newspapers are highly visible, it is true, but researches consistently show that most diffusion of innovations in less developed nations is via interpersonal channels.[5] The communication or information division within some development agency, like a ministry of agriculture, often deals only in the mass media, producing bulletins, radio spots, and posters. Many development officials assume that mass media communication is their only concern. This is a too-limited view of communication.

A more adequate approach would also include the interpersonal efforts of change agents to persuade clients to adopt innovations, and, more importantly, the word-of-mouth exchange between a satisfied adopter and his/her peers. These interpersonal channels are less visible than the mass media, and they may be less controllable by agency officials. But they are the most important channels by which innovations diffuse. So they cannot be ignored, and in fact, they should be the central concern of communication strategies for development purposes. Interpersonal channels are often coupled with mass media channels, and thus the effects of the mass media are expressed through, and heavily dependent upon, word-of-mouth.

### *Over-dependence on "Modern" Channels*

As a society begins to develop, its communication channels are expanded and thus become able to reach larger audiences. Soon, it is easy to forget that a system of mass communication existed long before the relatively recent introduction of electronic and print channels. These "traditional" channels consisted of traveling balladeers, village theater, puppet shows, and story-tellers. The "news got around," and fairly quickly, before the day of the transistor radio.

Most development planners ignore these traditional media,[6] and only in very recent years and especially for family planning have these channels been harnessed for development goals. The channels are already extensive, and are commonly perceived as highly credible by village audiences. Traditional media are highly participatory, featuring

two-way flows between communications and receivers. So their fulfilling development purposes is high, as we show later in this paper.

*Lack of a Multi-media Approach*

Many of the communication strategies currently utilized in development programs involve only a single medium or channel. Typically, an official has a surprising success in reaching a target audience with some particular channel, say radio. He then becomes an enthusiast for using that channel for all other purposes. Inevitably, this single-channel approach fails. Why? Because it assumes that there is *a* most effective channel for all purposes (usually there isn't), and it ignores the fact that communication requires a total system approach, that various channels, acting in concert, can usually out-perform any given channel. So communication planning should account for the interdependence of various channels in carrying interrelated messages. They need to be orchestrated in an integrated manner, perhaps by means of a communication campaign. This is the multi-media approach. Only in very recent years has its potential even been recognized in development programs.

So we see that rural development programs often use no communication strategies or inappropriate ones. Improvements only in the technology of communication, without proper communication strategies, will not lead to rural development. Needed, I feel, are revisions of our own conceptions of communication and of development.

## Modernization and Development

Modernization is the process by which individuals change from a traditional way of life to a more complex, technologically-advanced, and rapidly-changing style of life.[7] We see modernization at the individual level corresponding to development at the societal level. So development is a kind of aggregated modernization.

Development is a type of social change in which new ideas are introduced into a social system to produce higher per capita incomes and levels of living through more modern production methods and improved social organization.[8] Development consists of more than just economic growth. It means improved nutrition, jobs for the unemployed, and a more equal distribution of income.[9]

*First Dimension of Development*

On one hand, development programs want to improve the levels of development: To increase the number of acres planted to a new seed crop, to raise total agricultural production, and to improve farm incomes. This goal usually calls for concentrating development efforts on the larger farms.

On the other hand, such programs also want to help those clients who may need help the most: The poorest and least innovative farmers. This goal calls for redistributing farm incomes, by bringing up the levels of the smallest farmers. Often an agricultural development agency has limited resources. So these two goals are in conflict.

Raising the levels of income by working with large farmers brings about a change in per capita income, and hence is apparently a type of development. Real development, however, also consists of attaining a more equal distribution of incomes and levels of living. This is the second dimension of development.

Most national and international agricultural development agencies tend to help the larger farmers and pursue a levels-raising goal, rather than helping the smaller farmers through redistribution goals. Dorner's analysis[10] shows that the UN Development Program devotes the following percentages of agricultural aid to small farmers and to agrarian reform: Latin America 11, Asia and Far East 7, Africa 8, and Middle East 5.

Figures for USAID, World Bank, and the Inter-American Bank are similar, Dorner reports. He concludes: "The notion that the poor can be helped by aiding the rich must be

abandoned." After reviewing available evidence, Seers[11] finds that inequality has not been reduced in most countries, and it may have increased in past decades in many nations. Thus, by the standards of the second dimension of development, little progress is being made. One reason lies in development policies which raise levels of income while often worsening the equality of its distribution. Seers points out that "practically every decision taken by government officials has implications for the degree of equality," such as to lending to big farmers or small, to put the best equipment in rural or urban schools, etc.

A socio-economic gap exists between subsistence peasants and commercial farmers in most less developed nations. Power lies in the hands of the larger land owners. Much public lip service is given to second-dimension development goals, but in actuality there is reluctance to initiate major reallocations in the present social structure (such as through agrarian reform or tax reform), which could affect the positions of the more powerful land owners. Further, the already-advanced large farmers are in an advantageous economic and social position to adopt agricultural innovations relatively earlier than subsistence farmers.[12] The commercial farmers have a greater degree of contact with agricultural change agents, they have more ready resources to invest in agricultural innovations, and they have a more favorable attitude toward new ideas.

*Second Dimension of Development*

If a more equitable distribution of *Good* were indeed a paramount goal of rural development activities, the following communication strategies might be considered in a developing nation:

(1) Use the traditional mass media as credible channels to reach the most disadvantaged audiences and as a source of understandings about traditional strategies that can be used with modern mass media.
(2) Identify the opinion leaders among the disadvantaged segment of the total audience[13] and concentrate efforts of the development agency on them.
(3) Use change agent aides, who are selected from among the disadvantaged, to work for development agencies in contacting their homophilous peers.
(4) Provide means for the disadvantaged audience to participate in the planning and execution of development activities and the setting of development priorities.
(5) Establish special rural development agencies who work only with the disadvantaged audience of subsistence farmers. An example is the Small Farmers Development Agency in India, founded in 1970 to provide agricultural information and credit only to small-sized farmers.
(6) Change the emphasis of agricultural research centers from producing scale-related agricultural innovations (like farm mechanization, for example) that are especially useful to larger farmers, to pursuing research topics that promise to produce scale-neutral innovations or even new technology especially useful to small farmers. For example, the International Center for Tropical Agriculture (CIAT), Cali, Colombia, now has a research program oriented to peasant farmers.

Also, we should analyze communication efforts in such development programs as literacy and family planning, which aim particularly at relatively disadvantaged audiences in most developing nations, so as to determine what strategies could be utilized in agricultural development to reach these disadvantaged audiences.

*Need for Restructuring*

However, we feel that much more than simply the use of alternative communication strategies is necessary to attain more equitable development benefits. Perhaps a restructuring of society will be required, including legal changes, wider citizen participation, and perhaps even different political and economic philosophies than are presently followed.

In general, I note that many Latin American social scientists are convinced that

societal re-structuring is necessary to attain the second-dimension development goals. In comparison, most North American social scientists think such re-structuring, while perhaps desirable, is beyond their concerns, and they define social problems in terms of individual-blame rather than system-blame.[14]

Most modern "revolutions," I believe, do little to re-structure a society in the direction of wider citizen participation in development programs and in re-distributing the benefits of development. Such "revolutions" usually result only in replacing one set of power elites with another, while wealth and power are as concentrated as before. This cynicism about "revolution" as a means of re-structuring society is heightened by the fact that certain modern renditions have contributed to wide participation and to societal re-structuring. Perhaps one example is the People's Republic of China, where the 1949 change in government has since led to wide participation in rural development planning at the local level. For example, China has one of the world's most effective health and family planning programs in recent years; one reason is due to the important role of local women's committees in setting their own demographic goals (such as for their commune or work brigade), and exerting peer influence to help accomplish these goals.[15] (Chen, 1973.)

Now we turn to exploring how communication, under usual conditions, acts to cause a more concentrated distribution of communication effects.

## *Communication Effects Gap Hypothesis and the Marginals*

The predominant question asked by communication researchers over the past 25 years has been what effects a particular source, channel, message, or combination of such elements has on a specific audience of receivers. This effects-oriented inquiry, however, has focused mainly on the first dimension of communication effects (parallel to the first dimension of development) by pursuing such queries as:

(1) Has the communication activity had any effect? If so, what is the nature of the effect(s)?

Only occasionally has communication research sought to determine a second dimension of communication effects by asking:

(2) Has the communication attempt had a relatively greater (or different) effect on certain receivers than on others? Why?

While the first question asks about the level (or degree) of communication effects, the second question directs communication research to the distribution of such effects.

This concern by communication scholars led to the statement of the "knowledge gap" hypothesis by Tichenor and others:[16]

> "As the infusion of mass media information into a social system increases, segments of the population with higher socio-economic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease."

We feel it is theoretically and pragmatically fruitful to generalize this hypothesis into a broader form so as to state that:

> Attempts at change-oriented communication over time tend to widen the gap in effects variables between the audience segments high and low in socio-economic status.

Thus we posit a "communications effects gap" hypothesis, that is limited neither to the mass media nor to knowledge effects. Perhaps it need not even be limited to socio-economic status; alternative variables might be literacy; racial, ethnic, or religious

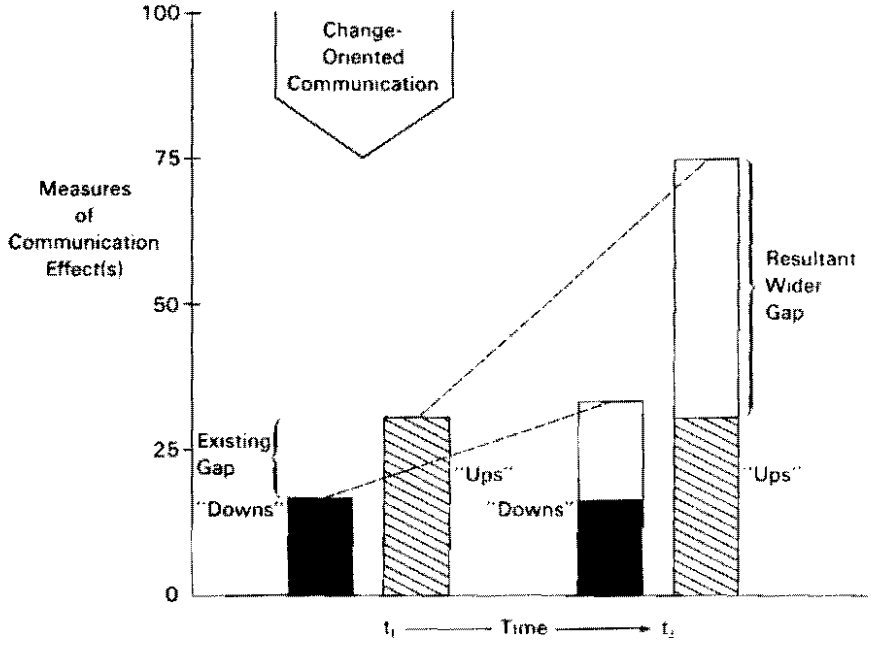


Figure 1. *Most attempts at change-oriented communication tend to widen the gap in effects variables between the audience segments high and low in socio-economic status.*

minority membership; rural-urban residence; and subsistence-commercial farmers (although there is probably an overlap of each of these variables with socio-economic status).

Figure 1 depicts our "communication effects gap" hypothesis in paradigmatic form, with the high and low socio-economic segments dichotomized as "ups" and "downs" to facilitate visualization.

It is important to remember that the communication effects gap hypothesis is still just an hypothesis, rather than a proven principle. The evidence presented by Tichenor and others[17] is rather tentative and limited, although consistent across several researches. A more adequate set of data would come from a benchmark-followup experimental design with a control group[18] (which would indicate how much the effects gap would have widened even if the attempt at change-oriented communication had not occurred).

## Some Possible Reasons

Why does the communication effects gap generally occur?

(1) A possible explanation in many cases is that the "ups," perhaps as an artifact of gaining their original superior status, possess greater receptivity to the change-oriented communication, and hence show greater response to it than the "downs." Also, the "ups" may possess greater slack resources which can be utilized for innovation.

(2) The sources or producers of the change-oriented messages are usually more homophilous with the "ups" than with the "downs," and hence these messages have relatively greater effects on the "ups."

(3) The lack of integration of marginals within interpersonal communication networks.

The "downs" are more aptly referred to as the "marginal population," a term used widely in Latin America by intellectuals and social scientists. The marginal population consists of villagers and urban poor who have relatively limited communication with the power elites who manage their society.

The marginals are literally on the margin of their social system; they lack a high degree of meaningful mass media or interpersonal communication with the power elites who run their society. The elites lack adequate feed-forward knowledge of the marginals;[19] they find it difficult to communicate effectively with them, the marginals lack access to mass media message production or to direct interpersonal channels with the elites, and so there is often almost no contact between marginals and elites in the same system. The marginals are relatively isolated from, and unintegrated with, their system; thus they are marginal in a communication sense. They remain on the fringe of the communication network.

"Most of the talking has usually been done by the upper level; the people of the lower level sit by quietly, even sullenly, often without listening."[20] Not only do elites dominate the mass media institutions in most societies,[21] but also such alternate means of communication as voluntary associations and governmental organizations. Further, there are often inadequate response channels by which the marginals could provide feedback about programs of planned change and development. Largely missing are means for the initiation of bottom-up change in a society.

*The Two-Step Flow Error*

As McNelly[22] points out, an easy excuse for the communication scientists' lack of concern about the marginal population's communication inaccessibility was the two-step flow model: That even if the marginals had little direct exposure to the mass media, they were indirectly exposed through informal flows from opinion leaders. But this trickle-down theory always was more of a popular paradigm and an excuse, than an empirically-based principle, and it has recently been called into question by the evidence of Tichenor and others[25] in the United States, and by McNelly and Molina's[24] data from respondents in Lima, Peru (although neither set of investigators claim that their evidence is completely conclusive on this point).

More than just opinion leaders intervene between the marginal individual and his society, of course. But past communication research has not been very rigorous in tracing out the nature of these interpersonal and mass media linkages. We feel the answers lie in fuller understanding of the nature of interpersonal communication networks, and the special communication roles performed by certain individuals in these networks.

On one hand, when scientists start out with the mass media, they usually find that such channels have considerable effects on receivers. But when communication scientists start out with some human behavior change (like the adoption of an innovation), and ask what communication channels led to this change, interpersonal channels are predominant, especially in less developed countries. The explanation of this seeming contradiction lies partly in the nature of the interpersonal networks through which the mass media (and other change-oriented communications) are connected to the individual receiver.

This relational research concern is parallelled by a growing realization that solutions to many social problems like poverty, crime, and overpopulation lie in a re-definition of the situation: From individual-blame to structure-blame.[25] Unfortunately, most social scientists in the past studied poverty as if it were an individual sympton rather than a societal phenomenon.[26] "Only very recently have some students of the poor come to see that it is the social structure, not the poor as individuals, that needs change. It is incomplete, for instance, to say that the poor lack knowledge when the system does not make information available to them.[27]

We feel that network analysis may help shift the focus of communication research

from individual-blame to system-blame in the study of social problems, and that it is one route toward a more adequate understanding of how social structure affects communication process.

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[12]Perhaps because most agricultural research is devoted to topics that reflect the needs of large commercial farmers, and hence leads to innovations that are of greatest benefit to larger farmers and of less potential to peasants. James Hightower, "Hard Tomatoes, Hard Times," Agricultural Accountability Project, Washington, D.C., 1972).

[13]Often in the past, change agencies have worked intensively with opinion leaders among the advantaged segment of the audience with the justification of a "trickle-down" to the disadvantaged audience. Perhaps, McNelly suggested, the two-step flow is a copout. John T. McNelly and Julio R. Molina, "Communication Stratification, and International Affairs Information in a Developing Urban Society," *Journalism Quarterly*, IL (1972).

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Chinese People's Republic," *Studies in Family Planning*, III (1972). Pi-Chao Chen, "China's Population at Grass Roots Level," *Studies in Family Planning*, IV (1973):219–227.

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[17]Ibid.

[18]And perhaps with a considerable period of time from benchmark to follow-up (to ascertain that the communication effects gap was not just a short-range consequence), and a panel of several follow-up measurements over time to determine if the trend to a wider gap were linear or nonlinear.

[19]Only rarely, for example, does a marginal produce a mass media message, especially one that reflects his/her view of life. Then it often receives wide interest by elites; an example is Carolina Maria de Jesus' *Children of the Dark*, (a diary by a Sao Paulo slum dweller).

[20]Herbert Gans, *The Urban Villagers* (New York: Free Press, 1972).

[21]Or at least are perceived as dominating the media institutions by the marginals, as the Kerner Commission of 1968 shows in the United States.

[22]John T. McNelly, "Media Accessibility and Exposure in Developing Urban Societies: Some Directions for Communication Research," paper presented at the Conference on Research Needs: Communication and Urbanization, Honolulu, HI, East-West Communication Institute, 1973.

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# Developing a Communication Support Program

ROBERT H. CRAWFORD*

THIS paper attempts to set forth the range of communication needs in rural development programs, and the importance of developing comprehensive communication strategies for their fulfillment. Such strategies call for communication specialists whose expertise transcends the "information" role and includes the whole process of development. This aspect of a development program is at least as important as the technical aspects, and requires equal care and attention in planning and budgeting.

## *The Problem*

Over the years, especially since World War II, billions of dollars in both government and private funds from many nations have been expended to help some of the world's nations "develop" their economies and societies. Tens of thousands of specialists have labored to introduce high yield variety grains, irrigation, improved hygiene, literacy, and other innovations. Most of this effort has been in the context of massive government programs, often with some form of foreign assistance.

But all too often the programs have failed to reach their goals. The failure has been blamed on inadequately trained change agents, obtuse government bureaucracy, an unmotivated peasantry, and a multitude of other causes. While the causes are obviously complex, it seems clear that one common thread that runs through many of them is inadequate communication.

When planners concern themselves primarily with the technical aspects of seeds, sanitary toilets, or new school buildings, and think of communication only as the final step from the field worker to the farmer or villager, the project is already in deep trouble. Such projects are carried out by large bureaucracies, and moving the organization to the appropriate action at the right time is the first communication task. It can only be done by conscious design and the specific allocation of resources.

Since a major project may take several years in the planning phase, the communication aspects are often ignored in the early stages. Too late, the information people are informed of their task, only to find that key items have not been provided for in the budget.

## *Role of Communication Support*

Erskine Childers, a pioneer in the field of development support communication, notes that development is not something that planners "do" to rural people through communication. Development is something that rural people themselves do, or it does not happen.

> The need is not merely to get farmers and their families to feel "involved" in a project, though such sense of involvement is vital; nor merely to "participate," as if this were optional. The need is to help farmers and their families to act as the implementers—to adopt (usually) quite specific innovations in their life-patterns and/or production techniques which are the whole purpose of the projects.[1]

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Rural development involves change in patterns of life and thought. Armed with macro-statistics, higher education, and substantial budgets, planners develop programs aimed at helping the rural masses. Assuming the objectives are indeed viable and valuable for the people concerned (a question that merits separate examination!), it would seem simple just to explain to the peasant farmer and he would then adopt as desired.

But life is not so simple. There are layers of bureaucracy to be convinced and enlisted first. Are there field workers? Does the program make sense to them? Will they faithfully transmit the necessary concepts and information? About a year ago I visited a family planning field worker near Taichung, Taiwan. I was accompanied by an interpreter and by the district public health nurse. Toward the end of a relaxed and informative interview, the field worker decided to ask some questions of her own. "Why do people say that families should stop with three children?" she asked. "Everyone knows that's too small a family." The district nurse chimed in that she wondered about the same thing. (Observe that this was Taiwan, with one of the best government family planning programs in the world. We were within one hour's drive of the headquarters of that program, and were talking to two women charged with primary responsibility in carrying it out. But it did not make sense to either of them.) I suggested that if a man has five sons and five hectares of land, each son will have only one hectare to inherit and that won't be enough, but they replied that one son will inherit the land and the others will go to the city to work. We talked some more and I hope I gave them something to think about, but I know they gave me a lesson.

Adequate communication support for rural development is essential to the success of any program, it must start with the people who are to carry the program out, and it must be included in the total planning process from the outset. The budget for communication should be as carefully prepared and fully detailed as those for supplies or foreign aid.

## *Analysis of Communication Factors*

It would be well if the communication specialists had some role in the initial deliberations as to what programs deserve priority, as they hopefully are close to the mind of the people through their feedback systems and systematic studies of the various audiences.

In any case, once a program is determined there must be *early* and *thorough* consideration of:

Who need to know
What
How (through what means) and
When (in what order).
How much will this effort cost, in time and budget?

### The Audiences

A very common mistake is to fail to identify the specific audience or audiences to be reached, and the specific messages needed for each one. Who needs to know? With a given innovation it usually happens that several audiences must be reached, each with its own message and through means appropriate to it. Failure to differentiate the audiences and messages and correctly match them up with appropriate media usually results in a loss of efficiency, and may result in program failure—or even a backfire.

Does the program seek better nutrition through diversified home garden plots? Obviously the farmer himself must know about the idea, how to plant and care for the garden, the necessary fertilizers, pesticides and other inputs, the costs and benefits, and how to use the different crops in his diet.

If district field staff are to inform the farmers, the field staff must be trained and equipped to do so. If they are to shift emphasis from other established programs and procedures, their supervisors must know of the program and be convinced. If field reports

are to reflect credit on the supervisors through reports on successful completion of this program, the regional and central administrators must understand the importance of the effort and make clear their concern to those below them.

If workers in other ministries (e.g., health, information, education) are expected to participate in any way, the communication analysis must extend horizontally, and then vertically within those other ministries. Insofar as possible, a sense of participation in an overall national effort far larger than parochial agency concerns is essential.

Each of these groups may be viewed as a separate audience, and a sub-program should be devised to transmit the appropriate information, at the appropriate time, in each case. In general, emphasis tends to be on communication to the ultimate consumers of the information—the peasants. But in terms of what we have been saying, the bureaucracy is a category of major importance.

*The Bureaucracy*

The first concern must be the preparation of all aspects of the bureaucracy. Within the bureaucracy, for instance, introduction of a new high yield variety seed might be mainly the province of the Agriculture Ministry, but it will also probably touch the affairs of the home and nutrition specialists of the Health Ministry if it is to be introduced into the diet, the economists of the Commerce Ministry if it is to enter export trade, and even the Ministry of Transport if it will involve new shipping patterns to market.

Cooperation among these agencies is not automatically to be expected. It may touch on pre-existing rivalries and raise questions of who should initiate action in these other ministries. Indeed, though it may be given top priority in the Agriculture Ministry, where will it rank in Health, Commerce, or Transport? If it is not given sufficient priority in these companion ministries, the project may fail for lack of some vital supporting input. Therefore, a conscious program of communication within the structure of the government in lining up the needed support and informing and enlisting all who need to know and be involved is the essential first step.

There may be cabinet-level decisions and decrees, inter-agency executive seminars, brochures, and manuals (plus conferences and in-service training) for the field staff, and many more efforts for the various levels to be reached. And this must be an ongoing effort. Sometimes there can be periodic meetings on the subject, or it can be part of regular staff meetings. A newsletter may be helpful (if it is of a nature that will be read and heeded).

If field workers will need to train paraprofessionals, there should be specific plans for how they will do this, and the necessary communication aids (flip charts, films, brochures) must be provided for in the overall plan.

In any case, it is definitely not to be assumed that an order at the top will be sufficient to launch the bureaucracy into effective and faithful action in regard to a given innovation. I recall a period in the Philippines in 1956 when a world service organization was distributing large quantities of Wisconsin cheddar cheese, packaged in seven pound cans. Virtually no work was done to inform anyone how to use it, since cheese was on the market and was known to be a delicacy in the Philippines. But it was overlooked that the only type of cheese in general use there at that time was a very mild cheddar, sold in small cans, and relatively expensive. The middle and upper class people who bought it usually served it as a snack on special occasions. Very few really knew how to use it as a staple in the diet. Large numbers of people threw it away when they opened the cans because they thought "it was spoiled." (Because that is what the sharper taste signified to them.) Furthermore, if a seven pound portion was not used rather rapidly, it would indeed spoil in that climate. But the people did not know how to use it in any quantity. In a staff meeting one person advised his colleagues that "it is good when you put a little of it in soup." The director of a family life department had no insight as to how to use up such a large quantity as a significant source of protein in the diet. Both of these people had prominent roles in the distribution

organization. How could they be expected to communicate effectively about the proposed innovation?

*The Consumers*

How will the field worker reach the ultimate "consumer"—the one who is expected to innovate, adopt, or abstain? Here again, it is essential to differentiate. Who needs to know? The farmer is an obvious target, but how about his wife? She may have to learn new habits if she is to incorporate the product into the diet. And she is usually sensitive to the responses of her family. Do the children dislike the taste, or is it hard to digest? Are new recipes needed? Do her parents object to the new method of preparation, which they say violates custom? Do her friends say that even if this new variety of corn is more nutritious, corn is only for pigs and beggars to eat? Thus, it is clear in this example that "consumers" would include the farmer, his wife, children, parents, friends, and even possibly market vendors whose advice may be important in the initial decision to actually use the product.

In reaching these various consumers, once they have been identified, what materials and training will the field worker need? He should have the film-strips, charts, samples, etc., in the training period and learn how to use them—then go forth with these aids to perform his task. Definite means must be set up in advance to ensure that the field workers will have a steady supply of whatever communication aids are needed.

INTER-RELATIONS

Full recognition is needed for linkages between the proposed program and other programs or with factors in the cultural tradition of the people. For example, productivity in rice harvesting can be improved by using small tractors, or even large hand scythes, instead of the small hand knives currently employed in many parts of Asia. But the "improved" methods sometimes violate spiritual concepts of Mother Earth and how one approaches her to take a harvest.

New high yield variety seeds usually require fertilizer, irrigation, pesticides, and other inputs. Will these be available, and on time? Will the regular commercial channels be sufficient to ensure this, or are government efforts needed? The cost of these inputs will be amply returned at harvest, but does the farmer need credit to finance them in the meantime? Where will he get it, and at what cost?

Among the mountain people of the Philippines, marriages and other special events are celebrated by a *kanyao* in which one or more pigs are ritually slaughtered and the whole village has a feast. The economic burden is often disastrous to the "honored" family, so some missionaries began to actively discourage the practice. But when people began to discontinue it, signs of malnutrition developed; it turned out that the intermittent *kanyao* was nevertheless a major source of protein in the diet. This problem was met by the introduction of chickens and beans.

For a longer view of the overall task of communication in development in the face of cultural inter-relations, we may look at the task inherent in the worldwide efforts for population limitation. If people tend to operate in their own self-interest as they themselves perceive it, means must be sought to ascertain how in fact they perceive their self-interest in relation to family size. This varies widely from culture to culture. Where desired family size is larger than can be absorbed (in the aggregate) by the particular society, means must be found to enable the individual to re-evaluate his own interests so he will be motivated to modify his behavior accordingly.

If he wants many children to ensure his economic security in old age (with a small contribution from each), perhaps he can be helped to see that two or three well-educated and healthy children can provide even better for him in retirement.

If his self-image of masculinity is proportional to the number of children (whether legitimate or illegitimate), perhaps with appropriate communication this norm can be

modified over time to include the factor of how well the children are provided for. Better one son who is a doctor or engineer than ten who are day laborers.

If his religious belief calls for his eldest son to ensure the repose of his soul by lighting the funeral pyre, perhaps (over time, and with the cooperation of many religious and cultural leaders) this norm can be altered so that the most prominent child (of either sex) can perform this function. If fully adopted, such a shift would reduce the desired family size (on the average) by half. Any degree of adoption would reduce the number of children deemed necessary for spiritual survival.

## The Message

At the inception of planning for the project the basic analysis should be made. What is the main message, and what variations must be made for specific audiences? For each audience, the message should stress the advantages and disadvantages to the person addressed of the proposed innovation. For the members of the bureaucracy, this would include institutional concerns (how success of this effort will make his district look good) and the relationship to other ongoing programs. For consumers, the details vary but the principle is the same. What will it mean to him or her?

If the subject is family planning, clearly different messages are needed for men than for women. And what about the grandparents? Legislators, editors, and other "influentials" also comprise select audiences that require individualized attention. In New York, a county Health Department launched a family planning clinic on a provisional basis in 1972, but many members of the County Board of Supervisors were hostile to the plan and were expected to kill it when the regular budget came up for consideration. Dr. Royal Colle, of Cornell, was asked to serve as a consultant. It was hypothesized that these men did not fully understand the purposes of the clinic, the real need, and the implications for the county (social, economic, and political). Accordingly, they were seen as a special audience and a campaign was devised for them. About fifty officials and other leaders were loaned cassette tape recorders for one month. A specially prepared series of four weekly newsletters, each accompanied by a cassette with interviews of county residents and discussion of issues as they related to the county, were mailed to them. Scholarly evaluation of this effort was not possible, but it should be observed that they did vote to support the clinic with the full amount requested in the budget.

## The Media

What media are available? Too often we think only of field workers and mass media. What else is there?

Demonstration plots are well known in agricultural extension work, but are not often thought of as "media," but they are indeed a means by which a message is transmitted to an audience. Their use must be well planned, however, both in the technical aspects of the demonstration and in communication about it. Audiences should be given the opportunity to compare the old and the new ways and to observe the net gain from the new way. And, of course, there should be full opportunity to ask questions and discuss all aspects of the innovation. Many other media are used with less frequency but can be effective if used in the right way at the right time.

When there are village fairs in the area, displays or booths can be set up as information centers for the program. Such a booth can be a combination of distribution center for literature and samples and a base for interpersonal communication as people are invited to bring their questions.

Endorsements by leading figures, while dependent on other media, is an important communication approach. The main thing is to have the most credible person make the endorsement.

Popular music can be a valuable vehicle, especially if it is in the idiom that is indeed perceived as local in the area. (It is doubtful if The Beatles would have much effect in Java with a song about dental hygiene, even if their music were frequently played there. But a recognized Javanese singer might be worth a try.) Indeed, many forms of folk entertainment and drama may lend themselves to development communication. In Indonesia, various forms of the *wajang* (an ancient puppet theater) have been used for both political and developmental purposes and there are current attempts to use them for the modern family planning effort.[2]

Phonograph records or tape cassettes can be used in many ways. If the target audience generally does possess the playback capability, simply making records available with a pleasing mixture of popular entertainment and information can be effective. Experiments are being continued in New York by Dr. Colle, and pilot studies are being prepared in Malaysia and elsewhere, in giving playback units to selected rural families and then supplying them with tapes on a regular basis. Results so far indicate they do listen, they learn, and they invite their neighbors to listen and learn also. Loss or damage to playback units has been minor.

Such efforts, of course, depend heavily on careful attention to ensuring cultural compatibility and acceptability. The material must be to the point of felt needs of the audience; presented in a way that engenders credibility on their part; reflect care in use of language, idiom, style of communication; attention paid to structural features of the audience, to the history of similar innovative attempts, and to the ability of the population to absorb innovation.

Another way of using records or tapes would be to supplement the efforts of the field worker. He may have specific training in one or more areas, but with a library of tapes he can be prepared to give authoritative and helpful information on a wide range of subjects without message distortion. Such tape libraries can also be attached to MCH clinics or other places where people must spend time waiting. While waiting, they are open to listen and to talk with others. Places where friends gather to talk, such as coffee shops or mosques are also possibilities.

But whatever media are used, full provision must be made for producing the required radio programs, film strips, tapes, or whatever by the appropriate specialists and on schedule. Since these things cost money, provision must be made in the original planning budget. Ordinarily they cannot simply be subsumed under the Information Ministry's regular budget.

## The Strategy

Once the assessment of communication-related factors has been made, an overall strategy is to be developed. The plan should start with the end goal (e.g., elimination of intestinal parasites) and then itemize means toward this end (e.g., adoption of sanitary toilets, deeper wells, instruction in sanitation). Once the means have been selected, the communication specialist must apply all that is known about the specific audiences to see what communication inputs will be required to move toward the end goal. In this framework, factors such as motivation, timing, and appropriate media fall in place, as well as the necessary feedback and evaluation.

More broadly, the value of this specific development project must be weighed against those in other sectors (e.g., improvement of nutrition, or the eradication of malaria) to develop an overall developmental strategy for the country.

The plan should include specifics about what training will be required, when, and by whom; what sort of equipment will be needed, its cost, plans for maintenance and repair; the films, filmstrips, pamphlets and other program "software" that will be required, who will produce it, and its cost. This is the point for a thorough assessment of how much the communication effort will cost in time, resources, and effort. The plan should be tied in

with the timetable for other aspects of the proposed program so that when the innovation is ready for actual introduction there will be trained workers ready to do the job, backed up by a knowledgeable and enthusiastic bureaucracy, and ample communication aids and supplies.

> Beyond this, Schramm notes that "the really basic strategies of developmental communication are not merely communication strategies at all but are economic and political, and grounded deep in the nature of a society. How fast do we want to go is an economic and political decision that determines the purposes for which communication will be used at a given time and how fast communication itself must be developed to help do the job. What ideology do we want to develop into is a politico-economic question that must be answered by the leaders, a question that will determine much of the content of communication, as well as the degree of central control over communication, the proportion of persuasion as opposed to control to be expected, and the extent to which the people will be helping to make rather than merely putting into effect a plan of change."[3]

Starting with the answers to such questions (either stated or implicit), the development communicator builds his strategy for informing and persuading the various sectors of society to be reached.

### Timing

Which audiences need attention first, and should the messages be phased? In a broad-based fundamental education project, the literacy campaign may start first. Based on an estimate of likely progress, a sanitation project may be readied to start four months later and another project involving improved methods of planting rice may be timed two months later to coincide with the start of planting season. Each one of these phases will need various communication aids (pamphlets, film strips, mobile film vans), and these must be scheduled in advance with as much care as ensuring that the necessary seeds and fertilizer arrive on time. If the program is regional or national, it may well involve the use of radio. This would involve coordination with another ministry, in many countries, and far enough in advance to enable script writers and producers to prepare the programs, and the program schedule to be adjusted to accommodate them.

Another aspect of timing is mentioned by S. C. Dube, writing of efforts in India:

> The timing of communication regarding particular items may be inopportune. In one development block of the state of Bihar, as a part of the malaria eradication program, all the houses were sprayed with DDT. This was a well-intentioned step, but its timing was unfortunate. Spraying was done early in October, and soon after, according to local custom, the houses were whitewashed for the Deepavali festival. In the process the efficacy of DDT was substantially lost. Naturally the experiment did not succeed in eradicating mosquitoes from the houses.

In this case it is clear that "communication" included much more than the act of telling people about DDT. The spraying, with whatever explanations were needed to bring it about, was also a part of the process—and it was here that the process broke down because of poor timing.

### Feedback and Assessment

Procedures should be built into the plan for constant monitoring while it is under way. How is it actually operating? How is it being received? Are there rumors that need correction? Are the various persons who have roles actually performing them as planned?

In major family planning programs, such as in Taiwan, field workers fill out a three-

part form for each person who has agreed to adopt the IUD (the most commonly used method). One part is retained by the field worker for her follow-up records and the client takes the other two parts to a doctor. The coupon entitles her to a 50% reduction in the standard fee for the service. The doctor completes the data on the second part and forwards it to the program headquarters, retaining the third part for his own records. The second part, of primary interest for program feedback, contains the client's name and demographic data, names of the field worker and doctor, type and size of loop inserted, and previous family planning method (if any). The data are fed to a computer, which can provide:

(1) Accounting information, upon which to pay doctors for their services and bonuses to the field workers.
(2) Efficiency data, which will show which field workers are more effective, which doctors are more active, which clinics are overburdened, and which ones are under-utilized.
(3) Soft spots in areas of the country where the program is lagging. A quick checkup may reveal damaging rumors which can be quickly counteracted.
(4) Comparison data with other areas.

Obviously, each rural development program will have its own type of feedback. But however it is worked out, it is essential that the responsible agencies have direct knowledge of how the program is operating. This is because evaluation is not just something that needs to be done later to put the results in an annual report. Things hardly ever go precisely as planned, but if problems can be identified soon enough, corrections can often be made in time to save the project. Careful planning is vital, but nothing can substitute for the flexibility provided by an effective feedback system that will allow program administrators to know the status of the project at any time and to make modifications as needed.

## *Some Additional Comments*

In carrying out a communication support program for rural development, it must be observed that at all stages all relevant offices and individuals should be kept not only informed but actively involved. This involvement should not be so active as to amount to interference in operations, but it should be sufficient so the other agencies and officials can feel that their ideas are respected and considered, and so they will also come into contact with other needs, pressures, and points of view.

Such planning and implementation calls for people trained as communicators, and not just as "information specialists." The information specialist is commonly able to do a workmanlike job preparing press releases, radio scripts, etc., from whatever information he is given. He is apt to measure his success in terms of press releases issued or minutes on the air.

The communication specialist, on the other hand, takes a broader view. He should be trained to think of the entire process from the conception of the program to the persuasion of each member of each target audience. He can think in "mass" terms, yet is able to carry the analysis to selected groups within the mass, and he knows that rural development is not a "mass" phenomenon. He knows which mass media are appropriate for certain phases of the information task, but he is also able to turn to other media (or create new ones, if necessary) to reach segments of the audience that will not be reached effectively by the mass media.

Communication is a broad concept that includes much more than publicity or information. It requires a study of the people involved, their motivations, and inhibitions. A decision to proceed with a program in the rural development area immediately calls for an analysis of the information that certain people need to receive and the means of transmitting it, but beyond that there should be arrangements through which the ideas and efforts of the rural people are actively sought and are meaningfully integrated into the ongoing

program. In the final analysis, it is they who must "develop;" the whole rural development apparatus is designed to help them do it.

## *References*

[1]Erskine Childers and Mallica Vajrathon, "Support Communication in Rural Development Programmes," paper presented at the Second World Food Conference, The Hague, 1970.

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[3]Wilbur Schramm, "Communication and Change," in Daniel Lerner and Wilbur Schramm, *Communication and Change in the Developing Countries.* (Honolulu, Hawaii: East-West Center Press, 1967), p. 27.

[4]S. C. Dube, "Communication, Innovation and Planned Change in India," in Ibid.

# Comments on the Rogers and Crawford Papers

GREGORIO MARTINEZ VALDES*

ROGERS is understandably concerned with the gap hypothesis and the so-called second dimension of development dealing with redistributing farm incomes. This is a concern justified in terms of the effects of programs tending to benefit the "ups," given their already favorable position in the social structure. It, in turn, facilitates their use of modern farm technology. In the context, "ups" are the favored, while the marginals are the unreached and the unchanged. Rural development programs traditionally conceived tend then to open even more the existing gap. Rogers suggests that this calls for new approaches.

Crawford, in turn, touches and discusses practically all sensitive points for implementing communication programs, although it seems to me he does not suggest concrete alternatives.

## *Two Assumptions*

There are implicit assumptions in both the Rogers and Crawford documents. A discussion of the following points may be worthwhile:

(1) No program starts and acts in a vacuum. There is a certain institutional infrastructure, and several agencies may be there with similar roles (at least intended roles). The question is how to establish a commonality of interests, how to establish the appropriate communication connections, how to make the communication really systematic and processal, how to detect decision-making flows and bottlenecks, and how to achieve feedback. All of this has to do with institutional behavior and structural change.

(2) Accepting that communication *per se* will not change things, we have to consider other aspects. Avoiding the linear-transmission models, let's look at the audience. Small farmers should not be taken as simple recipients, but they—and we—have to be real participants. Lacking decision power on the one hand, and being subjected to the existing structure, on the other, what would be the alternatives for the small farmers to get a permanent participation?

### FULL INVOLVEMENT

Rogers points out some suggestions and mentions special efforts, such as the special agencies in India. Should we stress special efforts and the organization of working groups in the clientele? If we are going to help to open new channels for communication and for the flow of new ideas and inputs, as well as for feedback, this may be a good alternative. The Puebla Project presents a favorable experience in this regard.

Certainly we should not think in terms of organizing the "receivers" but organizing the "participants" and facilitating a full involvement.

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# Popular Participation and Feedback Systems in Rural Development

MILTON J. ESMAN*

IN this paper, I shall focus on the communication needs of small and moderate-scale farm cultivators, both owners and tenants, who comprise the great majority of farm operators in developing countries. I shall not deal either with large scale producers and commercial plantations or with landless laborers. While the large scale producers are heavily dependent on reliable information for efficient performance, they usually have the capacity to make their informational needs known to commercial and governmental agencies that supply such services; government agencies and commercial suppliers, in turn, tend to beam their informational and other services in the direction of these more influential clients who also happen to have the resources and the incentives to use new information more productively than smallholders and tenants. The large operators are reasonably well tuned into existing communication networks and able to take care of their informational needs.

On the other hand, I shall not consider the communication problem of landless laborers, though their plight is increasingly desperate in many developing countries because of the pressures of rapid population increase on fixed land resources and the absence of alternative employment opportunities in industrial and other urban occupations. Landless laborers are not independent decision makers in agricultural production and, therefore, communication strategies cannot be central to the improvement of their conditions.

And though I am committed to the concept of integrated rural development, which includes health, nutrition, housing, family planning, and other elements of a fuller life for rural people, I shall nevertheless confine this paper to relationships between communication and agricultural production and marketing both to simplify the presentation and because I consider improved economic performance to be central to a broad strategy of rural development.

## *Some Assumptions*

For the purposes of this paper, I shall assume that the main purpose of communication policies and activities in the context of rural development in low income countries is to contribute to improving the economic performance of farm cultivators.[1] This is likely to require behavioral changes on the part of farmers and their families as they incorporate and respond to new challenges and opportunities in the form of technology, public services, and social organization. There have been two major premises underlying most of the studies of communication in agricultural development: (1) useful information which farmers do not have—in crop production, marketing, animal husbandry—can be conveyed to them at reasonable cost through expanded and more efficient communication activities, including mass media; (2) communication strategies can help motivate farmers and their families to apply new and useful information and to respond to opportunities which are available to them, but which for various reasons, they are reluctant to adopt and put into practice.

These premises are elements of a planned and top-down perspective which holds: (1)

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that the research and service agencies supported by government or modern business firms and the managers of mass communication media have information which could benefit farmers; (2) that communication exposure can help induce or persuade them to use the information.

Thus, it is thought that planned and guided communication activities can facilitate desirable behavioral changes, specifically the adoption of more productive agricultural practices. While one influential school of writers argues that increased communication exposure is a desirable end in itself, because it inadvertently produces "modernization," most students concerned with communication strategies and activities in the context of agricultural development emphasize its instrumental role in facilitating the adoption of desirable innovations.[2]

### Reasons for Failure

The reasons for the failure of small farmers to perform at technologically feasible (not to mention optimal) levels are surely complex. They include such factors as the lack of sufficient information on how to use improved techniques, hesitation to adopt changes because of risks and uncertainties, and commitments to values other than productive efficiency. While these explain some of the shortfall in farmers' performance, the operating premise of this paper is that structural constraints in the farmer's situation, that is, lack of realistic opportunity is the major explanation of this phenomenon.[3]

These structural constraints include:

(1) Land tenancy and the adverse terms of tenancy.
(2) Unavailability or high cost of credit which in turn limits access to needed inputs.
(3) Price disincentives.
(4) Unreliable and often exploitative marketing arrangements. Singly and in combination these structures constrain the small farmer and operate as inhibitions to economically and technologically efficient behavior.
(5) The high risks of failure which must be borne entirely by the farmer who has no reserves to fall back on in case innovations fail.
(6) The absence, or the availability only on unreliable or demeaning terms, of public services which respond to the practical needs of the farmer as he perceives them on the ground and which would give him the confidence and the reenforcement he needs to innovate and experiment.[4]

Given these constraints, it is remarkable how readily small farmers often do respond to new opportunities; actually they appear to be much more risk prone than most of the highly protected academics who bemoan their conservatism. But if the main inhibitions to improved performance are indeed structural and not primarily informational, then it is unreasonable to expect that the burden of lifting these constraints can be borne primarily by improved communication (information and motivation) or even more effective public administration. It is rather a question of institutional changes.

These changes may range from social revolution—which I consider an unlikely prospect in most countries and, therefore, an ineffectual premise for planning—to structural reforms in tenancy, credit, marketing, and other public services, to the building of new institutional capabilities oriented specifically to the needs of small farmers. Thus, the operative question is this: in the context of these fundamental structural constraints and the need for far-reaching institutional changes, how can communications help the small farmer?

## *Communication and Development*

Effective communication over a complex of activities such as those involved in rural development cannot be conceived globally as a single enterprise or a single operation. It is a pluralistic process. Communication is an integral element in the activities of every com-

mercial and governmental agency and in the administration of every program and activity that attempts to reach and influence the small farmer.

Every agency has an internal communication function which enables it to operate as a coherent structure and is essential to its maintenance as an organization. In this article I shall not attempt to deal with the problems of administrative communication within the boundaries of an organization, even though effective internal communication is essential to an organization's maintenance and thus affects its capacity to deliver services and perform its specialized program activities. Instead, I shall stress communication between organizations and their clients or constituents—transferring and exchanging information which is specific to the mission or the functional responsibilities of the individual organization as it interacts with its clients.

## Agency-Client Communication

The main channels for effective agency-client communication are directly through the field personnel of the agency as they contact individual clients. This is because:

(1) The most productive forms of communication, especially with semi-educated and low-status clients, are based on face to face personal contacts.
(2) The needs, capabilities and eligibilities of small farmers tend to be situationally specific and individualized.
(3) The expertise and resources for assisting them tend to be controlled by functionally specific commercial and governmental agencies.

Their outreach may be extended through individuals and groups (commercial suppliers, politicians, local influentials) who in turn meet, transfer, and interpret information to clients. This personal communication process can also be supplemented by printed information distributed directly by agency staff, indirectly by other intermediaries, or by messages and informational campaigns marketed through mass media. The mass media can only be auxiliary, however, to the main communication responsibility of every operating agency, for the message content must be provided by the operating agencies to the media for processing and dissemination.

The media can, of course, provide generalized economic, weather, and even political information that may be useful to small farmers; they can reinforce and enhance public awareness of the services provided by the specialized operating agencies; but they cannot substitute for agency-specific data conveyed through agency channels to discrete client groups, if the objective is to induce behavioral changes that are relevant to the individual needs and conditions of small farmers.

### *Intensity*

There are two important problems of agency-client communication: intensity and relevance. Intensity is a function of the frequency and appropriate timing of messages and especially the penetration of the client group. According to World Bank figures, "while developed countries have a ratio of government agricultural agents to farm families of about 1 to 400, in developing countries 1 to 8,000 is the average . . . Under the latter conditions, it is impossible for agricultural agents, handicapped also by poor transportation facilities, to reach the small farmers who need their help."[5]

Intensity is thus a matter of resources available for agricultural services and managerial efficiency in deploying and directing an agency's always limited personnel and material resources toward what, in peasant agriculture, is always a large and scattered client group.

### *Relevance*

Relevance has to do with the utility of information to the individual needs and specific conditions of clients. The burden of a growing body of communication research is that much of the information beamed to small farmers is irrelevant to their practical needs, in

that it is non-operational. It does not tell them specifically what to do and how to do it; or, more importantly, it does not take account of their specific situations, including natural conditions, as well as the aforementioned structural constraints that inhibit their ability to use technological innovations. There is little use in information that reaches the small farmer if it does not take specific account of his soil conditions or the scale of his operations; or if it prescribes inputs that he cannot afford or cannot finance through available credit terms; or if it assumes storage, transportation, or marketing facilities that are not available to him or his neighbors.

## Need for Feedback

How are government agencies to learn of the specific needs of small farmers so that they may provide operationally useful advice and attempt to adjust their services to concrete local requirements? In most societies small cultivators have difficulty articulating their needs. There is considerable social and often cultural distance between poor, uneducated, politically powerless farmers and the educated middle class officials, often city bred and certainly city educated, who staff the public services. In many countries peasants regard government as an outside force which at best is uninterested in their welfare but leaves them alone, and at worst is an oppressor collecting taxes without providing service and available to reenforce the power of landlords and creditors.

Small farmers tend to lack the skills and the confidence to express their needs; and officials in agricultural service agencies often have little incentive to investigate in detail the specific requirements of small farmers. They assume they know what the small farmer needs, but that he is an intractibly conservative late adopter. Meanwhile, they can keep busy on the problems of more prosperous and "progressive" farmers and hope that the smaller farmers will eventually adopt the improved practices tested by the larger operators. Thus, agricultural specialists tend not to be information seekers, but primarily information purveyors—to the extent they interact at all with small farmers.

Agricultural administration in many countries encounters at the same time the problems of intensity and of relevance to the needs of small farmers. Staff and facilities are not sufficiently "dense" to reach the numerous small farmers; and even when they do the information available frequently does not take account of their specific natural conditions or of the structural constraints that limit their ability to innovate. There is frequently an additional obstacle—the inability or failure of specialist technicians, each reporting through a different, vertically structured administrative hierarchy, to coordinate their activities on behalf of their common clients. Thus, the farmer finds himself dealing with several officials, each concerned with only one element of a farmer's total situation and confusing him often with mutually incompatible advice which the small farmer is unable to resolve.

## Some Propositions

How can administrative agencies which purport to serve small farmers insure improved integration and greater relevance of their services and of the information that supports these services to the needs of their clients? This question is more pertinent now than it would have been a decade ago, because many governments have a greatly increased awareness and concern for the problems of small farmers.

They know that the small farmer "problem" is not likely to disappear with the advance of industrialization, that small farmers are becoming politicized, and that governmental attention and investment in the needs of small farmers will have to increase in the interest of greater productivity, of justice, and of the stability and survival of regimes. Thus, they are beginning to invest more generously in public services to small farmers. How are they to increase the prospect that these concerns and investments will actually pay off?

My first proposition is that it is difficult and very ineffective for specialized government service agencies and staff members to interact with individual, fragmented, unor-

ganized small farmers. My second proposition is that government agencies must become active information seekers, rather than only information purveyors to insure that their services and advice to small farmers actually reflect the latter's specific needs and possibilities. The agencies must expand their capacity and their inclination to get information from the ground and to establish and maintain dialogue and information exchange with their clients. It is a truism of communication doctrine that effective communication must be a two-way process, must involve genuine "feedback" from clients. Nowhere is this as true as in efforts to improve peasant agriculture and rural life.

## Function of Farmers' Organizations

If these propositions are valid, it follows that the establishment and maintenance of effective two-way communication between government service agencies and peasant farmers depend on functioning farmers' organizations. Farmers' organizations and only farmers' organizations can perform the following intermediary functions in linking the small farmer to government service agencies:

### *Articulation of Needs*

They can articulate the needs of their members to government agencies. It is through and within the facilities of farmers' organizations that agencies can operate—with the active participation of members of the farmers' organization—the testing and adaptive activities that relate generic crop and livestock technologies to specific local conditions. Similarly the credit, storage, processing, pricing, marketing, and other specific needs of farmers can find avenues of expression through these constituency organizations, expression that takes account both of the specific natural conditions and the institutional environment in which the farmers must work. As collectivities, farmers' organizations can articulate needs which the individual small farmer cannot. Farmers' organizations seem indispensable both to the interest articulation and the feedback requirement of useful and productive communication.

### *Diffusing Information*

Farmers' organizations can assist in diffusing information to their mass constituencies. Any organization, by definition, is a communication network. What a farmers' organization can do is to aggregate small producers, whose individual communication capabilities are limited by the small scale of their informal social groups, into larger scale, horizontal communication networks which at the same time give priority to the diffusion of useful technological innovations. Farmers' organizations can perform the second step in the well documented two step communication process between the modern, formal bureaucratic agency and the small individual farm operator, reinterpreting and adapting the message of the former to the specific needs of the latter.[8] In the process of adaptation, messages will tend to include practical, operational information, because the farmers' organization, through its feedback capability, can reject irrelevant information and confront the purveyors of advice with the need to seek data that will make their prescriptions more serviceable to the specific needs of an organized clientele.

### *Integration and Coordination*

I have already noted the confusion the individual farmer encounters in the face of multiple and even conflicting advice from several functionally specific, bureaucratic agencies providing specialized services to the same clients (e.g. credit, extension, irrigation). As spokesmen for their constituents, farmers' organizations can contribute to the elusive goal of integrating and coordinating on the ground the activities of these several agencies on behalf of the concrete needs of their increasingly self-confident and demanding members.

### *Pressure on Government*

Relations between government agencies and peasant clients have not only a technical but also a political dimension. The demand for better services may require reallocation of

an agency's resources, the provision of services on improved terms, or supplementary budgetary resources for the agency's operations. This may involve pressure on government to bring about such changes, often to the perceived detriment of entrenched economic or bureaucratic interests. In the absence of pressure politics, political and administrative leaders sympathetic to the interests and demands of small farmers may find it difficult or even impossible to overcome competing influences. Thus, farmers' organizations, singly and federated, become spokesmen for the interests of their members in the competition for influence and scarce resources.

## Some Problems

Some form of farmers' organization seems, therefore, to be an essential link between government service agencies and atomized peasant farmers, if meaningful rural development is to be achieved. These organizations must operate on a sufficient scale—usually larger than the traditional village—to provide reliable services to their members and they must be vertically federated at the provincial or national levels to promote and protect the political and economic interests of their constituents.[7] Yet the penury of effective farmers' organizations in developing countries and their painful struggles to become viable are living testimony of the difficulties inherent in building and sustaining such institutions.

Briefly, the main problems are the following:

### *Limited Organizational Skills*

The limited organizational skills and experience of small farmers are reflected in chronic failures of leadership, lack of business skills, and the absence of trust and social discipline needed to sustain complex enterprises which transcend the scale of primary kinship groups. Where governments attempt to compensate for these deficiencies by providing technically trained staff members to farmers' organizations, there is the danger that the officials may take over the enterprise and inhibit the development of local leadership and business skills and the emergence of an organization that genuinely reflects its members' interests.

### *Hostility*

The hostility of established groups which fear the emergence of effective spokesmen for small farmers' interests. They may openly resist farmers' organizations. Large farmers may attempt to take them over, bend them to their own interests, and render them innocuous and ineffective as vehicles for the improvement of small farmers. Such conflict, however, is unavoidable if structural changes are to be achieved. Indeed once small farmer organizations have been successfully established, they in turn must face the challenge of landless laborers organizing on their own behalf, for their interests will not be congruent with those of the small farmers.

### *Politicization*

A more subtle danger is the politicization of these organizations. Mass organizations inevitably become targets for aspiring politicians or cliques from within and outside the organization. The ensuing contest for power and control can divert such organizations from their principal purpose—to serve their members—and convert them into battlegrounds for competing leadership groups. This is a dilemma for all mass organizations, and though it need not be fatal to their primary purpose, it represents a grave risk to their survival when they must simultaneously cope with opposition from powerful vested interests and with the limited skills and commitments of their members.

## The Missing Link

Despite these formidable problems, farmers' organizations are the critical missing link in programs of rural development. No strategy for the delivery of services or for re-

lated communication activities is likely to succeed in the absence of such intermediary institutions. And no other strategy is likely to be able to press effectively to relieve the structural constraints that limit small farmer performance, to improve public services, and to overcome the aforementioned communication problems of intensity and relevance.

*Institution Building*

Creating and sustaining viable constituency organizations for small farmers calls for an institution building effort. Institution building is the promotion and protection of technological and social innovations through formal organizations or networks of organizations. The process and problems of institution building, so conceived, is now incorporated in a growing theoretical and empirical literature.[8]

Innovators who work through the institution building route face two simultaneous problems: to build viable organizations with the capacity to sustain the controversial activities for which they are created in an uncertain and often hostile environment; and to establish and maintain complementary and mutually supporting relationships with other organizations and groups on which the organization must depend for its own success.

The establishment of satisfactory linkages is especially important for farmers' organizations, since they necessarily depend (1) on enabling links with sources of political support which guarantee them access to resources, authority to operate and protection against attack, and (2) on functional ties with a network of organizations providing such services as purchase, credit, marketing, extension, and irrigation. Most of the existing structures which they encounter in their environment are likely to pre-date the farmers' organization and would be compelled to change their operating procedures and priorities to conform with the latter's needs. This will engender opposition among staff members, fearful of change, or among larger farmers and other interests concerned that their power and access to resources might decline as established service organizations adapt their programs to the needs of small farmers.

If the purposes of the farmers' organizations are to be served, either the existing service agencies will have to adjust their priorities and methods of operation, or a parallel and perhaps competitive network of agencies either controlled by or responsive to the farmers' organizations will have to be built.

*Committed Leadership*

What is the source of the energy and commitment for so ambitious and risky a task? It is clear that institution building depends heavily on competent and committed leadership—on the combination of technical, organizational, and political skills and the tenacity of purpose needed to launch and sustain a new enterprise with limited resources in the face of indifference and even of bitter opposition. While the impulse may come from political activists, governments must usually take the initiatives in building farmer organizations. Success will depend on the sponsorship and protection of politicians and administrators who are moved by the needs of small farmers, convinced that their own future depends on a more satisfied rural constituency, and prepared to invest their political resources in reforming and restructuring the rural economy.

*Other Needs*

Building a new network of rural service institutions (e.g. research, extension, credit, marketing) or restructuring and redirecting those that exist, with farmers' organizations at the core of the new network, is a process of resource mobilization, program development, organizational learning, and political struggle that will vary with the specifics of each country situation and, therefore, cannot be detailed in this paper. The planning and the tactics for such an effort will have to take account of the existing state of farmers' organizations (to determine, among other things, whether single purpose or multipurpose organizations should be attempted), the resources likely to be available from government, and the degree of hostility or support likely to be encountered among existing service agencies and interest groups.

Farmers' organizations should not be attempted unless there is available a minimum body of technological practices that can be imparted to farmers that can improve their productivity; this is necessary to overcome their scepticism and build confidence in the efficiency of the new organization in which they are invited to participate. The risks of failure are, in any case, considerable, but the problems of rural development on behalf of small farmers are so urgent that governments increasingly have no choice but to invest more heavily in their welfare, both to reap the gains of greater productivity and to avoid the costs of social breakdown and political rebellion.

## *A Strategy*

Thus, what began as an inquiry into communication and feedback for small farmers led inexorably to a strategy of rural development. We found that the information farmers need is associated with and instrumental to specific services provided primarily by functionally differentiated, vertically organized governmental agencies. These may be supplemented by commercial or political channels of information.

The main inhibitions to agency-client communication in the rural areas of developing countries are limited coverage (intensity) and especially the irrelevance of much of the information the agencies disseminate to the specific circumstances and opportunities of the small farmer. Either the farmer does not receive the message or the message does not help him to cope with the specific natural and institutional problems that constrain his life as a small farmer.

Without facilities for reliable feedback, which is essential to the improvement of services and to supporting communication flows, the efforts of government agencies on behalf of small farmers are likely to be futile and wasted. Farmers' organizations are essential to the reduction of the structural constraints within which small farmers operate, to the provision of regular and reliable feedback, and to the maintenance of dialogue between service agencies and their small farmer clients.

Thus, the key to a strategy for rural development—one that incorporates the elements of effective two-way communication—is the creation and strengthening of formal constituency organizations among small farmers. This requires an institution building process, not only to develop viable structures, but simultaneously to manage the linkages between them, their sources of political support, and the networks of specialized government and commercial organizations providing the services on which small farmers must depend for improved technological and economic performance. This strategy requires the substantial modification of existing service agencies or the building of new networks of institutions to complement the farmers' organization. There are important technical, social, and political obstacles to this process of restructuring relationships in rural areas. Yet without such restructuring there can be no adequate links between specialized government agencies and small farmers; therefore, no reliable channels for effective two-way communication and feedback.

Once a network of farmers' organizations has been activated, there will be pressures on operating agencies to become information seekers, so that their activities may respond more adequately to the needs and realistic possibilities of small farmers. This will increase the productivity of agency personnel as their advice becomes based on more valid information and their specialized services become better integrated at the behest of an organized and more demanding constituency. Farmers' organizations will provide the social structure that encourages both the diffusion of improved practices through the two-step communication process and the essential feedback. The role of the mass media will be more clearly defined and their effectiveness enhanced. They will no longer be asked to attempt the diffuse and impossible task of "modernizing" the small farmer, but rather to process, dramatize and propagate information in direct support of agency operations, with the confidence that their messages convey field-tested practices, whose relevance to specific audiences have been verified by the feedback procedures that farmers' organizations have made possible.

## *References*

[1]Actually those in control of communication resources may have other objectives, such as building loyalty to the regime, selling soft drinks, saving souls, etc.

[2]A well known and readily available series of essays on the relationship of communications and modernization is Lucian Pye (ed.), *Communication and Political Development* (Princeton, New Jersey: Princeton University Press, 1963).

[3]The structuralist approach to rural communication is outlined in: James E. Grunig, "New Directions for Research in Communication and International Development: From the Study of Individuals to the Study of Formal Organizations" (Presented at the International Communication Association, Montreal, April 26–28, 1973). See also his article on "Communication and the Economic Decision Making Processes of Colombian Peasants," *Economic Development and Cultural Change*, July 1971, pp. 580–597.

[4]For a more extended treatment of this theme, see: Cynthia Gillette and Norman Uphoff, *Cultural and Social Factors Affecting Small Farmers' Participation in Formal Credit Programs* (Cornell University, Center for International Studies, Rural Development Committee, Ithaca, NY, Occasional Paper No. 3, [1973]).

[5]*World Development*, I, 11, November, 1973, p. 50. The same source indicates that agricultural research per farm family in developing countries consumes from $.50 to $2, compared with $20–$50 per farm family in developed countries.

[6]For the classical description of the two-step communication process, see E. Katz and P. Lazarsfeld, *Personal Influence* (Free Press, 1955).

[7]See Edgar Owens and Robert Shaw, *Development Reconsidered* (New York: Heath, 1972) pp. 74–103.

[8]See inter alia: Joseph Eaton (ed.), *Institution Building and Development: From Concepts to Application* (Beverly Hills, California: Sage Publishers, Inc., 1972); D. Woods Thomas, et al., (ed.), *Institution Building: A Model for Applied Social Change* (Cambridge, Massachusetts: Schenkman Publishing Co., 1972); and Melvin Blase, *Institution Building: A Source Book* (Beverly Hills, California: Sage Publishers, Inc., 1973).

# Comments on the Esman Paper

S. K. Taiwo Williams*

ESMAN'S paper on "Popular Participation and Feedback Systems in Rural Development" is very stimulating and touches on the major problems of effective communication in rural development. There is no doubt that if the objective of a rural development program is to obtain and maintain popular support for and participation in development projects, the first and basic need is to become acquainted with the important values of the social group among whom the work is to be done. Knowledge of these, if they can be mastered, often proves very useful indeed.

## *Importance of Feedback*

It is also obvious that no great amount of popular support and participation will add to the success of any program in rural development if communication between those responsible for the program and the people to be benefited is faulty. It is generally assumed that it is through mass media exposure and interpersonal communication processes that the peasants can gain the information needed to create rising expectations and motivation for modernization.[1]

Others like Gruning[2] disputed this assertion because it was felt that those who have reached this conclusion have not really comprehended the structural, institutional, and social rigidities that must be broken if meaningful development is to persist. And because of insufficient attention to the structural factors, most studies of communication and peasant modernization have tended to oversimplify and overestimate the role and effect of communication. Gruning therefore argued that communication is a complementary factor to modernization and that it can have little effect unless attention is paid to structural changes first to initiate the development process. Among the structural, institutional and social rigidities mentioned are unstable market conditions; archaic land tenure systems which concentrate the best lands in the hands of large land owners; insufficient infrastructure development; poor modern production inputs; inappropriate educational systems and irrelevant sources of information to peasants.

It is Gruning's view that these structural constraints cannot be controlled by an individual peasant and that only group action by those affected can effect changes in them. In other words, peasant modernization will probably never begin until the peasantry can be organized into an effective organization which can apply pressure to eliminate the structural constraints which peasants individually can do little about. Hence, the need for an effective virile farmers' organization that can articulate the needs of the peasants. This, in my view, is essentially the position taken by Esman in his paper and with which I may quickly add I have no quarrel. But for such an organization to function properly and effectively, it must obtain the control of communication channels to mobilize the peasantry.

## *Further Observations*

In dilating further on the paper, I would like to deal briefly with the following points which are not adequately covered in the paper vis-a-vis farmers' organizations as a means of articulating the wishes and aspirations of the peasant communities. These are:

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(1) Leadership and membership in farmers' associations.
(2) Channels for communication of innovations and change.
(3) Access to power and influence.

## Membership and Leadership

While it is true as claimed by Esman that farmers' organizations can help articulate the needs of their members to government and other agencies, very little attention has been given to the membership structure and leadership in such organizations. Different approaches have been recommended, but none has been empirically tested to my knowledge.

In some cases, it has been recommended that for such organizations to succeed, only bona-fide farmers should be members and that non-farm people in such an organization should confine their activities to professional capacities, such as supervisors and auditors. Otherwise, they will tend to dominate the organization and deprive the bona-fide farmers of the means of articulating their felt needs. This is because there will be a tendency for such non-members to succumb to the temptation of perpetuating themselves in office and using the organization to advance their personal and political interests.

On the other hand, Hunter[3] was pessimistic of the role which these farmers' organizations could play above the local level, especially in Africa and Asia. It was his feeling that until national societies have developed at a certain level, viable farmers' organizations cannot be supported. Instead, he suggested a pre-cooperative movement under the tutelage of government. It was his view that "to treat the small farmer (at a low level of development) as though he can manage a cooperative, use banking facilities, risk his income on expensive inputs, and change his secured method of cultivation for a new risky one is to behave unreasonably." On the basis of such a limited view of peasantry in developing countries, it has been recommended by Hartfield[4] that a gradual approach to the formation of farmers' organizations is necessary in such a way as to place increasing responsibility on decision making on them and building on existing and appropriate traditions, felt needs, and trends towards change.

My own view is that this ignorant and limited view of peasantry as being incapable of organizing itself effectively cannot be supported by personal experiences in Nigeria. The "Agbekoya" (Farmers' Organization) in the Western State of Nigeria, which successfully organized themselves politically into a coherent group to put pressure on government to improve the price paid for their cocoa, is a notable example. I believe what is needed is more research on the initiating and establishment phases of farmers' organizations in the developing countries and in different phases of economic development before any profound pronouncement as to their structure, organization and membership can be made.

## Channels for Communication of Innovation and Change

As rightly pointed out in Esman's paper, farmers' organizations can probably assist in diffusing information to their mass constituencies. In other words, farmers' associations with a high degree of autonomy can greatly facilitate horizontal communication among their members and help to increase the effectiveness of the extension agents, especially where enough cannot be trained to work with the farmers.

Two questions readily come to mind in discussing this. They are:

(1) To what extent do these organizations provide effective technical advice to their members?
(2) Has output increased as a result of supplies and innovations introduced through the associations?

On the question of the link between the farmers' organizations and technical advisory services, the evidence from Africa is rather mixed. In a Nigerian study,[5] it was found that the majority of the farmers looked to the extension agents and not to the farmers' organizations for technical advice. But whether or not the associations directly provide technical advice, they certainly may help create an atmosphere "favoring" the reception of such advice.

Receptivity to innovation depends among other things on options that are available locally, on whether the associations are in an area of new land settlement or not, and on whether new crops are involved or old ones. Another important factor affecting the role of farmers' organizations is the reference group or social network to which the farmer turns for any particular purpose. In this respect, a case study of a Kenyan primary society by Cosnow[6] is indicative in concluding that the family does not function as an innovator because "those who control its operations do not consider it as one of the responsibilities of the society to improve agriculture on the scheme." To comment on another's agricultural techniques, it is reported, would be in poor taste because it might imply criticism. A man should keep his agriculture to himself.

Again, this is neither a generally true nor generally false observation that could be applied to African agricultural practice elsewhere. In other areas, secondary functions performed by these associations in Kenya have been positively appraised. For example, the dip services, which many societies provide for their members, were run with high efficiency.

With respect to whether output has increased as a result of supplies and innovations introduced through the farmers' associations, there is little evidence from the present record to show that collective or communal initiative as such has been associated with mass innovation or breakthrough, technical or otherwise. Diffusion and innovation seem to have been a matter more of individual action with collective participation coming afterwards rather than before.

In order to be able to use the farmers' associations as a medium for communication of innovation and change in developing countries, there should be greater contact with extension agents. Educational tours to research institutes and local result demonstrations should be provided. In most developing countries, this is generally not possible because of lack of provision of essential facilities, such as transportation to both the agents and the farmers.[7]

We have also found from experience in Nigeria that the effectiveness of the farmers' associations depends on the regularity and frequency of meetings and the ability to produce evident advantages for their members through the benefits of economics of large scale operations. In this respect, the associations have not made any marked impact. Instead, the organizations have suffered diminution in both membership and number. This is because the associations have not been able, in most cases, to meet the expectations of their members in the supply of applicable technology for their farming activities. Moreover, effective linkages have not been well developed with extension agents nor with other governmental institutions where decisions concerning their interests and welfare are taken, such as in monitoring research and extension.

A factor which may account for this is the lack of competent people to manage the affairs of the associations. In many developing countries, efficient management of such associations is a rare commodity because they are not strong enough financially to be able to attract the most capable managers to run their businesses.

## Access to Power and Influence

For the farmers' organizations to be effective in mobilizing resources at their disposal, they must have access to power and influence. As long as peasants and small farmers are unorganized they have little or no chance of improving their bargaining position. The deleterious effects of lack of access to power and influence are well demonstrated in the negative characteristics often attributed to peasants, such as limited aspirations, low economic base, weak and unorganized structures, etc. Such power can be exercised through economic influence or political pressure groups, both of which are lacking among peasants or small farmers. Without strong allies, farmers' organizations are restricted to local influence and vulnerable to regression. Whereas, with strong allies and an institutionalized role in government programs, they become vulnerable to co-optation.

A strong central farmers' organization provides its members with the opportunity of political action in the form of lobbying and representation of members' views at the decision making level of government. The existence of autonomous farmers' organizations with access to government at different levels through a multi-tier system of federation undoubtedly provides the means for farmers' influence to be felt and encourages the crystallization of farmers' opinions on matters that affect their welfare. (As in Taiwan and Japan.) In many developing countries, it is important that the top policy makers fully appreciate the important inter-dependence between (1) farmers' organizations to express farmers' problems and concern; (2) the motivation to participate in agricultural development on the part of the farmers which is essential for development to occur, and (3) the provision of adequate resources to the agencies responsible for agricultural and rural development.

In conclusion, there is no denying the importance of farmers' organizations in enabling millions of small farmers to articulate their needs and in providing the necessary channel for pressure groups to achieve their legitimate goal of meeting the rising expectations of their members. The governments in the developing countries have an important task in encouraging such organizations and supplying them with the basic conditions for development. These are the essential physical, business, social infrastructure, modern information media, and other factors for progress. It is, however, debatable how strong a role the government should play in actual implementation of these in contrast to private bodies and individuals. It is felt that government should begin these associations as champion by giving them legal status, continue as partner, and abide as friend as soon as they are able to stand on their own feet. Farmers' organizations will remain largely ineffective as long as they are dependent upon the goodwill of government to listen to them. But given legal status, they can compel government to give them attention.

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# III. Facilitating Rural Communication (Case Studies)

# How the Elements of the PBFL/FAO Program Were Orchestrated in East Africa

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EVEN though I was asked by the organizers of this symposium to talk about Uganda, I thought it was more realistic to include the three countries where similar but adapted strategies were being used.†

Planning for Better Family Living (PBFL) is an FAO program with focus on a multidisciplinary integrated approach to make farm families aware of the relationship between needs, resources, goals, and size of the family. FAO's intervention is planned through the existing national agencies and program. Emphasis has been placed on three components: research, communication, education and training. The United Nations Fund for Population Activities (UNFPA) is the funding agency for the program.

## *Background Information*

Uganda and Tanzania changed the name from Planning for Better Family Living to Programmes for Better Family Living.

The ultimate objective of FAO is to raise levels of living of rural families. One main concern of this agency has been that of the relationship between food available and population increase. This can be easily confirmed by looking into the tables presented by the annual FAO reports on the *State of Food and Agriculture*. Probably the idea was to show in coming years how improved agriculture was catching up with population. The reality is that the gap has been increased year by year. The FAO Conference in 1967 approved PBFL and recommended that the organization should give increased attention to the food-population dilemma.

In July, 1971, the Home Economics Service organized a PBFL staff orientation training session. The meeting was intended to be motivational, informative and a vehicle for exchanging ideas relevant to the PBFL. Present at this meeting were: headquarters staff, associated regional officers, project leaders and counterparts from FAO-assisted institutions in East Africa, representatives from Aquarius Research Corporation, and the UN Population Programme Officer for East Africa.

Thus, one of the first strategies of the program was to test the ideas that had been developed for the program with people knowledgeable about and experienced with the regions where the program was meant to start. Even though programs need a framework to depart, they undergo constant changes until the final target population is reached.

Relevant to this symposium are some manifestations of the working groups of this meeting. The education and training group suggested research for "testing the credibility and acceptability of various communication channels and educational material."[1] The re-

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†This paper is based on her final report and other reports published in relation to work conducted by PBFL in East Africa during the period of January–December, 1972, when she was a member of the PBFL Support Team as adult education expert.

search group considered the variations in the communication process stating, "The research element of PBFL is particularly concerned about how messages are transmitted and received; how decisions are made; and the extent of the influences of peer groups (group of equals) or reference groups (those groups of people which individuals would like to emulate).[2] The communication group defined the communication component of PBFL as "including communication training, communication research, and communication field application."[3]

The project was designed to have an expert for each one of the countries in East Africa (Kenya, Tanzania and Uganda) and a support team corresponding to the three components (research, communication, education) for backing and helping in the development of activities related to their specialties. The support team was stationed in Nairobi, Kenya. A corresponding team stationed in Rome was to back all field activities as needed.

There was an FAO sub-contract with Aquarius Research Corporation (ARC) in the U.S. Among other things ARC screened relevant educational material mainly produced in the U.S. to be tested or used as examples in the development of new material for the project.

## *PBFL in East Africa*

National programs need communication at all levels. It is indispensable that decision-makers at ministries understand and believe in the concepts that are to be developed. Training-institutions are the key for program development because theirs is the main responsibility to prepare the necessary personnel for the direct contact with the rest of the population. When we spend all our efforts with change agents and none with policy makers, we are losing all or at least half of the time.

### Communication with High Level Personnel

Early in 1972 a PBFL workshop was conducted in Tanzania at which representatives from the different ministries were present. FAO personnel explained the projections of the program and nationals reported about their own agency's work. They learned about what each other was doing; finding out similarities and sometimes dissimilarities or distortion of messages going to the general public.

A similar seminar was conducted in June, 1972, at Kampala, Uganda.[4] It was organized by an inter-disciplinary working group on PBFL under the leadership of the country expert.

"The seminar recommended a framework for the development and coordination, at central and field levels, of extension and education programs . . . It emphasized the need for a team approach . . ."[5] The proposed plan of action included inter-agency curriculum development and research and establishment of regional and district training centers.

Kenya had a steering committee that met regularly studying the development of a plan of operations and the implementation of the program. Members of this committee were representatives from the different ministries concerned with rural development.

### Communication with Training Institutions

#### *Identification of PBFL Concepts and Generalizations*

The task of identifying PBFL concepts started with the Uganda country expert and members of the Bukalasa home economics staff. Ideas developed in working sessions with members of this group were the basis for a paper presented to the PBFL workshop at Kampala in June 1972.

It was considered that concepts should relate to the improvement of levels of living and directly or indirectly to population problems. The first task was to clarify among the

staff the concept of concepts (main ideas) and generalizations (main relationships). Once there was common understanding of these they were related to the courses being taught at Bukalasa (Family Relationships, Child Care and Development, Foods and Nutrition, Home Management), the five-year plan for development, and the teaching and living experiences of the staff. It was expected that teachers could repeat this type of exercise with the groups they were working at the college and others in the communities. We thought there could be similarities of concepts and generalizations in the three countries because of culture and geographical position and we tried to test it.

A questionnaire was drawn up and sent to Buhare Training Centre in Tanzania, Kenyatta University College, Egerton College, and Karen College in Kenya. Its objectives were to find out which of the concepts that had been identified at Bukalasa were being taught in other institutions and which ones could be added to ongoing courses and to invite additions to the original list.

As part of the survey, conferences on the topic were held among the staff at Buhare, Tanzania. The feasibility and importance of teaching population concepts in various courses were discussed.

The results of the survey showed that all the concepts and generalizations identified at Bukalasa, Uganda, were also relevant for Egerton in Kenya and Buhare in Tanzania.

*Development of Curricula*

Curricula should be based on facts produced from research. At the Buhare training centre in Tanzania, a method of revising the curriculum was outlined on this basis, which in this case was the gathering of information relevant to family life and population.

In many countries there is not enough research in this field or it is scattered. Much relevant research has been done in East Africa but until recently it has not been used by educators. Some of it is not readily available in the country. Since study programs cannot always be held up until all the data have been gathered and analysed, courses are started and curricula developed based on the personal experience and knowledge of the staff. They are tested with the students and finally modified when research results have been analysed.

*Egerton College, Kenya.* At Egerton, a course on Family Life Education intended for home economics students was revised. Emphasis was placed on understanding the structure of and communication within the family and the role of its members throughout the family cycle.

The PBFL course,[6] which followed this basic course, was designed to be taught to students in all seven streams at Egerton (Agriculture, Agricultural Education, Engineering, Animal Husbandry, Dairy Technology, Farm Management, Horticulture, Range Management, and Home Economics). It was tested with 33 women and 19 men students from Kenya, Tanzania, Uganda, Swaziland, Malawi, Zambia and Nigeria. Both courses were taught by a native of Kenya.

*Buhare Training Centre, Tanzania.* The staff at Buhare was interested in introducing population concepts into the courses then being taught (day care center, child development, textiles, clothing, arts and crafts, foods and nutrition, communication and agriculture). Discussions with each staff member were centered mainly on how theories on the improvement of levels of living and population were relevant to their individual courses. It was explained how to develop a curriculum by starting with the analysis of a situation and from this developing objectives and concepts, identifying resources, and recording experiences in an orderly way. The faculty planned to continue work in this field.

*Bukalasa College, Uganda.* Students at Bukalasa conducted a survey among families around the college as the basis for developing an "outreach" program. The findings of this survey were used for the identification of material useful for developing a PBFL course for all Bukalasa students, ongoing courses on nutrition, child care, health, home management and methods, and guidelines for the development of plans of work.

The PBFL country expert, a sociologist, the home economics staff of Bukalasa, and the head of home economics extension in the Ministry of Agriculture participated for two days in this exercise.

There were other concurrent activities going on in the program. Two of them are mentioned here.

*Communication Workshop for Rural Field Workers in Kenya*[7]

This workshop was organized by the Ministry of Cooperatives and Social Services with assistance from FAO/PBFL. "It presented concepts and strategies of communication relevant to rural development activities in Kenya. It discussed plans for integrating rural extension and education programs with special emphasis on population and family planning as essential components . . ."[8]

At this opportunity a draft of the communication handbook "Reaching Rural Families in East Africa"[9] that had been prepared by the PBFL Communications Expert was tested and corrected.

## *Summary*

Activities mentioned were among those conducted during the first year of PBFL in East Africa, primarily reaching policy makers and training institutions. Starting a new program is always a difficult task and it was so for the field personnel in East Africa. Drawbacks were caused by the lack of a country expert for Kenya and the five-month absence of the Tanzania expert.

Among the recommendations of the adult education expert at the end of 1972 in the area of curriculum development were the expansion of concepts to cover other areas and levels and curriculum development workshops at institutional, regional, and national levels.

The PBFL assistance for the program was planned for three years (1972–1975) but it could continue if needed. Final evaluations at the termination of the assistance will give more light for the possible implementation of the similar programs in other countries and the continuation of the same in the countries where it was originated.

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# A Case Study of the Two-Step Flow Hypothesis of Communication in Brazil

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THIS study is an effort to test the validity of the two-step flow hypothesis of communication for the diffusion of information about new agricultural practices in a developing country. In other words, the applicability of the two-step flow hypothesis of communication is questioned for the diffusion of specific mass media content. Basically, it is the examination of the relay function of the two-step flow based on what Katz and Lazarsfeld state, speaking specifically on the flow of information:

> "Some individuals seem to serve as personal transmitters for others. Without these relay individuals, messages originating from the mass media might not reach otherwise unexposed people. This, of course, is the major part of the opinion leader idea: we call it the *relay* function of interpersonal relations."[1]

Thus, it is a continuation of research efforts by communication scholars to map and understand the communication process and the role of communication in agricultural development. In spite of the research completed, there is still a considerable lack of knowledge about the diffusion process itself and factors that affect the process. This is especially true for the diffusion of new agricultural practices. Empirical knowledge of how and to what extent information about new agricultural practices, initially relayed by mass media, reaches people and how people affect the flow is still lacking. Much more should be known about this and other questions because of practical and theoretical implications.

The main practical implication concerns the use of mass media channels of communication, as well as the use of interpersonal channels of communication. A better knowledge of the flow of information regarding new agricultural practices and factors that affect the flow is certainly very useful for change agencies and change agents.

The main theoretical implication is concerned with testing empirically the applicability of one of the most quoted hypotheses in communication studies—the "two-step flow hypothesis of communication"—presented by Lazarsfeld's group of sociologists as:

> ". . . ideas often flow from radio and print to the opinion leaders and from them to the less active sections of the population."[2]

Even though the hypothesis aroused wide interest, it has not been tested adequately and sufficiently. The studies conducted using the hypothesis have extended and modified it. But the studies have tested only part of the hypothesis and have usually contained some methodological shortcomings. (For instance, using a sample instead of the whole population.) About this, Arndt,[3] in 1968, after reviewing research about the hypothesis, stressed the lack of studies of specific content flowing from media to opinion leaders and from them to nonleaders. Bostian,[4] in 1970, suggested that it would be worthwhile to test

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the hypothesis in the context of developing societies where media are scarce, and in special situations involving persuasive, purposive communication.

There are other related questions which we considered important to investigate for practical and theoretical reasons. Many studies concerning messages diffusion have not separated the original message components from the additional influence that often gets attached to it as it diffuses through a population. They have not separated the gatekeeping function from the influence function. (This study attempted to assess this additional influence through the individual's opinion about the messages.) Believing that the extent of the flow and the influence attached is a function of message relevance and how well message matches prevailing norms and behavior in the community, three messages differing on various dimensions were chosen. Believing also that other social-psychological factors quite probably affect message diffusion, we included a few of these which we considered most important. (For instance, social participation variables which denote the respondents' opportunities for receiving the messages.)

## *Research Design*

### Social Setting and Population Interviewed

The study setting is a farm community in Rio Grande do Sul, the southernmost State of Brazil. The State has a relatively high population density, particularly in the northern half in which small farms predominate. The area was colonized largely by German and Italian descendents.

The farm community chosen, which is part of the "municipio" of Santa Cruz do Sul, is called "Boa Vista." It was chosen for several reasons:

(1) Having a local radio station and newspaper.
(2) Having an audience exposed to mass media but still not characterized by mass media saturation—radio owned by 91 percent, newspaper subscribed to by 32 percent, magazine subscribed to by 11 percent, TV owned by 10 percent.
(3) Having a small village providing some basic services and where the boundaries of a local community could be set on the sociological basis.
(4) Being a local community very typical for the South of Brazil in terms of economic production and social characteristics.
(5) Being a setting that requires the introduction of new technical information to develop agriculturally.
(6) Studies already done in the same setting which provided useful initial information for designing the research.

The setting characterized a family farm unit, with low or medium family income, having a diversified type of farming activity which includes soybeans, tobacco, and wheat as the principal crops and swine and milk cows as the principal livestock. The farmers live and work on their own agricultural property.

The individuals to be interviewed are property owners, male or female, and heads of the family units as defined by agricultural decision making. These property owners were the respondents and the audience. Interviews were conducted with 327 persons.

### Messages

Message is one of the main elements of the two-step flow hypothesis; others are "mass media" and "opinion leader." What were called "ideas" in the original hypothesis are defined as messages in this study. Thus, "ideas" are three well-defined messages, each one containing several items of information about new agricultural findings and recommendations.

The choice of the messages for the study was crucial. When choosing and preparing the three messages, issues were sought that would be as new as possible, situationally rele-

vant, easily understood by the farmers. They were chosen and prepared in cooperation with a local extension agent.

Each of the messages contained several items of information, but just five major items of each message were selected for recording the flow process. The messages were prepared in the form of newspaper articles and also in a suitable form for radio. They were published once in the local newspaper and aired over the radio station twice. They were placed in the mass media naturally. Precautions were taken not to change the usual procedure in which agricultural messages are normally introduced to the community. The same mass media channels were used in the same way and with the same people as usual.

There were two main reasons for including three messages in the study: (1) to assure a higher probability of capturing a sufficient flow of information; (2) to examine some possible differences of flow among different types of messages—messages counselling a violation of local, social norms versus messages favoring the adherence to local, social norms, simple versus more complex messages, and, expensive versus inexpensive practices.

One of the messages, which we will report as message one, dealt with the rotation of soybeans and wheat. It is a relatively complex and expensive agricultural practice because it implies not only the idea of crop rotation but also soil analysis and recuperation. It implies also the violation of local social norms because the behavior pattern of the local farmers is to plant wheat and soybeans in different fields and years and not in the same field and in the same year.

Message two dealt with a new hybrid corn, OPACO-2. This is a relatively simple and inexpensive agricultural practice and actually would not violate local social norms. Most of the farmers had already adopted hybrid corn.

The third message dealt with planted pasture and higher milk production. This is also a relatively complex and expensive practice, implying a substantial change in the patterns of behavior because it implies removing the traditional natural pasture, special preparation of the soil and selected seeds and fertilizers for the new pasture, plus the addition of fences, and some changes in handling the animals.

The message flow, defined conceptually as the diffusion of agricultural information contained in mass media and interpersonal channels of communication, was operationalized by placing the three messages in the local radio and newspaper. Two to three weeks after the radio and newspaper relayed the articles, the flow of the messages and the particular items of information were recorded by means of personal interviews. The questions determined the respondents' reception of the messages and the items of information. The sociometric-type questions allowed the trace of the flow. They are based on the respondents remembering having read or heard about the messages and the items of information contained in each message.

### Opinion Leader and Interview Schedule

The opinion leaders are defined conceptually as those persons who informally exercised personal influence over other individuals' attitudes or overt behaviors in a desired way with relative frequency. It was operationalized through a question posed to the respondents to identify the respondents' opinion leaders in agricultural matters, especially local opinion leaders.

The interview schedule included questions to: (1) determine who received the stories though what channels and what personal influence accompanied the interpersonal flow; (2) identify the opinion leaders; (3) measure demographic, social and economic variables which could be expected to affect the flow process.

## *Results and Discussion*

### Message and Information Flow

The findings showed that 62 percent of the respondents received at least one of the messages either through mass media or interpersonal channels. It showed also that mass media channels, especially radio, account for most of the respondents' reception of the messages. But along with the mass media reception of the messages about one-third reported interpersonal contacts about the messages. Very few members of the population who were unexposed to the mass media channels were reached through interpersonal contacts. (See Table 1.) People talked about the messages but usually with people also reached directly by mass media channels. This is an indication that one-step flow operated in a relatively higher degree than a two-step or a multi-step flow of communication.

Looking at the messages flow through the different channels, the data showed that there is little difference between messages as far as their spread by mass media is concerned, but there is a difference when we consider interpersonal communication. A total of 17 percent talked about message one, 21 percent about message two and 13 percent about message three. (See Table 2.) It means that message two—perceived as relatively more relevant and which matched prevailing norms and behavior—was talked about more by the people. Thus, the extent of the flow of agricultural messages at the interpersonal level

TABLE 1

General message flow: respondents' reception of the messages in absolute and percentage numbers (N = 327)

| Message Flow | Absolute | Percentage |
|---|---|---|
| No | 126 | 38 |
| Yes | 201 | 62 |
| • Message one only | 33 | 10 |
| • Message two only | 28 | 9 |
| • Message three only | 24 | 7 |
| • Messages one and two only | 20 | 6 |
| • Messages one and three only | 19 | 6 |
| • Messages two and three only | 28 | 9 |
| • Messages one, two, and three | 49 | 15 |
| *Message Flow and Channel* | | |
| 1. *Mass Media* (With or without interpersonal) | | |
| No | 146 | 45 |
| Yes | 181 | 55 |
| 2. *Interpersonal* (With or without mass media) | | |
| No | 221 | 68 |
| Yes | 106 | 32 |
| 3. *Mass Media Only* | | |
| No | 232 | 71 |
| Yes | 95 | 29 |
| 4. *Interpersonal Only* | | |
| No | 307 | 94 |
| Yes | 20 | 6 |
| 5. *Mass Media and Interpersonal* | | |
| No | 241 | 74 |
| Yes | 86 | 26 |

TABLE 2

Message flow: reception of the three messages by mass media and interpersonal channels in absolute and percentage numbers (N = 327)

| Message and Channel | Absolute | Percentage |
|---|---|---|
| *Message One* (Rotation of soybeans and wheat) | | |
| No mass media and no interpersonal | 206 | 63 |
| Mass media but no interpersonal | 66 | 20 |
| Mass media and interpersonal | 35 | 11 |
| Radio and interpersonal | 23 | 7 |
| Newspaper and interpersonal | 3 | 1 |
| Radio, newspaper, and interpersonal | 9 | 3 |
| Interpersonal only | 20 | 6 |
| *Message Two* (New hybrid corn OPACO-2) | | |
| No mass media and no interpersonal | 202 | 62 |
| Mass media but no interpersonal | 57 | 17 |
| Mass media and interpersonal | 52 | 16 |
| Radio and interpersonal | 33 | 10 |
| Newspaper and interpersonal | 8 | 3 |
| Radio, newspaper, and interpersonal | 11 | 3 |
| Interpersonal only | 16 | 5 |
| *Message Three* (Planted pasture) | | |
| No mass media and no interpersonal | 207 | 63 |
| Mass media but no interpersonal | 75 | 23 |
| Mass media and interpersonal | 36 | 11 |
| Radio and interpersonal | 27 | 8 |
| Newspaper and interpersonal | 1 | 0 |
| Radio, newspaper, and interpersonal | 8 | 3 |
| Interpersonal only | 9 | 2 |

of communication is probably a function of message relevance and how well the message matches prevailing norms and behaviors in a community. (See Table 2.)

On the basis of the results it is evident that:

(1) Members of the population under study were exposed to mass media channels.
(2) Messages flowed into and within the population.
(3) A relay function operated within the population.
(4) A one-step flow operated within the population.

The first two points are requirements of the study. The third and fourth points are concerned with the basic hypothesis under study.

The two-step flow hypothesis states clearly that some individuals serve as personal transmitters for other individuals. The data show that there were individuals who relayed messages to others including some not initially reached by mass media. Thus, it is evident that there was a relay function as predicted by the hypothesis. However, more people received the messages from mass media than from personal sources. Thus a one-step flow operated to a greater extent than a two-step flow or a multi-step flow. Interpersonal contacts complemented mass media contacts rather than reaching unexposed people; this is not predicted by the hypothesis.

The data presented thus far in this unit were concerned with the message flow in

general terms, e.g. respondents having heard, read, or talked about the messages. Let us see the flow of the items of information contained in each message. Respondents may have heard something about the messages and remembered any or all of the items.

Looking at the amount of information received by the respondents the results showed that they remembered more items of information contained in message two than in the other messages. The amount of information remembered about the messages by those respondents who reported interpersonal contacts along with mass media contacts is a little higher than that reported by those who received information only through mass media. But when the respondents mentioned only interpersonal contacts they tended to remember less items of information. (See Table 3.) This is an indication that the amount of information dropped in the second step flow of communication.

Another indication of flow dropping is given by respondents who were reached by mass media channels but did not talk about the messages with other persons. These persons might be seen as dropping the flow process by not transferring to other persons what they heard or read. The results showed that 65, 52, and 68 percent of the respondents who were reached by mass media channels, "stopped" the process by not talking about the messages with other persons (See Table 4.) They did not let more people know about the

TABLE 3

Messages flow amount of information received by the respondents through various sources, absolute and percentage numbers (receivers only)

| Items Remembered | Message One | Message Two | Message Three |
|---|---|---|---|
| *Mass Media Channels only* | | | |
| Heard or read article but remembered no items of information | 23 (23) | 12 (11) | 26 (24) |
| Remembered 1 item | 8 (8) | 7 (6) | 12 (11) |
| Remembered 2 items | 15 (15) | 12 (11) | 10 (9) |
| Remembered 3 items | 17 (17) | 17 (16) | 13 (12) |
| Remembered 4 items | 18 (18) | 16 (15) | 23 (22) |
| Remembered 5 items | 20 (20) | 45 (41) | 35 (22) |
| Totals | 101 (101) | 109 (100) | 119 (100) |
| Mean | 2.58 | 3.40 | 3.11 |
| *Mass Media and Interpersonal* | | | |
| Remembered no items | 3 (10) | 2 (5) | 6 (20) |
| Remembered 1 item | 3 (10) | 2 (5) | 1 (3) |
| Remembered 2 items | 0 (0) | 3 (8) | 3 (10) |
| Remembered 3 items | 6 (20) | 4 (11) | 1 (3) |
| Remembered 4 items | 5 (18) | 5 (14) | 6 (20) |
| Remembered 5 items | 12 (41) | 22 (57) | 14 (44) |
| Totals | 29 (99) | 38 (100) | 31 (100) |
| Mean | 3.48 | 3.94 | 3.35 |
| *Interpersonal Contacts only* | | | |
| Remembered no items | 7 (44) | 8 (54) | 2 (25) |
| Remembered 1 item | 0 (0) | 2 (13) | 1 (12) |
| Remembered 2 items | 4 (25) | 2 (13) | 1 (13) |
| Remembered 3 items | 0 (0) | 0 (0) | 1 (13) |
| Remembered 4 items | 3 (19) | 1 (7) | 0 (0) |
| Remembered 5 items | 2 (12) | 2 (13) | 3 (37) |
| Totals | 16 (100) | 15 (100) | 8 (100) |
| Mean | 1.87 | 1.33 | 2.62 |

TABLE 4

Respondents' reception and talking about the messages, in absolute and percentage numbers (receivers only)

| Message Reception | Message One | Message Two | Message Three |
|---|---|---|---|
| Mass media but no interpersonal contact | 66 (65) | 57 (52) | 75 (68) |
| Mass media and interpersonal contact | 35 (35) | 52 (48) | 36 (32) |
| Total mass media reception | 101 (100) | 109 (100) | 111 (100) |

messages and did not discuss or receive more information about the messages through interpersonal contacts.

Still another way to examine the "dropping" is to look at the amount of information that respondents remembered having received from mass media channels and the amount of information they remember having talked about with other persons. The amount of information reported by the respondents drops considerably and consistently for all three messages at the interpersonal level of communication. (See Table 5.) Thus, people do not pass along all the information they receive from radio and newspaper. This is especially true when comparing the amount of information received by the respondents who were reached by radio and newspapers with those reached only through interpersonal contacts.

The results also show that mass media when carefully used can be quite effective aids to the change agent in disseminating messages about recommended farm practices. But it must be remembered that the mass media are merely message carriers. To be effective, the message must be relevant or useful for the farmers and presented in an understandable style. When such messages are prepared, they do get attention from readers and listeners and are discussed wherever farmers meet and talk to other farmers.

## Connection of Mass Media with Interpersonal Channel

The previous analysis argued that there is a connection between mass media and interpersonal channels, though it did not make clear how the process functions—through what structure of interpersonal relationship and what individual positions and roles. This was approached through the opinion leadership structure along with the "who-talks-to-whom" approach.

The common theoretical and practical assumption about the opinion leader is that he plays an influential and informational role. The two-step flow phenomenon postulated by Katz and Lazarsfeld implies that much of the information originating from the mass media reaches the public through opinion leaders.

TABLE 5

Message flow: amount of information received from mass media and amount of information talked about, in means (receivers only)

| Channel and Reception | Message One | Message Two | Message Three |
|---|---|---|---|
| Radio only | 2.33 | 3.18 | 3.01 |
| Newspaper only | 2.50 | 3.68 | 3.13 |
| Radio and newspaper only | 4.25 | 4.50 | 4.42 |
| Mass media and interpersonal | 3.48 | 3.94 | 3.35 |
| Interpersonal only | 1.87 | 1.33 | 2.62 |

The data in our Brazilian study confirm that talking about the messages took place mainly among persons other than those belonging to the opinion leader structure. It is evident that the relay function did not operate as predicted by the hypothesis. Opinion leaders did not participate in the relay function more than nonleaders. Even if we include as opinion leaders any person who received at least one indication, the importance of the opinion leader in the diffusion of information does not show up. Similar results are found when messages are taken separately.

## Individual Roles and Message Flow

A comparison of opinion leaders and nonleaders is made to see how their roles differed in the interpersonal message flow. Theoretically, opinion leaders are expected to play a key role in these interpersonal contacts—initiating the conversation, transmitting information, and giving opinions.

The results showed 143 "talking cases" reported by 94 respondents concerning the three messages. Few respondents talked with persons who are local opinion leaders with five or more indications or with nonlocal opinion leaders. The data show that the conversation about the messages usually took place during other conversations. Seeking information, either by the respondent or by the person with whom the respondent talked, happened in less than one-third of the cases. There is also a tendency for people to share information rather than just receive or transmit it. (See Table 6.) On the basis of the data, it is evident that opinion leaders did not transmit more information than nonleaders; they were not more likely to initiate the second-step; they were not more likely to seek information.

TABLE 6

Message flow: individual roles (transmitting, initiating and seeking) played by opinion leaders and nonleaders, in absolute and percentage numbers.

| | Opinion Leader | | | | |
|---|---|---|---|---|---|
| Role | Local With 5 or More Ind. | Local With 5 or Less Ind. | Non-local | Other Person | Totals |
| *Seeking Information* | | | | | |
| I sought (respondent) | 1 (9) | 7 (27) | 2 (22) | 13 (13) | 23 (16) |
| He sought (to whom he talked) | 2 (18) | 5 (19) | 0 (0) | 13 (13) | 20 (14) |
| Came out during other conversation | 8 (73) | 14 (54) | 7 (78) | 71 (74) | 100 (70) |
| Totals | 11 (100) | 26 (100) | 9 (100) | 97 (100) | 143 (100) |
| *Initiating Conversation* | | | | | |
| I initiated (respondent) | 5 (50) | 11 (43) | 3 (38) | 37 (39) | 56 (40) |
| He initiated (to whom he talked) | 1 (10) | 10 (39) | 4 (50) | 45 (47) | 60 (43) |
| Did not recall | 4 (40) | 5 (19) | 1 (12) | 14 (14) | 24 (17) |
| Totals | 10 (100) | 26 (100) | 8 (100) | 96 (100) | 140*(100) |
| *Transmitting Information* | | | | | |
| I transmitted (respondent) | 0 (0) | 9 (35) | 0 (0) | 25 (28) | 34 (25) |
| He transmitted (to whom he talked) | 5 (50) | 5 (19) | 5 (71) | 30 (33) | 45 (34) |
| Shared | 5 (50) | 12 (46) | 2 (29) | 36 (39) | 55 (41) |
| Totals | 10 (100) | 26 (100) | 7 (100) | 91 (100) | 134*(100) |

*The difference from 143 is due to respondents who did not answer the question.

TABLE 7

Message flow: individual roles (opinion giving) played by opinion leaders and nonleaders, in absolute and percentage numbers.

| Role | Opinion Leader: Local With 5 or More Ind. | Opinion Leader: Local With 5 or Less Ind. | Non-local | Other Person | Totals |
|---|---|---|---|---|---|
| *Opinion Giving* | | | | | |
| I gave opinion (respondent) | 9 (82) | 21 (81) | 7 (78) | 68 (70) | 105 (73) |
| I did not give opinion | 2 (18) | 5 (19) | 2 (22) | 29 (30) | 38 (27) |
| Totals | 11 (100) | 26 (100) | 9 (100) | 97 (100) | 143 (100) |
| He gave opinion (to whom he talked) | 9 (82) | 24 (92) | 3 (33) | 75 (77) | 101 (71) |
| He did not give opinion | 2 (18) | 2 (8) | 6 (67) | 22 (23) | 42 (29) |
| Totals | 11 (100) | 26 (100) | 9 (100) | 97 (100) | 143 (100) |
| I gave favorable opinion | 7 (78) | 11 (52) | 7 (100) | 48 (71) | 73 (70) |
| I gave unfavorable opinion | 2 (22) | 10 (48) | 0 (0) | 20 (29) | 32 (30) |
| Totals | 9 (100) | 21 (100) | 7 (100) | 68 (100) | 105 (100) |
| He gave favorable opinion | 8 (88) | 18 (75) | 3 (100) | 56 (75) | 85 (84) |
| He gave unfavorable opinion | 1 (12) | 6 (25) | 0 (0) | 19 (25) | 26 (16) |
| Totals | 9 (100) | 24 (100) | 3 (100) | 75 (100) | 101 (100) |

The data show also that there is a high sharing of opinion. A little over two-thirds of the respondents and persons to whom they talked about the messages gave opinions. About 80 percent gave opinions which were in favor of the messages. Opinion leaders were not more apt to give opinions than nonleaders. When they did give opinions, there was a slight tendency for these opinions to be more favorable than those given by nonleaders. However, this difference is very slight. (See Table 7.)

For the kinds of messages used in this study—messages probably typical of the majority of extension messages—there seems to be no advantage to try to diffuse these via opinion leaders. When the job is merely one of passing on the message, others seem to do about equally well.

This does not mean, however, that we should ignore opinion leaders. The finding does not necessarily deflect from the role of opinion leaders as influentials. Stated in terms of the typical adoption model, we were dealing especially with the awareness stage. It might be possible that many of our respondents would seek out their opinion leaders before adopting the practices recommended in the three articles. The leadership act is probably one of persuading and sanctioning. The gatekeeping act is one of disseminating or not disseminating the messages. These quite different acts have often been confused in theory, research, and practice. For the mere diffusion of most messages, a least effort principle probably operates. The benchmark for the flow of such messages is the number of contacts persons have with potential sources of information.

## Relationships Between Independent and Dependent Variables

The dependent variable chosen was "Level of Information." It refers to the amount of information initially fed into the radio and newspaper and reported as having been received by the respondents through the various channels of communication. Information reception is certainly a dimension of information seeking—people exposing themselves to new information. It has been viewed traditionally as associated with a variety of social-

psychological factors. One's age, years of schooling, social participation, etc., have long been recognized as good predictors of acquisition of new information through mass media and interpersonal contacts.

The "Level of Information" is an unweighted fifteen-item index concerning the fifteen items of information contained in the three messages. Through the Chi-Square test for statistical level of significance, and through "Stepwise Regression Analysis" to measure the degree of predictability from independent variables on the dependent variables, it was found that social participation variables (participation in formal organizations, contacts with change agents, visits with neighbors and friends, trips to the county and district seat, contacts with mass media channels) were the social-psychological factors found to relate significantly with the flow of information about new agricultural practices. Combined, these variables accounted for 29.74 percent of the variance in the amount of information farmers received about the three stories. Participation in formal organizations (interpersonal communication) and use of mass media (impersonal communication) best predicted the amount of information a respondent would receive.

## *Summary*

This study tested the validity of the two-step flow hypothesis of communication for the diffusion of new agricultural practices in a developing country. The population was property owners in a rural Brazilian community. The research findings in general did not support the hypothesis and predictions derived from it. A one-step flow operated to a greater extent than a two-step. Opinion leaders did not play a central role in diffusing messages initially relayed by mass media. They did not participate in the relay function more than nonleaders. They did not transmit more information than nonleaders. They were not more likely to initiate the second step. They were only slightly more likely to attach personal opinions to the flow of information than nonleaders.

## *References*

[1]Elihu Katz and Paul F. Lazarsfeld, *Personal Influence* (Glencoe, Illinois: Free Press of Glencoe, 1955), p. 82.

[2]Bernard Berelson, Hazel Gaudet and Paul F. Lazarsfeld, *The People's Choice* 2d ed. (New York: Columbia University Press, 1948).

[3]Johan Arndt, "A Test of the Two-Step Flow in Diffusion of a New Product," *Journalism Quarterly*, XXXXV 3 Summer, 1968, p. 457.

[4]Lloyd R. Bostian, "The Two-Step Flow Theory: Cross-Cultural Implications," *Journalism Quarterly*, XXXXVII 1 Winter, 1970, pp. 109–117.

# The Agricultural Approach to Rural Family Planning Communication

JUAN M. FLAVIER*

FAMILY planning, like any other aspect of development, is dependent on communications. Contraception is a technique. A technique has to be learned before it can be used. Family size is a value. Values are either weakened or strengthened by awareness of the ideas and opinions of others. For many couples, contraception requires a change in behavior; such a change tends to grow out of new information, new opportunities and new awareness of what others are thinking and doing.[1]

In the Philipines, as in other developing countries, standardized techniques developed in Western societies often are used in disseminating family planning.[2] This has resulted in much monetary and service wastage with minimal results. Various KAP studies have revealed that some progress has been achieved in many parts of the country but not nearly to the desired level, especially in the rural areas. Hence, there is an urgent need to reassess current strategies and techniques of introducing family planning programs to potential users.

This paper reports on a study aimed at evolving a communication strategy which is more effective in achieving acceptance (rather than rejection) of family planning programs among rural people.

It has been noted that persuasion, rather than motivation, tends to be the inclination of conventional family planning strategies in soliciting acceptors of contraceptive methods. A shift in this strategy may be helpful in accelerating acceptance of family planning. This brings us to the problem of motivation. What are the elements of motivation in the rural areas? What dimension of rural life can one use to effect maximum motivation?

Obviously, there is a critical need to develop a simple but effective approach of introducing the different methods of conception control to the target population. Just as critical is the need to identify the relevant appeals that motivate women to practice contraception. With the various contraceptive methods completely understood and the women properly motivated, we may be able to expect a bigger number of acceptors whose continued and successful practice will also be insured.

This research project aims to develop a procedural approach to the delivery of effective family planning service, as it seeks to evolve and test learning and motivational strategies that can be predictive of results. Therefore, it is both an action program and a research undertaking.

## *Research Design*

### OBJECTIVE OF THE STUDY

This study is an experiment with different approaches to family planning using various communications messages and learning strategies among clients.

The adaptive approach utilizes various communication techniques, materials, and

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means to reinforce motivation and the teaching-learning process concerning anatomy and human reproduction, different contraceptive methods, and side effects for each method. The techniques and materials devised for the study are parallels familiar to and valued by rural families. Many of the parallels are associated with analogous practices used by local people in their homes or on the farms. Wherever possible the message is made congruent with the local belief and normative systems.

The conventional approach is the popular and commonly used technique of using information in Philippine family planning programs. Information on anatomy and human reproduction is presented using a message which is scientific and national in orientation.

The third approach which is family planning service only refers to the periodic, scheduled, and announced visits of the family planning physician and/or nurses to the rural families.

## Statement of Hypothesis

From the above discussions the following general hypothesis is formulated for testing: that the adaptive approach will be more effective than other approaches.

## Setting of the Study

The study is being tested in the province of Cavite, the site of the International Institute of Rural Reconstruction. Cavite is divided into two areas: upland and lowland. These two regions have at least three major differences: type of agriculture, degree of urban influence, and population density.

The lowland area is where lowland rice is most commonly planted; it is either irrigated or not. The other crops are corn, sugar cane, and vegetables. In the upland area, the crops planted are highly diversified. Coconut and coffee are usually planted as the main crop. Intercrops such as papaya, pineapple, upland rice, sweet potato, chayote, ginger, and other fruits and vegetables are planted beneath.

Owing to the proximity of the lowland to Manila, urban influence is more pronounced than in the upland. Its population density, based on the 1970 census, is twice that of the upland area.

For research purposes, 69 barrios of Cavite were selected as the study area and grouped into clusters: seven in the lowland and seven in the upland.

## Design of the Study

This study was designed using a completely randomized block design as follows:

| | *Number of Barrios* | | | |
|---|---|---|---|---|
| | *Lowland* | | *Upland* | |
| *Treatment* | *Block I* | *Block II* | *Block I* | *Block II* |
| Adaptive | 5 | 5 | 6 | 4 |
| Conventional | 4 | 6 | 6 | 5 |
| FP service only | 4 | 4 | 5 | 5 |
| Control (within area) | 5 | | 5 | |
| Control | 2 | | 2 | |

The study area, composed of 69 barrios or villages grouped into clusters, is divided into four treatment areas as called for by the design. Twenty barrios (four clusters) follow the adaptive family planning strategy while 21 barrios (four clusters) follow the conventional family planning strategy. Family planning services are common to the above treatments. Eighteen barrios (four clusters) have family planning service only, with no family planning informational and/or motivational campaigns. Ten villages (two clusters) serve as control groups. In addition to these ten barrios, four barrios outside the study area were selected to serve also as control groups for comparability.

## Data Collection

For evaluation purposes, we have three principal sources of data: (1) Benchmark Survey; (2) Service Statistics; and (3) Post-Program Survey.

The Benchmark Survey (and also the Post-Program Survey) is basically a KAP and fertility survey. We used a stratified sampling procedure with 15 percent of total households in the study area as sample. An additional survey, which we call the Pre-Instruction Test (also a Post-Instruction Test after the program period), was also conducted. This test is an indepth knowledge test of the same women surveyed for the benchmark information.

Service statistics include the number of acceptors, number of current users, and vital statistics. The collection for these data is a monthly routine of our field workers.

## Organizational Structure of the Program

There are three mobile teams composed of a doctor and a nurse servicing the field. They are rotated quarterly in their assignments to neutralize personal biases.

Each treatment has a Family Planning Promoter (FPP). Each barrio has an indigenous Auxiliary Health Worker (AHW), who works as a volunteer.[3] Both FPP and AHW live in the barrio.

The differences of the treatments are shown in Table 1. It should be emphasized that the content of the materials used in the informational-motivational campaign in the adaptive clusters differs from the conventional clusters. Materials used in the conventional treatment are the same as those used by existing family planning agencies in the recruitment of acceptors. On the other hand, the materials used in the adaptive treatment are those evolved at IIRR using parallels familiar to and understood by Cavite rural families.

TABLE 1

Differences in the strategies of family planning, Cavite, 1973

| Item | Adaptive Treatment | Conventional Treatment | FP Service Only Treatment |
|---|---|---|---|
| 1. Personnel: | | | |
| (a) FPP | 1 | 1 | 1 |
| (b) AHW | 1/barrio | 1/barrio | 1/barrio |
| 2. Service | 2/month | 2/month | 2/month |
| 3. Informational/ motivational campaign | | | |
| (a) Mother's class | quarterly/one | quarterly/barrio | none |
| (b) Film showing | —do— | —do— | —do— |
| (c) Posters | adaptive | conventional | —do— |
| (d) Leaflets | —do— | —do— | —do— |
| (e) House to house visit | yes | yes | no |
| (f) Family council | —do— | no | —do— |
| (g) FP information | given intensively with adaptive materials | given with conventional materials | None, unless asked for |
| 4. Follow-up of acceptors | yes | yes | yes |

## Prototype of Adaptive Materials

One must bear in mind that the agricultural parallels are evolved through continuous dialogue with rural people. Tests and pre-tests are likewise conducted to insure effectivity and usefulness of the materials.

To illustrate, two aspects of family planning will be presented together with the prototype adaptive materials: "What is family planning?" and "Methods of family planning with emphasis on IUD, pills, and condom."

The following is an outline of the messages together with sample agricultural parallels to bring home the message. Central to the approach is teaching the unfamiliar by building it on the familiar.

A. "What is family planning?"
   (1) Birth control
      (a) Farmers in the area limit the fruits in a *pomelo* (a form of citrus) tree to 40 in the belief that excessive number makes for smaller fruits and poorer quality (sweetness).
      (b) Mango farmers limit number of fruits in a branch by plucking out defective flowers as excessive numbers will cause the branch to break.
      (c) A hen with too many chicks cannot adequately cover them with her protective wings in case of invasion by hawks or strong winds harmful to chicks.
   (2) Spacing
      (a) Rice is transplanted from the seedbed to the rice fields as too close a planting is injurious to the plant and will yield little produce.
      (b) Fruits are planted with adequate space to insure good fruiting pattern.
      (c) Pineapple can be induced to fruit by applying calcium carbide. But it is found that too often a fruiting will result in smaller fruits with low market value.
   (3) Infertility
      (a) Smudging mango trees can induce them to fruit.
      (b) Several superficial cuts on the bark of the trunk of a citrus will induce it to fruit.
      (c) Pricking a vine of an *upo* (white squash) will induce it to fruit.

B. "Methods of family planning"
   (1) IUD
      (a) Farmers insert a piece of wood on banana shoots to prevent them from growing and affecting the fruit pattern. The wood is parallel to IUD.
      (b) Plastic sheets are spread on the rice seedbed on which the seedlings germinate to enable the farmer to transplant without injuring the roots. The IUD is similar to the plastic sheet. The seed (fertilized ovum) may grow but will not hold on to the soil (uterus) because of the plastic sheet (IUD).
      (c) Farmers seal a bottle of seeds with cork to prevent the seeds from germinating. The cork is analogous to the IUD.
   (2) Pill
      (a) Bean pods applied with ashes prevent the seeds from falling out.
      (b) Rice bran from glutinous rice fed to a female horse prevents it from conceiving.
      (c) Ipil-ipil seeds when eaten by hens prevent them from laying eggs.
   (3) Condom
      (a) The tassle of a corn is provided with a plastic bag to prevent the pollen from dropping on the ear of corn below.
      (b) Bamboo strips forming a fish trap along a river prevent fish from going through.
      (c) Water jars in the village have a faucet provided with gauze to filter impurities.

## *Preliminary Findings*

One must bear in mind that this research project will run for three to five years. The service data below represent the first one and a half years of field operations. Therefore, the figures are at best suggestive trends and are not meant as conclusive evidence.

### Acceptance Rates

As of December 31, 1973, the total acceptance rate for the whole area of operation consisting of six clusters was 40.4 acceptors per 100 eligible women. Pill acceptance was highest (17.9) followed by IUD (13.8), condom (7.8), and others like foam or sampoon tablets (0.8), as shown in Table 4.

Treatment-wise, the adaptive clusters had the highest rate with 54.9 and the conventional clusters followed with 47.7. FP service only clusters ranked a poor third with 25.1. (See Figure 1.)

The absolute numbers of acceptors by treatment, by method as of December, 1973 are given in Table 2.

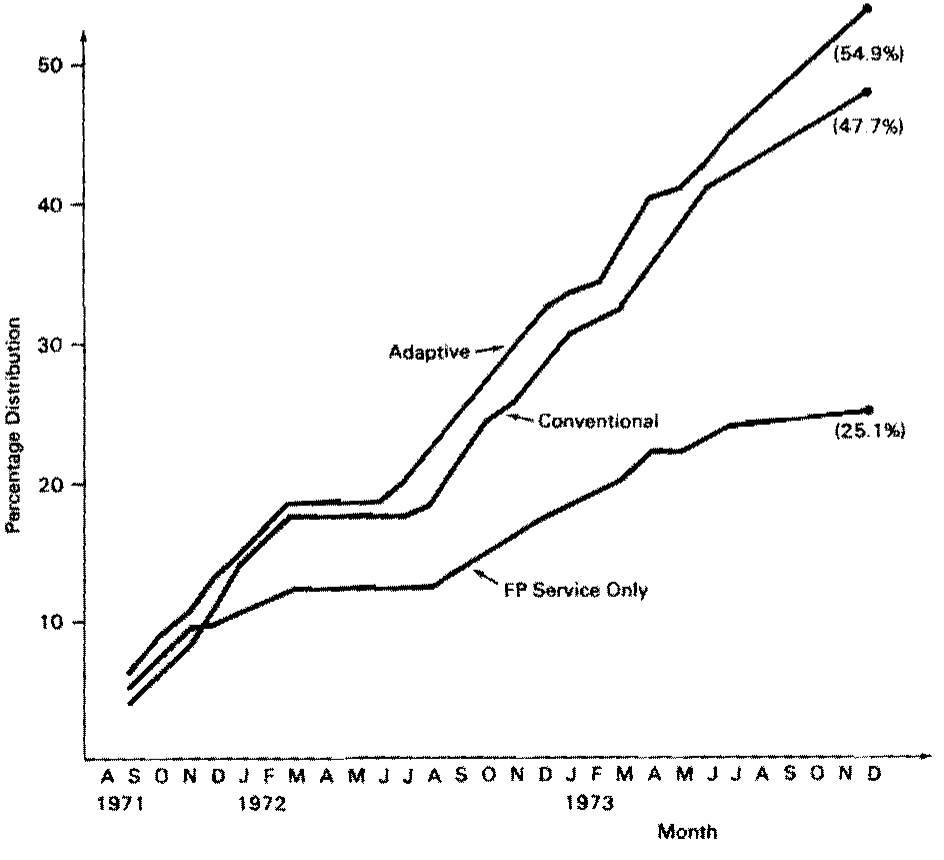


*Figure 1. Cumulative acceptance rate by treatment, all methods August, 1971 to December, 1973*

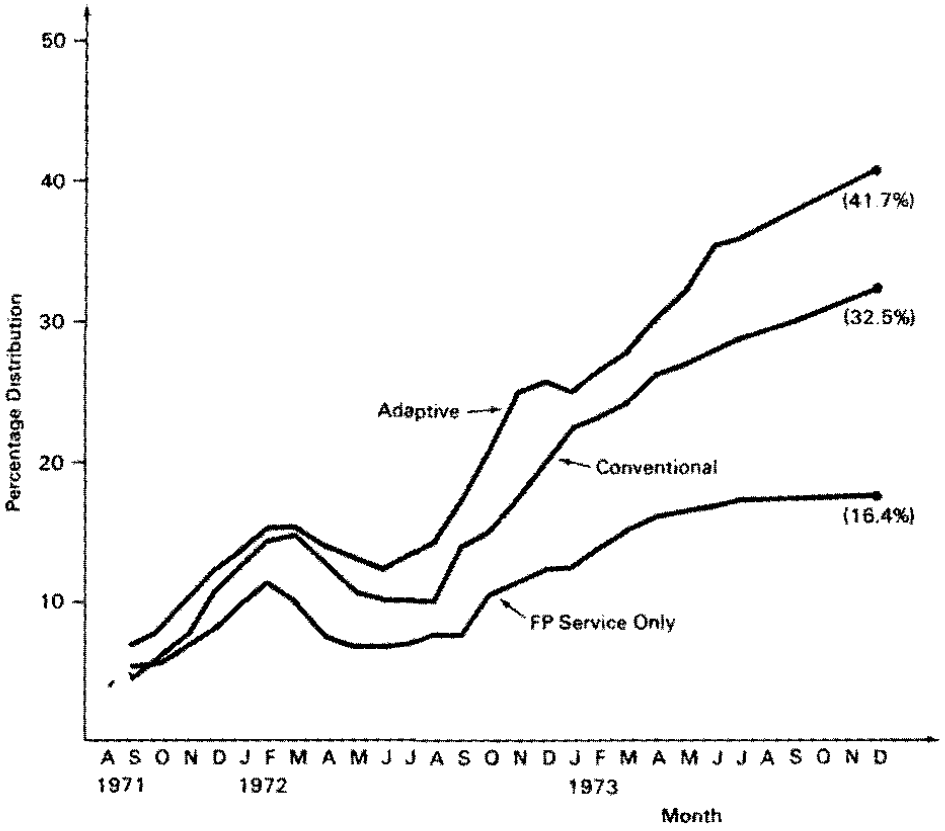


*Figure 2. Current user rate by treatment, all methods, August, 1971 to December, 1973*

TABLE 2

Cumulative number of acceptors, by method, by treatment, Cavite, Philippines, Dec., 1973.

| | Cumulative number of acceptors | | | | |
|---|---|---|---|---|---|
| Treatment | IUD | Pill | Condom | Others | All Methods |
| Adaptive | 192 | 208 | 90 | 12 | 502 |
| Conventional | 129 | 167 | 52 | 9 | 357 |
| FP service only | 79 | 144 | 83 | 2 | 308 |
| All treatments | 400 | 519 | 225 | 23 | 1167 |

## Current User Rates

About 71 percent of the acceptors as of the end of July, 1973 were currently using an FP method. The other 29 percent dropped out permanently or temporarily. (See Tables 3 and 5 for December, 1973 figures.)

The remaining one and a half years left of the program will furnish additional data needed to examine our hypothesis as to the effectiveness of the approach.

TABLE 3

Number of current users, by method, by treatment, Cavite, Philippines, Dec., 1973.

| | Cumulative number of acceptors | | | | |
|---|---|---|---|---|---|
| Treatment | IUD | Pill | Condom | Others | All Methods |
| Adaptive | 184 | 127 | 55 | 16 | 382 |
| Conventional | 118 | 81 | 37 | 7 | 243 |
| FP service only | 81 | 61 | 58 | 1 | 201 |
| All treatments | 383 | 269 | 150 | 24 | 825 |

TABLE 4

Cumulative acceptance rate, by method, by treatment, Cavite, Philippines, Dec., 1973.

| | Cumulative Acceptance Rate | | | | |
|---|---|---|---|---|---|
| Treatment | IUD | Pill | Condom | Others | All Methods |
| Adaptive | 20.9 | 22.7 | 9.8 | 1.3 | 54.9 |
| Conventional | 17.2 | 22.4 | 7.1 | 1.2 | 47.7 |
| FP Service Only | 6.4 | 11.7 | 6.8 | 0.2 | 25.1 |
| All Treatment | 13.8 | 17.9 | 7.8 | 0.8 | 40.4 |

Note:

$$\text{Acceptance rate} = \frac{\text{Number of acceptors}}{\text{Number of eligible women}} \times 100$$

TABLE 5

Current user rate, by method, by treatment, Cavite, Philippines, Dec., 1973.

| | Current User Rate | | | | |
|---|---|---|---|---|---|
| Treatment | IUD | Pill | Condom | Others | All Methods |
| Adaptive | 20.1 | 13.9 | 6.0 | 1.7 | 41.7 |
| Conventional | 15.8 | 10.8 | 4.9 | 0.9 | 32.5 |
| FP service only | 6.6 | 5.0 | 4.7 | 0.1 | 16.4 |
| All treatments | 13.2 | 9.3 | 5.2 | 0.8 | 28.6 |

Note:

$$\text{Current user rate} = \frac{\text{Number of current users}}{\text{Number of eligible women}} \times 100$$

## *Acknowledgment*

This action research was made possible through a generous three-year grant from the Scaife Family Charitable Trusts.

This study would not have been possible also without the village people in the social laboratory and the dedicated field workers of the International Institute of Rural Reconstruction (I.I.R.R.).

Dr. Y. C. James Yen, President of I.I.R.R., has consistently encouraged us by his continuing inspiration and backing.

## *References*

[1]United Nations, *Communication in the Family; Report of a Working Group* (Asian Population Studies Series, No. 31; New York: U.N., [1967]).

[2]Demographic transition in the West took place as a natural process under favorable economic and social progress. However, it took nearly 50 years for birth rates to be halved after the initial decline around the 1880's. The developing countries by necessity have to do it the other way: family planning must become widespread in a shorter time to facilitate economic and social development.

[3]The AHW receives 30 pesos monthly honorarium from IIRR.

# India's Intensive Agricultural District Program: Experiences in Thanjavur District

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THE Intensive Agricultural District Program, popularly known as the Package Program, has been in operation in Thanjavur District, Tamilnadu, India, since April, 1960. Jointly sponsored by the Ford Foundation, Government of India, and the State Government of Tamilnadu, the Package Program aims at ensuring a better standard of living for the rural people through increasing their income from farming by placing at their disposal scientific "know-how" and required inputs and motivating them to adopt better farming practices.

## *General Background*

Thanjavur District is one of the 13 districts of Tamilnadu, the southernmost state on the east coast of the Indian Peninsula. Flanked by the Bay of Bengal on two sides, this district enjoys an equitable climate ideal for cultivation throughout the year. Fertile deep river alluvium and sandy clay are the major soil types of the district. The annual rainfall ranges from 30" to 50" with higher precipitation on the east coast belt. The rainfall is not well distributed; October through December is the heavy rainfall period and the summer months of March through June are almost dry. Cauvery, one of the major rivers of the Indian Peninsula, irrigates 80 percent of this district from June–July to January–February. The entire district is a flat terrain with a very gentle slope from west to east and north to south and the river Cauvery branches into a number of small rivers and canals and feeds the lush green rice fields.

Rice is the major crop of the delta. Tamilnadu, to a large extent, depends for its requirements of rice on Thanjavur which accounts for 25 percent of the state's rice production. Thanjavur is one of our thickly populated districts with a density of 395 people per square kilometer. The 400,000 farms in the district are operated by land owners, tenants, and tenant cum owners, and about 400,000 landless persons work as agricultural laborers. During peak agricultural seasons farm labor from neighboring districts move into this district.

Thanjavur is well served by a network of all-weather roads and railways; 20 percent of the marketable rice produced in the delta is purchased by the state government through its agencies at a pre-announced floor price and the rest of the surplus is sold by the producers through the traditional trade channels. Agricultural inputs, including credit, are made available to the farmers through government agricultural depots, village cooperative societies, commercial banks, and private trade channels.

## *Organization*

To implement the Package Program additional staff has been positioned in this district. The Department of Agriculture, which looks after agricultural extension, is headed by a Joint Director of Agriculture. He is assisted by a team of subject matter specialists

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and an evaluation cell. The concept of positioning such a team at the district level is a unique feature of the Package Program and has paid ample rewards.

The district is divided into six divisions and a District Agricultural Officer is in charge of agricultural development of each division. The divisions are further subdivided into Panchayat Unions and in each union, with an area of 250 to 350 square kilometers, four Deputy Agricultural Officers with a basic degree in agriculture are employed. These field workers in the Union are assisted by 20 Village Level Workers. Four agricultural research stations located in the delta work on the problems of the farmers and provide new information for farm development.

The Department of Co-operation, which is in charge of rural credit, marketing and input supplies, is headed by a joint Registrar of Co-operative Societies. The field staff for cooperative work is organized almost on the lines of the Agricultural Department. The District Collector, who is in charge of general administration of the district, acts as the team leader and brings about close co-ordination among the various agencies involved in developmental activities of the district.

## *My Experiences*

I had the privilege of working as District Collector of Thanjavur from 1969 to 1972. Attempts were made to step up yields and production of all crops grown in the district. However, due to its large area and the pressing need to meet the food requirements of the state, our attention during my tenure as Collector was focussed on rice. Consequent to the various programs executed, rice production which was on the order of 1,027 million tons during 1968–69 increased to 1,369 million tons in 1972. The per acre yield rose during this period from 1067 kgs. to 1214 kgs.

Conscious of the need to check population explosion, along with agricultural extension, an intensive family planning education program was also launched in the district.

The following, in broad outlines, are the various strategies that were adopted in popularizing better "farm and home" management practices which led to higher production and created an awakening about family planning among rural people.

For planned agricultural development, attention needs to be bestowed on these matters:

(1) Continuous analysis of the farm situation and problems of the farming community.
(2) Identification of best suited scientific management practices.
(3) Effective communication of the new technology to the farmers and motivating them to action.
(4) Provision of required inputs, including credit, to practice the suggested innovations.
(5) Assured markets and reasonable prices for the farm produce.
(6) Maintenance of law and order to enable farm operations to proceed in an orderly manner.

We in the Thanjavur Intensive Agricultural District Program paid attention to each one of these sectors.

### Planning Phase

The agricultural season commences in Thanjavur during the second fortnight of June when water is let into the Cauvery river system from the reservoir. Our first activity was to develop during March, long before the commencement of the agricultural season, the action programs for the year to be carried out by the various categories of personnel employed in the Package Program. This advance planning helped us to implement our programs in an orderly manner on a time bound schedule.

The subject matter specialists and the evaluation cell assisted us in analyzing periodically the management problems on farming and in securing specific solutions from the agricultural research stations. To analyze problems connected with irrigation, marketing, input supply, electricity, etc., a district seminar on agricultural production was convened annually. About 1,000 progressive farms of the district, the State Ministers connected with food production, officials of different development departments, private input trade representatives, and others participated and chalked out specific activities to be undertaken to solve the problems of the farmers and to implement the annual program.

The research findings of the agricultural stations were analyzed in a meeting of top level research and extension personnel employed in the district. Farming practices to be advocated during the ensuing cultivation season were finalized. "Adaptive research," a new concept in extension education, developed as a special feature of the Package Program.

At this juncture permit me to say a few words about "adaptive research," a concept we, as pioneers, introduced in agricultural extension in Thanjavur District. "Adaptive research" is a process to test check the research findings of the research stations in the farmers' fields for their applicability to local situations to solve specific problems.

Let me illustrate this statement. In Thanjavur, the ruling variety for the first crop season during 1968 was ADT 27, a 105-day crop with an average yield of 1.5 metric tons per acre. The harvest of the first crop normally is caught in the heavy rains of the northeast monsoon. ADT 27, though a better yielder than the local varieties, was found to possess bad qualities like lodging and sprouting of grains in the earhead in wet weather. To step up the yield from the first crop of paddy, we requested the scientists to evolve and suggest short duration varieties capable of yielding more than ADT 27 with non-lodging and grain dormant characters.

Scientists from Adulthurai and research stations outside the district and state placed at our disposal five different cultures. The subject matter specialists of the project raised these cultures in 140 locations in the district in the holdings of progressive farmers with the assistance of the Deputy Agricultural Officers, the extension men at the field level.

During the crop growth-phase the participant farmers were taken around the trial plots to assess the relative performance of the cultures. After harvest of the trial plots, the yield data was statistically analyzed and the best adaptable strain was identified.

A conference of the participant farmers and the Deputy Agricultural Officers was also organized to find out their views on the performance of these cultures. In this meeting, a majority of the farmers identified the same culture which had come out first in the statistical analysis as the best one and so it was christened "Karuna" and popularized through demonstrations during 1970.

The participation of the progressive farmers and field level extension personnel in this research project helped us a great deal in popularizing Karuna in a very short time in the district. In 1970, the area under Karuna was only 5,000 acres, but in 1972 it spread to 250,000 acres. Besides this phenomenal coverage we found that through this adaptive research approach we could build up the competence and confidence of the field level functionaries, bring about a better rapport between the agricultural leadership in the villages and the change agents, and select proper practices best suited to local conditions.

Enthused by the multifarious gains achieved through this approach, adaptive trials on varietal, manurial, and plant protection problems were undertaken in Thanjavur District on a large scale. This approach has now been extended in stages to the whole state of Tamilnadu.

Going back to annual planning, I wish to stress again that every year we finalized the annual plan of work in March, long before the commencement of the agricultural season. We specified the messages to be communicated to the farmers by the extension workers.

These were based on the research findings of the agricultural research stations and adaptive research trials. We decided also on the various methods to be used during the year to popularize our recommendations.

Based on the contents of the agricultural program, the various inputs and credit requirements were worked out by the Cooperative Organization with a time schedule for organizing supplies. This blueprint for action helped us in training personnel, executing the various activities, and evaluating our performance and progress.

## Training Phase

Trained manpower, with clear delineation of duties and responsibilities, and required resource support are essential for organized execution of planned activities. For executing a developmental project involving a number of departments and a huge clientele, group training of personnel for specific roles is vital.

In the project every year, after formulating the annual action program, we organized various training programs designed to meet the job requirements of different field personnel. The Deputy and District Agricultural Officers were provided training for three days at the Farmers' Training Center located at the Aduthurai Agricultural Research Station. The research personnel attached to the agricultural research stations and the Joint Director of Agriculture with his subject matter specialists formed the teaching staff for these training courses.

The action program for the year was discussed in these courses with a critical analysis of why we had chosen particular programs and what roles were expected from them and other departmental personnel. Quite often, based on the experiences of the extension staff, individual programs were slightly modified to suit local field conditions. The specific knowledge essential for executing the action programs and the skills required for convincing the farmers were taught in detail to the workers in these training sessions. A clear idea of the resources that would be made available and the channels through which they would be supplied were also indicated to them. Performance of each candidate was evaluated and individual deficiencies were corrected if possible.

This initial training helped to orient the thinking of the field staff along the lines of the project team at headquarters and in executing programs according to plan and with a clear understanding of the goals and methods chosen.

The Deputy Agricultural Officers, in turn, provided training to their field workers. Separate training courses for the supervisory personnel of the cooperative, revenue and rural development personnel involved in agricultural development were also organized. Not resting with providing training to government employees, attempts were also made to train the salesmen in the village cooperative societies in fundamentals of agriculture so that at the time of selling agricultural inputs they could advise farmers on using the inputs.

To serve as a reference, a guide book containing the scientific recommendations to be popularized during the year was also printed and made available to each field worker. During the course of the year, monthly staff meetings provided extra knowledge for solving local problems and for passing on new findings of the research stations.

Through the medium of All India Radio at Trichy, a 5-minute talk for extension staff was broadcast twice a week by the project subject matter team to focus attention of the field workers on problems and activities of immediate concern. A monthly journal for the field functionaries was also published with a view to keep the staff informed of the latest developments in scientific farming. Thus, continuous efforts were taken to train the staff for the job and to keep them well informed by pressing into service different media that were within our reach. I feel strongly that the time, energy, and resources that we spent on building our personnel paid rich dividends.

## Execution

To disseminate scientific information to 400,000 farmers is not an easy task. In a community where the traditional outlook is still predominant, where the society is stratified by caste barriers, and where the literacy rate is low, this task is still more difficult. Acceptance and adoption of innovations in such a society is governed and controlled by a number of factors.

Analysis of our situation revealed that personal contact was an effective method to communicate information, but this was rather time consuming and demanded a larger number of qualified persons. Agricultural leaders in the social system, to a large extent, worked as effective communicators of new information and legitimized adoption of new ideas. But there was a wide time gap between the acceptance of a new idea by the leader and his communication to the common man in the village. People believed in what they saw rather than what they heard. New ideas which could be practiced with the locally available resources and which involved the least risk but gave a higher assured return, were more quickly accepted by a large number of people. Success in farming spurred people to experimentation and trial of new ideas.

Keeping all these observations in view, the project staff designed the execution of the annual plans on a three-step model:

(1) Trial—Adaptive Research
To test check research findings and select innovations suitable to the area.

(2) Demonstration
To prove the usefulness of the selected innovations in the holdings of progressive farmers and to influence others in the social system to accept the innovations.

(3) Mass Communication
To make all the farmers in the social system aware of the innovations and to induce them to look at the demonstrations and to persuade them to accept new ideas quickly.

Having selected the innovations useful to the local condition with wide adaptability, the next step was to demonstrate these innovations by conducting method and result demonstrations in the holdings of progressive farmers accepted as farm leaders by the village people. Every Deputy Agricultural Officer was assigned the task of conducting a result demonstration in a three-acre farm where an ideal crop pattern and recommended management practices were demonstrated by him to the neighboring farmers. These demonstration centers were also utilized for conducting method demonstrations to teach new skills to the farmers.

To attract attention of all farmers in the neighborhood, big sign boards displaying the methods followed in the demonstration were put up. Also, during a crop season, at least three meetings of farmers were conducted at each center. After every season the results of the demonstrations were analyzed critically and the results were passed on to the extension staff for further use in their work, and to farmers through mass media, including radio and the press.

Recognition for the role played by the "Demonstrator-Farmer" was given by displaying his name in the sign boards and in all announcements made through the radio and the press. Analysis of the effect of the demonstration method revealed that it helped in convincing farmers about the usefulness and practicability of recommended practices and built a better rapport among the extension staff, progressive farmers, and other farmers in the villages.

To speed up the adoption process, we were continuously keeping the farming community aware of the recommended innovations and their economic benefits and persuading farmers to have a closer look at the demonstrations and acquire new knowledge and skills. For this task we followed a series of mass contact methods.

## Mass Contact

From the middle of May to the 15th of June every year, we organized a mass campaign in the district to publicize widely the crop patterns and management practices advocated for the year to secure higher profits from farming. In each Union area 20 village meetings were organized during this period. Exhibitions, slide shows, demonstrations, and a cultural program were the components of each village meeting organized by the Union extension staff with the active assistance of the non-official leaders of the area.

The village meetings commenced at 4 p.m., and the farmers were first taken around the exhibition in small groups. In the exhibition we displayed the actual quantities of inputs required for cultivating one acre of the recommended crop with full details on when and how to use these inputs, their cost, and the profit a farmer could get by following these recommendations. Pests and diseases affecting the crops were also displayed with the actual quantity of chemicals required for an acre and the quantity of water in which the chemicals should be mixed.

Nothing was left to the imagination of the farmers, and we insisted on displaying the actual quantity recommended per acre rather than samples or models. This sort of display created a great impact on the farmers. We found that a poster saying use 100 kg. of urea had not even half that effect on our farmers as placing two bags of urea (100 kgs.) and telling them "use this as a basal dose to get 'such and such' yield." In all these displays local language and local weights and measures were used.

After the exhibition at 6 p.m., the Deputy Agricultural Officers of the Union organized a public meeting presided over by a local leader to explain in greater detail the crop patterns and management of practices. We saw to it that not more than 10 minutes were spent in these meeting on "rituals" traditionally connected with public meetings, and soon after it turned out to be an educational meeting.

In these meetings the Agricultural Officers explained in detail, with locally-produced color slides, the package of practices advocated for securing higher yields and profit. This slide talk was followed by another presentation with the aid of a flannel board by the staff of the Cooperative Department. How to get credit and other inputs from cooperative institutions to practice the innovations advocated were explained in detail. Farmers were prompted to ask questions after these talks and their doubts were cleared.

To break the ice in a traditional society not accustomed to raising doubts in public places, we sometimes went to the extent of deliberately planting a few persons to raise questions so that others could follow without inhibition. After the talks, a demonstration to show how to prepare a spray solution correctly and handle a power sprayer was conducted. To sustain the interest of the people to the end and to attract as large an audience as possible to the village meetings a cultural program was organized at the end of each meeting. But care was taken to see that information on agriculture and family planning was also effectively disseminated through this program.

In all these meetings the Deputy Agricultural Officers were asked to use only the local language and weights and measures so that every section of the community could grasp what was said. To our great surprise, we found that more sustained efforts were required to train the extension staff in using the local vocabulary than in physically organizing the meetings. Throughout the district during this one month period, before the commencement of the agricultural season, 720 village meetings were held. These meetings helped us stir the village community to action by exposing to them the advocated practices in a simple language and informing them where to get the inputs.

The highlights and gains of this approach to my mind are:

(1) Specific, useful, practical messages told in simple local words.
(2) Use of different audio-visuals to disseminate information to all sections of the community.

(4) Commitment of the extension personnel to specific programs.
(5) Development of the extension staff as better teachers.

Not stopping with the campaign approach, we utilized the press success stories through dramas, dialogues, interview, and talks. These activities were further strengthened by display of posters, wall paintings, etc., on the innovations. Wherever one turned one could always see a poster or wall painting on agriculture or family planning in Tanjore District. This sort of continuous bombardment of message in the clientele system helped in speeding up the adoption process.

## Role of Other Institutions

The Farmers' Training Center located at Aduthural played a vital role in the adoption process by providing specialized training to agricultural leaders and by conducting institutional and peripatetic training for progressive farmers. A large number of demonstrations were prepared by the special staff of the training center to teach new skills to the farmers. Also, the private input trade functioning in the district, with the active assistance of the project, laid result demonstrations and trials to prove the efficacy of their products.

Thus, the extension efforts of the Project were geared to:

(1) Development of messages suited to the area to secure profits through analysis of farm problems and test checking of research findings by involving innovators, private trade, extension personnel, and research staff.
(2) Dissemination of message through campaigns, mass media, demonstrations, etc., involving as large a farming population as possible with the active assistance of village leaders and trained extension personnel with the sole idea of creating awareness and speeding up the adoption process.
(3) Make available the required inputs, including credit, by informing people in advance where they could get their requirements.

## Coordination

The 573 village cooperative societies and the two cooperative banks established in the district did yeoman service in providing credit and timely supply of fertilizers. Marketing of rice, the main agricultural commodity, was organized through the private trade, cooperatives, and Food Corporation of India, and was regulated by the civil supplies department of the government. To provide timely supply of inputs, to ensure a fair price for the agricultural produce, and to bring about close coordination among the various governmental departments involved in agricultural development, we held weekly meetings in which the district heads of the development departments like Agriculture, Cooperation, Irrigation, Electricity, Cooperative Banks, and Civil Supplies met under the chairmanship of the District Collector. In this meeting bottlenecks in program implementation were analyzed and future plans of action were formulated.

The planning and statistical cells attached to the project periodically assessed the progress of various programs and reported to the Coordination Committee. This informal meeting which acted as the "War-Council" of the project helped us to continuously evaluate our progress, initiate appropriate timely corrective actions to set right defects, and to bring about an integrated approach to farm development designed to achieve the goals of the Intensive Agricultural District Program. I am of the firm view that a coordinating unit of this type is absolutely essential for the successful implementation of any area development program.

## Family Planning

In a thickly populated area it is not possible to insure the economic prosperity of the rural people through agricultural development programs alone. Along with agricultural projects, great attention should be bestowed on family planning. Otherwise, the little gains

secured by production programs will be eroded by the spurt in population. Realizing this in Thanjavur, we concentrated our attention on family planning along with agricultural programs.

During the first year of our campaign approach, information on family planning was provided along with agriculture. During the second year separate booths for providing specific advice on family planning to men and women were set up as part of the campaign and qualified medical personnel were assigned to this task. Besides a separate family planning campaign was organized in the District to popularize vasectomy and tubectomy operations.

Analysis of these approaches revealed that people, though conscious of the need to restrict the size of the family, felt helpless due to their poor economic conditions either to follow the recommended protective methods or to get an operation. We found that good food and rest were essential to recuperate after the operations, and these were not within the reach of an average villager. To overcome this, we organized a special family planning campaign in which Family Planning Operation Centers were organized in each block for a short period and boarding and lodging facilities were provided free of cost for a seven day period for those who were willing to undergo the operations. To make them feel comfortable, good bedding and music were also provided at these centers. To create a healthy competition among the unions and to induce more people to attend, a prize incentive scheme was also introduced. These measures helped to popularize family planning measures effectively in a short period.

## Our Progress

As a result of all these organized activities, productivity in the district has increased conspicuously and population growth has been kept under check. (See following tables and charts.) Enthused by the success in Thanjavur, the state government has extended the adaptive trials, training program for staff, campaign approach, and the concept of positioning subject matter specialists to the whole state. Thanjavur District is continuously being used as a study center for the extension staff employed in other districts. The "Family Planning Center" method evolved in Thanjavur has been copied by other districts and states.

The Intensive Agricultural District Program approach has contributed significantly

TABLE I

Rice production in Thanjavur District.

| Year | Rice production in Million ton |
|---|---|
| 1960–61 | 0–90 |
| 1961–62 | 1–01 |
| 1962–63 | 0–93 |
| 1963–64 | 0–89 |
| 1964–65 | 1–04 |
| 1965–66 | 0–91 |
| 1966–67 | 0–87 |
| 1967–68 | 0–92 |
| 1968–69 | 1–02 |
| 1969–70 | 1–02 |
| 1970–71 | 1–30 |
| 1971–72 | 1–36 |
| 1972–73 | 1–46 |

to the economic prosperity of Thanjavur District and the state of Tamilnadu. But more than that we value the awakening and development of human beings, generated through this organized attempt in agricultural development. We strongly feel that where the human mind is awake active progress and prosperity are bound to flow at a rapid pace.

TABLE 2

Per acre rice production. A comparative study between intensive agricultural district program and non-intensive agricultural district program (neighboring district).

| | Yield in kgs (per acre) Paddy | | | Increase in kgs. per acre in 1970–71 over 1960–61 |
|---|---|---|---|---|
| | *KURUVAI* | | | |
| | 1960–61 | 1965–66 | 1970–71 | |
| Intensive Agricultural District | | | | |
| Program area | 976 | 1045 | 1238 | 262 |
| Control area | 818 | 907 | 958 | 140 |
| | *SAMBA* | | | |
| IADP area | 912 | 948 | 1156 | 244 |
| Control area | 803 | 884 | 942 | 139 |
| | *THALADI* | | | |
| IADP area | 513 | 598 | 684 | 171 |
| Control area | 474 | 513 | 575 | 101 |

Kuruvai—I Crop
Samba—Main Crop
Thaladi—II Crop

TABLE 3

Credit made available to the farmers through co-operative societies in Thanjavur District.

| Year | Amount (Rs) |
|---|---|
| 1960–61 | 1481679 |
| 1961–62 | 5604633 |
| 1962–63 | 8734770 |
| 1963–64 | 12738524 |
| 1964–65 | 15066700 |
| 1965–66 | 11859000 |
| 1966–67 | 24866566 |
| 1967–68 | 36213227 |
| 1968–69 | 45106939 |
| 1969–70 | 49894000 |
| 1970–71 | 58437921 |
| 1971–72 | 78927000 |
| 1972–73 | 95003383 |

TABLE 4

Family planning in Thanjavur District.

| Year | Achievement | |
|---|---|---|
| | Sterilization | IUCD |
| 1961 | 1648 | — |
| 1962 | 2710 | — |
| 1963 | 2627 | — |
| 1964 | 5049 | — |
| 1965 | 22127 | — |
| 1966 | 22263 | — |
| 1967 | 13395 | — |
| 1968–69 | 6951 | 2252 |
| 1969–70 | 4413 | 4974 |
| 1970–71 | 4413 | 6978 |
| 1971–72 | 29818 | 6075 |
| 1972–73 | 42186 | 1978 |

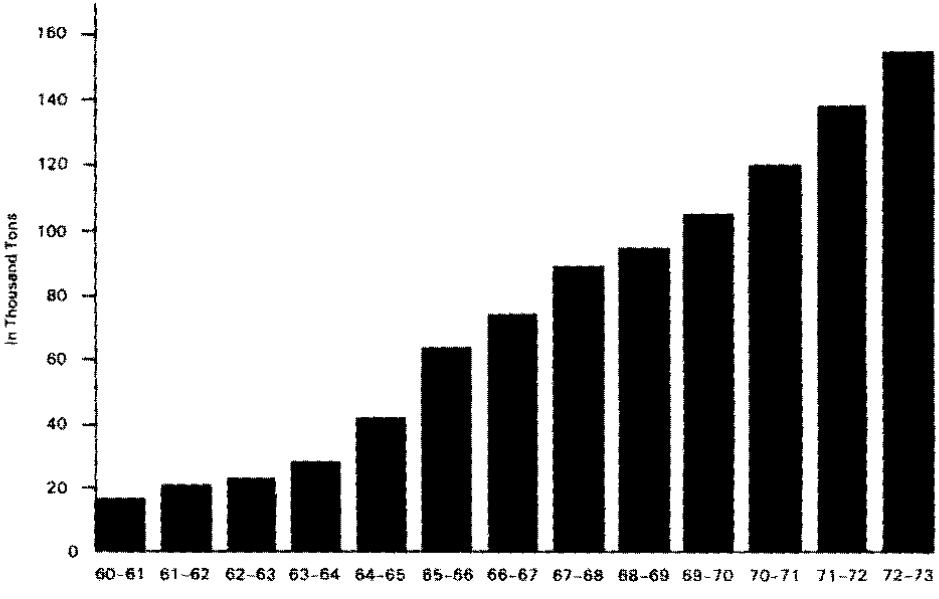


*Figure 1. Consumption of nitrogen in terms of ammonium sulphate. (IADP Thanjavur.)*

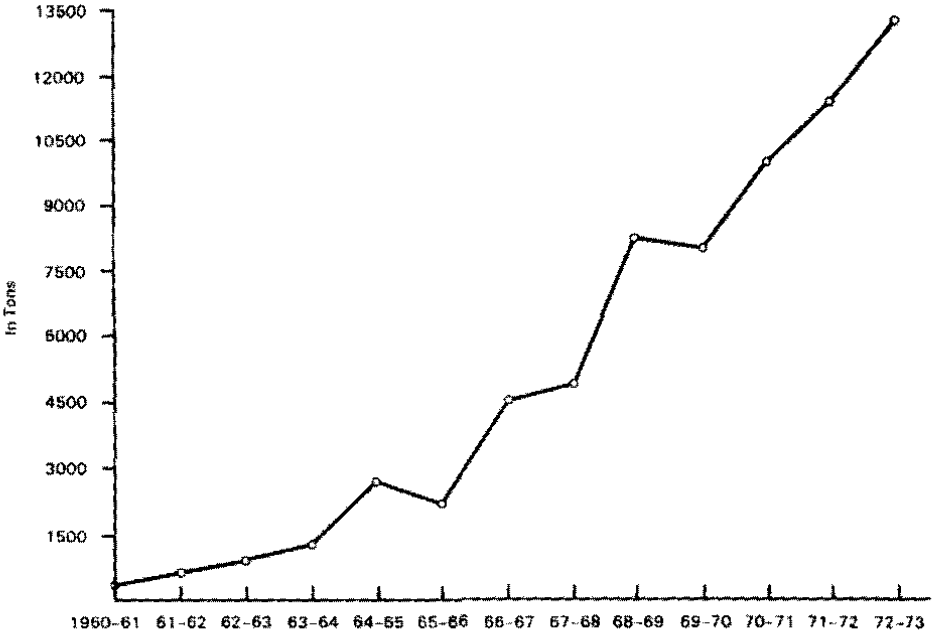


*Figure 2. Pesticide take-off. (IADP Thanjavur.)*

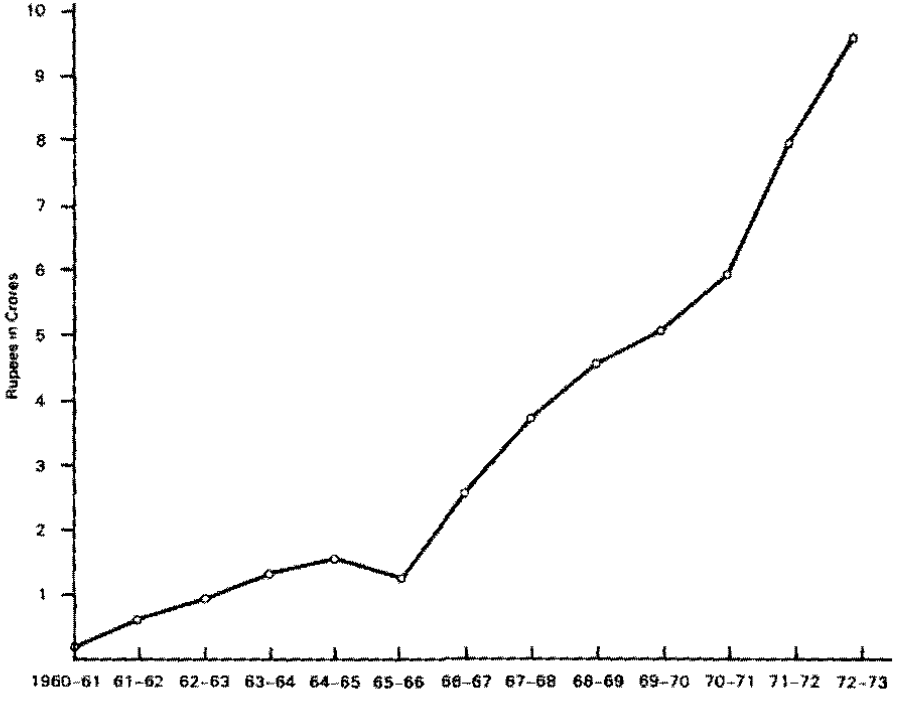


*Figure 3. Cooperative credit gains. (IADP Thanjavur.)*

# Spreading New Rice Varieties: Then and Now

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THIS paper outlines certain efforts in the Philippines to spread the new rice varieties, aptly termed as the "Seeds of Change."[1] It focuses on the Philippines because this is where the International Rice Research Institute (IRRI) is located. Moreover, the country is one of the immediate beneficiaries of the new rice technology turned out by this leading world rice research organization.

First, the paper presents the progress so far in the use of high-yielding rice varieties (HYVs); then it analyzes and compares the approaches and techniques utilized at two time points in pushing the HYVs toward wider adoption.

## *Progress*

The progress in HYV adoption is shown here:

TABLE 1

Rice HYV areas, Philippines.

| Crop Year | Provinces under NFAC Program | Area ('000 Has.) | Percent Increase in Area | Percent HYV Area/ Total Rice Area |
|---|---|---|---|---|
| 1966–67 | 10 | 1 | — | .03 |
| 1967–68 | 12 | 390 | 389 | 12.6 |
| 1968–69 | 15 | 606 | 55.4 | 19.5 |
| 1969–70 | N.A. | 928 | 53.1 | 29.9 |
| 1970–71 | 64 | 945 | 1.8 | 30.5 |
| 1971–72 | 64 | 1,050 | 11.1 | 33.9 |
| 1972–73 | 64 | 1,200 | 14.3 | 38.7 |
| 1973–74 | 53 | 1,580 | 31.7 | 51.0 |

Source of basic figures: The National Food and Agriculture Council, Philippines, 1973

In 1966–67, the year IR-8—the first dwarf, stiff strawed HYV of IRRI—was placed on the market, only 1,000 hectares were initially devoted to the new variety. Availability of seed was naturally a limiting factor. In the following seven years, the HYV hectarage increased by leaps and bounds toward 1,580,000 hectares in 1973–74. This represented about 51 percent of the total crop hectares of the country.

Understandably, the HYVs spread mostly over the irrigated areas, since the nature of the varieties and the package of inputs prescribed for them required good water control. Without water control, yields could not be maximized and the relatively high-cost of

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inputs accentuated the risk to the small farmers[2] who comprise the majority of the rice producers of the country.

IR-8 was turned out by the International Rice Research Institute with the awareness that while it was a high yielder that easily yielded 6 tons and as much as 10 tons per hectare, its grain had a white belly making it susceptible to milling breakage and reducing its marketability. IRRI continued to develop better strains and this led to other HYVs labeled as IR-5; IR-20; IR-22; IR-24 and IR-26. The College of Agriculture of the University of the Philippines and the Bureau of Plant Industry produced their own HYVs which, together with those of IRRI, were included in the recommended varieties of the government's rice program.

During the period 1966 to 1974, the leading recommended HYVs are shown here:

TABLE 2

Philippine seed board approved HYVs

| Year Approved | Rice HYV |
|---|---|
| 1966–67 | IR-8; BPI 76-1 |
| 1967–68 | C4-63; IR-5; BPI 76 |
| 1968–69 | IR-20; C4-137 |
| 1969–70 | IR-22 |
| 1970–71 | C12; IR-24; BPI 121 |
| 1971–72 | C22 |
| 1972–73 | BPI 3-2 |
| 1973–74 | PARC 2-2; C 168; IR-26 |

When IR-8 was first introduced in 1966, its yield potential, compared to the national average yield of only one to three tons per hectare, offered a dramatic difference. This created unusual interest in the adoption of the variety.

Officials of IRRI presented the variety to President Ferdinand E. Marcos of the Philippines in a ceremony in Malacañang Palace and the President visited the IRRI experimental fields. The Governor of Laguna, the province in which IRRI is located, launched a program called "Operations Spread" aimed at encouraging the adoption of IR-8 and its technology in his province.

Some enterprising farmers formed seed companies and certain business groups organized management companies offering services for administering farms devoted to the new high-yielding variety.

IRRI delivered a major portion of its IR-8 seed stocks to the government's Bureau of Plant Industry for multiplication and dissemination. At the same time, it distributed to small farmers in various parts of the country seed kits which consisted of a packet of seeds, some fertilizers and insecticide, plus information on the culture of IR-8.

At IRRI's experimental fields, visitors were encouraged and those who reportedly would surreptitiously pocket some pannicles for multiplication on their own farms were tolerated. IRRI also sent seed kits to foreign countries, notably India, Pakistan, Malaysia, Indonesia, Ceylon, Burma, and Thailand.

## *Current Situation*

Since 1966, rice programs intended to spread increasingly better technology have improved. The latest program, "Masagana 99," was launched by the President in May, 1973 as a program of survival for it was mounted at a time when the Philippines was facing

an impending rice crisis traceable to floods and the long drought that ravaged the rice crops of Asia in 1972–73.

The most massive and intensive rice program ever launched by the government, "Masagana 99" has accounted for about 28 percent increase in rice harvests over those of the previous year. Although the incremental supply generated by the program did not bring the country to levels of complete sufficiency in rice, it has nevertheless substantially filled the expected gap between production and consumption. Rice importations, if any, this year (1974) are expected to be minimal.

In structure and design, "Masagana 99" represents the advances so far achieved by the country in improving its rice program strategies. Compared to approaches and techniques followed in 1966 to 1972, "Masagana 99" presents significant changes which in all probability will be followed pattern-wise from here on.

Five areas of considerations appear helpful in comparing the "pre-Masagana 99" program and the "Masagana 99" itself, and these include:

(1) Organizational thrust
(2) Training program
(3) Extension schemes
(4) Planning
(5) Supporting services and linkages

## "Pre-Masagana 99"

The National Food and Agriculture Council (NFAC)[3] has been the organization managing the rice programs of the country. It is composed of all the bureaus and corporations under the administrative wings of the Department of Agriculture and Natural Resources; the College of Agriculture of the University of the Philippines; the Philippine National Bank; the Development Bank of the Philippines; the Department of Rural Banks of the Central Bank; the National Irrigation Administration; the Fertilizer Industry Authority; the National Grains Authority, and any other organization (government or private) which may be invited by NFAC to participate in the national food and agriculture programs.

The main advantage offered by NFAC is instant coordination and decision-making among numerous agencies which, when acting individually, are difficult to forge together toward concerted action.

Before "Masagana 99," NFAC was already operating, but in the implementation of its decisions it was basically agency oriented. The rationale was the belief that administrative responsibility for agency action still belonged to the agency concerned. Each agency had its own administrative head and a separate budget.

In 1972–73, 376 extension agents were trained. The technical personnel attended 12-day training sessions while the supervisory personnel went through a two-day workshop-seminar.

The extension agents contacted farmers and farmers associations directly on a daily basis and were left to their own devices as to approach and recommendations in dealing with the farmers. Each technician covered an average of 39 farmers. Technicians assigned to the rural banks helped farmers prepare farm plans and budgets to serve as basis for rural bank loans. Each technician averaged assisted borrowings of about ₱35,580.

The average contact days with farmers were nine days during the cropping season broken down as follows:

| *Activity* | *Days* |
|---|---|
| Farm plan and budget | 1 |
| Loan application and releases | 1-2 |
| Inputs | 1 |
| Plant protection | 1-2 |
| Harvesting and threshing | 1 |
| Marketing | 1 |
| Repayment | 1 |
| | 7-11 |

Due to communication difficulties,[4] the pay and allowances of technicians were delayed by as much as two months in some places.

There were 482 technicians equipped with motorcycles and 2,718 who did not have their own means of transportation. The motorcycles were furnished under a motor vehicle loan program in which technicians are able to purchase on an installment basis motorcycles for their use in the performance of their duties. They are provided a modest allowance for gasoline.

The audit and reporting systems were instituted informally in 1971-1972 but, generally prescribed, reports and feedbacks were delayed and did not follow formats capable of collation and systematic analysis.

The public information activity was limited to press releases to the major dailies and occasionally there would be spot broadcasts over selected radio stations. Some pamphlets were printed.

The three major financing institutions that have participated in the rice program are the Philippine National Bank, the Rural Banking System, and the Agricultural Credit Administration. In 1972, 80 branches of the PNB, 425 rural banks, and 27 stations of the ACA participated in the rice credit program. Only the rural banks and ACA employed technicians to help in their lending programs and these included 81 for the rural banks and 132 for ACA.

Micro-kits were distributed by the government. There were three kinds; 3,492 kits were distributed. In the private sector, three fertilizer companies and 23 pesticide firms participated in the program.

## "Masagana 99"

Under "Masagana 99," NFAC adopted an inter-agency action oriented program. While salaries of field personnel still emanated from their respective bureaus, allowances were disbursed by NFAC. Normally, where the bulk of personnel belonged to a bureau the regional and provincial directors were chosen from such bureau. In addition, the provincial governor was empowered to oversee the rice program operations in his province and if he found any of the NFAC personnel being remiss in their duties, the governor could suspend them.

Under "Masagana 99," a total of 2,103 extension agents were trained, mostly at the International Rice Research Institute. Technical personnel went through 10-day crash programs while supervisory personnel participated in four-day training sessions.

For purposes of facilitating credit and extension work, farmers in the program areas were organized into groups of seldas and damayans.[5] The grouping enabled financing institutions to require members of each selda or damayan to guarantee each other. It was anticipated that this would exert an extra influence upon the farmers in the faithful performance of their obligations under the credit program as there would be a peer-group pressure toward this direction. Also, this facilitated the contact and coverage functions of the extension agents. Now they could more readily deal with farmer groups and were ex-

pected to make daily contact with these groups. Instead of being left to their own devices in making their recommendations, they were armed with a 16-step standard recommendation. They merely modified these when specific problems indicated the need. This technique simplified the message-transmission function of the extension agent.

Thus, the technician was able to increase his average coverage from 39 to 124 farmers, and those who assisted in the credit program averaged a lending coverage of ₱114,430. Without an increase in the total number of technicians, service coverage was improved tremendously—by 218 percent in farmer contact and 222 percent in loan extension. The frequency of contact remained the same—about nine days during a cropping season.

One major innovation was the institution of operational planning with the province as the basic planning unit. A provincial program officer was installed in each province to manage this function. The procedure started with a national macro-plan evolved by NFAC which then was reduced, and modified in the process, to provincial operating plans

TABLE 3

Extension and extension-related services before and during "Masagana 99."[7]

| Activity | "Before Masagana 99" | "Masagana 99" |
|---|---|---|
| 1. Organization | Agency action oriented | Inter-agency action oriented but with more decentralization in supervision of field activities |
| 2. Training program | | |
| (a) No. trained | 376 | 2,103 |
| (b) Duration | | |
| (1) Technical | 12 days | 10 days |
| (2) Supervisory | 2 days | 4 days |
| 3. Extension schemes | | |
| (a) Contact unit | Farmers; Farmers Associations | *Selda* and *damayan* production groups |
| (b) Contact frequency | Daily | Daily |
| (1) Farm plan and budget | 1 day | 1 day |
| (2) Loans | 1–2 days | 1–2 days |
| (3) Inputs | 1 day | 1 day |
| (4) Plant protection | 1–2 days | 1–2 days |
| (5) Harvesting/threshing | 1 day | 1 day |
| (6) Marketing | 1 day | 1 day |
| (7) Repayment | 1 day | 1 day |
| (c) Coverage | | |
| Farmers/Technicians | 39 | 124 |
| Loans | ₱35,579 | ₱114,430 |
| (d) Mobility | | |
| No. with motorcycles | 482 | 1,002 |
| No. without motorcycles | 2,718 | 2,198 |
| 4. Planning | Macro-National Level | Macro-micro mix. national planning plus provincial operational planning |

TABLE 3 (Continued)

| Activity | "Before Masagana 99" | "Masagana 99" |
|---|---|---|
| 5. Supportive services | | |
| (a) Pay & allowances | 2 months delay | 15 days delay |
| (b) Audit & reports | Late, not standardized | Up-to-date, systematic MIS |
| (c) Information program | | |
| (1) Radio | Seldom a station | 122 radio stations |
| (2) Frequency | Spots | 22 minutes daily |
| (3) Publications | 8 | 20 |
| (d) Financial institutions | | |
| (1) PNB | 80 | 101 branches |
| (2) R B | 425 | 443 branches |
| (3) ACA | 27 | 27 branches |
| (e) Technicians deployed | | |
| (1) PNB | None | 500 |
| (2) R B | 81 | 43 |
| (3) ACA | 132 | 112 |
| (f) Applied research | | |
| (1) Kinds of kits | 3 | 3 |
| (2) No. distributed | 3,492 | 10,000 |
| (g) Private sector | | |
| (1) Fertilizer firms | Vol. 100% | 329% |
| No. of dealers* | 184 | 250 |
| (2) Pesticide firms | Vol. 100% | 300% |
| No. of dealers* | 300 | 400+ |

*Each dealer serves 6 to 7 outlets.

that included implementing details. This initial procedure, it was expected, would be followed in the reverse order in subsequent planning cycles, with the provincial operational plans being made as the basis of the national programs.

The supporting services and linkages improved considerably, as follows:

(1) Delays in pay and allowances were cut from two months down to 15 days.
(2) The number of extension agents with motorcycles was increased from 482 to 1,002.
(3) A management information system (MIS) was installed and this facilitated audit and reporting.
(4) Radio was extensively used. A total of 122 stations in various parts of the country participated in the program, devoting 22 minutes of their time to the program each day. Authorized radio broadcasters were equipped with portable cassette tape recorder-players.
(5) More intensive press releases and 20 publications were issued to program participants.
(6) The Philippine National Bank, the rural banks, and the ACA increased their participating branches from 432 to 571. In addition, the PNB utilized jeeps and helicopters to serve as mobile banks to reach more farmers. The service coverage of these three financial institutions were roughly 55 percent for PNB, 40 percent for the rural banks and 5 percent for ACA. Total credit for the wet season crop of

1973 was about ₱385 million, an unprecedented high in the entire history of the rice industry.

(7) The technicians utilized by the financing institutions were increased from 213 to 655.

(8) In applied research, three kinds of rice micro-kits were used and 10,000 kits were distributed.

(9) The private sector of the fertilizer and pesticide industries had a hey-day, so to speak. Without having to spend too much in promotional work, "Masagana 99" became their biggest billboard and their sales more than tripled compared with 1972.

## Comparison Summary

Table 3 summarizes the comparison between "Masagana 99" and the previous year's rice program.

## Observations

It should be noted in Table 1 that the spread of HYVs in terms of hectarage as a percentage of the total riceland of the country, indicates that within eight years HYVs were adopted by more than half of the country's total riceland.

The bigger jumps in coverage occurred in 1967–68, 1969–70, and 1973–74:

TABLE 4

Percent increase in HYV areas, Philippines.

| Crop Year | HYV Area/ Total Rice Area | Increase |
|---|---|---|
| 1966–67 | .03 | |
| 1967–68 | 12.6 | 12.57 |
| 1968–69 | 19.5 | 6.9 |
| 1969–70 | 29.9 | 10.4 |
| 1970–71 | 30.5 | .6 |
| 1971–72 | 33.9 | 3.4 |
| 1972–73 | 38.7 | 4.8 |
| 1973–74 | 51 | 12.3 |

This phenomenon is partly explained as follows:

(1) 1966–67 was the first year of introduction of IR-8 and results on commercial farms were encouraging. The magic of a new exciting technology spread as fast as the IR-8 seed could be multiplied and distributed.

(2) In 1968–69, there was a slump in the rate of spread as IR-8 began to be depreciated because of its infirmities in quality and this was abetted by the introduction of new varieties, namely C4-63, IR-5 and BPI 76 in 1967–68 and IR-20 and C4-137 in 1968–69.

(3) In 1970–71, 21 devastating typhoons and an outbreak of the tungro disease dampened enthusiasm for the spread of HYVs. Relatively stabilized prices in 1969–70 must have also influenced the anticipations of farmers. It was in 1969–70 that the Philippines was considered sufficient in rice supply and did not have to import rice that year.

(4) The big leap in 1973–74 was mainly due to the launching of "Masagana 99" over some 670,000 hectares, 500,000 of which were irrigated; the rest was rainfed.

From 1966–68, the enthusiastic response of farmers was understandable. The IR-8

variety promised a doubling and trebling of harvests. The potential was bolstered by the fact that the Philippine rice market did not discriminate significantly between head rice and broken rice.

From then to 1972–73, Filipino rice farmers, particularly those in the irrigated areas, were becoming increasingly aware of the advantages of HYVs. Varieties introduced in later years rode on this phenomenon.

In mid-1972, unusual floods covered a good portion of Central Luzon (the rice granary of the country) wreaking havoc on lives, property, and the rice crop. An emergency rehabilitation program followed as the flood receded, and the farmers responded with new concern and vigor. But soon after the flood, a long drought extending up to April, 1973 destroyed crops and prevented farmers in many places from planting their dry season crops.

Because the drought had adversely affected all rice producing countries in Asia and rice prices soared to inordinate levels in the world market, the lean months of July, August, and September, 1973 posed the threat of hunger, high rice prices, and food riots. (The latter did occur in certain other countries in Asia.)

This impending situation was unusual. The Philippines could not import enough rice to fill the expected shortage of 700,000 tons and would have to find a solution to the problem within its own borders. Thus, an unusually massive rice program was launched by the President of the Philippines as a matter of survival.

This program was not the same as previous ones in terms of the number and relationships of participating agencies, area coverage, credit infusion, information campaign, and control of input distribution. It improved on these programs. The organizational relationships changed. The provincial government executives became involved. Planning became more detailed to ensure operational success.

The area coverage concentrated on irrigated areas of some 500,000 hectares and rainfed areas of 100,000 hectares which later were expanded to 176,000 hectares. It was decided that attention be given to the rainfed areas because two years of experimentation in two provinces involving rainfed and upland areas had disclosed promising results. Since about two-thirds of the riceland of the country consisted of rainfed and/or upland farms, it stood to reason that improvement of rice technology in these areas would benefit the rice industry in terms of higher total production and more farmers would be given the opportunity to raise their income and thus improve their levels and quality of living.

The supervised credit infusion was more than double that of 1972–73, and it reached an unprecedented number of about 580,000 farmers. With credit being dispensed through three financing institutions, the prescription of technology was more easily adopted as only those who would use HYVs and their cultural requirements were entitled to credit. In effect, this suddenly expanded the input market and, as it turned out, the fertilizers and pesticides available in the country were not sufficient in some places to meet the demand.

A Fertilizer Industry Authority had to be created to make sure that the procurement and distribution of fertilizers would be optimized. While this proved to be of value in the programmed areas, this meant that the non-program areas could not obtain their requirements. (There is a world shortage of fertilizer.)

Pesticide firms predicted that supplies would be adequate for the programmed areas, but after two-thirds of program time had elapsed, granular pesticides ran out. Moreover, difficulty was encountered in dispensing liquid pesticides because of the lack of spraying equipment on the farms.

The information campaign, particularly in the use of radio, was unprecedented. Jingles, spot announcements, newscasts, interviews, and dialogues were used. A by-product of this particular aspect of the program is the development of a network of rural broadcasters who are developing skills in agricultural broadcasting. This will become increasingly useful over the years.

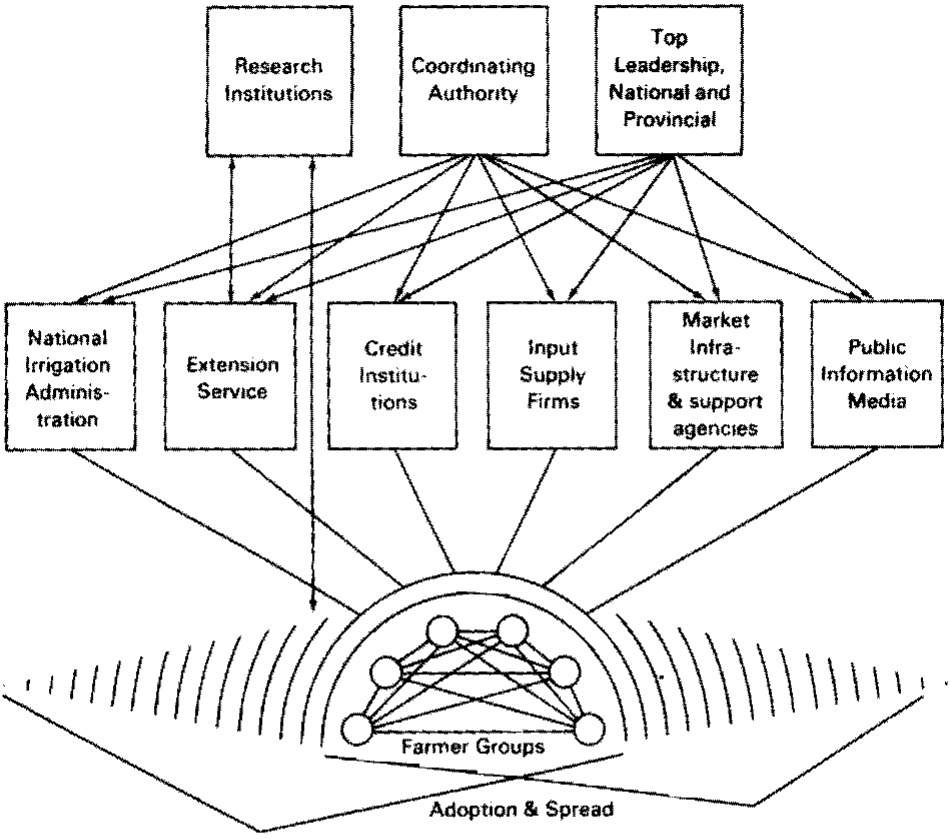


*Figure 1. Rice HYV technology delivery systems, Philippines, 1973–74.*

"Masagana 99" experience will probably improve over time. While it has already boosted production by an estimated increase of 28 percent, it is, more importantly, an investment for the future. Part of its returns will be in terms of increasingly effective rice programs in the country.

Looking at the entire strategy so far used in the spread of HYVs in the Philippines, the more important elements are reflected in Figure 1.

Figure 1 shows that the delivery system for the spread of HYVs and their associated cultural practices in the Philippines involves a strategy-mix requiring the coordinated participation of several government agencies and private organizations.

In the main, the rice technology is produced by the research institutions. It is passed on to the farmers and farmer groups directly and through the extension service and a public information program using all available media, with particular emphasis on radio because it has the widest coverage. Its adoption is enhanced by:

(1) A massive credit program, principally conducted by three financial institutions, enabling farmers to purchase the needed inputs.
(2) An infrastructure program to facilitate product flow.
(3) A price support program to keep farm prices at profitable levels.
(4) The organization of farmer groups to promote credit, extension, and information dissemination.

(5) An inter-agency action oriented coordinating authority that supervises the planning process and directs and monitors implementation.
(6) The involvement of the top political leadership at the national and provincial levels to give importance and urgency to the national and provincial programs and provide a mandate for all participating agencies to actively and fully cooperate.

It is difficult to clearly isolate the contribution of each of the components of the strategy-mix.

## *References*

[1]Lester R. Brown, *Seeds of Change* (New York: Praeger, 1970).

[2]The average rice farm size in the Philippines is 2.99 hectares.

[3]Originally called the Rice and Corn Production Coordinating Council, 1965-68. In 1968, RCPCC was expanded to NFAC because of the rather encouraging experience with RCPCC as a coordinating body. It was felt that other food commodities should be included in its responsibility.

[4]The Philippines is an archipelago of some 7,000 islands.

[5]Philippine dialect terms for small united groups.

[6]Of all the media, radio has the most extensive coverage—about 80 percent to 85 percent while TV and the newspapers have a coverage of only about 15 percent to 20 percent.

[7]The assistance of Heginio Orticio in the preparation of this table is acknowledged.

# The Puebla Project In Mexico

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## *A Program to Increase Crop Production by Small, Subsistence Farmers in Rainfed Areas**

THE Puebla Project initiated field activities in April, 1967, after extensive study and analysis by experienced agricultural scientists. It had its origins in the need to develop more effective procedures for bringing about rapid increases in crop production among low income farmers in rainfed areas. The striking contrast in Mexico between the highly productive irrigated areas and the low productivity of the rainfed areas gave rise to the questions this project set out to answer.

The Puebla Project is basically an experiment planned and carried out to develop a better understanding of how to quickly increase yields of basic food crops among farmers producing at subsistence levels with traditional methods. The immediate objectives of the project were: (1) to develop, field test, and refine a strategy for rapidly increasing yields of a basic food crop—in this case, maize—among small holders; (2) to train technicians from other regions in the elements and successful use of this strategy; and (3) to double average maize yields in the project area in five years.

Objectives were stated in terms of production, not because the ultimate concern was in producing more maize, but rather because greater production of maize appeared to be an important first step in increasing net income. It was expected that greater net income would provide farmers with new opportunities to improve their general welfare.

## *The Project Area*

The Project area consists of 32 counties in the western part of the state of Puebla and can be reached by car in about two hours from Mexico City or the National Agricultural Center at Chapingo. It comprises about 116,000 hectares of cultivated land with some 80,000 dedicated to maize production. Maize is planted from March through June and harvested from October through December.

### THE PHYSICAL ENVIRONMENT

The project area occupies much of a large valley drained by the Atoyac River and bordered on three sides by the rising slopes of the volcanos: Popocatepetl, Iztaccihuatl, and La Malinche. Most of the cultivated area lies between 2150 and 2700 meters above sea level.

The climate is temperate with dry, mild winters. May and early June is the warmest part of the year with an average temperature of around 18.5°C. Frosts occur mainly during the winter months from October through March, but have been reported in all

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*Most of the information presented in this manuscript was taken from a more comprehensive report of seven-years' activities of the Puebla Project, prepared by the project staff and consultants, to be published in 1974 by the International Maize and Wheat Improvement Center, Mexico.

months of the year except July. Hailstorms are fairly frequent, with an average of one per month reported in July and August and half that number in September.

About 94 percent of the total precipitation falls during the 7-months period from April through October, which comprises most of the maize growing season. According to historical weather data, average rainfall during this period varies in the area from 777 to 863 mm.

The soils of the area have formed mainly from volcanic ash and pumice ejected by the three volcanos. They vary from deep, highly productive, loamy sands or sandy loams occupying much of the central part of the valley to sodic-like soils in the southeastern part of the area that have low productivity under rainfed conditions. The soils generally contain less than 1 percent organic matter, and have pH values between 6.0 and 7.5, low to high levels of available phosphorus, and high levels of potassium.

### The Farming Population

Most of the farmers in the region are descendents of the Indian populations present in the area at the time of the Spanish Conquest. There are an estimated 40,000 farm operators in the area with an average of 5.9 members per family.

The average farm size is about 2.9 cultivated hectares. About 90 percent of the farms have 5 hectares or less. Over 99 percent of the farmers own their land or are ejidatarios, who have possession of the land, without paying rent, as long as they live. The average farm consists of 3.8 separate parcels.

Seventy-eight percent of the farm operators are able to read and write. These farm operators have attended school an average of 2.24 years. Farmers live in villages in homes usually (76 percent) made of sun-baked adobe bricks. According to survey data for 1970, 74 percent of the farm homes have one or two rooms besides the kitchen, 77 percent have electricity, 21 percent potable water, 61 percent a radio, 13 percent a television set, 3 percent a refrigerator, and 34 percent a gas or petroleum stove.

Ninety-five percent of the farmers in 1967 knew about chemical fertilizers, 80 percent had used them on at least one occasion, and 69 percent had used fertilizers that year. The average amounts of fertilizers used per hectare in the project area in 1967 were 34 kg of nitrogen, 14 kg of $P_2O_5$ (phosphorus), and 5 kg of $K_2O$ (potassium). Fifty-five percent of the farmers knew of hybrid maize, 15 percent had planted hybrids on at least one occasion, yet less than one percent of the farmers had planted hybrids in 1967. The estimated average maize yield for the project area in 1967 was 1.3 ton/ha.

### The Agricultural Infrastructure

The 157 villages in the project area are connected by roads, many of which are rough and eroded but passable during most of the year. The marketing of maize has presented no serious problems over the years, most maize being sold to local buyers in the city of Puebla (550,000 population) and other important towns. There is a floor price for maize, and the national price control agency, CONASUPO, has warehouses distributed through the area where maize is purchased.

Three official credit banks operate in the Puebla area, providing both credit and fertilizers to farmers. A national fertilizer agency supplies fertilizers to farmers through several retail outlets. Insecticides, herbicides and hybrid maize seed are available at agricultural stores in the principal towns. A national crop insurance company has an agency in the city of Puebla and provides crop insurance to farmers receiving credit from the official banks.

## *Organization and Operation*

The Puebla Project was organized by the International Maize and Wheat Improvement Center (CIMMYT) in 1967 and was operated by that institution until February,

1974, when it was taken over by the Mexican Ministry of Agriculture. CIMMYT administration was agile and efficient and enabled the project to function with a minimum of red tape and logistical problems.

It was clearly defined at the beginning that the clients the project expected to benefit were the small farmers in the area. The project conceived its action as being complementary to the activities of the existing institutions involved in credit, the distribution of inputs, crop insurance, and marketing. The project expected that it would give major attention to: (1) developing adequate production technology; (2) providing the technical assistance necessary to enable small farmers to use the new technology; (3) identifying and resolving problems limiting farmer use of the new recommendations; (4) measuring and evaluating change; and (5) coordinating the activities of farmers, agricultural agencies, and project staff.

The organization of project activities, therefore, was conceptualized as involving three sectors: (1) the farmers; (2) the agricultural institutions; and (3) the technical team of the project. The first two sectors were established and operating in 1967. The third sector had the task of filling in the gaps and achieving a level of efficiency in the agricultural services that would permit small farmers to increase production and net income rapidly.

The technical team consists of professionals, people with a university degree, and subprofessionals, local farmers who have been selected and trained for a specific job. The numbers of professionals per program have fluctuated but, on the average, have been: coordination—one; agronomic research (including maize improvement)—four; technical assistance to farmers—five; and evaluation—one. The number of subprofessionals over the years has averaged about 25.

It was recognized that the quality of the staff would be the most important factor in assuring the success of the project. Every effort was made to select young, mature people who had outstanding technical ability and were highly motivated to work to improve the production and well being of small farmers. Salaries and perquisites for the staff were made competitive with other job opportunities. Materials and equipment required in the work were provided opportunely and in adequate amounts. Provisions were made for outstanding staff members to continue their academic preparation after a few years in the project.

Specialists in agronomic research, maize breeding, and communications at CIMMYT and the Graduate College at Chapingo provided technical assistance to the project staff. The total consulting service amounted to approximately 172 man-days per year for the 1967–1973 period.

## Strategy of the Project

Once the objectives of the project had been clearly defined, an attempt was made to decide *a priori* what needed to be done to achieve the stated goals. Although it was not known initially what factors were limiting farmer use of adequate production technology, it was evident that a coordinated, integrated effort would be necessary to identify such factors and find a way to improve them.

The strategy of the project, therefore, was to cooperate closely with other agricultural institutions in bringing into existence any of the following essentials or accelerators of change that were lacking in the area: (1) adequate production technology; (2) effective communication of agronomic information to farmers, agricultural leaders, and project staff; (3) accessible production credit with reasonable interest and repayment terms, available from both public and private sources; (4) adequate supplies of agronomic inputs at easily accessible points when they are needed; (5) favorable relationships between input costs and crop values; (6) accessible markets with guaranteed prices that are attractive to the producers; and (7) crop insurance that protects the farmer against losses due to natural causes. The Project expected to conduct agronomic research, persuade

farmers to use improved practices, and work closely with political leaders, agricultural agencies, and suppliers of agronomic inputs.

## Coordination

The senior member of the project staff was named coordinator and was assigned the specific task of coordinating the activities of the farmers, the project staff, and the agricultural service agencies so as to enable the farmers to increase their levels of agricultural production and net income.

The project coordinator has performed three distinct but closely related functions: (1) he has served as administrator with the responsibility for the hiring of staff, the defining of policy on personnel matters, the approval of the expenditure of funds, etc.; (2) he has directed project activities by providing the leadership in the preparation of operational plans, the execution of these plans, and the summarizing and reporting of results; and (3) he has gained the cooperation of other agricultural agencies by keeping them informed of what the project is doing, what it has accomplished, and what the needs of the farmers are. When problems arise that require action by a given institution, the coordinator provides relevant information and works closely with the institution in finding a solution.

The first action of the coordinator in 1967 was to become well acquainted with the farmers, their agricultural activities, and the physical environment by traveling to most of the villages and over most of the roads in the area. Simultaneously with this, was an intensive effort to establish good relationships with the executive personnel of the institutions and to learn the detailed procedures each used in its work with farmers.

Over the years the project coordinator has varied the attention given to the farmers, staff, and different institutions depending upon the priorities existing at a given time. In general, however, he has maintained continuous and close contact with the three sectors through: (1) weekly meetings with all project staff; (2) direct participation with individual staff members in establishing an experiment, holding a meeting of farmers, giving a demonstration at planting time etc.; and (3) regular visits with representatives of each of the institutions. In addition, he has promoted annual meetings at the end of the year in which farmers, staff, and representatives of institutions have joined together in reporting to the Governor the accomplishment of the previous year and the plans for the coming year.

## Agronomic Research

The objective of agronomic research in the Puebla Project is to produce information on the management of the soils and the best available varieties that will enable farmers to realize higher yields and larger returns from their production investments. Production practices that were expected to influence crop yields in rainfed areas included land preparation, planting date, seeding rate, amount and kind of fertilizers applied, time and method of applying the fertilizers, depth of plowing, and control measures for weeds, insects, rodents, and diseases.

The first step in developing better knowledge of these agronomic practices was to gather as much information as possible on farmers' production practices, soil and climatic characteristics, and the experiences of other researchers in the area. This was done over a period of time by means of interviews with farmers and agronomists residing in the area, by consulting the research findings of the Mexican Agricultural Research Institute, by analyzing the available climatic data, and through studies of the properties of the soils in the area.

The information available to the research staff at the beginning of a given cropping season was used to estimate: (1) aspects of existing technology that were probably deficient; (2) which of these could probably be changed economically; (3) which were likely to produce the largest increases in yield and net income; and (4) whether or not such as-

pects of the technology needed to be investigated in the Puebla area. In this way it was possible to draw-up a list of the questions about technology that needed to be investigated and arrange them in order of priority.

The next step was to plan and carry out field experiments to answer the questions of highest priority. The ecological diversity of the area was taken into account in planning the research and in locating the field trials. In 1967 and 1968 information on the physical environment was very limited, and field experiments were distributed fairly evenly over the area. From 1969 onward, however, two or more producing systems were recognized in the area, and the experiments were located to sample these systems. (A producing system is defined as a part of a production universe in which the uncontrollable production factors for a crop are reasonably constant. Uncontrollable factors include soil morphology, geomorphology, climate, previous crop, and, at times, planting date.)

Observations were made periodically during the growing season on the factors influencing production at each experimental site. The trials were harvested, the data were analyzed, and the results were expressed as treatment means or production functions. For greater certainty in interpreting data on crop response to rates of fertilization and plant density, such data were expressed both as mathematical functions and as two-dimensional graphs.

The information available from the Mexican Agricultural Research Institute in 1967 was taken as a first approximation to the recommendations on maize production practices for the Puebla area. The data collected in 1967 were used to revise these recommendations and come up with a second approximation to the recommended practices. The data collected in subsequent years were used to generate a third, fourth, fifth, etc., approximation to the recommendations on maize production practices.

From 1969 onward, maize recommendations were formulated for distinct producing systems. All available information on climatic variability and prices for maize and inputs were taken into account in estimating the optimal levels of practices. Recommendations were arrived at after carefully weighing: (1) the precision of the available information on the relationship between yield and the production factors; (2) the marginal productivity of the factors in question; and (3) the risk involved in recommending to the farmer something that might be incorrect.

## Technical Assistance to Farmers

Once new recommendations for the production of maize had been developed in late 1967, project activities were expanded to include technical assistance to farmers. The main objective of this program was to provide whatever assistance was necessary to enable farmers to use the new technology property. It was contemplated that the three principal functions of the technical assistance agents would be to: (1) inform farmers of the new technology; (2) assist farmers in arranging for inputs, mainly fertilizers; and (3) assist farmers in resolving other problems that prevented them from using the new recommendations effectively.

In addition to instructing the farmers about what they should do, the technical assistants tried to explain the expected increases in yield and net income, and the importance of using all components of the technology precisely as recommended.

Several communications media have been used to inform farmers of the new technology:

(1) Radio and pamphlets which have proven effective for reaching the more advanced farmers.
(2) Village meetings at which the new recommendations are explained in detail and movies used to strengthen the presentation or provide farmers with information on related areas of interest.
(3) Demonstrations of the new practices to farmers directly in the field where the

technician demonstrates the new way to plant, fertilize, etc., and all farmers then participate in the operation.

(4) Farmers of one village invite farmers from other villages to visit their plantings and the farmers from the different villages exchange experiences about maize production and other activities. (The technician accompanies the farmers on a walking tour of several adjoining fields. Deficiencies and favorable aspects of each planting are pointed out and discussed.)

(5) Both local demonstrations attended by farmers from a larger area, have been used at harvest time. (The farmer on whose land the demonstration is held assists in presenting the results to the visitors.)

Some farmers in Puebla have their own funds or can readily obtain funds for purchasing the fertilizers needed in following project recommendations. Most of the farmers, however, are unable to use the new technology unless credit can be made available to them. The technicians of the Puebla Project are using the following ways to assist many farmers in arranging for credit and fertilizers:

(1) The organization of farmers into groups. (Individual small farmers normally cannot qualify for credit from a public or private bank.)

(2) Establishing a relationship between the groups and the credit banks. (Project technicians accompany newly-formed groups to the bank and assist them in applying for credit.)

(3) Developing the capability of the groups. (The group representatives are encouraged to accept responsibility as rapidly as possible for all activities of the groups, including their transactions with the credit banks. The technician continues to provide the groups with information and ideas but leaves the decision making to the groups themselves.)

Project technicians are assisting farmers in Puebla to resolve other problems, particularly issues related to the operating procedures of the banks and crop insurance agency, that make it difficult for them to use the new technology. Information on dissatisfactions of the farmers is collected by the technical assistance agents from many groups and transmitted back to the other members of the project team. The team studies the information and decides what action to take. Additional information is collected, if needed. The project coordinator then takes the initiative in promoting the action necessary for bringing about change.

## Evaluation

The Puebla Project was conceived as an experimental approach to develop and test strategies for rapidly increasing yields among small, subsistence farmers. Its operational strategies were viewed as flexible and subject to modification as new information became available on problems limiting farmer participation in the project. It was essential, therefore, to provide for an evaluation unit with two main objectives: to measure the progress made by the project over time, and to identify obstacles that hinder progress and collect the information needed in modifying strategies so as to overcome such problems.

Information on the rural population, agricultural activities, crop statistics, etc., was collected from many sources, including the Census Bureau and Agricultural Economics Department of the Mexican Ministry of Agriculture. It was decided that a personal interview survey of farm operators in the area was needed to provide additional information about the farmers and their activities and to establish a benchmark for future comparisons. This survey, involving a random sample of farm operators, was conducted in early 1968. A second personal interview survey was carried out in the spring of 1971.

A major goal of the Puebla Project was to increase per hectare yields of maize. It was imperative, therefore, to have a reliable measure each year of average maize yields. An indirect method for estimating yields was used for this purpose. The length and diameter of all ears of maize in a sample area of 50 lineal meters were measured, and these were used

to estimate yield employing a regression equation previously developed specifically for the maize varieties grown in the area. A yield estimate was made on a random sample of fields each fall just prior to harvest.

The information collected in the two personal interview surveys on the farmer sector and the agricultural institutions was supplemented with several special studies of a more limited scope. The most comprehensive of these studies was carried out during the fall of 1972 and spring of 1973. It involved ten communities distributed throughout the project area. The first part of the study consisted of informal visits by the investigator to the communities over a period of six months during which a certain rapport was established with the villagers. The second phase of the study consisted of formal interviews with 69 farmers in organized groups and 29 unorganized farmers.

### Assistance in Developing Similar Programs in Other Areas

It was contemplated from the beginning that, once significant progress had been made in learning how to rapidly increase crop yields among small holders in rainfed areas, it would be the responsibility of the Puebla staff and consultants to communicate this experience to agricultural and political leaders in Mexico and other countries. By mid-1969, it was clear that the strategies being employed in Puebla were proving highly effective, and the decision was made to move ahead in encouraging people in other areas to try the Puebla approach.

Several means were employed to accomplish this objective: (1) the Puebla experience was communicated directly to hundreds of people that visited the Project each year; (2) a report describing project activities and accomplishments in 1967, 1968, and early 1969 was prepared in English and Spanish and distributed to all parts of the world; and (3) two international conferences, attended by agricultural technicians from 15 Latin American countries and representatives of 15 international development organizations, were held in 1970 to discuss strategies for increasing agricultural production on small holdings. The transactions of these conferences were published and given wide distribution.

A more formal way to use the Puebla staff and experience for promoting similar programs in other areas was worked out in early 1970 when CIMMYT signed a contract with the United Nations Development Program with the commitment to assist government agencies in Central and South America "in developing regional maize programs to ensure that subsistence, maize-consuming farmers and their families benefit from the discovery of 'high lysine' maize."

Colombia, Peru, Honduras, and the states of Mexico and Tlaxcala in Mexico, initiated regional production projects during 1970 and 1971. The Puebla staff and consultants helped to train key personnel for staffing the projects and provided technical assistance in the organization and operation of the projects.

The training of project staff was carried out jointly by the Puebla Project and the Graduate College at Chapingo. Some trainees received both academic preparation at Chapingo leading to a M.S. degree and in-service training in Puebla, including thesis research. This period of training was for two to two and one-half years. Other trainees only received in-service training in Puebla, in most cases for six to 10 months.

## *Lessons Learned*

The experiences gained in seven years of operation of the Puebla Project have produced no easy answers to the question of how to rapidly increase agricultural production and net income of small, subsistence farmers under rainfed conditions. Clearly, this is a most complex and difficult problem. However, the experiences in Puebla do show that crop production in rainfed areas of small holders can be significantly increased and at a cost most developing countries can afford.

The Puebla experience indicates that the following points about the organization and

operation of programs for increasing agricultural production and net income of small farmers in rainfed areas are important:

(1) An interdisciplinary team of agriculturists should be formed to work directly with the farmers. The team must assist the farmers in deciding what they need to do to increase their production, net income and general welfare, and help them arrange for the needed services from the private and public agencies.

(2) The team should consist of carefully selected, highly qualified individuals. The members of the team should have personalities that enable them to work harmoniously with the farmers and stimulate them to better utilize their resources in the search for a more fruitful life. They should have the academic background and capability for learning rapidly the methodology corresponding to their particular job, applying it effectively, identifying new problems, and proposing ways to resolve such problems.

(3) Individuals comprising the team should be especially trained for their jobs. The philosophy and many of the operating procedures found to be important in Puebla are different from those taught in the conventional training of people for agricultural development programs. Consequently, it is essential that personnel selected for such programs be given supplementary training in the philosophy and objectives of the agricultural program and the specific techniques that each will employ in his particular job. Most of this training must be given in a well-functioning program with the trainees assuming direct responsibilities in the program under the close supervision of experienced people.

(4) Precise recommendations on crop and animal production practices are needed. The small farmer growing basic food crops operates with a small margin of profit. He is normally not prepared to assume very much risk. This means that recommended varieties and production practices, to be acceptable, must be quite accurate. In rainfed areas, recommendations of crop production practices need to be based on results from carefully conducted research on farmers' fields in the area.

(5) Technical assistance agents need to become directly involved in the solution of the problems of small, subsistence farmers. Once improved information is available on production practices, the technical assistance agents must inform farmers of the new technology, the expected increases in yield and net income, and the necessity to employ all components of the technology precisely as specified. They must assist the farmers in arranging for inputs, be alert to problems that prevent farmers from using the improved practices effectively and, when necessary, take the leadership in working out solutions to such problems.

(6) Need for the organization of farmers into groups. A regional program like the Puebla Project uses a small team to achieve favorable change among large numbers of farmers. Such a program can function efficiently only when the farmers are organized into groups, so that farmer leaders join together with the technical assistance agents in helping the farmers improve their production practices.

(7) A regional program should provide the leadership in coordinating the activities of all public and private service groups in the region. In most countries, the major problems of the rural poor have been recognized by the governments, and agencies have been created to provide the services required to resolve them. In practice, however, each service group tends to direct its attention to the specific parts of a problem that it feels responsibility for. The team leader of a regional program should be assigned the responsibility to coordinate the activities of existing service agencies, the project team, and the farmers themselves so that the three sectors complement each other fully.

(8) A regional program should include an evaluation component. The responsibility for identifying obstacles that limit farmer use of new technology should be vested in a member of the program team. Feedback from farmers of information on problems will flow through all team members; but an evaluation

# IV. Developing Resources for Rural Development

# Organizational Issues in Agricultural Communication

HERBERT F. LIONBERGER*

THIS paper proposes to present a general overview of the organizational context in which communication of farm information occurs, identify some of the resulting communication problems, and suggest ways of alleviating them.

Implicit assumptions are that:

(1) A continuing supply of specialty information is essential to support a modernizing agriculture.
(2) The specialized information needed by farmers includes instruction on how to use new technologies (Coughenour, 1967) along with that of a more general nature and that having to do with new farm practices.
(3) Specialty information and increasingly other agricultural inputs must be developed and delivered from off-farm sources to farmers.

## *Organizational Context of Agricultural Communication*

Basically, the organizational context from which communication problems emerge is: (1) the series of specialized agencies required to develop and deliver information and other agricultural inputs—credit, supplies, services, etc.; (2) the hierarchical manner in which these agencies are organized and operate; (3) the uncoordinated way in which inputs are often delivered; and (4) the control system which ideally keeps the whole organizational arrangement coordinated and responsive to the needs of farmers.[1]

Communication up and down these delivery system hierarchies and between and among them at the appropriate levels is further complicated by the attitudes of people who hold positions in them. They may assume elitest views about themselves and "peasant farmer" stereotyped views about cultivators. The last specifies inability to think in abstract terms, to make sound decisions when in possession of the necessary facts, and a need for protection from the designs of conniving exploiters.

Organizationally related communication problems also derive from the group memberships of the farmers who are the potential users of the information and/or services delivered to them. They are members of family, kinship, locality, friendship, and special interest groups in which they associate, attach varying degrees of importance, and defer in what they think and do. The last includes farm clubs, plant protection associations, agricultural cooperatives, discussion groups, and the like. In addition to promoting collective special interests, they provide opportunities for farm talk and information exchange. They also provide mechanisms for communicating interests, concerns, and needs back to agency personnel and collectively rewarding them for services well rendered or reprisals for the converse.

In addition, farmers, like others, have reference groups—like regarding themselves as "we poor" or "we progressive" farmers. Such assumed attachments orient them to or away from getting information source and influence how they respond to the information they get. It is in the context of these overlapping and sometimes conflicting groups that in-

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terpersonal communication of farm information occurs and the multiplying effect of learning about new innovations in farming and becoming convinced (accepting them) is achieved.[2]

## *Explanatory Conceptual Models*

Two models are suggested for conceptualizing organizationally related communication problems and putting them into a meaningful context. One adapted from Coughenour[3] by Lionberger and Chang,[4] helps understand how systems for developing, transforming, and disseminating scientific information operate. This may be referred to as the "information systems model." The other is a "social system" model adapted from an earlier one by Riley and Riley.[5] It provides a framework for defining group influences on communication.

### Information Systems Model

The "information systems" model is predicated on assumptions that:

(1) Specialized agencies are needed to develop, transform, and disseminate the specialty information to farmers.
(2) The information supply must be derived mainly from the basic sciences through research and development.[6]
(3) Information systems evolve in response to emerging informational needs.
(4) The degree of differentiation (splitting up) of functions to be performed and the organizational specialization needed is relative to the state of agricultural development. But as a minimum this requires innovation (research and development), dissemination (extension), and integration (fitting new knowledge and information into the local context).[7]
(5) Organizational specialization tends to occur along these three functional lines giving rise to linkage and coordination problems.
(6) Problems encountered in developing and supplying other agricultural inputs—chemicals, machines, credit, etc.—closely parallel those involved in the organization and operation of informational systems.

The minimal organizational context and related communicative linkage issues are graphically illustrated in Figure 1. The model specifies that basic scientists working somewhat as an exclusive group are required to develop the needed basic science knowledge and theory. They explore the frontiers of science for new knowledge without regard for its potential application. Then other scientists concerned mainly with the application of research findings, also working somewhat as a group, try to abstract potentially usable knowledge and theory from the basic sciences, develop innovations, and test them usually under controlled laboratory conditions. After this, the innovations are tried under conditions similar to where they will actually be used (adaptive testing). Will it work and will it pay questions must be answered and "how to do it" information generated. Finally, farmers must fit the new information and innovations into their own social system and farming operations. This involves fitting the new into what already exists in a manner specifically suitable to each farmer who uses it.

Another significant information system feature is provision for feedback from people as information consumers to the developers and disseminators. Initially this was provided by having faculty members spend some time each year in the field, but more recently, through the cooperative extension service.[8]

Although the functional requirements for effective operation of an information system cannot be violated, there are organizational alternatives for supplying informational needs. One is the farm informational system in Taiwan where the research function is vested in agricultural universities and the Provincial Department of Agriculture and Forestry research agencies and where the main agricultural extension service is operated

| TRANSFORMATION CONTINUUM from Basic Science to on Farm Use | FUNCTIONS THAT MUST BE PERFORMED | | |
|---|---|---|---|
| | Research and Development (Innovation) | Dissemination of the Information | Integration—Fitting the New Into Already Existing Conditions |

**BASIC SCIENCE**

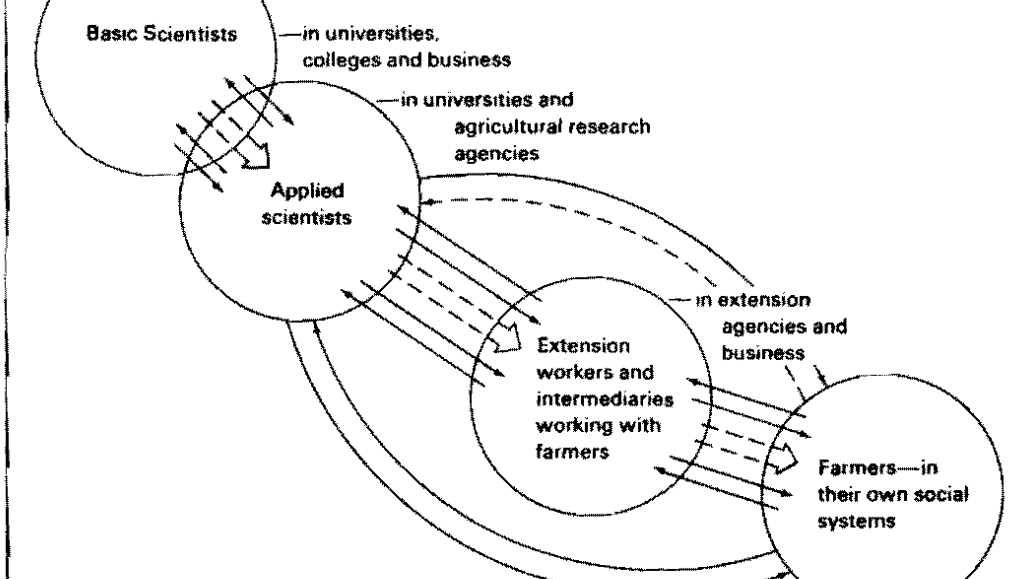
1. Pursuant of scientific discovery as a goal.

**APPLIED SCIENCE**

2. Practical application the goal.
3. Innovation—finding applications that might work.

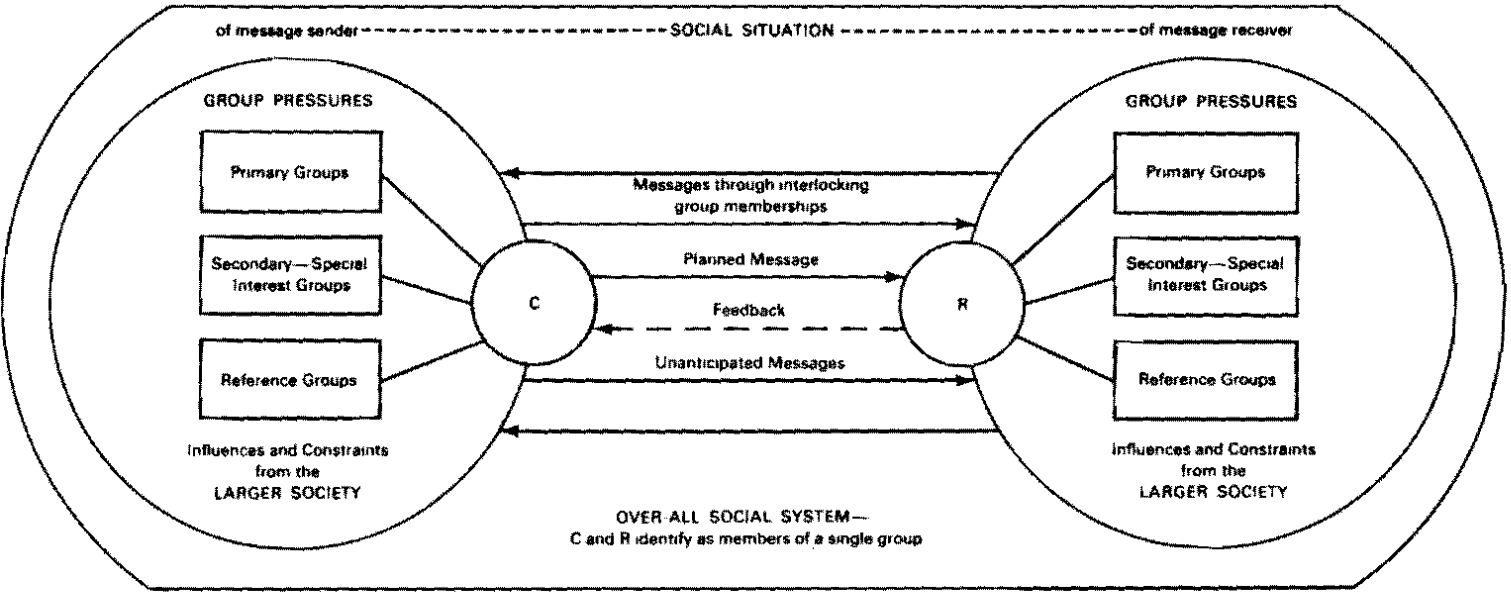
**ADAPTIVE TESTING**

4. Local trials to determine:
   - Will it work?
   - Will it pay?
   - How it fits in.
5. Putting locally validated innovations and information to use on the farm.




Adapted from Coughenour (1987)

*Figure 1. Information systems model*




Adopted from Riley and Riley, "Mass Communication and the Social System"
C the Communicator and
R the Receiver

*Figure 2. Social group influence model.*

by the farmers' own Farmers' Associations.[9] There are also many other organizational alternatives. Thus, in thinking of the model for proper use elsewhere we should clearly focus on functional requirements and linkages rather than on the organizational arrangement.

### Social Systems Model

The "social systems" model focuses mostly on the organizational context in which people send and receive messages.[10] It reminds us that communicators, like farm advisors, are members of groups which impose constraints on the messages they select to communicate and how they communicate them (see Figure 2).

It also directs attention to the group affiliations of message receivers that are likely to result in selective exposure, perception, and responses to messages received. These include such primary groups as family, social cliques, neighborhoods, and relatives, as well as secondary and reference groups. The model also indicates how indirect communication feedback can occur through interlocking primary or secondary groups and to situations where the communicator and receiver perceive themselves to be and respond as if they are members of the same group. This can occur even in mass media situations.[11]

Quite aside from elements suggested by the model, social groups make members more accessible to each other and likely less so to outsiders. Members are influenced by group norms which specify what messages to become exposed to and in a sense also how to respond to them. Finally, they provide mechanisms for carrying out decisions made. As a negative influence they can restrict communication where norms and members of groups are in conflict with each other.

## *Problem, Issues, and Suggestions*

### The Problem Context

Organizationally related communicative problems considered in this paper were selected from a much larger universe of what was possible, namely:

(1) Interorganizational linkage and coordination problems involved in developing usable information to communicate to farmers.
(2) Group related problems in selecting and training effective agricultural advisors.
(3) Issues emerging from the group memberships and identification of agricultural advisors.
(4) Providing integrating mechanisms in the "line operated" farm input delivery systems.
(5) Coordination, management, and control of the agricultural input systems.[12]
(6) Improving agricultural communications by creating agricultural career service.
(7) Mobilizing group influences in activating farm talk.

Even with excellent research to develop and test quality farm information, much of the information produced is still not ready for direct on-farm use. At least two basic questions must be answered about agricultural innovations:

(1) Will they work?
(2) Will they pay?

Other questions have to do with the allocation of scarce resources,[13] the social consequences of what is being recommended, and how to put what is being recommended to use. Some economically feasible innovations may be too costly socially or otherwise unsuitable for use.[14]

Perhaps "application" and "social consequences" information can be obtained only from actually putting innovations to use on the farm. This might be the reason why farmers rely so heavily on other farmers as sources of information. But some of this kind

of information must be developed by properly conducted adaptive research for which there is no substitute. Local requirements vary so much that suitability of innovations to local use cannot be safely neglected. For example, new rice and hybrid corn varieties developed in one place often cannot be safely transferred to another without further adaptive testing and modification. Since basic and applied science knowledge can be borrowed, scarce intellectual manpower and economic resources may well be more appropriately used for this kind of testing rather than for doing basic research.[15]

The last is both expensive and chancy. Also its transfer is least subject to cultural constraints. Except in highly competitive situations, scientists have demonstrated their willingness to share what they know with other scientists, irrespective of the country in which they live. Not only do they tend to speak the same language, they are generally anxious to exchange ideas with each other. Thus, for acquiring possibly relevant theoretical knowledge, the major communication emphasis should be on facilitating interaction among scientists the world over—such as occurs in the several international agricultural research institutes, in international scientific conferences, and scientist exchange programs.[16] But for adaptive testing of innovations that farmers must use, interaction (mutual influencing) of applied scientists with extension specialists and farmers is most important.[17]

The needed interaction between basic and applied scientists may be achieved by research activities in which both participate, as in agricultural experiment stations in the United States.[18] In fact, basic scientists may be more productive when they are required to interact with others who have applied concerns. At the same time, applied scientists have an opportunity to get needed information from their more theoretically oriented colleagues. But getting proper linkage between the extension agency and the farmer is not so easy. Each tends to operate in a world somewhat different from the other. As a minimum we must have agricultural advisors who are capable of communicating with and supplying farmers with the information they need.

## Providing Effective Communicators

It would be presumptuous to try to enumerate all qualities and conditions which contribute to becoming an effective communicator of farm information. The intent here is to enumerate a few group related conditions that influence effectiveness as a communicator. This is quite aside from such personal qualities as a genuine desire to work with and help farm people, and having confidence in their ability to make wise decisions when in possession of the facts.[19]

### *Credibility*

Byrnes[20] stresses credibility—a kind of in-group quality—as being highly essential for success as a farm advisor. Rightly, the emphasis seems to be on the safety component of credibility seemingly based on actual farm experience and empathy with farmers rather than expertise, presumably more based on abstract knowledge and professionalism.[21] Having achieved high safety credibility, advisors are presumed to be able to assist in adapting new information and technology to on-farm use and evaluating its adequacy in terms of local conditions; also to diagnosing production problems, and helping farmers solve them.

Even though requirements for achieving high safety credibility are not entirely clear, it is apparently necessary for high influence in the adoption decisions of farmers. In Taiwan where extension advisors are rated very high on this and other desired qualities, they are frequently named as most important influences in farmers' adoption decisions,[22] but in the United States where fellow farmers are generally accorded highest credibility, farmers are most often named.[23] It is not likely that safety credibility can be achieved without either the personal qualities stressed by Dwarkinath and Mosher or the reference group identification to which homophily-heterophily issues also apply. It is to the last that attention is now directed.

*Heterophily-Homophily*

This concept involves the question of whether, in obtaining information in interview of feedback situations or delivering it, accuracy of content communicated seems to be enhanced by high similarity between the interactors.[24] Meanings are in people, not in symbols. Unless the definitions used by message senders and receivers are sufficiently alike in meanings assigned, communication of intended messages cannot occur. This lends support to the requirement of on-farm experience as a qualification for selecting farm advisors. Even in the personal matter of one farmer choosing another as a source of farm information, the inclination is to choose those more knowledgeable than self, but nevertheless similar on most other characteristics.[25]

The principle of homophily (likeness) on most qualities and heterophily (difference) on a few crucial ones, is implicit in the selection and training of leader aides from among own kind to communicate with low income families and the farm advisement success of programs where local farmers are chosen and trained to communicate information to others about like themselves. Thus, they are successful not only in communicating information to other farmers but also in convincing them to accept the changes being recommended.[26]

Taiwan agricultural advisors who enjoy high credibility over farmers' own peers,[27] quite invariably maintain their farm attachments which makes it possible for them to see the innovations from research actually tried in the field before recommending them to farmers. This all surely enhances their credibility and thus also their influence on the adoption decisions of farmers whom they advise.[28]

In insisting on demonstrated workability from local trials, farm advisors require evidence quite like what farmers themselves require for accepting and using innovations.[29] A third ingredient for communicative effectiveness is knowledgeability.

*Knowledgeability*

While drawing on the basic sciences, knowledgeability most of all requires thorough knowledge of local needs and conditions and what works locally. Ability to effectively demonstrate recommendations is probably also necessary. Farm advisor training programs must build squarely on utilitarian knowledge as illustrated by the farm advisor training program of the International Rice Research Institute.[30] In this program academics is combined with work experience in all rice production operations. When completed, advisors could answer most of the questions about rice production that farmers ask. Since advanced degrees are not always essential to the kind of farm advisement required, college educated professionals may be reserved for agricultural assignments where their intellectual qualities are more needed. This may be particularly appropriate in the early stages of agricultural development. Of course, initial training in practical agriculture must be continually supplemented by in-service education to keep advisors up-dated on information from the research sources.

The often heard dichotomy of what to teach (subject matter) vs. how to teach (extension education) is, of course, an erroneous definition of the issues involved in this matter. Reasonably perceptive proponents of extension education do not urge teaching methods to the exclusion of subject matter even though it sometimes may be emphasized too much. But aside from the claims and counter-claims as to proper balance, some methods of communicating with and influencing others as well as helping them think through their problems, are clearly superior to others. Agricultural advisors can unquestionably benefit from effectively using the better ones. They surely should have the benefit of this accumulated body of knowledge.

*Accessibility*

Physical accessibility is necessary but not sufficient to insure access of farmers to advisors. The farmer must also perceive of them as being accessible. This is mostly a matter

of mind. Physical access, of course, can be provided by such obvious means as:

(1) Living in the area.
(2) Using bicycles or motorized vehicles instead of walking.
(3) Keeping regular office hours.
(4) Being available at designated places for consultation at specified times.

Also this may be achieved by such devices as radio forums, in which the advisor participates in discussion sessions with local farmers after listening to radio farm information broadcasts,[31] and farm discussion groups initiated by farmers as in the small agricultural units in Taiwan.[32]

Psychological accessibility is more of a personalized matter which requires the reduction of social distances and perhaps also, increasing personal acceptability of the advisor as a requirement for high influence, if not also for communicating information. This all implies the absence of restrictive social class and caste differences, empathy with farmers, and perhaps personal conduct in accord with local expectations.

## The Group Context of the Agricultural Advisor

In addition to extension agencies in which agricultural advisors occupy positions which influence what they communicate, there are informal social groups in which they participate and others to which they defer in thought and talk (reference groups), even though they are not actual participants in them.

The personnel policy of the extension agency and the way responsibilities are defined and rewarded are highly important determinants of communicative performance. If the policy is to have farmers come to the extension advisor's office—as "public office" extension in Taiwan—that is where advisors will meet and talk to most farmers. But if the policy is to take extension to the farmer—as with farmers' association extension in Taiwan—most of the exchange is likely to occur in the field.[33] If advisors are expected to preside at farm discussion meetings in evenings or to conduct radio forums, that also is what they will likely do.

An extension organization with an authoritarian orientation encourages attitudes of superiority over farmers and down talks to them as intellectual inferiors. (Also fails to listen to what they have to say.) Own personal associations and/or reference group identification may have much the same effect. For example, a college graduate with an inflated opinion of self may also assume attitudes of superiority and autocratic behavior toward farmers.

Other communication problems emerge from the position of advisors between two social subsystems, each of which places demands on them. One is the official employing agency and the other is the social subsystem of the farmers themselves. An agricultural advisor can identify strongly with one or the other, or perhaps both, but research in different cultural settings shows that identification with farmers is conducive to most effective work.[34] Identification with the farmer clientele is greatly enhanced where they are organized and are able to make their wishes and demands collectively known and to reward those who defer to their needs, wishes, and desires.

Quite aside from these formal group alignments, agricultural advisors are also members of neighborhoods, kin, and friendship groups (social cliques) which predispose them to help some and neglect others—as where advisors of a high caste find it difficult to communicate with those of a very low caste.

Certain prescriptions or observations about group influence and alignment would seem to follow, namely:

(1) Extension agency policy should be squarely based on best known communicative policies and seeing that the performance of those who follow the prescriptions are properly rewarded.

(2) If a college education carries strong elitest attitudes and predispositions to impart impractical knowledge, it may be best to choose high school graduates instead. College graduates are not necessarily the best communicators of scientific information to farmers.[35]
(3) Also, if potential agricultural advisors belong to elitest groups which may adversely affect their communication with important clienteles, maybe others should be chosen who can talk with the farmers who are left out, or better still, only those who can communicate freely with everybody.
(4) Persons who identify strongly with farm people and have a commitment to help them are likely to be most successful.
(5) Finally, emergence of strong farmer reference groups can be accelerated by getting the more progressive farmers involved in extension activities and organized to pursue their own ends. This is apparently possible well before group identification and association actually occurs.[36]

## Help Integrate an Otherwise Differentiated System

Problems of integration and communicative linkage grow out of:

(1) The tendency to specialize functions performed on behalf of farmers by off-farm agencies.
(2) Failure to coordinate deliveries or agricultural inputs.
(3) Integrative needs, i.e., for combining inputs into usable combinations for farmers.[37]

The intent is to provide a few suggestions for coordinating deliveries to farmers and helping them with their integrative problems. These include:

(1) Integration of research and extension in the information supply line just before the information is ultimately delivered to farmers.
(2) Building integrative mechanisms into the delivery lines from source to farmer.
(3) Use of area rather than commodity oriented research agencies at the last developmental stage before information is delivered to farmers.
(4) Coordinate specialized agency efforts to support modern agriculture.
(5) Emphasize generalists over specialists as agricultural advisors.
(6) Use packages of practices instead of recommended single ones for the use of farmers.

Although these cannot be proposed with finality, either research or field experience seems to support one alternative over others that might be considered.

### *Involvement the Key*

In the developmental process for supplying quality information to farmers, research specialists are inclined to defer to other researchers in selecting and completing research projects and in making their research findings known.[38] Extension personnel, likewise, are inclined to professionalization and deference to their own professionals to achieve status, salary increases, and promotions. Since adaptive testing has little utility for writing professional journal articles, researchers may neglect or even refuse to do it. At the same time, farm advisors may insist that adaptive testing is a research responsibility. Since adaptive testing represents the stage in information development where it is finally made ready for safe delivery to farmers, interaction of researchers and extension workers with farmers is highly essential. Adaptive testing, in which all three participate is likely to both enhance the utility of the work done and dissemination of the locally validated product, while at the same time, getting needed reactions from farmers.[39]

### *Area vs. Commodity Organization*

One way to organize agricultural research is on a crop or enterprise basis as implicit in the commodity oriented organization of the Indian Council for Agricultural Research,

the International Maize and Wheat Improvement Center (CIMMYT) in Mexico City, or the International Rice Research Institute in the Philippines. Area orientation which takes into consideration the interrelatedness of all agricultural enterprises suited to a particular area is illustrated by the district agricultural improvement station in Taiwan, and in a sense, agricultural colleges in the United States. Information developed in and delivered from such sources is likely to take cognizance of how specific recommendations fit into the local situation, i.e., existing farm enterprises, practices, and local life patterns. Information delivered from such sources should be more easily integrated into existing farm practices than that delivered by a highly specialized single commodity research station.[40] Thus, for the final stages of testing and adaption of new ideas and knowledge, area rather than commodity oriented research organization is indicated (also see Expert Committee on Assessment and Evaluation, 1969).

*Importance of Farmer Input*

Some control by farmers of the various efforts to develop, transform, and deliver farm inputs to them is necessary. In a free enterprise system where profit and other favorable recognition are contingent upon services well rendered and penalties for the converse, research, and extension remain quite responsive to their needs. Likewise, inputs are generally available in the kind and amount needed when the farmer is ready to purchase them.

But where farmers are less responsive to imperfections in products delivered and how, services can become seriously deficient. Perhaps for producing and delivering farm information, effective farmer input into policy decisions and a capability of rewarding "proper" responses and penalizing the "improper" is more important than type of organization, even in authoritarian kinds of arrangements allegedly controlled in a top down manner.

*Coordination Offices*

For coordinating the delivery of diverse agricultural inputs, coordinating offices or agencies positioned in the supply lines between the source and the farmer can be very helpful. Certainly the township farmers' association office in Taiwan where a farmer can get the latest seed varieties, fertilizer, insecticides, credit, scientific information, and services, and can also deposit his savings if he wishes, is a good example of this kind of an office. District and block offices as reconstituted in the Intensive Agricultural Development Program in India do somewhat the same.[41] Farmers' organizations operating as coordinating agents also have this potentiality.[42]

*Generalist Advisors*

An integrating facility of yet another kind resides within the agricultural advisors themselves. Advisors with a diversity of technological knowledge about local agriculture and who are intimately acquainted with the local farming situation are much more able to abstract locally usable information from the research sources and interpret it to farmers who must use it. Narrowly educated specialists are not capable of providing the kind of integrative assistance needed. This is probably one important reason why elementary and secondary school educated agricultural advisors fortified with practical knowledge are so frequently consulted as sources of farm information by farmers and exercise so much influence over their farm practice adoption decisions.[43]

*Package Practices for Farmers*

Innovations like new wheat or rice varieties, invariably require combinations of practices, usually different from the old for successful use of them. Unless these needs are jointly met, failure is almost assured or even worse, substantial losses may be incurred.[44]

Best suited packages may vary considerably from one locality to another. Determining what they are and where they will work generally requires the help of many spe-

cialists—soil chemists, agronomists, plant protection specialists, agricultural engineers, farm management specialists, and perhaps others. These specialists perform an integrative function by putting recommended practices together. Otherwise farmers who in the initial stage of agricultural development generally have low farm management ability, would have to do it. This kind of help is likely to be most useful for cultivators who are just beginning to break away from traditional ways of farming.[45] Even for the farmer who is able to apply abstract knowledge to his own farming operations, package combinations are convenient.

## Career Services for Better Communication

When farming is occupationally down-graded and farmers are regarded as mentally backward and incapable of making intelligent decisions, professionals who work with them either directly or indirectly in agriculturally related enterprises are likely also to be held in low esteem. The best qualified candidates may be discouraged from entering the agricultural services, particularly where it is assumed that persons trained as administrators can administer anything and thus can be readily transferred from one kind of service to another. Such a policy denies the specialty nature of agriculture and the utility of what is learned at lower levels for proficiency in performing at higher levels in the administrative hierarchy. The net result is a loss of personnel capable of effective communication in the agricultural services.

If careers in agricultural services were clearly recognized and rewarded and avenues of upward mobility clearly specified, efforts of status achievers in the services could quickly develop a cadre of dedicated agriculturalists capable of communicating at all administrative levels in the agricultural service agencies.

## Interpersonal Communication

Interorganizational communication problems in the agricultural support system is one thing; activating communication among farmers for the dissemination of scientific farm information and the adoption of recommended practices through interpersonal communication is another. Farm talk and interpersonal influence greatly multiplies the impact of agricultural advisor efforts. It, so to speak, puts the "hump" in the adoption curve[46] and may even take over where farm advisor efforts end.[47]

Although interpersonal communication is basically a two person matter, it occurs mostly within groups that facilitate, retard, or even prevent such contacts.[48] First of all, social groups make members more accessible to each other and a little less so to outsiders. Members in one faction may refuse to talk to those in another or even stand in opposition as a matter of general principle. Within groups there are those who talk more than others (key communicators), those who have more influence than others (influentials), and those who have a reputation of being usually first to try new farm practices (innovators).[49] Getting the first two quickly informed, convinced, and talking ought to speed up knowing and believing among other farmers. Also, just as individuals are key persons in the diffusion process, so may be some social groups over others.[50]

Where innovators are not also key communicators or influentials and are regarded as imprudent deviants, special help to insure their early success is good strategy. Even though they are not necessarily sought for information and advice, they are watched. They assume risks that others are not willing or cannot afford to take and help adapt innovations to the local situation—which includes working out imperfections.

In situations where change agents assist in carrying on discussions and collectively arriving at adoption decisions, acceptance rates have been known to be ten times higher than where the same information (assumed to be necessary for an intelligent decision) is delivered by the lecture method.[51] In group discussion and decision sessions, those who participate are able to proceed through a decisional process in one sitting in a manner

probably much like what they would otherwise go through over a much longer period of time.

In addition to getting information needed to arrive at a decision which includes an assessment of how to fit the new into one's own situation, the force of group opinion operates as a compelling force on all who participate in the decision.

Briefly on the negative side, agricultural advisors have to exercise great care in avoiding alignment with conflicting groups. In addition, where cleavages are distinct and strongly felt, it may even be necessary to provide avenues of communication to and within each of the conflicting segments.

In general, the professional change agent needs to understand how social groups facilitate or restrict communication of information from outside sources to take advantage of what they have to offer and to avoid mistakes that could greatly lessen their effectiveness as communicators. This requires a knowledge of diffusion research findings that have to do with group influence and how they operate in the change process.[52]

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[2]Everett M. Rogers and F. Floyd Shoemaker, *Communication of Innovations* (New York: The Free Press, 1971), pp. 161–168, and James S. Coleman, Elihu Katz and Herbert Menzel, *Medical Innovation—A Diffusion Study* (New York: Bobbs-Merrill, 1966).

[3]Milton C. Coughenour, *Some General Problems in Diffusion from the Perspective of Theory of Social Action* (Columbia, Missouri: University of Missouri, Agricultural Experiment Station, Research Bulletin #186, [1967]).

[4]H. C. Chang and Herbert F. Lionberger, *Farm Information for Modernizing Agriculture: The Taiwan System* (New York: Praeger Publishers, 1970).

[5]Leonard Broom, Leonard S. Cottrell, Jr. and Robert K. Merton (eds.), *Sociology Today* (New York: Basic Books, Inc., 1959), "Mass Communication and the Social System" by John W. Riley, Jr. and Matilda White Riley.

[6]This is not to deny the need for considering folk knowledge and new ideas and information developed by farmers themselves.

[7]Herbert F. Lionberger, "Information for Modernizing Agriculture: Toward an Ideal System Model," paper prepared for the International Programs Seminar Series, University of Missouri, Columbia, Missouri, 1971; Ronald G. Havelock, *Planning for Innovation Through Dissemination and Utilization of Knowledge*, Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1969. Final Report to the United States Department of Health, Education and Welfare.

[8]This model is really a social invention developed first in agricultural colleges in the United States over a long period of time in which many mistakes were made and corrections applied. What emerged was kind of an organizational arrangement (information system) that was capable of extending the frontiers of basic science knowledge and translating it into usable practice. Modifications of the model subsequently were taken to other countries and used for other substantive areas where a continuing supply of specialty information is needed—even into industrial concerns which develop and deliver new information and technology in the form of new products.

[9]Chang and Lionberger, *Farm Information for Modernizing Agriculture: The Taiwan System.*

[10]Although interaction which implies communicative exchange and mutual

influencing of those involved is neglected in the model, the "information sender-receiver" over-simplification has considerable utility in understanding the nature of group influences involved in the communication processes.

[11]Phillip H. Ennis, "The Social Structure of Communication Systems: A Theoretical Proposal," *Studies in Public Communication*, III (Chicago: University of Chicago, 1961), pp. 120–144.

[12]The problem of coordinating the flow of agricultural inputs from agencies to farmers is treated at length by Milton J. Esman, "Popular Participation and Feedback Systems in Rural Development," paper presented at the Cornell-CIAT International Symposium on Communication Strategies for Rural Development, Cali, Colombia, 1974.

[13]For example see: Jose Pastore, "Decision-Making Under Uncertainty: The Case of Subsistence Agriculture," Idem.

[14]For example, a maize, wheat, or rice variety may have a displeasing taste. The housewife may in turn object because she gets blamed for preparing untasty food. Also, these may be situations where unambitious, lazy relatives come in for their share of increased production that is partly the result of the hard work of another. In this case the hard worker may decide it isn't worth the extra effort.

[15]Raymond E. Borton (ed.), *Selected Readings; Getting Agriculture Moving*, (New York: The Agricultural Development Council, 1966), Vol. 1, "Agricultural Research," by C. W. Chang, pp. 210–221.

[16]Sterling Wortman, "The Technological Basis for Intensified Agriculture," *Agricultural Development Proceedings of a Conference*, (sponsored by the Rockefeller Foundation at the Villa Serbelloni, Bellagio, Italy, April 23–25, 1969), pp. 17–43.

[17]See Ibid., and Raymond E. Borton (ed.), *Selected Readings; Getting Agriculture Moving*, (New York: The Agricultural Development Council, 1966), Vol. 1, "Relationships Between Agricultural Research, Instruction and Extension," by G. Vervelde, pp. 344–350. Professionals who work with farmers in developing countries where communication is mostly delivered in a top-down elitest manner are critical of the moral implications of such a stance. This position is well articulated by Luis Ramiro Beltran in "Rural Development and Social Communication: Relationships and Strategies," a paper presented at the Cornell-CIAT International Symposium on Communication Strategies for Rural Development, Cali, Colombia, 1974. Even though needed information probably must be delivered in somewhat of an elitest manner, the communicative linkage of the change agent (farm advisor) with the farmer must be truly interactive, i.e., one in which mutual information and exchange and influence occur with feedback moving up the line to research and control sources as well as flow of scientific information from the research sources.

[18]Charles E. Kellogg and David C. Knapp, *The College of Agriculture: Science in the Public Service* (New York: McGraw-Hill, 1966).

[19]Raymond E. Borton (ed.), *Selected Readings—Getting Agriculture Moving*, (New York: The Agricultural Development Council, 1966), Vol. 1, "Improving the Competency of Extension Workers: A Continuing Responsibility of Research and Teaching Personnel," by R. Dwarkinath, pp. 394–399. Also see A. T. Mosher, "The Extension Process," Idem, p. 299–314.

[20]Francis C. Byrnes, "Credibility and Competence: Key Characteristics of Development Communicators," paper presented at the Third World Congress of Rural Sociology, University of Louisiana, Baton Rouge, Louisiana, 1972.

[21]David K. Berlo et al., "Dimensions for Evaluating the Acceptability of Message Sources," *Public Opinion Quarterly* XXXIII (1969): pp. 563–576.

[23]Shih Tung Lin, "Views and Use of Farm Information Sources by Farmers in Two Taiwan Villages," (Thesis, University of Missouri, Columbia, Missouri, 1969).

[24]Herbert F. Lionberger, *Legitimation of Decisions to Adopt Farm Practices and Purchase Farm Supplies in Two Missouri Farm Communities: Ozark and Prairie.* (Research Bulletin 826, University of Missouri, Agricultural Experiment Station, Columbia, Missouri, [1963]).

[25]Dilip K. Bhowmik and Everett M. Rogers, "Homophily—Heterophily: Relational Concepts for Communication Research," *Public Opinion Quarterly* XXXIV (1970): pp. 523–538.

[26]Gary D. Copus, "Structuring Influence of Attributes on Farm Information Flow," (Ph.D. dissertation, University of Missouri, Columbia, Missouri, 1972).

[27]Heliodoro Diaz and Herman Felstehausen, "Communication and Institutional Change in Mexican Agricultural Development," paper presented at the Third World Congress of Rural Sociology, Baton Rouge, Louisiana, August 23–24, 1972.

[28]Lin, "Views and Use of Farm Information Sources by Farmers in Two Taiwan Villages."

[29]D. C. Dubey, Gladys Gallup and Willis A. Sutton, Jr., *Village Level Workers: Their Work and Result Demonstrations* (Delhi, India: National Institute of Community Development, Government of India, 1962). See also H. C. Chang and Herbert F. Lionberger, *Communication and Use of Scientific Farm Information by Farmers in Two Taiwan Agricultural Villages,* (Research Bulletin 940, University of Missouri, Agricultural Experiment Station, Columbia, Missouri, [1968]).

[30]Neal Gross and Bryce Ryan, "The Diffusion of Hybrid Corn Seed in Two Iowa Communities," *Rural Sociology* VIII (1943): pp. 15–24. See also Lionberger, *Legitimation of Decisions to Adopt Farm Practices and Purchase Farm Supplies in Two Missouri Farm Communities: Ozark and Prairie,* and Elihu Katz, "The Social Itinerary of Technological Change: Two Studies on the Diffusion of Innovation," *Human Organization* XX (1961): pp. 70–82.

[31]William G. Golden, Jr., "Training Rice Production Specialists to Help Solve Rice Production Problems," (IRRI Saturday Seminar, December 7th, 1968).

[32]John Nicol, Albert A. Shea and G. J. P. Simmins, *Canada's Farm Radio Forum* (Paris: United Nations Educational, Scientific and Cultural Organization, 1954).

[33]Chang and Lionberger, *Farm Information for Modernizing Agriculture: The Taiwan System.*

[34]Ibid.

[35]Dwarkinath, "Improving the Competency of Extension Workers: A Continuing Responsibility of Research and Teaching Personnel." Jack Preiss, "A Theory of Control: The Role of the County Agricultural Agent," (Ph.D. dissertation, Michigan State College, East Lansing, Michigan, 1954).

[36]Allahabad Agricultural Institute, *Extension Evaluation,* Allahabad, India: Allahabad Agricultural Institute, (1957); Chang and Lionberger, *Farm Information for Modernizing Agriculture: The Taiwan System.*

[37]D. C. Dubey and Harold Hoffsommer, "A Sociological Study of Panchayati Raj in Rajasthan and Andhra Praduh," Mussoorie, U.P., India: Central Institute of Study and Research in Community Development, 1961.

[38]We can think of information development and supply systems as prototypes of systems required for developing and delivering other agricultural inputs. All must ultimately be organized to do research, deliver (by sales or extension education or both) and

integrate these inputs into usable combinations for specific on-farm use (Ronald G. Havelock, 1971, Ch. 3).

[38]Vervelde, "Relationships Between Agricultural Research, Instruction and Extension."

[39]Wortman, "The Technological Basis for Intensified Agriculture."

[40]This is not to suggest the general superiority of one type of organization over another but simply to note that for local adaptive testing research directed to the total agriculture in an area requires the integration of disassociated bits of information into usable combinations for specific local uses. Help in performing this function facilitates the diffusion of the usable research findings to farmers. With area oriented research where the total local agriculture is considered a minimum of additional effort is needed to get the resulting information into shape for on-farm use (Expert Committee on Assessment and Evaluation, 1969); Chang and Lionberger, *Farm Information for Modernizing Agriculture; The Taiwan System*, pp. 158–165.

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[45]Ibid.

[46]Rogers and Shoemaker, *Communication of Innovations*, pp. 177–179; Katz, "The Social Itinerary of Technological Change: Two Studies on the Diffusion of Innovation;" and Coleman, Katz and Menzel, *Medical Innovation—A Diffusion Study.*

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# Creating Agricultural Communication Centers for Training, Research, and Information Services

WILLIAM B. WARD*

PEOPLE in Mysore State in southern India use the term "navira" (new air) to describe changes that have taken place in modern times. A new wind blows there and stirrings of change can be seen even in remote villages. Among the reasons for this change is one of India's new agricultural universities. In nine short years it has become a force in the improvement of agriculture and rural living and it stands witness to what can be achieved with a pragmatic and integrated program of research, instruction, and extension.

A similar new wind is blowing in each of the other states of India and the communication gap between agricultural scientists, educators, and farmers is being narrowed slowly but surely.

Several of these new agricultural universities (the oldest is only 14) have identified a special need to improve their communication capabilities through better use of the mass media and other channels and to train people who can communicate the new technology effectively to millions of cultivators who must make the decisions that will determine India's agricultural future.

This paper will deal primarily with the Communication Centers that two of the leading universities have recently established in their efforts to speed up agricultural and rural development and build stronger institutions. (University of Agricultural Sciences at Bangalore, created in 1965, and the G.B. Pant University of Agriculture and Technology, established in 1960, formerly the Uttar Pradesh Agricultural University at Pantnagar and the first agricultural university in India.)

I will describe the principles, policies, and organizational structures they have adopted in adding this new dimension to their activities. The information may be useful to other universities and organizations. Some of the ideas might be accepted as is, others modified depending upon local circumstances.

First, consider the background that led these universities to decide that they should take such action. (The places may be different but some of the conditions are strikingly similar in other parts of the world):

(1) In a country with 60,000,000 cultivators, 550,000 villages where 80 percent of the people live, and with only one change agent per 50,000 villagers, a great gap existed between the research results in the universities' experiment stations and the cultivators.

(2) Although a considerable body of agricultural technology existed, there was a major void—the lack of both a tradition and competence to get the research findings interpreted and into communicative channels oriented toward both the professional agricultural workers and the cultivators. Too many useful research results were buried in experiment stations and laboratories and very little of this new technology was flowing from the "knowledge centers" to farmers and other

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people who could use it. (India has rather extensive mass communication channels, particularly films, press, and radio; it is ironic, however, that the daily press sometimes carries more foreign agricultural research information than Indian mainly because the latter was not readily available but the former was through the wire services.)

(3) The task of communicating what is involved in applying the new and highly sophisticated technology to millions of farmers, the majority of whom are illiterate, was (and is) staggering.

(4) National, state, and district governments wanted and needed more agricultural information officers and expanding agricultural industries were crying for trained information personnel who also knew something about agriculture. There was (and still is) a severe shortage of trained people in agricultural communications who have an empathy with farmers and rural people. The training needed was of two kinds: limited in-service training to "hold-the-line" and specialized training at the undergraduate and graduate levels in agricultural universities to turn out students who could make careers in agricultural communications. There was not a single institution in the country oriented toward either one of these needs.

(5) Practitioners had to "fly blind" in many respects on the question of communication strategy because of so little communication research conducted in rural India. (Most of what was communication doctrine in the U.S. and other developed countries had to be discarded or substantially modified simply because of a vastly different culture.)

## *The Basic Concept*

With that background in mind, a review of their experience and that of others, and a look ahead, the decision was reached by these institutions that instead of small, separate information functions that had grown up more or less helter skelter under different administrators a total, unified commitment was needed. This would be in the form of a university-wide Communication Center where communication personnel would be brought together in one location and the functions would include communication research, in-service training, undergraduate and graduate level teaching programs, and an information service to provide continuing and effective dissemination of the university's research and related undertakings.

A commitment of this kind implied an integration of communication into every phase of the university's on-campus teaching, research, and extension activities and channels between cooperating communication units would be direct and not via several administrative hierarchies. It meant that communication was a subject to be taught as well as a subject for research, while at the same time disseminating the information from the "knowledge center" to many different audiences. It meant also that the Center would have a budget of its own and equal standing with any of the other major departments of the university.

The policymakers realized that the ability of their institutions to interpret their mission to various audiences would be a major factor in ultimate success or failure and the piecemeal communication efforts of the past were not sufficient. One Vice-Chancellor stressed the fact that there was "overlapping of areas, confusion of responsibilities, and many other defects" in the set up of small communication units spread out under different administrators. He also observed that everybody's business in communication at the university often turned out to be nobody's business. Because there was too much dual control and very little coordination, too many important things "dropped between the slats."

## *Goals*

Each institution set specific goals for their Communication Centers and, in general, they included these five:

(1) Develop a coordinated and strong information service, staffed by qualified communicators to: (a) interpret the results of scientific research from the experiment stations in cooperation with extension subject matter specialists and assist in the process of disseminating this information through all available channels to people who could use it; (b) improve internal communication (within the university); (c) inform influential people of the institution's programs and accomplishments; and (d) give the university increased visibility with cultivators and village and city people. (The component elements of the information service were combined and coordinated because each one depended upon the other for its effectiveness. For example, the editorial-publication section needed photographs and booklets designed by artists, and then printed and distributed; the radio section depended on the news section for certain information. These are only illustrative of the many reasons why all information services were combined into one Center.)
(2) Offer, initially, a basic academic program in agricultural communication at the undergraduate level to help find and train young people in this new profession in India and to give those students in the agricultural sciences basic courses to assist them in being more successful in whatever field they chose as a career. Later, after sufficient experience and demonstrated need, move into a graduate program, thereby providing a "seed source" of competent personnel for the mass media, universities, government agencies, and agricultural industries.
(3) Support and enhance the teaching programs of the various colleges of the university by assisting faculty in the effective use of modern teaching media.
(4) Exercise leadership and initiate action for in-service communication training of faculty, agricultural information workers, and extension personnel at state and district levels. (The Agricultural Extension Services in the states are under the administration of the State Departments of Agriculture; the communication trainers should be part of the regular information and teaching personnel of the Center.)
(5) Conduct communication research to help guide action information programs and gradually to become a major source of agricultural communication research knowledge.

## *Administration and Organization*

No one administrative setup will fit the requirements of different institutions, but there is one principle basic to the success of a Communication Center and it is this: The Director of the Center should be directly responsible to the top administrator, with close relationships with Deans of Colleges and Directors of research and extension. (In the case of the two agricultural universities in India, the Director of the Center reports to the Vice-Chancellor since activities of the Centers are university-wide; the position of Vice-Chancellor is equivalent to University President in the U.S.)

To be effective in guiding the communication programs, the Director of the Center must be involved in policy and program development of the institution. Then he and his staff have the opportunity of building communication support into all appropriate projects at the time they are being conceived, not after the fact or as an appendage at the last minute. He should also develop close working relations with the Agricultural Information Officer of the State Department of Agriculture.

Those who teach and do research in the Center should have academic standing comparable to other disciplines. The staff should be made up of high-quality, well-trained people who are professionals in the various fields of communication. A person cannot be expected to be a professional in all of them any more than one can be an expert in all areas of the plant sciences. The Center requires professionally trained people in publication writing and editing, printing, radio writing and broadcasting, news writing, motion picture production, photography, exhibit planning and preparation, public speaking, and trans-

lating information into local languages—or such combinations of these as are most practical under local conditions.

In the final analysis, of course, success depends on the professional competence and cooperativeness of the personnel involved. The ideas presented here relate mainly to those principles of administrative policy and organizational structure that are capable of strengthening agricultural communication programs in extension, teaching, and research. They are not intended as standard patterns. Likewise, the charts in Appendices I through VII are only a means of bringing into focus the different organizational structures.

For various reasons, an institution may not be able to create a full-fledged Communication Center all at once, but could establish a "phased-in" program over a period of four or five years. A sequence such as the following may be possible:

*Phase I* Organize an agricultural information service; draw together the available personnel, equipment, and supplies into one location. For example, writers, photographers, editors, and audio-visual specialists who may be assigned to various units should be reassigned to the new Center. (This was the beginning of the Communication Center at the University of Agricultural Sciences; see the Vice-Chancellor's Executive Order, Appendix VIII.)

*Phase II* Provide in-service communication training programs.

*Phase III* Offer a few basic undergraduate courses in agricultural communication as electives; later consider a more extensive program both at undergraduate and graduate levels but stress the necessity of a strong background in the agricultural sciences along with agricultural communication.

*Phase IV* Begin a program of communication research.

One of the sticky problems encountered in organizing these Communication Centers has been the reluctance of some administrators to let go of one or two of their functions for inclusion in a Center to serve the entire agricultural university. In the Indian agricultural university, for example, certain communication functions are or have been in Extension Education Departments or Directorates of Extension. The basic concept of a university-wide Communication Center, as presented here, is broader than this one dimension of the university. Furthermore, from my observations, Extension Education Departments in these universities appear to be concerned primarily with program planning, extension administration and supervision, evaluation, meetings, group discussions, and the like. Two or three communication courses are sometimes offered. However, their staffs have been trained mainly in other areas and agricultural communication as a profession becomes of secondary importance.

Extension Education is a professional area of its own and needs full attention. Likewise, the professional area of Agricultural Communication should be of primary importance in its own right.

In regard to the extension information service function from the university, the concept and operating policy should be that the research scientist, the subject matter extension specialist, and the communication specialist of the Center should work together in a team approach. The communication specialist can often be the link between the scientist and the extension subject matter specialist and bring the two together so the research can be interpreted into practical, localized information and provided to State Departments of Agriculture for field extension personnel and to other existing channels of communication.

All segments of an agricultural university—extension, research, teaching, and administration—want, need, and should get information services from a coordinated Center. Extension should be a major benefactor of an effectively integrated agricultural communication program, but other programs of the university should be equally well served.

In agricultural universities in other countries where the information service function was started under the administrative control of extension, it was not long until the research administrators were asking for their own information staffs, and the top administration of the universities wanted a separate information or public relations staff. Often three or four different units engaged in similar work at a land-grant type university were competing with each other for funds, personnel, newspaper space, time on radio stations, and the like. This uncoordinated operation brought headaches to administrators and criticism from those in charge of mass media, not to mention less effective results. There is no need for new institutions or organizations in developing countries to make the same mistakes.

## *The Future*

Since the first Communication Center in India of the type discussed here was created at Uttar Pradesh Agricultural University at Pantnagar in 1970 (with some financial and consulting assistance from the Ford Foundation), I have been asked several times by interested parties whether the concept is still viable. I believe it is and more important than ever, particularly with the rapid spread of new communication technology in developing countries. But it will take more time at Pantnagar, Bangalore, and elsewhere for the concept to be completely understood by some of the officials of the universities and the faculties. The concept is new to them, and therefore understandable that it will involve more experience on their part with the operations of the Centers, plus the fact that the Centers will have to prove the concept is workable and useful. Among other things, this requires strong, capable leadership by the Director of the Center.

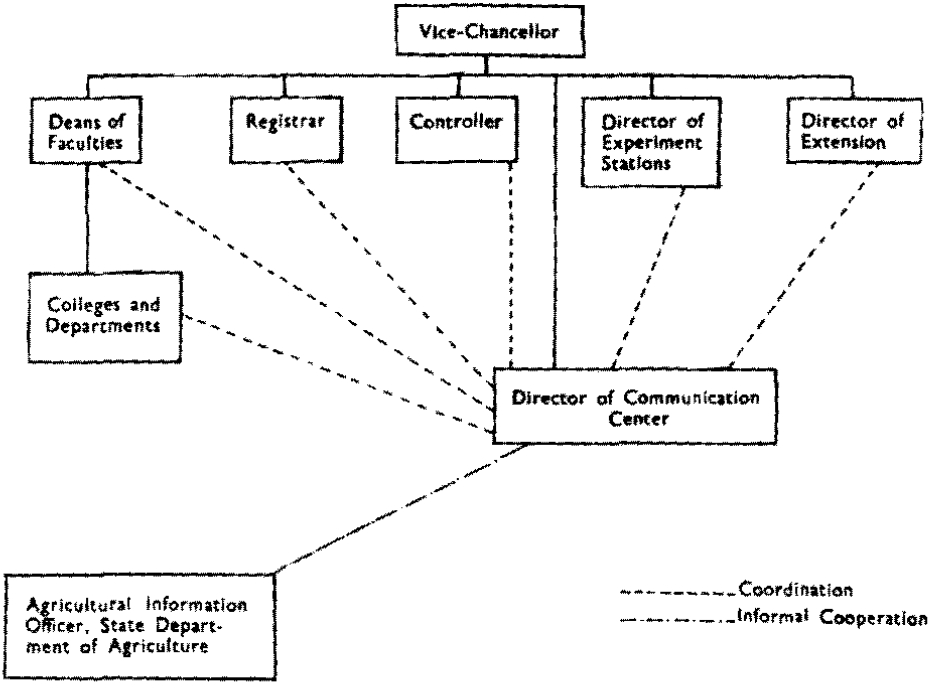
A major problem of the Centers is to train personnel and develop an appropriate program focus. This takes time, but considerable progress is being made and the concept of an all-agricultural university Communication Center continues to grow in India. It is my understanding that the Association of Indian Agricultural Universities has requested the establishment of communication centers in all of the twenty agricultural universities as part of the nation's Fifth Five-Year Plan. (Appendix IX.)

Vice-Chancellor D.P. Singh, who worked closely with me during the planning stages of the Center at Pantnagar, says that "one of the most striking changes of all has been the new rapport that has sprung up between farmers and 'our universities', as some now call them. A few years ago there was almost no communication between the two; the universities were almost as insular as though enclosed by walls, well schooled in the classics but innocent of what was going on a few miles from their own gates. Today there's a lively dialogue between scientists and farmers."

The new Communication Center there is an integral part of that vital dialogue. Despite many difficulties in the pre-natal and post-natal stages, I have every confidence this Center and others like it, that are well planned and supported, will turn out to be something the institutions and the rural people in this developing nation can look upon with pride.

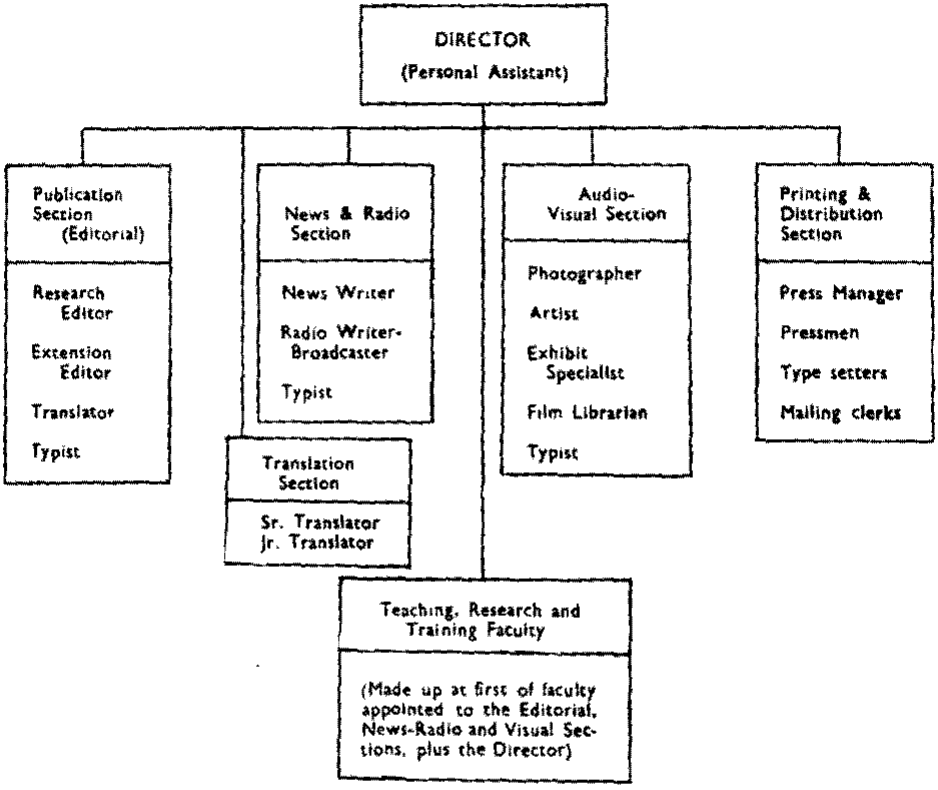
# *Appendix I*

An example of a desirable organizational structure within the university:



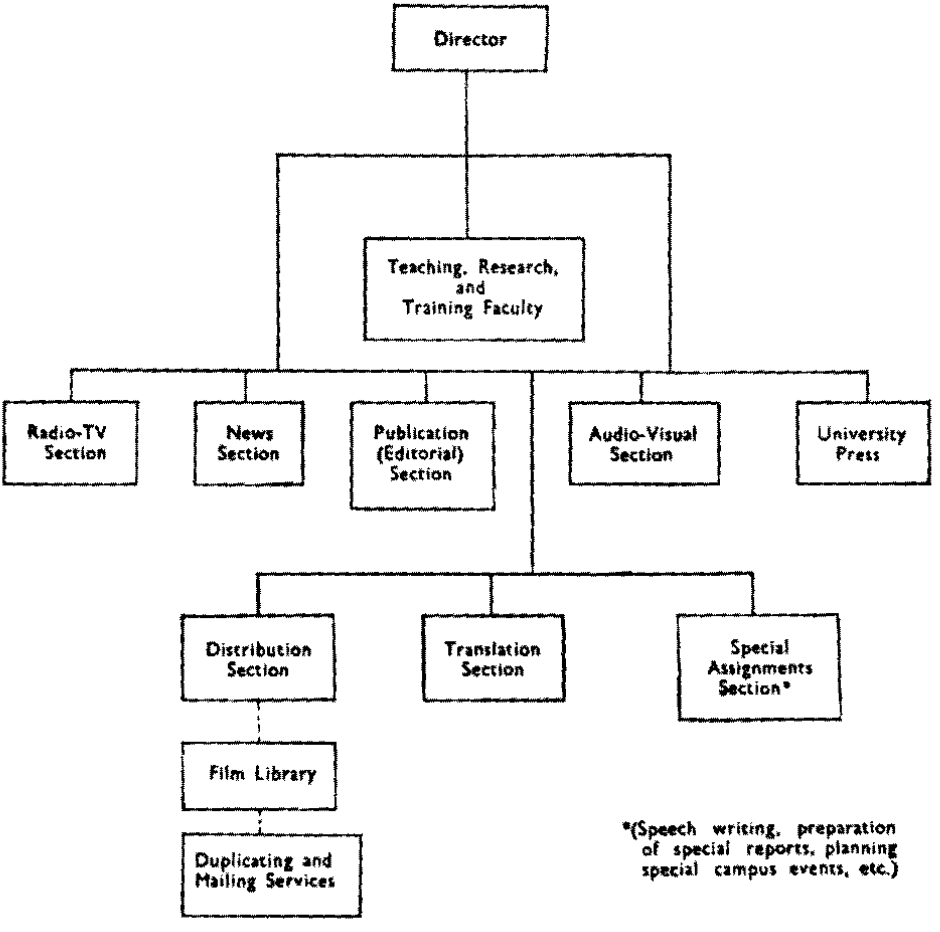
# *Appendix II*

The staffing of a Communication Center may have to be started on a minimum basis and this would be one form of organization:



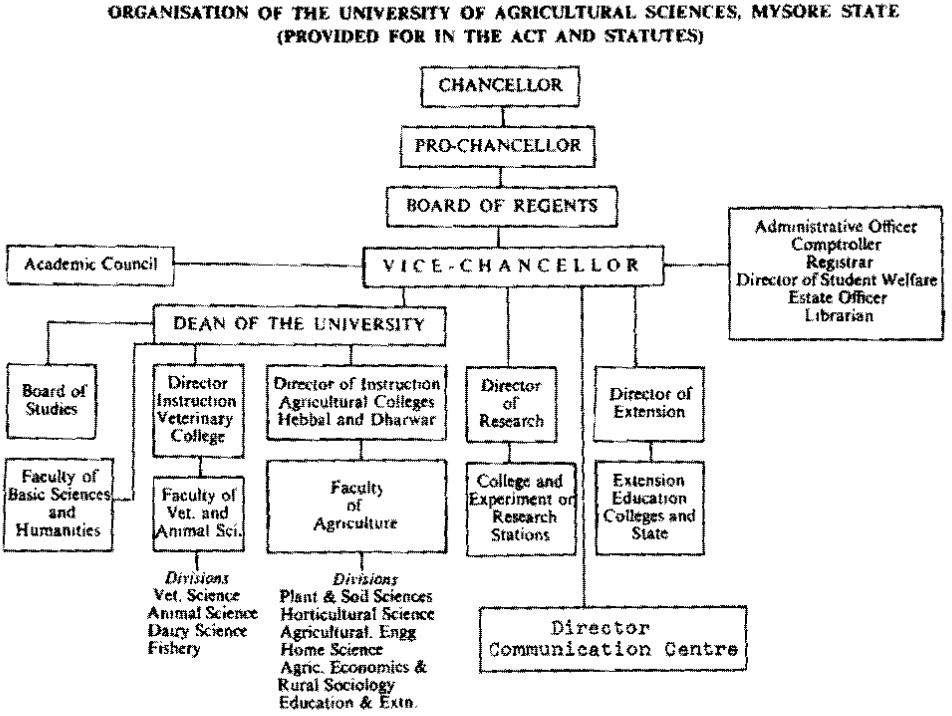
# *Appendix III*

Over the years, a Communication Center should gain strength and this organizational plan might evolve:



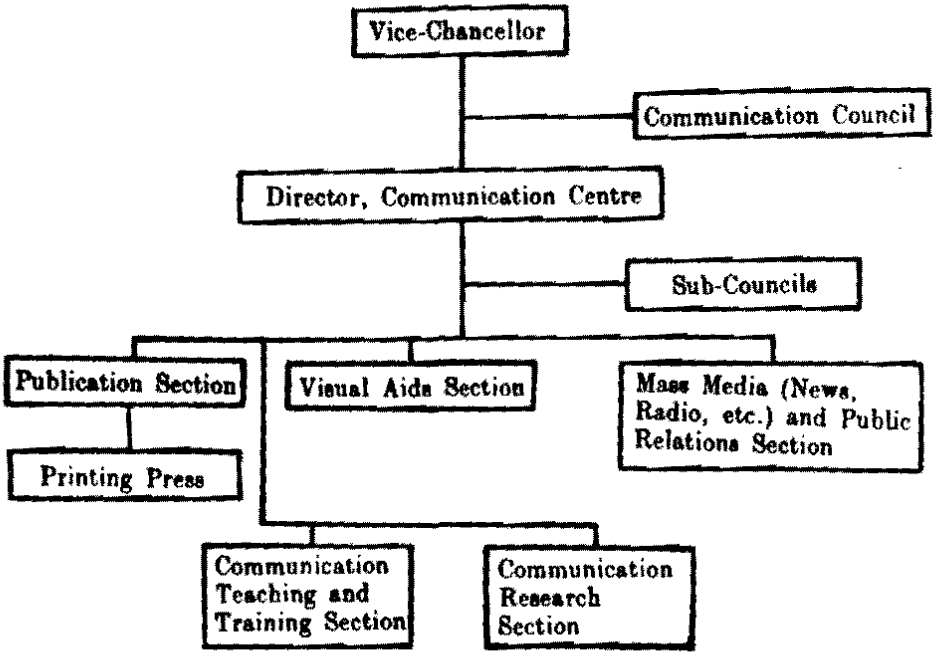
# *Appendix IV*

**The relationship of the Communication Center to the other parts of the University of Agricultural Sciences at Bangalore, India:**



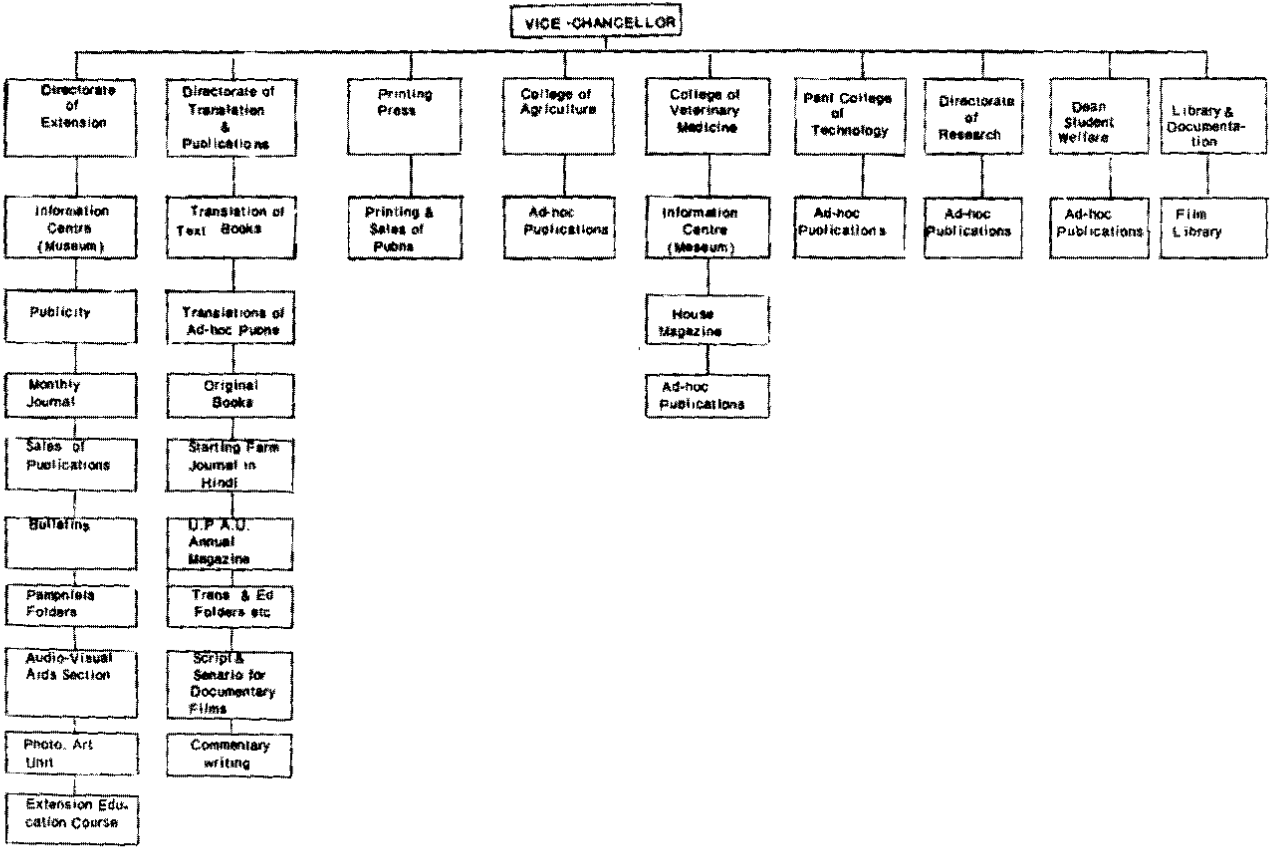
## *Appendix V*

The organizational structure of the Communication Center at the University of Agricultural Sciences at Bangalore, India:



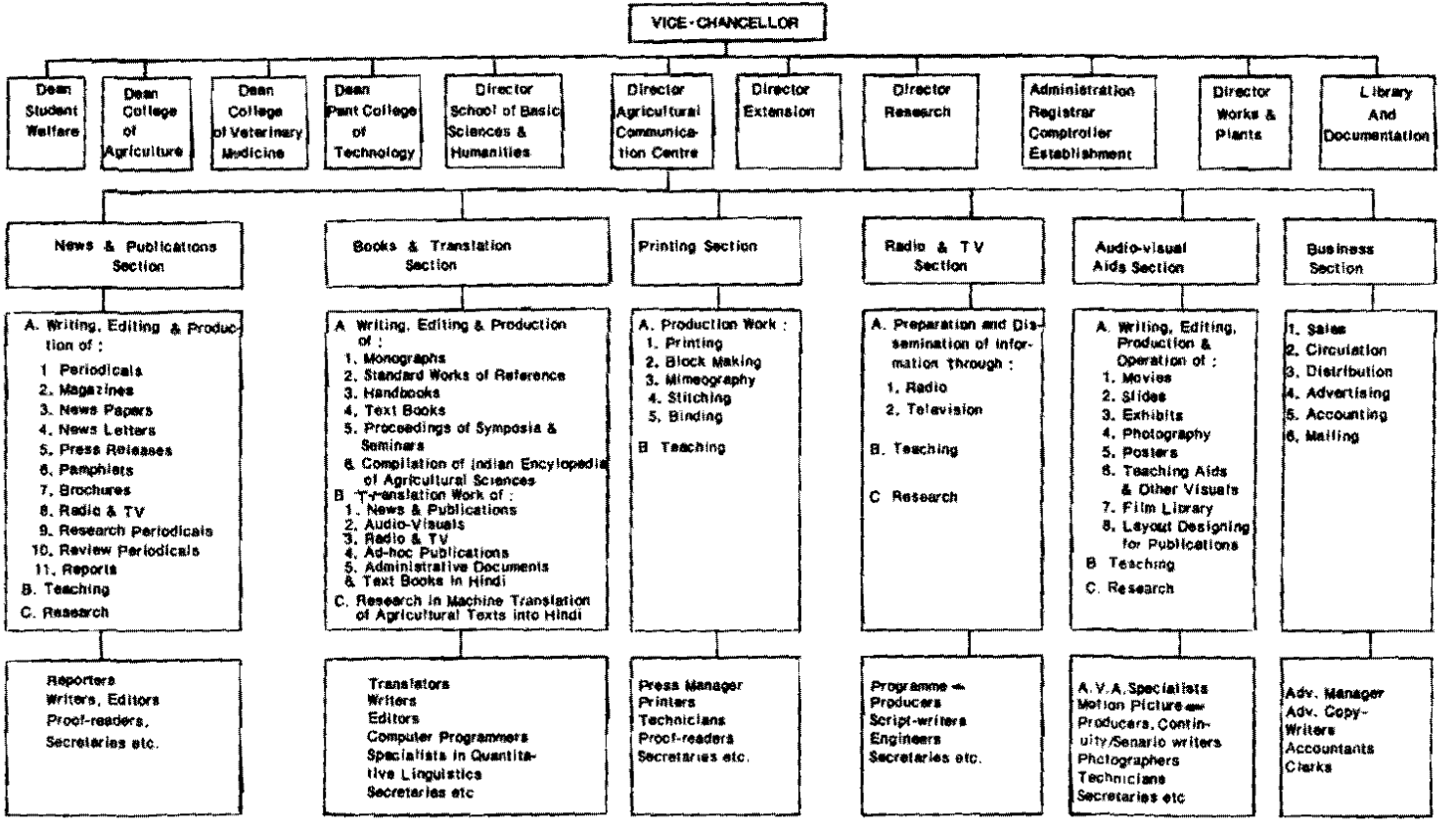
# *Appendix VI*

Existing functions – agricultural communication at U.P.A.U., Pantnagar.



# *Appendix VII*

Organizational plan of the proposed agricultural communication centre at U.P.A.U. Pantnagar.



# *Appendix VIII*

The University of Agricultural Sciences, Bangalore

No. AA-92

Hebbal Campus
Bangalore-24
April 12, 1972

EXECUTIVE ORDER

Sub. Setting up of a Communication Centre at the main campus of the University of Agricultural Sciences at Hebbal.

At present the communication functions of the University of Agricultural Sciences are being performed by various agencies at Hebbal such as the Publications Council, the Directorate of Extension, Directorate of Research, the Mysore Journal of Agricultural Sciences, etc. On the suggestion of Professor Ward, Communication Consultant and Chief of Party, USAID/Tennessee Team, Bangalore, it is considered necessary to set up an integrated Communication Centre which has the responsibility of not only doing extension information work, but be the chief organization for the total communication about all activities of the University of Agricultural Sciences, such as, teaching, research and extension.

With this purpose in mind, it has been decided that a beginning should be made in setting up of the Communication Centre with an Honorary Director, who will be the Dean for the present. In due course a full-time Director of Communication Centre may be thought of. The Communication Centre would consist of the following personnel working under the Honorary Director and in consultation with Professor Ward.

They are:

1. Editor of the Publications Council
2. Assistant Editor and his other staff
3. The Information Specialist
4. As many Artists as can be pooled from those available at Hebbal
5. The UAS Press and its staff

For the effective functioning of the Communication Centre, a Communication Council is formed with the following members:

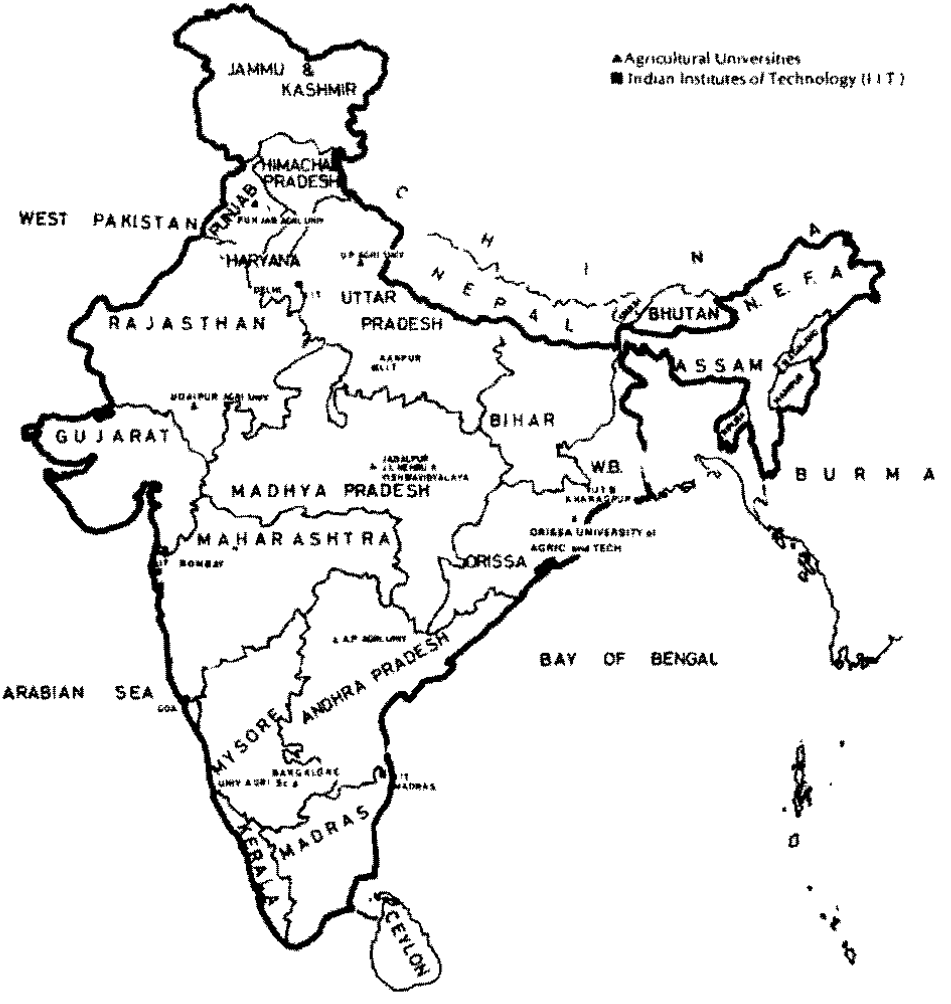
| | |
|---|---|
| 1. Vice-Chancellor | Chairman |
| 2. Dean & Honorary Director of the Communication Centre | Convener |
| 3. Professor Ward, Chief of Party | Member |
| 4. Director of Extension | Member |
| 5. Director of Research | Member |
| 6. All the Directors of Instruction | Member |
| 7. Principal, Ag. Engineering Institute, Raichur | Member |
| 8. Editor of Publications Council | Member |
| 9. Registrar | Member |
| 10. Director of Student Welfare | Member |

This Communication Council will function as a policy making body, but the day-to-day operations of the Council will be decided by the Director of the Centre in consultation with such members of the Council as may be necessary. The Communication Centre will come into operation from the 1st of May, 1972. The consequential arrangements as indicated above may be effected by this date. The first meeting of the Communication Council will be held on the 15th May 1972.

Sd/-
(K. C. Naik)
Vice-Chancellor

To

# *Appendix IX*


▲Agricultural Universities
■ Indian Institutes of Technology (I I T)
JAMMU & KASHMIR
HIMACHAL PRADESH
WEST PAKISTAN
PUNJAB
HARYANA
RAJASTHAN
UTTAR PRADESH
CHINA
NEPAL
BHUTAN
N. E. F. A.
ASSAM
BIHAR
GUJARAT
W.B.
BURMA
MADHYA PRADESH
MAHARASHTRA
ORISSA
BAY OF BENGAL
ARABIAN SEA
ANDHRA PRADESH
MYSORE
MADRAS
KERALA
CEYLON

# Comments on the Lionberger and Ward Papers

JAIME GUTIERREZ*

MY discussion has three parts. The first part concerns the two models which Lionberger follows in "Organizational Issues in Agricultural Communication." The second point is the organizationally related communication problems also presented by Lionberger. And third, I will talk about Ward's paper on "Creating Agricultural Communication Centers for Training, Research, and Information Services."

## *A Clear Image*

Starting with my first point, the system model presents a clear image of the complex processes of creation and dissemination of knowledge for both social scientists and policy makers. It is easy to locate any activity of a development organization within this model, whether the activity belongs to a rural change agent or if it is the complex decision making of a high ranking official. Even more, the model seems to imply that developing countries could borrow applied knowledge that is more suited for quick benefits instead of utilizing their limited economic resources for basic scientific research that is expensive and risky.

I also consider that Lionberger's combined use of the information systems model and a social group influence model has the advantage of permitting a closer look at the properties of the user system; specifically, its social structure, membership characteristics, value orientations, and control of deviants. The clearer specification of the groups within the large social structure modifying Riley and Riley's model is also a well made point.

The addition of secondary special interest groups as affecting C and R clarifies the position of some Latin American communicators. These communicators feel that an advertising and publicity agency's approach dominates diffusion and communication research and that this approach by measuring an audience's reaction to a given media seeks to sell ideas and products rather that meet the audience's need.

## *An Elitist Conception*

When the reality of some developing countries is considered and a look is taken into the basic assumptions that underlie the information systems model and the social group influence model, their telic nature becomes clear. For example, the social group influence model establishes an egalitarian horizontal relationship with feedback going from R to C. It seems to me the real situation is more of a vertical form. The information systems model also implies that economic development is concomitant with specialization of functions. As a result of this the model—instead of describing a social reality—seems to state a goal to be reached by action-oriented programs.

It is my opinion that the models show a developmental approach with an elitist conception which implies that there is a favorable or healthy direction of change toward which the activities of the "clientele system" or "receiving system" or "practitioner system" can be redirected. In recent meetings, Latin American communicators have expressed aware-

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*Assistant Professor, Department of Soil Sciences, University of Puerto Rico.

ness of new social arrangements that are being promoted with success and which start from a clearer understanding of the "practitioner system." Furthermore, they question the validity of models developed in advanced societies with a strong emphasis upon a technological content since rural development transcends pure technology and reflects a wider social content.

Going to my second point, I would like to comment in very general terms on the organizationally related problems presented by Lionberger. They seem to be highly representative of problems facing rural development strategists. One point he seems to make throughout the second part of the paper is that for success in communication farmers' associations with a high degree of autonomy need to exist. However, in some parts you get the impression that the paper assumes the existence of only one social class among farmers and this is a point to be questioned when considering the situation of some countries. One is left wondering about which class of farmers Lionberger is referring to when he says that "identification with farmers is conducive to most effective work." This relates to the popular participation views presented by Esman.

The suggestion is made that the "emergence of farmers as a strong reference group can be accelerated by getting the more progressive farmers involved in extension activities and organized to pursue their own needs." Diffusionists have been criticized for this since working with progressive farmers (the more advantaged farmers) is sometimes viewed as a widening of the gap between the well to do and the poor. (The gap between "ups" and "downs" that Rogers presented yesterday.)

## *Centers of Potential Power?*

Ward makes an important point in his paper, "Creating Agricultural Communication Centers for Training, Research, and Information Services," when he mentions developing awareness about communication potential within an agricultural university. Since I consider Ward's descriptions of creating awareness about communications' potential important, I only wish that his paper didn't read so much like a facile success story. He not only deals with awareness but also with the steps leading to a full organizational adoption of the idea in the form of a university-wide communication center. However, he does not mention the conflicts involved during the implementation of the idea, and I believe it would be fruitful to hear how these conflicts were solved.

For example, in his paper it is not stated how the Communication Center uses or takes into consideration the country's existing communication infra-structure. The possibility exists of duplicating the facilities of other government agencies or renting them from private industry. People may see Communication Centers as centers of potential power—power not necessarily used for dissemination of knowledge.

Little is also said about the Communication Center research unit. This unit is not only important for pure research purposes but also for critical evaluation of expensive communication technology.

And by this I mean very much what Colle included in his paper. He writes that sophisticated communication technology will someday be felt in the countryside. But there are important frontiers to cross before that "someday" comes, and strangely enough, it may be that the most important things on those frontiers will not be the complex, sophisticated, and expensive technology. Instead they may be the simple equipment and techniques that give rural people a chance, themselves, to have more control and be an important participant in the communication process.

# New Trends in Training of Agricultural Production Specialists as Development Communicators

FERNANDO FERNANDEZ*

AGRICULTURAL development is an extremely complicated process that can be represented as the dynamic evolution of the agricultural supra-system. Within it, a large number of systems and sub-systems occur, such as: production at the farm, commercialization of inputs, marketing of the products, education at various levels, regional and community infrastructure, health, agricultural research, and family welfare.[1] Each of these contributes to agricultural development and in so doing interacts with other components of the supra-system and with the farmer. The first and most frequent channel of interaction is through communication.

The farmer and his enterprise act within the system so as to contribute to and benefit from it. Communication makes available the knowledge he needs to participate in development.. Development emphasizes but is not limited to the concept of economic growth—increasing production and productivity. A more ample concept of rural development includes economic growth, generation, and acquisition of knowledge, improvement of health, social advancement, recognition of cultural values, and other parameters.

Surveying the landscape of agricultural development, one finds that the relatively few professional communication specialists available are engaged in communicating ingredients of development in one or more of the components of the agricultural systems. Most of them devote a great deal of time to teaching professionals in other disciplines how to best communicate development. Their audience consists for the most part of agricultural scientists and professionals. These may be known as extension agents, change agents, farm production advisers, etc., and play essentially the role of the "development communicator." The latter, for our purposes, may be defined as "a professional in a given scientific or technical field directly related to agriculture, often a generalist (i.e., agronomist, animal scientist, veterinarian) whose endeavor is the education of the farmer, to bring about his development and that of his community, as part of the agricultural system." To achieve this objective, he communicates knowledge and skills in his field to the audience of farmers and brings to them information from other relevant sources as well.

Throughout this paper, I shall be discussing this type of development communicator rather than the professional communication specialist.

## *Communicating for Agricultural Development with Farmers*

Information furnishes the farmer with criteria on which to base his decision-making process.[2] The conditions of risk and uncertainty in agricultural production loom large to the small farmer. He frequently seeks by several means, often intuitive and deductive, to minimize risk. Correct information helps this small farmer to decrease uncertainty when making decisions on the use of technology, investment on production inputs, utilization of

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credit, substitution of machinery for manual labor, marketing alternatives, etc. Therefore, the information to be used must be valid, must have value, and must be timely.[3]

The agricultural extension programs of developing countries have attempted to develop rural areas. Traditionally, these extension programs have concentrated on extending technology for production with little consideration to transmitting information on health, family welfare, community organization, input availability, or market information.

### Mass Media Use

Both mass media and interpersonal communication methods developed in the United States and Europe have been used. Mass media approaches found adequate for the most advanced countries seem to be effective in carrying information to the educated farmers common in those countries and to the elite, well-educated farmers of the developing nations. Several authors, however, have questioned the effectiveness of mass media in reaching the farmers of developing countries with technical messages.[4,5,6,7,8,9] According to Beltran[5] in spite of the enormous increase in the numbers of transistor radios in Latin-America, the radio messages do not reach more than half of the population in the region. He says, "The degree of access of the rural population to the mass media is so low that it is possible to assert that those persons live in a state of 'social incommunication'."

The roots of the limited success of mass media, as a tool for communicating development to small and medium size farmers in developing countries, may be found in the following facts:

(1) Mass media channels have been created in advanced countries for urban dwellers and rural societies of well-educated farmers.
(2) There is a large exposure to mass media for farmers in advanced countries, while small farmers in developing nations are often illiterate or have limited access to newspapers, television, radio, movies, etc.[5]
(3) Mass media in developing countries is largely informative; it promotes the doing of things or the adopting of innovation, with little emphasis on how or why.[10]
(4) The opportunities for teaching the diagnosis of field problems and vivid demonstration of management practices are more easily provided by interpersonal communication than by mass media.

### Interpersonal Communication

Thus, interpersonal communication is usually more effective than mass media in communicating development messages to small farmers in developing countries, but a single message does not reach large numbers of farmers.

It appears that alternate systems of communication based largely on interpersonal channels, but complemented with mass media messages, should be sought for the communication of agricultural development in rural areas. Nevertheless, without disregard for the importance of the role of mass communication in the future of agricultural development, in the rest of this paper I shall deal exclusively with interpersonal communication.

## *Historical Background*

Ansorena[11,12] has analyzed three decades of rural extension in Latin-America. These were initiated in the early 1940's, when their services were established as a result from bilateral contracts between the governments of the USA and Latin-American countries. In the early stages, the emphasis was on extending imported technology with little or no adaptation nor validation. The contribution of the social sciences was practically non-existent, and extension agents were trained almost exclusively in technology through theory courses, plus some training in extension methods developed for U.S. audiences. This latter training in extension has increased in importance since 1945, while a productivity criterion

predominated in the training of agronomists for extension from 1950 until 1960. Since then IICA has played an important role in post-graduate training of extension specialists, oriented primarily to prepare administrators, supervisors, leaders, and teachers of agricultural extension.[13]

## Economic Emphasis

During the 1960's, a stronger relationship was sought in the application of extension to the plans for economic development. Man rather than crops or animals became the object of development. The social variables received more attention in the training of extension workers. The national universities did not yet fill in the vacuum in trained professionals for extension.

In-service training at this stage dealt mostly with the philosophy of extension, sociology, planning methodology, and methods of evaluation. Technical competency was disregarded on the erroneous assumption that university education provided (through theory) all that was needed. Extension agents were finding it easier to direct their attention to medium-sized and large scale farmers more receptive to the kind of technological innovations that they were trying to introduce. Small farmers were almost completely overlooked, although they constitute about 75 percent of all farmers in the region[14] and, in addition, are the ones most needing development help.

Furthermore, the extensionists began to identify some of their failures in obtaining economic growth among small farmers with political and social-structural factors that hinder progress. The extension programs of the various countries were subjected to critical reviews in an effort to find the weaknesses.[15] But the financial resources allocated to the programs were still insufficient for adequate staffing and equipment.

At the beginning of the 1970's, the revival of the Malthusian theory started in the 1960's created ever stronger pressures for economic development. Statistics of the first two years of this decade in Latin-America, with the exception of Brazil, are discouraging; the rate of growth in agriculture falls behind that of population.[16] The gap between the rich and the poor seems to be getting larger; the clamor for social change and revision of social structures becomes louder. This clamor echoes in some of the national governments and even in international organizations such as FAO and IICA.[17]

## Humanized Development

As a result of these phenomenon, and of the reviews of the extension programs during the 1960's, strong recommendations were made to "humanize" agricultural development and to orient efforts towards the liberation of man, the improvement of the small farmer, his family, and his social status—simultaneously with the goal of economic growth in the rural sector. Along the lines of this philosophy, the training of extension workers in Latin-America tended to go also in the direction of "humanization" and building up of social conscience.[18] The acquisition of knowledge is stressed in the disciplines of sociology, anthropology, economics, and communication, and in the fields of land reform, agricultural policy, colonization, cooperativism, farmers organization, community development, and administration of extension. The image of the farmer, particularly the small one, as the object of development is now even more conspicuous.

At the same time, however, the financial resources allocated to extension programs continue to be insufficient; the better extensionists leave for better paid jobs. The majority of the extension agents are chosen from among recent graduates,[15] and the training of these agents continues to follow the traditional theory approaches.

The outstanding Brazilian educator, Paulo Freire, has described the extension agronomist as a communicator of development, erroneously called an extensionist.[19] He emphasizes the role of such a professional as a teacher who must seek the acquisition of permanent and ever increasing know-how by the farmer to allow him to benefit from its

application. The development communicator should not just "extend" information that sometimes may be useless.

### New Models Needed

Freire warns against the tendency of the extensionist to use techniques of persuasion or propaganda inherited from the U.S. The difference between classical extension and development communication, as defined in the revised concept above, is exemplified by Byrnes[19] referring to the behavior of a group of U.S. extensionists, showing that they advocated the adoption of innovations rather than teaching the farmer "how." The first approach aimed to an educated farmer tries to be promotional, resorts to persuasion rather than to information and instruction, and may be useful in developed societies. Development communication, oriented to less educated societies, should be educational. Classical extension sometimes may even attain economic growth but not necessarily agricultural development, which involves not only the increase in production and productivity, but also the education of the farmer and his family and their social and cultural improvement.

It is time to originate new and indigenous models of agricultural development communication, rather than to cling to the traditional extension philosophy and methods. We must come to grips with the undeniable fact that in the real world—although it is possible to isolate technological, scientific, social, economic, and cultural issues for separate study—each one of these components in the agricultural system does not work independently but interacts. Thus, it is not possible to divorce functionally the transmission and application of science and technology from socio-economic relationships.

With this background we may now attempt to analyze some factors important to the extension worker's success.

## *Effective Performance of Extension Agents*

Until recently, the performance of extension workers was chiefly measured on the basis of activities in which they engaged, i.e., numbers of contacts with farmers per year, number of field days, persons present, number of publications distributed, hours of radio programs, number of office or home visits. Other measures included levels of satisfaction of the personnel, farmers, administrators, and the like.[20] These methods of evaluation say little about the results achieved or the capability of the extensionists to communicate effectively about development.

Furthermore, attempts to ascertain those areas, disciplines, or fields in which the extensionist or communicator of development must be competent have been skewed toward either technology or to extension methodology and administration, and more recently toward the social sciences. At the same time, criticism mounted that extension programs did not meet the expectancies of the farmer or that not enough progress was being achieved in rural areas.

### Some Critical Factors

I shall examine a few basic premises underlying the functionality of the professionals working in agricultural development, especially those that communicate the ingredients of development to farmers, and present some of the factors which stem from these premises that are critical to effective performance. Those premises are:

#### *Wide Breadth of Coverage*

Professionals who attempt to cover all or a large proportion of agriculture find their efforts so thinly spread that they never make a substantial impact. The latter often has been the case with traditional extension agents. Therefore, sharpening the focus to a more discrete group of commodities or to a single commodity would increase the effectiveness

of extension performance. This I call a group-commodity specialization, and it involves combinations of crops or animals. Combinations including both crops and animals should be avoided whenever possible (except in cases of livestock and pastures or forages), as it is difficult for a professional to acquire enough basic working knowledge in such different fields to be really effective in working with any of them.

*Large Biological Variability and Socio-economic Complexity*

The relationships among the various physical and biological factors influencing plant and animal growth are complex. Furthermore, additional variability is introduced into the system by socio-economic relationships that interplay with the biological factors in the farmer's world. Therefore, in working with farmers, plants, and animals the professional faces a great deal of biological and socio-economic variability that makes first-hand experience an essential requirement for effective performance. This experience may be acquired by unguided trial and error or through adequate practical training.[21]

*Credibility—A Condition for Acceptance of Messages*

For the message emitted by the source to be accepted and used by the receiver, the receiver must perceive the source as credible. When this condition does not prevail, the message, good or poor, is rejected. In a series of farmer-extension agent communication interactions, the first messages establish a precedent of credibility based on the validity and value of the message.[2] Byrnes' observations have traced the failures of extension agents to the fact that they lack credibility, no matter how well intentioned and skillfully presented the message is. "Often these agents do not command respect, attention, or trust because farmers have learned through the years that many are not technically competent."[22] Credibility may be restored by means of increasing the level of competency of these professionals to make them capable production agronomists and qualified communicators for development. Thus, in turn, competency becomes a condition for credibility.

*Competency—A Condition for Credibility and Effective Performance*

Several authors have questioned the competency of the typical extension agent in the tropics to bring the farmer information that would assist him: (a) to decrease the level of uncertainty and diminish the risk in his farming operation; (b) to adopt new technology that would increase production and productivity; and (c) to improve the welfare of his family and his community and bring about social change at the community level.[10,22,23,24,25]

Data obtained at three international agricultural institutes—IRRI, CIAT, and IITA—point to the science and technology inadequacies of extension workers in the tropics of Asia, Africa, and Latin-America. Such evidence is based on results from tests on practical diagnostic and management skills given to professionals before and after training courses. Scores of the order of 25 to 52 percent were common in those tests for untrained professionals. Training brought these scores to a range of 82–94.[26,27]

Five areas of competency have been presented in Byrnes' "competency model" for production specialists.[10] These are technical competency, economic competency, scientific competency, farming competency, and communication competency. A training program for the "production specialist" should include acquisition of these five competencies as the principal objectives of the training.

## Responsibility for Training

It seems logical to assume that the education of development communicators is a responsibility of the national universities. However, at present, national and international institutions find it necessary to organize programs to train production specialists as development communicators to accelerate agricultural development.

We hope that universities in the near future will accept fully this responsibility and introduce curricular reforms and practical training into their academic programs. Such

changes should allow them to generate competent production specialists qualified as development communicators. In the meantime, the national and international institutions for research and development may have to meet the challenge.

## *New Trends in Training Development Communicators*

Extension agents who are supposed to transfer technology are frequently recently graduated young professionals. They are assigned to work with farmers with no further preparation than a crash course in classical extension methods. These professionals lack the diagnostic skills and management competence needed to cope with the practical problems of production that the farmer faces. Their theory-oriented university education fails to qualify them for the development task.[22,23,24,25,28]

The limitations of competency of recent graduates in extension, eager to work but lacking experience and skills, has prompted national institutions and international organizations to organize training programs to supplement university education and to equip the extensionist with specialized knowledge. Most of those training programs, however, have adopted the classical form of theory courses with particular emphasis on extension philosophy, methodology, and administration.[28,29] Other training courses have concentrated on mechanisms of credit, farm accounting, or pieces of technology taught in theory form,[30] usually scientifically sound but far removed from the realities of the small farmer's biological and socio-economic environment. Often this new technology the extensionist is supposed to extend, has not been tested for validity and value in the farmer's fields.[10] It has been assumed that what increases yield at the experiment station will do the same on the farmer's field, without consideration of other factors such as profit, quality, equipment needs, labor utilization, and other variables. This has occurred in Latin-America and Asia.[31]

There has been, in simple words, a near void in training of competent, skilled production-oriented communicators for development, through the learning-by-doing approaches. These approaches, by teaching both "how and why" at the professional level, ensure greater competency.

### The Postgraduate Internship

Some of the international centers—IRRI, CIMMYT, CIAT, IITA, CIP, and AVRDC—have already developed post-graduate training programs for production specialists. Each center has its own version of the "learning-by-doing" approach. All train through a combination of field tasks and seminar sessions, similar to the approach followed by the medical profession and referred to as the "internship" in a hospital and sometimes including field duty at an assigned location. This concept of the internship has been described by the author in an earlier paper.[21]

Outlined below are the principal characteristics of the postgraduate internship as it applies to the training of "production specialists."

(1) Establishes well defined "behavioral objectives" within the five components of the competency model, and a "training plan" is followed to reach these objectives.
(2) Provides qualified supervision advice and evaluation by direct channel adviser-trainee.
(3) Requires complete dedication full-time.
(4) Gives the trainee responsibility in his activities.
(5) Promotes interaction with colleagues.
(6) Allows time for independent work, review of literature, and preparation of reports.
(7) Utilizes "learning-by-doing" methodology for production and communication which takes place directly in the fields under real life situations of a production system involving farmers and farming operations.

(8) Supplements in-field training with seminar sessions on communication, farm management economics, technology, and experimentation. Active discussion is stressed rather than passive listening.
(9) Provides opportunity to conduct replicated field experiments intended to test the validity of technology on the farmer's fields.
(10) Requires specialization in a crop or animal species or a small group of similar crops or animals.
(11) Seeks to develop skills along with know-how and know-why.
(12) Applies a communication approach throughout the course of training.

## Training for Discipline-role Specialization and Team Work

Other attempts to improve the communication for development with small farmers have been made over the last six years through the so-called "rural development projects" that concentrate the efforts of a team over a small region and on one or few commodities. The now well-known "Puebla Project" was the first of this type and it has set the example for others to follow in Mexico, Honduras, El Salvador, Colombia, and Peru.[32,33]

The strategy of these programs attacks simultaneously the problems that limit crop yields and productivity both from the technological as well as the socio-economic points of view. The professional manpower consists of a core team of four or five role-specialists.[32] By this I mean that each professional is trained separately to fulfill only one of the following roles:

(1) Applied research through experiments on the farmer's fields and aimed primarily toward "validation" of existing technology and testing of innovations.
(2) Communication oriented to bring information on technology to the farmer along with socio-economic education.
(3) Social work oriented toward improvement of the family's way of living, health, and welfare.
(4) Evaluation intended to study and evaluate critically the methods used and their results.
(5) Coordination to ensure that the above activities are carried on in a team effort toward the accomplishment of the development objectives of the project.

Training of the man for the second role is our principal concern in the light of communication for development. For all practical purposes the training of this man should be almost identical to that already discussed for the "production specialist." He must possess the five competencies—technical, scientific, economic, farming, and communication. His training essentially should qualify him in these five areas with the specific objectives of the program in mind.

The members of ALADER (Latin-America Association for Rural Development) agree that the training of the personnel for the development projects must take place largely in the field within the boundaries of existing projects.[34] This training according to them shall follow a practical approach of "learning-by-doing" complemented by interdisciplinary conference-discussion sessions and group dynamics.

The same communication approach for the training of "production specialists" can be applied here not only to the training of the "communicator" in the team, but also to that of the persons in roles (1), (3) and (5).

## Communication Training of Agricultural Production Specialists

The agricultural production specialist, as a development communicator, is a technical man or scientist who must be trained to communicate his knowledge in the best possible way to help achieve the objectives of development.

This man may be trained by professional communication specialists on the ways and means to best communicate the messages for development in the socio-economic environ-

ment in which he operates. A number of instructional plans, varying in content, have been utilized in the past, many camouflaged under what has been called extension methodology.

During the last four years of experiences in training production specialists at CIAT, the plan below has been followed in teaching communication to technical personnel. Behavioral objectives are established, and the trainee at the end of his training must be able:

(1) To formulate clear-cut objectives of communication aimed to audiences of farmers, co-workers, and administrators, and oriented to obtain changes in behavior of these audiences.
(2) To develop communication strategies to accomplish the objectives.
(3) To show personal ability to structure and deliver messages and perceive and utilize feedback information.

Conference-workshop sessions are organized around topics of subject matter selected to fulfill the stated objectives. Those topics include broadly: (1) role of communication in decision-making; (2) purpose and the process of communication; (3) learning process; (4) channels, media, and techniques; (5) group dynamics; (6) article and report writing; (7) communication strategies for rural development.

Emphasis is presently being made in the use of interpersonal communication and the presentation of oral and written information.

The above subject matter is presented to the trainee through an integrated social-science approach in which the discipline of communication is considered not in isolation but interlinking with factors in other social sciences that affect human behavior and development. These factors include material from economics, sociology, and planning—all interplaying in the agricultural system.

This subject matter may be similar to that presented in many other courses on communication. However, a critical difference is introduced in contrast with most courses. This difference is the opportunity to practice in the field, with real farmer audiences, what is taught in the classroom. This learning-by-doing is practiced by assigning the trainee to several small farmers or to a cooperative farm of several owners. He formulates objectives of communication for his audience, plans a strategy to achieve these objectives, including a plan for the communication of development ingredients. The trainee lives with these farmers or visits them daily, communicates with them individually and in groups, carries on his plans for the communication of development ingredients, and writes a case study. All of the training takes place under the supervision of experienced communication specialists working in a team effort with agronomists or animal scientists and farm economists.

As stressed here, the principal role of the professional communication specialist is to train, both through theory instruction and practice, those agricultural professionals who will work as development communicators. In addition, communication specialists may assist in building-in methods of evaluation of the success in achieving communication and reaching the objectives sought by this process.

Another strongly felt need occurs in the area of communication research oriented towards evaluating agricultural education and training including the multiplication of training, and devising strategies in training for agricultural development. (Training in this sense considered as a form of communication.)

Caution, however, must be exercised for the temptation is great to emphasize methodology of communication in the training of development communicators and leave in oblivion the fact that credibility and competence are conditions for successful communication and, in turn, credibility and competence depend upon the validity and value of the message communicated. It would be socially irresponsible to train field communicators without full competency in the practical subject matter about which they are going to communicate.

## *Challenge to the Professional Communication Specialist*

None of this is in any way intended to deemphasize the role or importance of the professional communication specialist. Rather, the non-professional communicator for development, as described here, represents an important communication audience for the professional. These people badly need the kind of help professionals such as represented in this conference can provide. The areas where they can benefit from professional assistance are almost endless. They include audience analysis, communication planning and strategy, communication skills, group dynamics, simple survey techniques, instructional methods, testing techniques, and approaches to evaluation.

Through them the professional can learn of unique communication problems and their novel solutions, gain introduction to field communication activities, and assist directly in the preparation of communication materials.

But the challenge and responsibility rests with the professional communicators. They must not only want to help their non-professional colleagues, but need to develop ways to gain their attention, understanding, and acceptance. This is an immediate and pressing communication goal.

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# Gatekeepers in Agricultural Information Dissemination

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THIS paper draws its data from a number of studies we have conducted in southern Brazil on the present and potential role of the mass media as aids to rural development. Because it is made up of the "borrowings" from a number of studies, it lacks some "ingredients" that would have been included had we specifically researched editors' gatekeeping behavior and criteria for this behavior.

In part, our communication studies in Brazil stemmed from our concern about what we considered to be an overly optimistic view in much of the literature as to what the mass media can and are doing to aid rural development. This literature also reflects a tendency to confuse the potential role of mass media with their present performance.

Most studies on the role of the mass media in agricultural development look at farmer contact with the mass media. A significant correlation between mass media use and farm practice adoption is a common finding. But it is rarer to find farmers mentioning the mass media as major sources of agricultural information. A plausible explanation is that farmers who use the mass media are more receptive to change and have more resources available to try new practices, but that the mass media are furnishing little information relevant to their agricultural problems.

## *Media Content*

Few studies have looked at media content, and even fewer at the relevance, adequacy and understandability of this content.

In a 1968 study, we looked at the agricultural news published in the newspapers of the state of Rio Grande do Sul.[1] The 54 newspapers studied printed 7,875 column inches of agricultural news in the week studied. This represented 5.3 percent of the news hole for the four urban papers published in Porto Alegre, and 8.3 percent of the total news published by newspapers in the interior of the state.

There is no objective way to determine how much agricultural news is enough. But based on these quantitative measures alone, we might conclude that the press was serving the agricultural sector quite well. This optimism is dampened when we look at the qualitative analysis.

We coded all agricultural news into three levels of content relevance. That coded as having high situational relevance was defined as information useful for farmers to make decisions in their farming operations. To be classified in this category the answer had to be "yes" to the questions: "It is reasonable to assume that at least some of the farmers living in the circulation area of this newspaper could benefit in their farming operations by having read this information? Could the information help them do something different?"

Of the 725 items coded, only 64 had high situational relevance. Furthermore, there was considerable difference between the urban and interior press. Only 5.5 percent of the agricultural articles in the four Porto Alegre newspapers were coded as having high situational relevance as compared with 11.8 percent for the interior press.

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This difference between the urban and interior press is probably situationally determined rather than caused by differences in gatekeeping criteria. At least in this study, the urban press demonstrated ample evidence of a pro-agricultural editorial policy. As one indication, the four urban newspapers published 16 editorials supportive of agriculture in the week studied.

## *Information Relevance*

Readers and their problems are simply more heterogeneous for the widely circulated urban press than for smaller interior newspapers. Regardless of intention, urban newspapers cannot give localized recommendations very well. There is an inverse relationship between the relevance of information that can be provided by a media outlet and the size of the target audience.

Unlike most developing areas, the interior press in Rio Grande do Sul is widespread and quite well developed. Nearly all parts of the state are serviced with what could be called a "local" paper. Over a half dozen studies in various parts of the state have included farmer-readership measures and have reported this at from 26 to 41 percent. This indicated to us that newspapers at least had a potential to play an important role in agricultural information programs. However, most evidence (particularly the content analysis study) showed their role to be more potential than actual. We attempted to explore the reasons for this.

The situationally relevant agricultural information stories we have referred to are not typical newspaper stories. Their purpose is to instruct rather than merely inform about the events of the day. They generally lack the newness or immediacy of most news articles. The typical newspaper editor's time is completely taken up with reporting local sports, crime, politics, etc. He is too short of time and help to dig out the information for good instructional agricultural articles. He is too busy reporting the news.

Usually this kind of instructional article is institutionally produced rather than written by newspaper editors and reporters. Generally someone from an agricultural development agency or organization will provide this material for the mass media. Rio Grande do Sul editors apparently receive little such material.

## *Agents' Mass Media Use*

In a 1965 survey of 257 local change agents in the state, Bostian and Schneider found that 60 percent of the agents had not written a single newspaper article or column the previous year.[2] In a 1967 study of the same population, Hyman found that for those agents who reported their mass media use, 52 percent had not written a single article for newspapers the previous year.[3] Of the agricultural stories in our content analysis study for which it was possible to determine the source, only 4 percent were written by agricultural development agency personnel. In a 1970 study, we asked 17 change agents if they prepared material for newspapers. For the 13 who said they did, the median number of articles prepared was five per year.[4]

ASCAR, the state extension agency, has been a heavier user of mass media than other agricultural development agencies working in the state. For 1970, ASCAR reported that 556 newspaper articles were published. Considering just those municipios in which newspapers are published, the average came to 11 per municipio.[5]

The evidence showed that little agricultural news with situational relevance was being produced by or for newspapers. The unanswered question was whether editors would publish more of these articles if they were made available to them.

In a Colombian study, Felstehausen interviewed urban newspaper editors and found them reluctant to devote much space to agricultural problems because of a limited farm audience.[6] This does not appear to be the case in Rio Grande do Sul. Conversations and

correspondence with newspaper editors suggested that the quantity and quality of agricultural information published is limited more by a scarcity of articles than by editorial decision. This appears to be true for the metropolitan press as well as the interior press.

All of this represents bits and pieces of evidence that seemed to show a willingness on the part of editors in the state to publish instructional agricultural articles. We decided to test this more directly.

## *Editors' Use of Articles*

With the help of faculty members from the College of Agriculture and Veterinary, Federal University of Rio Grande do Sul, we prepared six agricultural articles. These were identified as news releases from the above mentioned institution. The articles were mailed one per week to all of the newspapers in the state. A photograph was sent along with the last article.

The state press association (ADJORI) receives most, but not all, of the newspapers published in the state. We decided to include all papers for which ADJORI received over one-fourth of the copies during the study period. This left us with 34 newspapers published in the interior. During the study period these papers published 720 editions, and we were able to read 437 or 60.7 percent of these. Although this 60.7 percent didn't represent a random sample in the statistical sense of the term, there is no obvious reason to consider these papers different from the remaining 39.3 percent. Accepting this assumption of representativeness, the 34 interior newspapers would have published 84 articles during the eight-week period for a publication rate of 41 percent.

After the eight-week period, we continued to monitor the interior newspapers, although not as closely as previously. Three more of the articles were published, boosting the publication rate to 43 percent. Had we been able to find all articles printed late, the publication rate no doubt would have been higher. Three articles were published three months after we mailed them.

Fourteen of the 34 newspapers didn't publish any of the articles during the eight-week period. One published one of the articles later. Based on just those which published articles, the publication rate for the eight-week period was 70 percent. The percentages cited are based on the number of articles we sent. It assumes that all arrived in the newspapers' offices, which very well may not have been the case.

We were able to check all copies of the five Porto Alegre newspapers. Two of the newspapers printed one article, and one paper printed two. This comes to a publication rate of 13 percent. Three of the interior newspapers and one Porto Alegre paper published the photograph we sent.

Newspaper editors may have been skeptical about receiving news releases of this type for the first time from the university—and receiving them without any letter of announcement of a new press service starting. However, if this had been true we would have expected publishing rates to go up as the service continued, and this was not the case. On the other hand, 41 percent of the newspapers published none of the articles.

In summary, the results are very encouraging. Most of the newspapers published at least some of the articles. The 43 percent publication rate is higher than we would find in most countries where such agricultural articles are sent out by universities on a regular basis. Furthermore, all articles were published in their entirety; not a single story was shortened. Finally, at least some of the editors thought enough of the stories that they saved them until they had room in their newspapers to publish them.

We conclude, then, that most newspaper editors in Rio Grande do Sul are quite willing to open their pages to instructional agricultural articles. However, these articles have to come to them without any great effort on their part. In a 1965 study, Bostian and Schneider found that 51 percent of the change agents working in the state had never once

been asked by a newspaper or radio station for agricultural information the previous year.[7] Bostian also found that change agents' use of mass media depended to a large extent on the training they received in communication techniques. Presently, nearly all new agents in the extension service receive such training.

## *Readership Studies*

Many agents do not prepare articles for newspaper or radio because they greatly underestimate farmers' mass media use. A check of 17 change agents in the central part of Rio Grande do Sul showed that over half of them said that not over 5 percent of the farmers read newspapers. Yet studies in six separate parts of the state have all come up with more than four times this percentage of farmers reading newspapers. Agents also underestimated radio use, although not as greatly as they did for newspapers.

Even more surprising than the low average level of agents' estimates of farmers' mass media use is the wide variation in their estimates. For the 17 agents, the estimation of the percentage of farmers who read newspapers regularly ranged from 1 to 30 percent. For radio the range was from 20 to 98 percent. It should be remembered that all of these agents were from the same area of the state. Surprisingly, editors' estimates weren't much better, particularly for farmers' radio use. An N of five dictates caution in our conclusions, but radio-use estimates ranged from 45 to 90 percent. Most Rio Grande do Sul studies show that 85 to 90 percent of the farmers listen to radio.

Publication is only one of a series of necessary conditions before an article can have some effect. The article must also be read. To measure real and relative interest in agricultural articles, we conducted a readership study of all articles published in one issue of *Gazeta do Sul*—a bi-weekly newspaper published in Santa Cruz do Sul. Our study population consisted of all the farmer subscribers to this newspaper in the municipio of Santa Cruz do Sul. The 111 farmers randomly drawn from this population were interviewed approximately one week after the newspaper was published.

Reading was defined as having read 50 percent or more of an article. The issue used for the readership study contained nine agricultural and 48 non-agricultural articles. Average readership of agricultural articles was higher than for any other content category with the exception of news about activities of the municipio government. For the latter category, there were only two articles and both appeared on the front page. Comparing agricultural with non-agricultural stories, the average readership was 42 percent vs. 27 percent.

Considering all farmers in the municipio, our data would indicate that if the local newspaper publishes an agricultural article, it will be read by 4 to 5 percent of the total farmers. A later study by Schneider (which will also be reported at this symposium) led to the same conclusion.[8] Four to five percent may not seem like much, but it does mean that the newspaper message will be read by about 450 farmers. Other than by radio, it is difficult to reach that many farmers at one time.

## *Understanding Messages*

Mere reception of messages is not enough; they must be understood. The conceptualization of communication has changed from one of transfer of ideas from one person to another, to an act of sharing. Signs and symbols are transferred, but meaning comes out of some communality of experience between partners in the communication transaction. At the very least, there must be some commonness of code or language. Yet studies on comprehension of some terms have consistently shown writers often over-estimate farmers' technical vocabulary.

The absence of direct and immediate feedback with the mass media can result in a writer producing material for years without really knowing he is not being understood.

What is worse is when he is so preoccupied with impressing his colleagues that he doesn't really make an honest effort to be understood by his ultimate audience.

In this study, we selected 10 terms widely used in newspapers, agricultural magazines, and extension bulletins. The terms were: contour farming, hybrid, erosion, seed inoculation, consortium (growing two crops together), artificial insemination, liming, corrective fertilizing, maintenance fertilizing, and crop rotation. We informally checked our list with a number of agricultural professors who agreed that these terms were widely used in messages to farmers. They also felt that farmers had no problems understanding these terms. Yet even with considerable leniency in accepting answers as correct, only three of the terms were understood by more than 30 percent of the farmers interviewed. Corrective fertilizing and maintenance fertilizing, terms widely used in a soil recuperation campaign taking place in the study area, were understood by only 28 and 14 percent respectively.

We also had 16 change agents and five editors in the area estimate what percent of farmers they felt would understand these terms. Both of these groups consistently overestimated farmers' comprehension of these terms, with extension agents' estimates most out of line.

As part of the readership study reported above, we wrote three agricultural articles for the newspaper issue studied. These articles had readerships of 48, 44 and 43 percent respectively. In each case, we thought that the articles were well organized and written in such a way that the majority of farmers would understand them. To test knowledge level, we asked two questions about each article and then divided the respondents between those who read all the article and those who read none of it. The average correct answers were 31 percent for non-readers and 40 percent for readers. Although readers did better than non-readers on the knowledge test, there was only one question for which over half of the readers knew the correct answer.

Part of the reason for our readers not doing better is because we too were guilty of using unfamiliar terms. In one article, we used the word "protein" five times without adequately explaining its meaning. Of the 111 farmers interviewed, only one had a really good idea as to what protein is. Some of the readers tried to make sense out of the message by associating the unknown term "protein" with a more familiar term, "vitamins."

This study, plus data from some of our other studies, clearly shows that most of the technical articles written for farmers in Rio Grande do Sul are not well understood by the majority of readers.

## *Information Seeking*

Earlier in this paper it was argued that the situational relevance of mass media messages are often ignored in communication studies. Yet the usefulness of information depends on how well it addresses itself to the existing situation and the nature of the situation itself. Situational or infrastructural factors set the parameters in which an individual can make decisions and act. Even apparently relevant information can be useless if it does not fall within these infrastructural parameters or is not accompanied by changes in the infrastructure. Whiting noted this when studying impediments to farm practice adoption in Afghanistan. He found that extension agents had little new information to extend and farmers lacked supplies and credit to adopt the few innovations available.[9] Rochin reports similar findings from Pakistan.[10] As Bordenave points out, communication is an adaptive tool. Structural limitations to a large extent determine the use of the tool.[11]

Through a Q factor analysis, Grunig developed typologies of entrepreneurial and non-entrepreneurial rural-decision-makers in Colombia. He found that as the situation became less restrictive, allowing a wider range of possible decisions and action, information seeking and other communication variables became more important in determining the typologies.[12]

To adequately test the influence of infrastructural restrictions on information search, we decided that the infrastructural factors included would have to be of concern to nearly all farmers in the study area, and that this concern would have to be nearly equal for all in the sampled population. Based on these criteria, the two infrastructural factors selected were the number of markets available in which farmers could sell their products and the range of prices paid. We included the five major products marketed in the area. Going from the most restrictive to least restrictive market situation these crops were wheat, milk, tobacco, swine, and soybeans.

As several studies have shown, some farmers are inherently greater information seekers than others. To control for this, we let each person act as his own control and investigated the difference in his information seeking behavior for the two products he sold which brought him the greatest gross income. Searching for information is, of course, only necessary when you don't receive it without looking. Because of this, we determined the number of sources and amount of market information farmers received without having to ask for it, as well as their search efforts.

Considering the number of sources and number of times farmers received price information without searching for it, we found no significant difference on these variables for farmers' most and least restrictive markets. Information received without asking was about equal for the two products each farmer sold.

For information seeking the situation was entirely different. Here farmers clearly searched for more price information in the least restrictive market. Fifty-two searched for more of such information in the least restrictive market as compared with only 12 for the most restrictive market. The same holds for the number of different sources from which they searched for price information. Forty-three went to more sources for price information about the product they sold in the least restrictive market versus only eight for the more restrictive market.

As a check on our information search data, we asked farmers to name the markets in which they knew the price being paid—and to give the prices. Here again, a significant number of farmers knew the prices paid in more markets in the least restrictive situation. All differences linked with information seeking were significant at the .001 level. In addition to checking farmers' past information receiving and seeking behavior, we asked them how valuable they would consider a monthly bulletin listing buyers and prices for the products they sold. Here again, the data clearly supported the hypothesis. Going from the most to the least restrictive market, farmers progressively gave greater value to a market information bulletin.

The potential value of information programs are determined by the parameters of decision-making open to a farmer. Information programs must fit a farmer's situation, not an idealized version of what it would be nice for his situation to be. If we define information as something useful, it is the user rather than the sender who determines its presence. What is transmitted is data—anything which can be perceived by the senses. It becomes information to the extent that it is responsive to some felt inadequacy or problem. The efficiency or adequacy of communication efforts is measured by the frequency and extent to which the transmitted data is useful input for problem solving behavior and thus becomes information.

## *Demand-Supply Concepts*

As Guerrero and others have pointed out, the implications of treating information as a "demand" concept rather than as a "supply" concept are tremendous.[13] Development is measured in terms of ability to cope with problems rather than the degree to which some pre-set goals have been reached.

The farmer becomes the reference point for agricultural policy and agricultural information programs. How different this is from the common "pipe-line" approach in

which the role of information programs is seen merely as the transfer of findings from laboratories and experiment stations to farmers. Success is measured mainly in terms of speed of transfer. If transfer and adoption are slow, researchers blame the extension agents who in turn blame the backward, recalcitrant farmers.

There are serious shortcomings when an agricultural development agency or a mass medium uses this kind of criteria to judge the adequacy of its communication or extension methods. It is based on the tenuous assumption that the accumulate pool of knowledge should be known by all farmers and that if they knew this, their information needs would be quite adequately met. It ascribes great wisdom and benevolence to the producers and disseminators of new farm technology in that it assumes that they know what farmers need and want. To a large extent this is true, but if the major mode of communication is to farmers, rather than with them, there is no continuous adjustment mechanism to keep research focused on the problems farmers feel most acutely.

Groot asked Philippine farmers and researchers to list the characteristics they considered important in new rice varieties. Although their lists had considerable overlap, scientists left out some factors farmers considered very important. For example, farmers did not want a rice variety that would have to be planted or harvested at the same time their available labor was tied up planting and harvesting other crops.[14] Rao reports similar findings in India where he says research on new crop varieties has overstressed physical characteristics like yield, disease, pest or drought resistance to the neglect of factors like grain weight, shape, color, size, taste, and price prospects.[15]

What is needed is more dialogue with farmers rather than merely communicating to them. Unfortunately, we not only aren't very much disposed to do this, we also aren't very well equipped to do so. Two-way communication is not easy to bring about. Formal organizations are structured to facilitate top-down communication rather than bottom-up. Change agencies expend great efforts in diffusion of information, but little effort in infusion. Following Groot's definition,[16] by infusion we do not mean the same thing as feedback. Feedback, as generally conceptualized, is the response to a message received, while infusion is more of an elicited response of a felt need. It is information-seeking on the part of the diffusion or change agency.

## *Fitting Messages to Needs*

What holds for change agencies' communication efforts is also true for mass media use in general. Here too the relevance of instructional articles is in part a function of the extent to which clientele guide the subject matter of the messages. The most successful programmers of farm radio forums have long recognized this. But here again, the lack of homogeneity of situations and the difficulty of maintaining channels for infusion of information makes it nearly impossible for any constructive dialogue to take place between farmers and regional or national media.

A reasonably good fit of messages to felt needs on most problems can only take place in a fairly small geographic area. The situation requires a local writer. As we mentioned earlier, the local editor is not apt to fill this role. We earlier suggested that local change agents should fill this role, and we reiterate it here. They should not only be in the best position to know the answers to farmers' questions, but should also know better than anyone else what these questions are. When change agents try to keep up on both kinds of knowledge, they usually find that farmers put considerable faith and credibility in them and are interested in and responsive to their advice. Rochin found this to be true in Pakistan[17] as we did in Brazil. This has also been the experience of the Puebla Project in Mexico. Furthermore, change agents are often in the best position to influence the availability of needed supplies and services to go along with the information provided.

Perhaps the kind of agent described above is also in most cases more ideal than real.

Byrnes has warned us not to merely assume the competence of change agents,[18] and Grunig has pointed out that change agents are often products of organizations with norms and values different from those of the client group.[19] Nevertheless, accepting these very real caveats, we feel the local change agent is still far better prepared and able than most to prepare relevant media fare.

Farmers themselves, particularly through their rural organizations, can also constitute a significant source of useful information in the media. We were surprised at the amount of this kind of information we found in the Rio Grande do Sul press, particularly in paid announcements by farmer cooperatives, rural syndicates, and other farmer organizations. These announcements would report such things as the day the cooperative would start buying wool; that a contract had been signed with a local pharmacy giving members a 5 percent discount on all veterinary supplies; that credit would be available through the cooperative; etc.

Of the 37 such announcements published during the week of our content analysis, 27 percent were coded as having high situational relevance. Furthermore, most of these announcements had value for a substantial percentage of the farmers in the area. What is now published in these announcements is principally for the use of the organizations' members only. However, our suspicion is that the willingness of local editors to open their pages to agricultural news from university, experiment station, and extension sources would also be extended to these organizations if they wished to provide general agricultural development information. Furthermore, through media use these organizations could reflect to outside agencies and policy makers the concerns most acutely felt by their farmer members. In this sense, the media could be used to carry infusion as well as diffusion information. At least a modest effort toward dialogue could result.

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# Analysis of Communication Research of Significance to Rural Development in Asia and Research Needs for the Future

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IT is quite difficult to make generalizations about Asia, considering its size and wide diversity of cultures and sub-cultures. However, geographic and cultural factors make it possible to establish groupings, e.g., South Asia, East Asia, and Southeast Asia. South Asia includes the countries in the Indian sub-continent: India, Pakistan, Bangladesh, Sri Lanka, Afghanistan, and Nepal. East Asia covers China, Japan, Korea, Mongolia, and Taiwan (Formosa). Southeast Asia consists of nine countries: Burma, Thailand, Laos, Cambodia, Vietnam, Malaysia, Singapore, the Philippines, and Indonesia. This paper will concern itself, to a large extent, with Southeast Asia, without excluding selected countries from South and East Asia.

Southeast Asia has a population of over 200 million which is approximately that of North America and a little less than the population of the Soviet Union. The great bulk of the population speak Malay or Malayo-Polynesian. The rest are Tibet-Burmans, Thai Khmer, Mon Vietnamese, and a number of minor ethnic groups which have their own distinctive dialects. The mainland Southeast Asians (except the peninsular Malays) are all Theravada Buddhists. The Malay-speaking groups are predominantly Muslim except for the Filipinos who are mostly Catholic Christians.

The entire sub-region, except for Thailand, is newly emerged out of a colonial past and, thus, share more or less similar experiences in this regard. Part of this stock of experience includes influences toward Westernization and modernization. This modernization or, development, as lately put, has taken the form mainly, (with the exception of Singapore) of rural or agricultural development.[1]

Characteristic of Southeast Asia insofar as its agricultural economy is concerned are the following features: (1) monocultural export dominance; (2) preponderance of perennial crops; (3) duality of small holder and plantation production; and (4) the existence of food deficit and surplus area.[2]

The breakthrough to development is achieved through the "modernization of rural life."

> ". . . development in Asia . . . is no longer a question of the priority of industry over agriculture. It is a question of modernizing rural life . . . as a basis for continued rapid industrialization. Without the modernization of rural life, industrialization can be damped down or even throttled, not only by the pressure of *population* or *food supplies* (underscoring supplied) or by the lack of adequate industrial raw materials or agricultural exports abroad but also by the inadequacy of the domestic market itself."[3]

This paper will address itself to a discussion of communication research of significance to the process of "modernizing rural life" specifically in the fields of agricul-

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ture, nutrition, and population. The information on which the discussion is based was obtained from field studies conducted mostly in Japan, Korea, Taiwan, India, and the Philippines during the last 10 or 20 years, as well as from existing literature on the subject-area. Included also are the writer's experience and observation in the various countries of the sub-region which reinforce study findings.

## *Agriculture*

### Agricultural Communication Research

A great number of the studies dealing with the process and effects of communication have been conducted for the most part in relation to agricultural development. Done mostly in Korea, India, and the Philippines, these studies focus on the dissemination of new farming practices and others related to rural community development.[4]

The passing of traditional, antiquated farming practices in the above countries of the sub-region may partly be attributed to the diffusion of new farming methods by various types of rural communication channels. This is one of the main findings of much of the village research on the communication process done in the area during the last two decades. The research has dealt for the most part with sources or communicators of new farming technology, as well as the recipients of this type of agricultural information.

The great bulk of this research has been done on the macro level, utilizing data obtained from sample surveys, with the farmers and village elders usually serving as the respondents. Some examples are: Agricultural innovations in Indian villages, Agro-information flow at the village level, the human variable in farm practice adoption in Philippine villages and knowledge and practice of new farming methods. Those conducted at the micro level have dealt with an analysis of "cases," i.e., particular agro-cultural innovations such as high-yielding rice and corn varieties, fertilizers, pesticides, and others in a few villages ranging from one to less than five per study. The few experimental studies have centered on the comparative effectiveness of various communications media and change approaches or strategies.[5] The studies have been undertaken by individual researchers or groups of researchers in communication institutions based mostly in privately-owned universities. Further, the researchers usually have had training and experience in North American schools which have a strong program in diffusion research.

### The Field Worker

The research findings have identified the field worker (or Extension worker in some countries) as the central character in the drama of change in the villages of the sub-region that are covered by Extension programs. The great majority of these field workers come from the ministry/department of agriculture and its subsidiary agencies. The rest are from national, private institutions or from voluntary organizations affiliated with international community development or rural reconstruction movements (e.g., Thailand Rural Reconstruction Movement, Philippine Rural Reconstruction Movement, etc.). In some countries, these workers are college degree holders, whereas in others they are high school graduates with training in vocational agriculture.

The positive response of the rural folk to farming innovations has been due to a large extent to these field workers. Their success in convincing farmers to adopt the new farming practices has been attributed to their knowledge of new agricultural technology, their oral communication skills, their competence in demonstrating the effectiveness of the innovations, their social stature in the village community, and their "smooth, interpersonal relations" with the village constituency, in general.[6]

### Rural Communication Network

The Extension worker, however, is only one of several key individuals and groups in the Asian Rural communication network which plays a significant role in the diffusion and

adoption of farming innovations. The others are the village elders, the farmer and his wife, neighbors, relatives and friends, religious leaders, community leaders (often the village council members), formal and informal groups, and various types of traditional/folk media.

The village elders are the venerable old men who are highly respected by the village folk because of their age, wisdom and experience, and large following in the community. They often endorse the innovation and, in some countries of the sub-region, the village elders also function as opinion leaders or "influence" persons. In other countries these rural influentials may include the elective village council members, the proprietors of land (where agrarian reform has not been implemented), religious leaders, and the professionals. This group has been identified in some studies as legitimizers of the farming innovations, particularly where the effectiveness of the new technology has been amply demonstrated. In a number of cases, they have been shown to exert social pressure on farmers, thus facilitating the adoption of the innovation.[7]

The farmer has played a dual role in village change. He not only receives agricultural information but also acts as source and as channel, relaying the information he gets to others if he deems it important and useful. Studies in Japan, India, Pakistan, Korea, Taiwan, and the Philippines have shown the farmer as information-seeker and information-giver of farming and related data. This situation however, is characteristic more of the modernizing villages.

In the isolated, tradition-bound villages, farmers who obtain new technological information from initial sources such as Extension workers tend to hold on to the information rather than pass it on to others. This behavior is due to one or more of the following: (1) the farmer is not prone to risk-taking; he cannot take the risk of being embarrassed or ridiculed if the new practice fails; (2) he is skeptical; he doubts the efficacy of the practice until he has tried it and proven its effectiveness; (3) he is not adequately motivated on the merits of the innovation so that he cannot recognize its significance until he has tried it and succeeds and sees the other farmers' favorable reaction to his success; and (4) he feels it is his good fortune to get the information and that other farmers will have their own chance at one time or another.

On the other hand, the farmer's wife, in some of the Southeast Asian countries, has functioned as initiator of homemaking innovations such as new ways of preparing food; (where no shortage exists), food preservation, needlecraft and handicraft, new kitchen layout, household gadgets, front yard or back ground gardening and home planning, and building sanitary privies. In a few countries she provides social support to agricultural innovations, thereby facilitating their legitimation. The rural housewife also shares decision making with her husband with regard to the adoption of modern agricultural technology.[8]

Village studies in Thailand, Malaysia, Korea, and the Philippines have revealed the exogamous character of village marriages as evidenced by the observation that often neighbors and friends are also relatives. This is especially true in villages which have relatively less exposure to urbanizing influences. Although kinfolk sometimes live in non-contiguous villages, they maintain reciprocal ties characterized by the performance of mutual obligations and the sharing of mutual benefits. In this process, the spread of new technology, especially on their means of livelihood, usually farming, is facilitated through these functional relationships and filial ties.

In countries where villages are governed by groups usually called councils composed of elective officials, new farming technology is often channeled through these institutionalized groups. Because of their advantages in terms of greater and prior exposure to modern practices and sometimes higher socio-economic status, the council members are often the early adoptors of farming and related innovations. They also help legitimize these innovations by initiating group discussions, encouraging greater interaction, and leading in field demonstrations to test their effectiveness and adaptability to the village situation.

These formal groupings which help in the dissemination of new agricultural practices include, as previously mentioned, the village councils, the parent-teacher associations, the farmers' cooperative and credit organizations, farmers' marketing associations, homemakers' clubs, and youth clubs. In countries like India and the Philippines, one finds rural media groupings as well as the radio forums and the teleclubs.

There are also the small, informal groups such as neighborhood associations which meet irregularly. These groups are usually preferred to formal groups which do not allow the free flow of information due to the observance of 'protocol' and the stratification between the leaders and the followers. The venues for these informal encounters are the house of the chieftain, the village store, the village's place of worship where such exists, and by the cool river banks and the roadside fringed with shady trees.[7]

## The Mass Media

Available agricultural communication studies have established the fact that the personal channels at the village level which have just been discussed are more effective than the mass media in the adoption of farming innovations. However, low economic and literacy levels have made their reach in Asia's villages much too limited to leave the communication support to agricultural development entirely to them.

With the exception of radio, the mass media and mass media aids—newspapers, radio, television, film, magazines, leaflets, pamphlets, posters, comics, etc.—have not filtered down to the grass roots to any appreciable degree. This is due to the inaccessibility of many villages resulting from inadequate transportation facilities and also to poor distribution procedures and practices.

In villages covered by the Extension program of the government, where such exists, movies shown by mobile vans which carry messages on modern agricultural practices command high viewership and credibility rating among the rural folk. With the advent of the transistorized radio, a new and powerful mass medium came into being and dominated the rural media scene. Because of its wide reach, both physical and psychic, this medium has accelerated word-of-mouth communication of new farming practices.

The print media, perhaps because of their relatively higher costs and the low literacy levels obtaining in Asia's villages, have yet to demonstrate their effectiveness in terms of effecting the acceptance and adoption of new agricultural technology. Studies in recent years show that, in combination with other media, such as radio and personal channels, print media can be useful aids in bringing about rural development.[8]

## Messages and Audiences

"The medium is the message" has yet to be demonstrated in rural Asia and documented in rural communication research done in the area. An analysis of research findings show that messages have to have certain attributes to be understood by their intended audiences. These include the use of: (1) realistic illustrations (e.g., photographs) to support the text; (2) informal, personal approach; (3) words and phrases that are simple and familiar to them; and (4) the use of symbols which exist in their midst. Moreover, the messages must be consonant with existing value orientations and be within their range of experience.

For purposes of rural development, study findings on rural audiences deserve close scrutiny by development strategists. Available studies in this field have focused on target audiences as groups with reference to their socio-economic attributes, attitudes, value orientations, motivations and aspirations, media preferences, reactions to media messages as well as the effects that these messages have had on them in terms of changes in levels of awareness and knowledge and, to a limited extent, attitudes and behavior vis-a-vis selected agricultural innovations.

Insofar as these variables are concerned, the findings exhibit a variance not just between countries of the sub-region but also within countries. In addition, for several of the less developed countries, the audience studies were undertaken as part of benchmark surveys for development such as agrarian reform and allied projects such as cooperatives, statistical surveys of households, advertising and marketing studies and pre-election pools. Those not included in this classification were mostly exploratory studies with very limited area coverage, small samples and non-rigorous research methods. All these factors militate against their use in policy and planning for rural development on a large and meaningful scale.[10]

## *Nutrition*

### Health Studies

An analysis of health studies undertaken at the rural level in the sub-region which have relevance to nutrition reveal the following: (1) by and large, rural housewives do not plan their meals at all and only a small percentage do so in terms of nutritive value, appearance, and variety; (2) meals served are highly deficient in vitamins (A and C in particular), proteins, fats and oils; (3) breakfast is the poorest meal of the day and supper the best (i.e., families which can afford to have three meals per day); (4) fruits available in the backyard are usually sold rather than served; (5) food preparations and cooking methods result in loss of nutrients (e.g., washing rice two to four times, overcooking leafy vegetables, etc.; and (6) food storage facilities are very inadequate and often do not exist at all.

The causes of malnutrition are as varied as they are numerous. A main factor is the lack of necessary information on food and nutrition which has resulted in the generally low nutritional level of Asia's population. A study of food beliefs and dietary practices among rural women pinpoint general areas of nutrition information in which common misconceptions were reported. It also suggested that "food beliefs and nutritional knowledge serve as the framework for ideas about proper food selection on the basis of which one can safely predict the kinds of food a housewife will serve the family."[11] The existence of some beliefs and practices that adversely affect food intake has also been adequately documented.[12] This lack of sound nutrition information apparently obtains not only on the part of the people in general but also on the part of the community workers responsible for nutrition education. These workers include the home demonstrators in villages covered by the government's extension or health program.

### Factors Influencing Adoption

Studies have indicated that factors associated with the adoption of food innovations include educational level, age of the housewife, income of the household, number of children of school age in the family, membership in peer and reference groups, stage of the family cycle, and size of the household.[13]

Housewives with high education, who were younger and whose husbands had high income, tended to plan balanced meals for longer periods, to have better quality food, to keep records, and to rely mostly on reading matter, demonstration, and radio for information on food preparation and innovations. In like manner, housewives in the early stages of the family cycle were also prone to adopt these innovations.

In general, farmers tended to have poorer diets than teachers, carpenters, and others having non-farm income.

Other studies[14] point to village projects such as the Rural Health Demonstration Units and Rural Health Training Centers as the vehicles for the dissemination and adoption of health innovations including their nutrition aspects. The projects utilized approaches such as health and nutrition education through personal contact, group contact,

collaboration, and coordination with other allied agencies and all these supported by mass media. A number of specific strategies were effective in inducing acceptance of the innovations, namely:

(1) An understanding and acceptance of the people and their health and nutrition practices by the health workers resulted in the acceptance of the latter by the people. This acceptance facilitated the acceptance of the health and nutrition practices.
(2) Minimizing the social distance between the health workers and the people enabled the latter to identify themselves with the health workers and made them more receptive to change.
(3) Planning and working out public health and nutrition programs, with and through the local health staff and the accepted community leaders and "gatekeepers," ensured the success of the program. Since people identified themselves with their local leaders, it was observed that authoritative acceptance of health practices from these people who were held in high esteem led to continued acceptance.
(4) Continuity, availability, and adequacy of health services and facilities also helped in ensuring continued practice of the newly adopted innovations.
(5) The multi-disciplinary approach which introduced the health and nutrition program as part of a total community program helped greatly in motivating families to accept the innovations.

In recent years, there has been a growing recognition in some countries of the sub-region of the relationship of nutrition with other aspects of health, such as family planning. Information campaigns have been based on these propositions: (1) generally, larger families mean poorer nutrition in developing countries; (2) better livelihood requires nutritional as well as family planning advice; (3) where nutritional conditions are at their worst, both family planning and nutritional advice are urgently needed; and (4) only this combined approach can bring optimum quality of life.[15]

Two communication approaches are presently under assessment in two countries of the area: (1) nutrition education accompanied by a sound and simple demonstration and practice in food preparation, and (2) integration of nutrition with family health/planning as the basis of an intensive health education and public information campaign.

## *Family Planning*

### Asia's Population

The Asian sub-region contains six of the world's 10 largest countries in terms of population: China, India, Indonesia, Japan, Bangladesh, and Pakistan. If the present growth rates continue, Asia's population could double in the next 35 years. Although family planning programs are being implemented in almost all countries of the sub-region, there is still a considerable lag between gains in diminishing birth rates and the increasing population growth. Asia's birth rates are estimated to be between 40–50 per thousand population while death rates vary between 16–25 per thousand population.

The increasing population is a major factor that has deterred Asia's economic growth and impaired health improvements. Available information bears out the fact that more births means greater incidence of illness for both mothers and their children. Not only will expenditures for medical services and medicines eat a considerable amount of the family's budget, but other necessities as well. Basic essentials like food, shelter, and education are adversely affected by the dwindling budget.

Many Asian countries, on the other hand, have continually implemented family planning programs with fair success. This success has been attributed to the following: (1) the adoption by many governments of an official policy in family planning; (2) the cooperation of private, voluntary agencies; (3) foreign aid to the programs that is both, substantial and

continuing; (4) progress in medical technology; (5) clinic services support; (6) dedicated personnel; and (7) adequate communication support to the programs.[16] This section of the paper will discuss the last variable on communication support to family planning programs.

## KAP Surveys

Countries in the sub-region with family planning as an official policy have extensively implemented family planning programs. They have frequently used all forms of interpersonal and mass media to convey their respective messages, describing the different contraceptive methods, discussing their advantages and disadvantages, using gimmicks, symbols, and exhibits to attract the attention of the greatest number of people possible.

A review of knowledge, attitudes, and practice (KAP) studies in Asia reveals that, in general, sophisticated or detailed knowledge of family planning, particularly of methods, is low, but there is a high percentage of approval. This approval of family planning is a function of education, income, and other socio-economic and related indices including communication. In spite of the high approval, practice in most countries is generally low due to some intermediate factors such as inaccessibility of clinics, inadequacy of some of the family planning methods, and the resistance of husbands.

## Personal Channels

Studies on the communication aspects of family planning programs have revealed that the most commonly sought sources of family planning information are persons—relatives, neighbors and friends, clinic personnel, and field workers. In countries with strong clinic support to programs, doctors, particularly women doctors, have been reported to be the most credible information sources among clinic staff. In many village studies, it has been likewise reported that relatives, neighbors, and friends are "consulted" ahead of other personal channels. They function as "facilitators" of change in the sense that they prod reluctant housewives to go to clinics.

Religious and other village community leaders function as "intermediaries." Conflicts, doubts and fears related to family planning methods are brought to their attention by potential acceptors and acceptors for resolution and clarification.[17]

Family planning field workers have been found to lack detailed knowledge on the use of the various contraceptive methods. For this reason they have not been as effective as their counterparts in agricultural extension. They have thus often functioned as "referral" agents as well as "motivators" in the process of the adoption of family planning, leaving the rest of the job of change to the clinic staff.

Generally, as in agriculture and nutrition, personal channels have been found to be more effective than the mass media in motivating and educating would-be acceptors. This is due to the two-way flow of messages which the mass media can provide only to a limited extent.

## Mass Media and Messages

Among the mass media, radio is the most common source of family planning information. Leaflets, pamphlets, posters, comics, and newsletters are important in some countries of Asia and so are newspapers and magazines. Television is gaining in use for urban audiences.

Except in rare cases, the mass media by themselves or in isolation from personal channels cannot effect the practice of family planning especially among the traditional rural folk. In general, people do learn about family planning and the use of methods from newspapers, leaflets, posters, and radio but they consult and seek support from persons before they may use a method.

There is very limited research knowledge on what mass channels and characteristics of channels are most effective in reaching particular audiences; for example, what kind of poster should be used for which group(s)? What type of radio program would be most effective for what purpose and which group(s)?

Studies have shown these approaches or strategies to contribute to effective message presentation: (1) the messages have a reasonable balance between information and motivation; (2) they are geared to the needs and interests of the intended audiences; (3) they place emphasis on the positive rather than the negative aspects of family planning, the personal or family interest rather than the national interest; (4) they use words, phrases, settings, and characters that are familiar to the intended users; (5) they have realistic illustrations with adequate explanations; (6) they have formats that are appealing to the target group(s); (7) they use the personal rather than the impersonal approach; and (8) they use local names and local examples and the dialect/language of the intended users.[18]

Effective messages are those which project deeply-held values of the people which favor the need for family planning, such as the desire to own property, the education of the children, and the general well-being of the parents. These messages also meet needs based on values which apparently are against family planning but which are enlisted in its support. These include the modesty of women, masculinity (machismo) of men, and the high value placed on children. A knowledge of the historical background of the country, its demographic situation, socio-cultural factors, available communication resources and facilities, agriculture, and the goals of the family planning program in the country has also been found to be effective.[19]

## Audiences of Users of Mass Media Materials

Demographic surveys provide the socio-economic profiles of audiences or users of our mass media materials. On the other hand, KAP surveys report, to a limited extent, some media characteristics of said audiences.

An analysis of mass media materials in some countries of Asia show that many of these materials lack the "rural touch." Apparently, these materials are not based on what the rural folk would prefer to read. As one communication specialist put it, "Our rural folk have their own standards in judging family planning communication materials."

How well do Asian publications live up to the 'standards' of rural audiences? Limited studies have been done in this subject-field. A review of these studies however shows the following rural preferences: (1) multi-colored covers; (2) glossy paper; (3) symbols obtained in their village; (4) photograph illustrations; and (5) happy illustrations of the family composed of father, mother, and the children.[20]

## Research Needs for the Future

An analysis of existing data relevant to the three subject-areas discussed in this paper shows the lack of coordination among agencies or institutions implementing one or the other of these three programs is a factor which hampers the effectiveness of said programs. This lack of coordination results in wasteful duplication of efforts, lack of optimum use of scarce resources, and lack of a unified direction essential to national development. In view of this problem, there is need to study what type of communication support is necessary to bring about better communication and coordination within, between and among agencies implementing these three programs of agriculture, nutrition and family planning. What types and amount of communication should exist within and between these agencies? What should be the nature and direction of the flow of messages? What factors facilitate or impede this flow? Will periodic formal and informal get-togethers, meetings, seminars, and conferences involving all those concerned help in minimizing the problem? How is coordination achieved? Is a coordinating body essential? What type of 'coordinating' leadership is needed?

The effectiveness of the integrated approach in implementing family planning communication programs in a few Asian countries has been documented in research reports of recent vintage.[21] A system where communication research, materials development, communication training, and other communication activities relative to family planning are mutually supportive, such that they contribute to each other and to one unified and effective program, is a strategy worth studying. Agriculture, nutrition, and family planning are undoubtedly interrelated, interdependent, and interlapping. There is a need to study the integrated communication approach in reporting these three concepts of agriculture, nutrition, and family planning as an essential first step to their acceptance and adoption.

A review of the literature in the three study areas covered by this paper will show that there are no exhaustive studies describing the nature of the adoption process relative to each area in the developing countries of the sub-region. While the five-stage adoption process which was developed in North America exists, this has limited applicability to the Asian situation as revealed in developmental communication studies. There is a need to do in-depth studies of the process of adoption vis-a-vis agriculture, nutrition, and family planning in the Asian setting. These studies need to take into account the factors which impinge on the process—as facilitators or deterrents—particularly communication and related socio-psychological and socio-cultural elements.

The many day-to-day operational or logistics problems of the agricultural, nutrition, or family planning administrator which have some bearing on the communication process also need to be studied. For instance, what type of communication materials for which groups should one have at the family planning clinic, a farm demonstration area, or an agricultural extension office? What type of incentive schemes should one consider for field motivators? What motivational strategies will work for specific situations? What type of reporting forms will provide a valid measure for program accomplishment? What other feedback mechanism will adequately measure program effectiveness?

Lastly, in spite of the volumes of reports/papers written about programs in our three subject-fields in the four continents represented in this symposium, we know little about these programs. The inadequate flow of reports across these continents is in need of improvement. Studies along this line are warranted as bases for such improvement. In addition, there is value in doing intensive case studies on successful programs of agriculture, nutrition and family planning to add to existing reports. A sharing of these reports would hopefully contribute to better intercontinental understanding and cooperation which is one of the goals of this noteworthy symposium.

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# Communication and Adoption of Agricultural Innovations in Latin America

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IN order to prepare this paper I tried my best to collect the most important studies carried out in recent years in Latin America about this subject. However, when I had finished gathering a pile of reports, articles, and theses, and it was the time to digest them and extract conclusions and generalizations from them, I was unable to secure enough time and peace of mind to do an adequate job.

Therefore, this paper is not intended to be a serious research review but merely an expression of my own perplexities on a problem that is really much more complex than the impression given by the words "communication and adoption of agricultural innovations in Latin America."

When seen superficially, our problem seems to have but three neat facets:

(1) The farmers
(2) The innovations
(3) The communication sources and channels

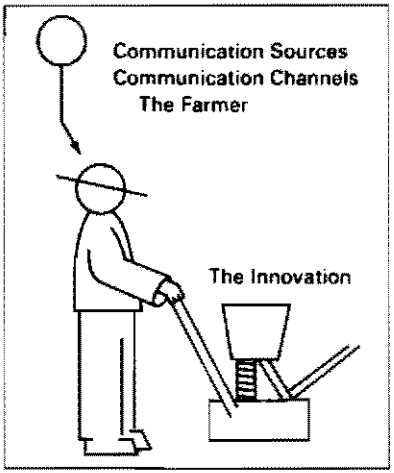


*Figure 1. How misleading and deceptive this simple drawing is! Actually, these three elements consist of whole worlds of persons, institutions, forces, processes and situations, connected with many other complex structures and processes.*

## *The Farmers*

Take the first element: the farmers. Long gone is the time when we were happy to work with the stereotype of "the typical Latin American farmer." There is no such farmer. The variety is immense: subsistence and commercial, sedentary and migrant, poultry and plantation farmers, latifundia and minifundia farmers, renters and sharecroppers, occasional and permanent. Each type of farmer and each type of farming arrangement shows a different combination of communication and adoption behaviors, and the country and the region in which the farmers live and work contribute their share of cultural variety and social organization modalities.

Also gone is the illusion that a farmer is an individual who has access to information and makes his own decisions. Today we are aware that our countries, their economies and their people—and above all the farmers—are dependent upon decisions made for them by international forces. Moreover, within our countries the rural areas occupy the lower level in a pyramid of vertical domination and often exploitation.

If we have learned something in recent years,

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it is the considerable effects of the socio-economic structure on farmers' adoption behavior. Take the case of Guaraçai, a municipio of the state of Sao Paulo. Thais Martins Echeverria[1] found in 1967 that small farmers who owned land, knew significantly more and adopted a higher proportion of eight recommended practices that renters and sharecroppers. Not by coincidence the degree of schooling of the owners was higher than that of the landless and so was their access to impersonal media bringing technical information.

James Grunig[2] in Colombia, dramatized the radically different effects of communication on farmers with a "managerial" capacity to make autonomous decisions and those farmers who, by historical reasons, were subject to situational constraints (lack of land, lack of resources, lack of education, geographic isolation).[3] My own study in Timbauba,[4] as well as Fonseca's study in Esmeraldas,[24] showed how small is the influence of psychological factors on the access to instrumental information and adoption, when compared with the structural (socioeconomic) factors.

Stratification in Latin America means, in general, domination of many by a few. This domination pattern is maintained in part because the coercive pressure of social structure penetrates even the minds and hearts of men. Percy Mejia,[5] in Cajamarca, Peru, saw his hypothesis confirmed that persons who are more dependent and exploited would be the ones with a more negative reaction toward agrarian reform, despite the probability of their being more benefited by the new tenure regime. Mejia reasoned that the individual in a dependency situation does not establish horizontal communication, finding more security in maintaining a referential orientation to the individual on top (the patron). Consequently, the small farmers interviewed by Mejia in 1970, were more favorable to agrarian reform than the tenants and the landless workers.

Gustavo Quesada,[6] in Minas Gerais, Brazil, also found the strong influence of what he called "patron dependence" on communication behavior and innovativeness. Insofar as a large portion of Latin American farmers are patron dependent, models of diffusion and adoption formulated on the notion that the individual farmer is the unit of decision-making are likely to miss the point.

That is why Paulo Freire[7] stated his thesis that technification (adoption of technical innovations) is a stage that farmers in a developing country should reach only if they will simultaneously undergo a process of conscientization (perception and critical awareness of one's own situation vis a vis the social structure and the strengthening of one's own aspirations for growth and self-realization). Technification without conscientization is nothing but "cultural invasion" and usually has nothing to do with genuine human and social development to which it can even be detrimental. A campaign in Minas Gerais to promote the building of latrines was apparently successful until a later evaluation showed that many farmers were using their latrines for corn storage.

## *The Innovations*

As Francis Byrnes[8] has pointed out, very seldom does one find studies which analyze the technical quality, the timeliness, and the cultural and social compatibility of the recommended innovations.

There is a tremendous lack of adequate innovations. Research, in general, is biased in favor of large scale commercial agriculture and seldom aims at solving the problems of subsistence and small agriculture. Research is usually carried out in central places and is not replicated on a national basis to check the adequacy of results to the various ecological and economic conditions. Besides, only recently are economic aspects affecting the innovation's profitability being considered as part of a research project before recommending the new techniques and products to the farmers.[9] Also very infrequently research includes attention to the possible social and economic consequences for the community as a whole. This research would be able to say if the techniques are appropriate or not to the stage of general technological development, if they are likely to favor some groups of farmers at the expense of others,[10] or if they are bound to perpetuate the domination of the majority of farmers by forces foreign to their own interests.

In other words, if until now adoption has been always considered as a dependent variable, it is necessary to study its role as an independent variable, with definite effects on employment or unemployment, environmental pollution, rural migration, income distribution or concentration, etc.

Finally, the adoption of technical innovations by the farmers should not be seen as a goal in itself, but as a part of a wider social transformation which includes farmers' conscientization, politization (assumption of class consciousness and awareness of need of more active participation in decision-making), organization (participation of farmers in group with political power), and technification.

## *Communication*

Here again, we have overcome old illusions. No longer do we put our blind faith in the power of the message. No longer do we believe that communication is always at the service of innovation and development. Luis Ramiro Beltran, in a series of papers,[12,13,14,15] has expanded my own contention of 1965[16] that in Latin America the large proportion of mass media content is frivolous, irrelevant, and even negative for rural development. In fact, as long ago as 1958, Ruanova had shown the discrepancy existing between the content of farm magazines and the information needs of the farmers of Mexico. He rated the contents of the main farm journals during a year and compared this list with the ranking of matters reputed to be of interest to the farmers. The correlation was negative.

A more general problem, according to Beltran, is the state of "incommunication" among the rural population and between it and the urban centers. Many studies have shown that radio is about the only medium with significant penetration in the rural areas. Nevertheless, this penetration is not always useful. Studies show that the urban and consumption biases of the media—due perhaps to their private ownership and commercial basis on which they generally operate—tend to exert an anti-change or at least a wrong-change effect on many. The present tendency to migrate from the rural areas might be blamed partially on this disfunctional role of the mass media. Another deleterious effect is the promotion of adoption of unnecessary or premature innovations by farmers, often opposite to their individual or class interests.

In the field of communication, we have not yet researched enough about possible feedback mechanisms which could facilitate the flow of messages from the farmers to the decision-makers, nor the exchange mechanisms that could increase the flow of communication among the farmers themselves.[32] We must remember that geographical dispersion and isolation require a great deal of communication ingenuity, and that these are characteristic of a high number of Latin American farmers.

## *Communication-Adoption Picture Complex*

Of course, the picture is not totally black. There is a growing "social conscience" among technocrats and planners and a growing "critical conscience" among farmers; in some countries, such as Colombia, there have been brave attempts to organize farmers; also there are exciting efforts for social transformation such as in Perú and Cuba; communication channels are gradually reaching more isolated places; formal education is slowly finding its way into the countryside, etc.

In general, nevertheless, Latin America is far behind in the development of its rural and agricultural potentials required by the extraordinary growth of its population and the imperatives of better living conditions for future generations. Nobody doubts that Latin America needs to make a leap forward in technological diffusion. But it may also be necessary that technification occur as a part of a process of gaining greater independence.

Independence may also be needed in diffusion research. Until now, most of the studies done in Latin America carry the imprint of the U.S. "classical" diffusion model. We must

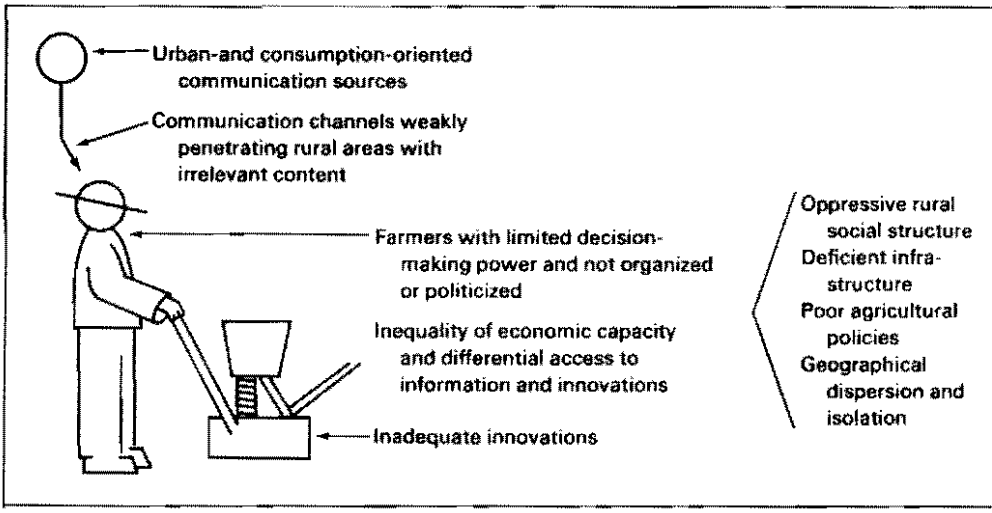


*Figure 2. After the brief demonstration showing the communication-adoption picture as more complex than it appears to be when superficially considered, the first graphic representation might be complicated in this fashion.*

overcome our mental compulsion to perceive our own reality through foreign concepts and ideologies and learn to look at communication and adoption from a new perspective.

## *Types of Studies and Results*

We cannot say that diffusion and adoption of innovations have not been studied in Latin America. Both North Americans and Latin Americans have conducted several field studies and even three or four important experimental studies.

### Field Studies

Especially worth mentioning among these, are those by Deutschmann and Borda in Colombia,[17] by Rogers[18,19] in the same country, by the Mexican team led by Myren,[20–23] by the excellent Colombian team working at the Instituto Colombiano Agropecuario of Tibaitatá,[24] by Fonseca[25] at Esmeralda, Minas Gerais, by Echeverria[1] in the state of São Paulo, by Bendezu in Huancayo, Perú,[26] by students of the Extension and Rural Development Graduate program at Turrilba, Costa Rica, and by Sturm and Riedl[27] in Rio Grande do Sul, Brazil. A recent study by Ivo Schneider, also in Rio Grande do Sul, analyzes the applicability of the two-step flow hypothesis of communication for farmers. Besides these studies directly connected with innovation adoption, many other communication studies have been done in Latin America, particularly in Mexico, Colombia, and Brazil.

### Experimental Studies

Latin America has witnessed the execution of large scale experimental communication/adoption studies involving several communities receiving different media or method treatments. Among them we mention the pioneering study by Torres and Spector in Equador on the influence of radio and supporting media on adoption of farm and home practices; the study directed by Waisanen[28] in Costa Rica in 1963 in which two communication techniques (radio forums and reading forums) were compared in regard to their ability to effect change in levels of knowledge, evaluation, and adoption of innovations in agricultural, health, and social education; the study directed by Rogers and Herzog[29] in

Minas Gerais, Brazil, as a part of a three-nation project in which whole communication strategies were compared as to their efficacy for technological diffusion.

A unique experiment in communication and adoption was also conducted in Mexico under the name *Projecto Puebla*.[30,31] If something was learned from this experience, it was the advantage of coordinated effort among the various agencies contributing to infrastructural facilitation of high yield production. Unfortunately, Latin America is still waiting for experiences which do not isolate the production dimension, important as it is, from the other aspects of development, and which do not consider the farmer as little more than a production factor.[32] An experience in current execution that should deserve our attention, is the *Projeto Piaui* in Brazil which is a test of an integral and participatory development.

It is quite difficult to summarize the findings of all these studies. Because of the conceptual model employed, there is a general tendency for the findings to parallel those of the United States, such as: existence of innovators, opinion leaders, followers, and laggards; stages of awareness, interest, trial (not always) and decision; differential usage of communication by the different adopter categories. It is only natural that some differences emerge, such as the dominating role of the interpersonal channels of communication in Latin American regions where mass media have low penetration. The Schneider study raises some doubts about the applicability of the two step hypothesis as it failed to confirm U.S. findings that many farmers receive information and influence, not directly from the mass media, but through intermediary persons. On the other hand, Fonseca's thesis found that social participation had no relationship with adoption, which probably would not be true in the U.S. In the Rogers' Minas Gerais study, it was found that "innovators appear to be the least risk-oriented of any of the adopter types," this also seems to contradict American findings.

A solid conclusion, nevertheless, emerges from all the Latin American studies and that is the overwhelming influence of economic ability on innovativeness:

> "Again we are struck by the importance of the economic variables for these farmers. If we look for those divisions which produce reasonably large numbers in both the high and low sub-groups (of the configurational analysis), we note that the splits are produced mainly on the economic variables. (Milk production, income, level of living, farm size, and economic knowledge.) The psychological and sociological variables have their chief function in splitting off small groups of deviants from the more stable types."[29]
>
> "The implication is that if a farmer has low milk production, low income, and low level of living, he adopts no or very few innovations. Almost a third of our farmers display these characteristics."[29]

## *Research Questions*

Because the classical diffusion model was formulated under significantly differing conditions and in agreement with an ideological stance not compatible with the Latin American reality, the types of questions asked by Latin American researchers who used that model unquestioningly, do not get to the real issues affecting rural development.

Let us compare the type of questions emanating from the classical model with some questions that we think should be asked by Latin Americans. In the paper presented by Havens to the Third World Congress of Rural Sociology,[33] he listed the following questions as typical of the "diffusionist approach" to the study of development:

(1) Which innovations are available? (technological inventory)
(2) Who uses the technological innovations?
(3) How are they diffused?

(4) Which are the differences between users and non-users of innovations?
  (a) In personal characteristics
  (b) In social characteristics
(5) Which groups orient individual behavior?
(6) How do individuals feel deprivation and what attitude do they take to reduce it?
(7) Which are the pertinent social codes and norms?
(8) How do values affect individual or group behavior?

Now to consider which questions should be asked to understand the general picture of communication and adoption of agricultural innovations in Latin America, let us imagine ourselves to be government planners of a nation that has decided to transform its agricultural and rural life in a way that would secure a more just social structure and solid national development. The list I present, undoubtedly, will display my own limitations to put myself in the role of government planners, but here are my questions:

(1) How autonomous or independent is the country from external forces which affect its economy and its political decisions?
(2) How is the rural social structure organized and what control does it exert over individual decision? What is the historical genesis of this situation?
(3) Do the majority of the farmers own their land, either individually or cooperatively? Do they own their tools?
(4) Who controls the economic institutions, particularly the market, credit, and input supply organizations?
(5) Who decides what kinds of innovations should be diffused and developed?
(6) Are the farmers consulted and are their needs ascertained?
(7) What are the criteria used to guide the choice of innovations to be promoted: the common welfare, the increase of production for export, the maintenance of low prices for the urban consumers, the profit of big commercial farmers and landowners?
(8) What effects will the adoption of certain innovations probably have on individual and family welfare? On regional and national development in the short, medium and long range? Will they increase employment or unemployment, fixation of the rural population or migration to the cities, enrichment of the already rich or better income distribution?
(9) Do the innovations take into account regional and local differences in ecology, economy, farming habits, and cultural norms?
(10) Is there any degree of coercion for the adoption of an innovation, either by the market situation, the credit institutions, the government, the landlords?
(11) How appropriate and well proven are the products and techniques being diffused? Are they adequate to the stage of technological, economic, and social development?
(12) What kind of living and learning adjustments do the practices require from the farmers? Do they require the establishment of new systems of credit, land tenure, technical assistance, marketing, and insurance?
(13) Who controls the sources and channels of communication? Is there communication monopoly, censorship, blockage, or distortion?
(14) How adequate are the communication channels' content and treatment for the needs of the farmers? Are they at the service of all the farmers or preferably at the service of the government, the input industries, the farm product buyers, the larger farmers, the consumer groups?
(15) What are the feedback possibilities and channels for the farmers to communicate their needs and adoption results to the innovation sources and policy makers?
(16) Are farmers organized in pressure-groups that can exert influence on the structure of land tenure, on the production infrastructure, and on the marketing system to facilitate the diffusion and adoption of the right innovations?

(17) How good are the change agents or extension personnel as a two-way communication channel? Are they technically competent, ideologically oriented to the welfare of the farmers, methodologically adequate?
(18) What are the institutions which directly or indirectly contribute to the transfer of technology to the farmers? What are the present relationships between the processes of conscientization, education, organization, politization, and technification of the rural population?
(19) Is technification promoted and executed without any efforts for simultaneous conscientization?
(20) How do farmers diagnose and solve their problems? How do they search for extracommunity resources and help? How developed is their communication ability? What are the personal and group roles in farmers' problem solving?

This list may be accused of being more of a political program than a research perspective. That's all right. It should be. Because if there is one thing we are learning in Latin America it is that in communication and adoption of innovations, pure research that is ideologically free and politically neutral does not exist and cannot exist. The scientist who says that he wants to do research without committing himself to changing rural society is, in fact, as ideologically committed as the other who believes in research as a tool for human and social change. Education, technological progress, and political action should not be separated in Latin America because they are aspects of one single process.

## *Five Foci*

As for suggestions of what should be researched in the field of communication and adoption of agricultural innovations in the near future, I can only be true to my own biases. I think the most fertile foci for research are the following:

(1) To study diffusion and innovation adoption as a problem-solving system, starting not with the innovation and its sources, but with the farmers' situation, needs, and problems; consider the mutual and the upward communication flows by which these needs and problems are articulated, informed, and acted upon by the intermediary services and the solution centers. (See Figure 4).
(2) To study the structural framework in which communication and adoption happen (or do not happen); include the influence of land tenure arrangements, agricultural policy's consequences on decision-making, the consequences of the adoption of certain innovations for the overall development process, detecting the role of institutions in facilitating or restricting adoption decisions, etc.
(3) To study the infrastructural aspects of the adoption of innovations; include the configurational relationships between the access to inputs, credit, technical assistance, information, market, storage, transportation, insurance, etc.
(4) To study the adoption of innovations as teaching-learning experiences to identify the pedagogical requirements of diffusion and adoption as part of a larger process of mental growth and human enrichment of the farmers.
(5) To study the functioning of global strategies of rural development in which conscientization, education, politization, organization, and technification play integrated roles.

Let us briefly explain the objectives and contents of these five foci:

### Focus No. 1

One of the main drawbacks of the classical diffusion model (Figure 3) is that it reflects the directive and persuasive characteristics of present diffusion efforts: an innovation is produced in a research center, university or industry, its supposed advantages for the farmers is uncritically accepted by the authorities, and a diffusion system is triggered to convince the farmers to adopt.

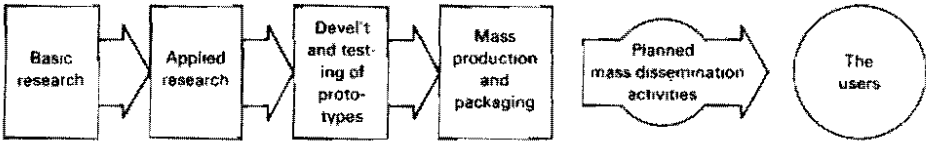


*Figure 3. Classical diffusion model taken from Havelock.*[34]

Most of the extension work in Latin America has been executed according to this model, which is only slightly different from the marketing model applied by industry and advertising. The sad thing is that research has also proceeded along this line. The present emphasis on communicating things to the farmer, instead of finding out what he needs or wants, is reflected in research priorities. For example, of the 39 studies reported by Arevalo and Alba[24] for Colombia, 21 studies deal with media and/or message evaluation and content analysis, seven deal with identification of the media used by the campesinos and six deal with determination of the relationships existing between the socioeconomic characteristics of the farmers and their use of media.

Havelock[34] presents an alternative model which he called "problem solving." It starts with the needs of the users and the way they diagnose their own problems. The model (see Figure 4.) stresses the need for a diagnostic stage in which "the user's symptomatic needs are analyzed and interpreted," favors non-directive outside help, gives importance to the use of internal resources, and believes that "user-initiated change is the strongest."

The model puts in a proper perspective the role of intermediate services as the farmer's external resource, and the role of research centers as the final solution sources. The application of a problem-solving model would lead research to apply itself to a better understanding of the farmer's situation, to the study of his own communication channels with his fellow farmers, to the ways problems are diagnosed and solved, and to the forms by which external assistance is solicited when necessary.

The French change agents who have worked in the former colonies have long ago adopted this approach. Chantran,[35] for instance, says in his book that for doing good "vulgarisation" two kinds of research are indispensable:

(1) Research on the farmers—Levels of knowledge, attitudes, language, motor habits, circumstances.
(2) Research on their technology—Knowledge of the time schedule dedicated to the traditional activities and days of work dedicated to each crop; knowledge of the production factors of the farm; knowledge of the methods of work and the reasons the farmers give for using them; knowledge of the channels through which the diffusion of new technology could reach the farmers.

Studies under this model would not be applied only at the users' level but also at the intermediary services level and at the research levels, inasmuch as those are but subsystems of a general problem-solving system.

Moreover, within this model the adoption of innovations can no longer be separated from conscientization, politization, and organization simply because most of the farmers' real problems are not solved through technification alone. They are all aspects of one single problem-solving effort: that of human beings trying to improve their lives.

## Focus No. 2

This area of research is a natural consequence of the previous one. Indeed, the functioning of the three sub-systems presented in Havelock's problem solving model does not happen in a power vacuum. It happens in a social structure with all kinds of social obstacles and facilitators.

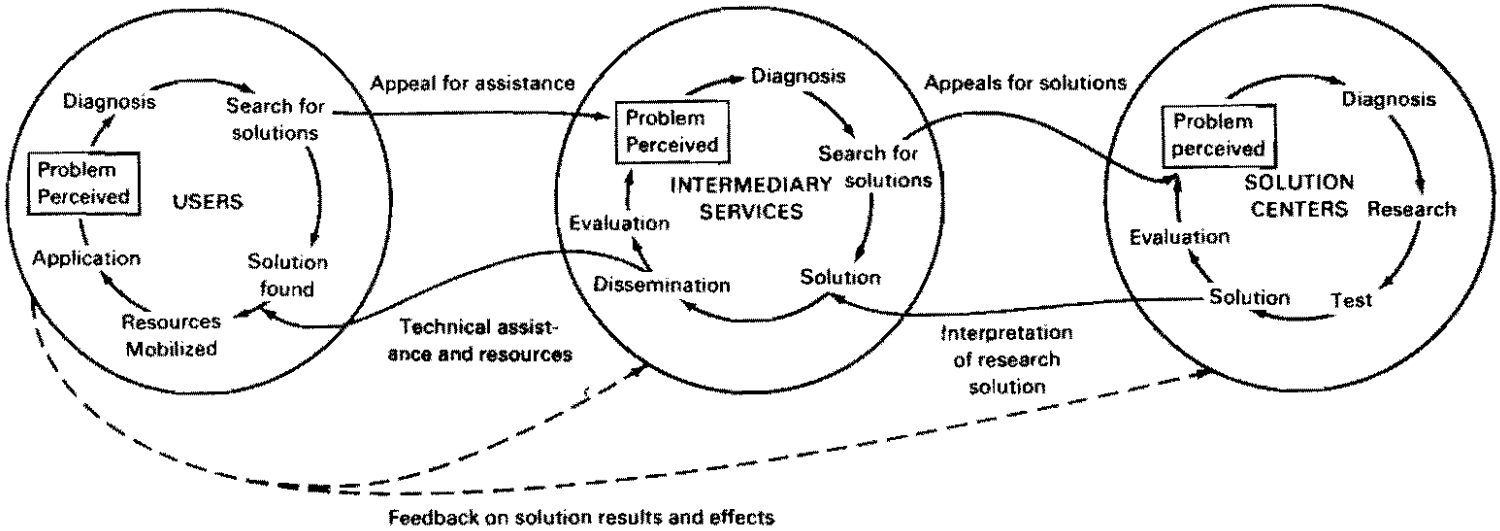


*Figure 4. The problem-solving model. Adapted from Havelock.[34] This is a problem-solving system composed of three subsystems: the Users, the Intermediary Services, and the Solution Centers. The central focus is the users' problems, and their own efforts for solutions. The other two sub-systems are called upon when users' resources are not enough to cope with the problems.*

Land tenure, as we have already seen, influences how the rural population live, behave, and communicate. The media may be viewed as part of the pattern of domination and influence in our society. Their choice of news and editorial slant carry the mark of vested interests and political ideologies.

An important area of research is the flow of communication between the urban and the rural areas, between the rural towns and their surrounding countryside, and between communities of a certain zone. Ordoñez[36] from CIESPAL, Equador, is studying these flows, aiming at understanding how the dependence and domination patterns are reflected in the communication network.

Attention to the structural framework of communication and adoption would also lead us to a field to which Esman[37] has attached a great deal of importance in his paper for this seminar: farmers' organizations. Farmers have weak organizations in most of the Latin American countries not because they are naturally individualistic or disinterested in politics. The reason may be that historically they have been attacked whenever their association presented a threat to the system.[38] The relations between farmers' organization and adoption of technology has not been studied in Latin America except by Saldarriaga of Colombia, with his experiments with "friendship groups" within the extension strategy.

## Focus No. 3

Although everybody recognizes today that most farmers will not adopt a practice under adverse market, price, transportation, storage, or credit situations (see Arevalo and Alba[24]) not many studies focus on the influence of these aspects of infrastructure on the adoption decisions. Of course, communication is an important part of the picture. However, little has been done to research the triangle of communication, adoption of innovations, and infrastructure despite the fact that market and price information systems and credit information channels exist in our countries, and that private firms are increasingly aggressive in the fields of product information and even technical assistance.

## Focus No. 4

Although agricultural extension agents are dedicated to informal education, their pedagogical training, in general, leaves much to be desired. This may be a strangulation point in the process of diffusion and adoption.[8]

Here again French "vulgarisateurs" are ahead.[35] They have applied to the teaching of new techniques some of the learning principles and procedures derived from the T.W.I. (Training Within Industry) method. For each practice they identify the component steps, the best order in which they should be presented, the ways the learner can master each step better, the exercises he should make, etc.

Theories of learning and teaching (such as those by Skinner, Piaget, Gagné, Bruner, and others) can supply important contributions to the pedagogy of adoption which could be applied not only in face-to-face situations but also in the use of mass media.[32]

## Focus No. 5

While some researchers should devote themselves to gathering the basic information indicated in the previous four foci, an urgent thing in Latin America is to learn how to plan and execute deliberate change strategies with definite objectives and with the active participation of the farmers.

We have lost much time in looking for associations between variables that we cannot manipulate or modify. Of what help is it, for instance, to find out that geographic mobility is correlated with innovativeness, for the designing of a change strategy? Are we going to move people around the country just to increase their innovativeness?

I think that the present "demographic studies," comparing whole arrays of descriptive variables should give place to "action research" in which a strategy is tested and adjusted to obtain definite results. After all, communication is not a descriptive science but a tool of change, and change cannot be studied adequately by merely observing correlations among variables. We ought to plan, produce, and evaluate change, and learn while we ourselves are changing.

## *New "Ideology"*

We have in Latin America the human potential to move fast and far in the field of research on communication and adoption of innovations. What we need, I think, is a better conceptualization of the role of technology and its adoption within a genuine, integral, and participatory rural development process. We must learn to see the adoption of innovations as something that can be good or bad depending upon its congruence with the general needs of the farmers and the nation in a historical moment. We must resist the past tendency to consider the adoption of technological innovations as something disconnected from the processes of liberation and emancipation of large segments of our population.

This new "ideology" would force us to concentrate more on the users of the innovations and less on the groups, institutions, and channels interested in having them adopt their products or ideas. Our attention to the users would lead us to investigate the factors that can facilitate solution of their problems, be they structural, infrastructural, or educational.

After all, the adoption of an innovation is a human decision, and human decisions are based on four ingredients:

(1) Willingness to do things.
(2) Knowing what to do.
(3) Knowing how to do them.
(4) Having the means to do them.

As the French say, Vouloir, Savoir, Savoir Faire et Pouvoir.

Communication certainly can help farmers raise their aspirations and motivations, obtain access to information and knowledge, and learn the necessary "know how." Communication, however, cannot give the last ingredient—the means to do things—as it signifies POWER. It is a political problem which the Latin American farmers and the committed scientists and change agents must solve by persistent action.

*(Note to readers: The opinions expressed in this paper are solely the author's responsibility and not the institution for which he works.)*

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# Analyses of Recent Communication Research of Significance to Rural Development in Africa and Research Needs for the Future

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AFRICA is a heterogeneous country made up of sharply different geographical regions and of different peoples with varying cultures. In spite of the complex nature of the geography of the continent, one can identify three main regions: North Africa with the Sahara desert, Africa South of the Sahara, and South Africa.

For the purpose of this paper I have largely confined my observations and analyses of the present situation to Africa South of the Sahara. The whole question of the development of resources for rural communication, in respect to agricultural innovations, nutrition, and family planning, is a new phenomenon in this Region.

## *Agricultural Innovations*

The development of communication strategies for agricultural innovations, with special reference to food production, has received the attention of governments in this region only within the last 15 to 20 years, mainly after these countries had become independent from colonial rule. Communication for nutrition services is equally a recent introduction; communication strategies for family planning started only a few years ago.

With reference to agricultural innovation, a line has to be drawn between the production of agriculture export crops and of food crops for local consumption. The economic development of the majority of African countries has depended upon their agricultural exports. Communication strategies for the introduction of innovations in the production of agricultural goods have been developed in most of these countries within the last 50 years.

Most of these countries started off as colonies, and their main values to their Colonial powers were as sources of the production of agricultural raw materials. Food production posed very little problem in the colonial days, because the importation of consumer goods, including food, was encouraged as an important aspect of the trade relationship existing between the Colonial power and the Colonial territory.

The independence of Colonial territories, and their abrupt change in agricultural policies from their role as food importers to a new strategy of self reliance resulted in the recent attempts to introduce various innovations into local methods of food production.

Communication methods which have been used in these attempts to introduce innovation have varied from country to country and from year to year. They have also varied from the use of conventional methods of extension education to revolutionary methods which emphasize infrastructural development and the supply of services.

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## Change Agents

A long list of different categories of change agents and organizations concerned with communicating innovations for agricultural development can be compiled in any one African country. The basic organization officially responsible for this in any district is the government department responsible for agriculture. Such a department under normal circumstances has technical staff trained in agriculture who work in the rural areas advising farmers on methods of increasing the level of production of their crops.

However, several other categories of change agents can be found with agricultural development boards and corporations; also, voluntary agents with church-related extension services; individual industries that utilize agricultural raw materials, cooperatives, and local councils may have change agents.

## Several Reorganizations

In most countries the government ministry or department responsible for agricultural development and for extension work, has been constantly undergoing changes and reorganizations. This has been the result of constant changes of government and changes of policies from one minister or commissioner to another.

In my own country, the search for an effective extension service has resulted in five complete reorganizations of the Ministry of Agriculture between 1959 and 1973. At one stage between 1962 and 1964, all departments rendering agricultural services in this Ministry were completely abolished, and their functions were handed over to newly-formed political organizations. About six months ago, 10 Divisions of the Ministry, which had been established since 1967, were completely disintegrated and each region in the country was reorganized under an Assistant Director of Agriculture.

Most of the African countries do recognize the serious lack of an effective communication link between recommendations from agricultural research and actual farming practice as carried on by the majority of farmers. It is commonly observed that methods of crop production practiced by agricultural and research stations (such as the use of higher yielding varieties, use of fertilizers, planting in rows, and crop protection) have had no effect on traditional farming methods beyond the boundaries of these stations.

In several international conferences in Africa at which communication and extension methods have been discussed, the usual evaluation has been to declare Extension and the existing communication methods as a failure, so far as food production is concerned. It should be mentioned, however, that although most government-organized extension services which operate on a national scale from district to district have made very little impact on agricultural change, this is not the case with some of the non-governmental organizations. They have concentrated their efforts on selected localities and have made considerable progress in changing attitudes and practices of traditional farmers.

## What to Communicate

One of the basic problems of the governments in the field of communication for agricultural change, is not how to communicate (whether to concentrate on mass media, groups or individuals) but what to communicate. Many Extension Divisions have been created without defining very clearly what should be their functions and how those functions would differ from the performance of other technical divisions of the Ministry of Agriculture.

Since the introduction of the word "Extension" as a specific service in agricultural ministries, interpretations and directives of the service have varied from pure educational inputs to technical services involving the supply of physical inputs aimed at increasing agricultural productivity. For example, in one country, the Extension Service in a Ministry of Agriculture refers generally to training, information and publication, and to farmers'

training centres. In another country the Extension Service relates to the entire agricultural services, both technical and educational, that are carried on by the respective Ministry of Agriculture.

In a critical analysis one finds that most extension services have very little to communicate educationally for agricultural change, and the average service merely continues to repeat what has been going on over the last decade. For instance, in many areas farmers are already aware of the value of fertilizers, of improved seeds, and of crop protection chemicals. What they are seeking are facilities and opportunities for the trial and adoption of many of these inputs. Existing facilities, however, often tend to be beyond their purchasing capacities, and they merely look on.

Extension work in Northern Ghana, for example, has gone on for the past 50 years, and this has included all the known orthodox methods for encouraging fertilizer use and the use of crop protection chemicals. Fertilizers were sold in 50 kg. bags and crop protection chemicals in their imported packages. There was, however, no significant use of these inputs in spite of all the demonstration plots, the meetings, and personal calls made by the Extension staff.

About three years ago, the field staff of some church-related extension organizations, decided to sell fertilizers in 1 kg., 2 kg., and 5 kg. bags at rates of 8 cents, 16 cents, and 40 cents respectively, for the convenience of traditional and other small scale farmers. (More than 95 percent of the farmers in the area.) Within a year, these church related organizations had sold, in each district in which they operated, more than eight times the quantity of fertilizers usually sold by the Ministry of Agriculture.

They used similar methods in selling crop protection chemicals. While I was on a visit to one such extension officer in the North, a little boy came to his house one evening with a lantern. He had been sent by his father to purchase 5 cents worth of an insecticide to protect his cowpeas against weevils. The peas were being kept by the father until the next planting season.

If we want farmers to purchase inputs, they can only do so at their own pace and within their own purchasing capacities. For instance, the average subsistence farmer who needs sugar to use in his home will only buy a few cubes at a time—just sufficient for the time of day at which the sugar is needed. If he wants matches for lighting his fire and his lamp, he will buy a few sticks at a time. When he needs kerosene for his lamp, he will take the lamp to the retailer and half fill it with kerosene that will last for a day or two only.

By purchasing in little bits he eventually gets what he needs within any space of time, but the main point is that he should not be pushed. A 50 kg. fertilizer bag selling at $3.00 may never be purchased by him, but if he buys it in 5 kg. lots he soon uses more than 50 kgs. in a planting season without realizing he had done so.

## Subsistence Farmer Underrated

It appears that in many cases the way of life of the subsistence farmer is seriously underrated. It is perpetually assumed that he is apathetic, resistant to change, and does not understand what he is told. The tendency, therefore, is to continue to preach to him with demonstrations when efforts could be better employed by providing the inputs and infrastructural development urgently needed in the environment of the farmer.

There are other areas in which innovations being communicated to farmers have no relationship with current farming practice and, therefore, are not adopted. Two of these constraints are the farmers' practices of shifting cultivation and mixed cropping.

After turning our backs on shifting cultivation and denouncing it for more than half a century, it was decided in July, 1973, to hold an international conference on shifting cultivation. Its significance, merits, and demerits were discussed in relation to the present international drive towards increasing food production in the developing countries. Be-

cause of language difficulty this conference was obviously held without representation from the farmers themselves who do the shifting. Experts could only speak for or against it, according to studies they have individually made about shifting cultivation. This illustrates the serious gap in the communication system between researchers and the farmers they serve. A dialogue between subsistence farmers who practice shifting cultivation and research workers could provide the ideal feedback and would enrich the arguments about it.

The practice of mixed cropping is another barrier in the communication system between research and farm practice. While researchers use pure stands of crops planted in rows with specified spacing on mechanically cultivated soils, the average traditional farmer has his crops mixed, with random spacing, and on hoe and matchet cleared land. Demonstration plots and results of fertilizer use on experiment stations have little significance in the mind of the farmer. A farmer recently told the author that what was being recommended to him was what the white man does in his own system of farming. What he wanted to learn was how his own type of farming could be made to be more productive.

### Other Bottlenecks to Communication

There are various other bottlenecks which nullify the communication strategy for increased productivity. There is no real incentive in a farmer planting a higher yielding variety or increasing his production when there is no road leading to the farm and no transportation facilities, other than the farmer's wife headloading the products along a 2 to 5 km. footpath from farm to village.

A progressive farmer, recently interviewed on the national television network of Ghana, said his biggest problem was an access road and transportation.

Agricultural productivity cannot be pushed as an isolated item from the total aspect of rural development. It is rather unfortunate that in some countries ministries or departments of rural development are distinct from those responsible for agricultural development. The average agricultural extension agent who has the patience to sit and discuss with farmers in a village soon realises that the priority needs of the people are access roads, good drinking water, health facilities, and better transportation and marketing systems. To them, increasing agricultural productivity is secondary to their needs for infrastructural development.

## *Communication Strategy for Nutrition*

An analysis of the communication strategy for nutrition extension reveals that there is the tendency to adopt one common attitude towards correcting malnutrition, an attitude which does not apply in all cases. Much of the extension work in this field has had little relevance to the local situation.

It is generally assumed that malnutrition in Africa is due largely to the absence of protein rich foods in the diet, and that this can be remedied by teaching people how to prepare balanced diets for adults and children and how to grow protein rich foods for improving upon the quality of foods. This is true in some cases but not in all.

One can identify two different geographical areas on the continent giving two different causes for malnutrition. In general, the areas of two rainfall seasons provide adequate staple foods on the farms all year. These are staple foods like cassava, plantain, cocoyam, and yams, with facilities for growing two crops of maize and rice wherever possible. The problem of malnutrition in these areas arises out of unbalanced diets due to a preponderance of carbohydrate foods. The normal communication methods of teaching people how to prepare balanced diets, what to grow, and what to eat to combat malnutrition are very significant in these areas.

The problem in the Savannah areas with one rainfall season and one cropping season is different. In most of these areas, there is a prolonged dry season. It is so dry that there is no other source of food supply from the farm from one harvest to another. The main crops are cereals and pulses, and the total harvest is hardly ever enough to provide the needs of the household for the 12 months until the next harvest. The result is that for most of the year there is not enough food in the home. Most households in the savannahs have only one meal a day during what is commonly known as the hungry season.

Apart from unbalanced diets, malnutrition is mainly the result of an actual shortage of food in the savannahs, and the orthodox approach to nutrition education becomes least relevant. People are so hungry that any type of available food is precious and welcome. What they need are methods for increasing production of food to provide enough to eat for a whole year, with some surplus for the purchase of consumer foods.

### Rural-Urban Migration

It should be mentioned here that although rural-urban migration is usually looked upon as a bad thing from the national level, this is an important means of saving food for the households in the Northern Savannahs of Ghana. Young men are encouraged after the harvest to migrate south to the urban centres for salaried employment, including work as laborers and house boys. They are then expected to go back to give a helping hand at the start of the farming season. They are also expected to take back with them some cash savings which can be used to buy food to supplement the household stocks of cereals, pulses, dry fruits, and dry leaves.

This type of migration is vital to the nutrition of the household, and our communication methods for better nutritional standards should discuss increasing productivity through the most efficient use of the manpower available in the home. Malnutrition in little children in these savannah areas is found to be caused mostly by lack of milk in the breast of the mother. This is the result of the seasonal scarcity of food. Some foreign agencies have constantly donated food to be handed out to mothers for feeding their malnourished children. Such handouts should be looked upon as temporary measures only for emergency cases and should not be made a permanent measure in the fight against malnutrition.

### Suit Local Conditions

There is a need to revise our communication methods to suit local conditions and to have relevance to local experiences and traditions. Child spacing, for instance, has been used for generations in most parts of Africa as a means of fighting Kwashiorkor or marasmus which are symptoms of malnutrition in children.

Many ethnic groups have a tradition that an expectant wife should leave the husband and stay with her parents to deliver the child and should not return to the husband until the child is walking. The superstition is that the child would die if the woman ignores this rule.

These ethnic groups have by tradition realized that children closely spaced suffered seriously from malnutrition and often died after weaning. Child spacing when used by traditional groups for fighting malnutrition should be seriously taken into account and used as base to our own communication strategies for better nutritional standards and for family planning.

## *Family Planning*

This brings me to the third part of this paper: family planning and the communication strategies of planned parenthood associations of most of the African countries.

The African family and family planning have been popular subjects of study by various organizations in recent years, and researchers have included social anthropologists, medical doctors, sociologists, missionaries, demographers, and statisticians.

When family planning was heralded by most African countries, the emphasis was on communicating to the public the dangers of world population explosion and methods of birth control as a means of controlling this expanding population. Global figures were used, such as the doubling of world population from three billion in 1967 to six billion by the year 2000, and the fact that the world is adding a million people to the population of the globe each week. Developing countries are said to need hundreds of millions of tons of additional food in the near future to feed new mouths.

These global figures are frightening to the educated who understand the situation and can appreciate the magnitude of the problem. Census figures indicate that more than 50 percent of the present populations of most African countries are illiterate. Global figures and population control have made very little impact on these people, for they do not understand the figures and their implications.

### Traditional Concepts

Family planning organizations are now changing their communication objectives from population control to child spacing. This falls more in line with the understanding and traditional concepts of the people. The superstition which enforces abstinence in some ethnic groups between man and wife during breast feeding and until the child starts to walk can be gradually broken with the introduction of birth control methods which serve the same purpose. Some husbands use this superstition to starve their wives sexually while they have great fun elsewhere during the period.

Although the major objective is population control, family planning measures can be presented to rural people as measures for controlling pregnancy, leaving the other major objectives to take care of themselves. Some rural people have had traditional methods to control pregnancy throughout the ages. A research worker in Sierra Leone found that rural women have tried various traditional methods, most of which were merely psychological. Some of the measures included drinking native herbs, long breast feeding, wearing cords of certain vines around the waist, charms fixed to the bed, and small native pots packed with herbs and kept under the bed.

There is every opportunity to build our communication strategies on the need to control pregnancy by emphasizing things that people are aware of. When this is done, population control can be a logical result.

The problems of food production and population control are more related to urban population growth than to the rural population. African urban centers are increasing in population far in excess of infrastructural facilities for feeding the people there. My country Ghana has doubled its population in 25 years between 1948 and 1973. Within the same period, the population of Accra, the capital, has increased to four times its number—200,000 to 800,000. This has happened with roughly the same marketing structures and with little improvement in transportation and marketing facilities and in agricultural productivity. This I believe is a serious problem which can be solved through decentralization of industry and through a wider distribution of employment factors.

This paper has stressed the fact that it is not how we communicate but what is being communicated which is the most important factor in the communication strategies for rural development in African countries. To know what to communicate we need to conduct more research and learn more about local farming methods, local conditions resulting in malnutrition, and local concepts of family planning. Until we do this, the content of what we communicate will be alien to the people we communicate with, and time, human resources, and money will be spent with negligible results.

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# Recent North American Communication Research Relating to Diffusion and Adoption of Agricultural Innovations, Nutrition, and Family Planning

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COMMUNICATION research examining the dissemination and diffusion of technological information in the United States and Canada is at a modern low. Gone are the days when many land-grant universities had a stable of social scientists examining the diffusion of technical information to the farmer. The tremendous research productivity of the 1940's and 1950's has vanished. Of the pioneers, only one rural sociologist is still actively studying this process in the United States.

## *Some Factors in the Decline*

Why the decline in North American technical information diffusion research? Where have all the researchers gone? Many have chosen Asia, Latin America, and Africa as more attractive locales for their research efforts. And most of the U.S. scholars maintaining an interest in their own culture as suitable research ground are digging into other subject matter areas, primarily public affairs information flow and dissemination of environmental concepts.

Several reasons readily occur to me to explain this lack of continued agricultural diffusion research in the U.S. and Canada. First, agriculture itself is less dominant and receives proportionately less appropriations in the U.S. If agricultural technology has passed its zenith or leveled off as I suspect it has, even though the world food picture might give it a slight boost, then research on this topic would logically be reduced. Second, other subject matter has become dominant not only in curriculum but in research areas acceptable to land-grant university researchers. So they have applied the methodology of diffusion research to other subject matter areas in the U.S. or else have moved to other countries to retest U.S. generated hypotheses. Third, some researchers feel they have reached the point of diminishing returns in the diffusion research market. Certainly the pattern of activity of the once productive and widely used Diffusion Documents Center, formerly at Michigan State University and now at the University of Michigan, indicates this. Its establishment and collection of more than 1,000 reports, and the subsequent decline in its accumulation and use of materials, is some indication that researchers do not demand bibliography in this area as they once did.

A fourth reason comes to mind, which I hope is not a permanent condition, if in fact it now exists. It appears that many communication researchers no longer look for practical problem situations on which to test their theories. Thus, they accept most any convenient field or laboratory situation on which to try their ideas, or they select content at random in testing hypotheses. Sometimes they disguise this lack of utility and relevance in their work by calling it basic research. Although this basic research may improve our long-run

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knowledge of the process of communication, it gives us little to talk about at a symposium such as this and little to apply to development problems.

In preparing this paper, I took two approaches. One was the traditional literature search, in which I reviewed the communication journals and other published references in the three subject matter areas of agricultural innovations, nutrition, and family planning. This review produced almost nothing in the way of recent U.S. or Canadian research on those subjects with a communication aspect. I arbitrarily defined "recent" as studies in the past 10 years. The U.S. journals had more studies of these topics undertaken in other areas of the world than in the U.S.

My second approach was to write to research centers and researchers whom I knew were (or had been) active in these research areas. Thus I communicatd with many of the U.S. researchers here at this symposium and many of their colleagues. These responses helped me catch up on my colleagues' work but were relatively unproductive in regards to my assigned topic. For example, most of my colleagues mentioned articles that were a result of research conducted in developing countries or mentioned articles in subject matter areas other than those called for.

Perhaps I am belaboring the lack of recent U.S. and Canadian research in this area, but I must report that I checked out over 500 bibliographical references of so-called communication studies in these subject matter areas and found almost all of them of no help because they either were not recent, or were done in developing countries, or did not really contain a communication component. In this latter regard, I checked out the University of North Carolina Population Center's computerized retrieval of 224 items, key-worded as communication studies, and found only seven items meeting the criteria set for this paper.

This paucity of U.S. generated diffusion studies led me to approach this paper in slightly different fashion from my instructions—I added an extra objective. The original one was to give a resumé of such studies, discussing the main variables, propositions, and generalizations. The added one is to take a broader approach and look at other types of U.S. communication research in order to generalize toward rural development needs.

## *Communication Aspects of Nutrition Information Diffusion*

I have nothing of value to offer the nutrition communication experts. I found no articles in U.S. communication journals on this topic. Articles found in other references were mainly of two types which seem of little utility. Many studies compared various media of communication regarding their ability to instruct others in nutrition subject matter. Most of these are schoolroom situations, and the conclusions are routine. For example, visual aids are better in distributing nutrition information than is lecture only. Or, use of classroom media produce learning. The second typical group of studies looks at distribution of health information into communities, but these studies are not oriented toward communication variables, and what they say about delivery systems is old hat to any agricultural extension person.

## *Diffusion of Agricultural Innovations*

Correspondence with several Canadian university rural sociologists turned up no recent work there. In the U.S., Lionberger seems to be the only person with a continuing research program in this area.

In a study reported in the Journal of Rural Sociology in 1972, Lionberger and Copus[1] examined the extent to which social cliques serve as communication barriers and how this varies with agricultural elites and nonelites. Such research has obvious relation to communication in developing nations across village, tribal, language, or caste lines. Lionberger and Copus found that social cliques facilitated communication among their own membership. But as the importance of the information sought increased, the seeker was more

likely to go outside his clique, to cut across clique lines. The seeker also cut across lines when he realized someone in another clique was more qualified to give the information he was seeking.

These findings are paralleled by Forman's study in India[2] in which he found that caste was not a barrier to transfer of agricultural information, and that proximity of givers and receivers of information also did not explain the amount of communication between villagers. Thus, we can hypothesize that farmers in any society will do most of their communicating within their own social group, but that when very important information is sought, they will go outside the social group, especially if they regard an outside source as more qualified.

Lionberger and Campbell[3] looked at a different aspect of information relationships of Missouri farmers when they examined the extent to which personal characteristics influence interpersonal interactions versus communication between farmers not sharing particular personal qualities. They found that farmers communicated with people different than themselves more for informational than for social purposes and more for evaluative than for interactional purposes. This suggested to the authors that farmers must be applying universalistic standards, versus personal standards, in making communication-partner choices for information-seeking. It again reinforces the relative lack of social barriers to farmer communication of agricultural information in the U.S. Further, since farmers were selective in seeking highly competent persons as farm information sources, the potential for quality information flow through the interpersonal network was substantial. The question in regard to applying these results to developing countries is, "Is the farmer more selective in choosing among other farmers as sources for technical information, than he is in his social and interactional communication choices?"

### Some Generalizations

First, people communicate primarily within relatively established social groups. They go outside a social boundary for information when their information need is vital, and when they regard an outside source as more qualified. Second, people communicate with similar people, people like themselves. They talk to relative strangers more about technical information than about social concerns. Although these generalizations may seem trite, they are valuable in showing that interpersonal communication patterns of 1970 farmers in an advanced technology reflect basic social concerns.

## *Diffusion of Family Planning Information*

Of the three topics suggested—nutrition, agriculture and family planning—the vogue in the United States is toward family planning communication studies. It appears to match public affairs information and environmental topics in research interest.

Many research reports are available, although more research on family planning communication is being conducted overseas (especially in Asian countries) than in the U.S. and Canada. I will review several studies that, because of their clientele, ought to have some relevance to developing countries. Most of these studies involved disadvantaged or minority groups or rural populations.

In his article, "A blueprint for research and evaluation of population communication programs during the 70's"[4] Bogue laments that communication research is not one of the big spenders in the family planning business (or perhaps the family planning business is not spending much on communication research). Bogue calls for communication research practitioners to read, think, and apply results of previous research to this current subject matter and situation. And Bogue thinks that small sample, inexpensive surveys will answer many of the practical questions about family planning communication.

Radel, writing about communication research in family planning for the East-West Communication Institute[5] also calls for an immediate, practical approach with inexpen-

sive, quick, surer studies. He says studies should be descriptive, evaluative, directive, validative. He believes that communication researchers should forget about mass media studies and look to the communication problems involved in administering and practicing family planning. A question arising from Radel's paper is how we can get surer, validative studies at the same time we get quicker, inexpensive studies.

## Type of Research Needed

You might expect the communication researchers with less stake in family planning, but more in communication, to take a different approach to the question of the type of communication research needed. Edelstein[6] of the University of Washington criticizes family planning communication research for not being unique and for using the traditional survey research techniques. He decries the methodology as researcher-oriented and of not being "respondent-free."

Edelstein makes a complaint that has been heard often regarding agricultural diffusion studies—the results of such surveys are alike. But they should not be if we are asking the correct questions in the correct way among peoples of different cultures. Further, some important questions are not being asked. Edelstein calls for a research conceptualization that emphasizes the decision-making process of the individual. He calls for methodology in survey research which uses open-end, yet systematically structured questions, where the burden of the structuring is left to the respondent. He argues we should leave the respondent free to begin wherever he is—rejecting, adopting, seeking, or whatever.

McNelly[7] sees additional weaknesses in our approach to family planning communication research. He accuses U.S. researchers of slighting the role of mass media in information transmission by emphasizing research on attitude change. And he believes that much of the attitude change work has been short-term, shallow stuff. In family planning, he says we cannot afford to lose sight of the informational inputs to attitude formation. Also, McNelly thinks we ought to study the influence of situational factors on whether favorable attitudes are translated into behavior. He notes that family planning information is as poorly distributed in total populations as are other types of information. He calls for bringing a broad societal and collective viewpoint and content to family planning information, not just taking a personal and psychological approach. One of McNelly's criticisms is that we need to look at informational inputs to attitude formation.

## Attitudes Toward Family Planning

What is happening to attitudes toward family planning in the U.S.? Certainly we have more information on such subjects in our mass media than we did 10 years ago. Westoff and Ryder[8] have provided an answer. The main purpose of their research was to understand whether the attitude of American women toward fertility control had become more favorable in recent years. Data came from three studies conducted in 1955, 1960, and 1965. The researchers make these conclusions:

(1) American women have become increasingly favorable toward the principle of fertility control.
(2) The greatest change has occurred among Catholic women, many of whom have moved away from exclusive endorsement of the rhythm method.
(3) This change in Catholic attitude has been especially marked among the better educated Catholic women.
(4) Couples appear to be adopting contraception earlier in marriage.
(5) Education is becoming less important in differentiating use.
(6) The gap between white and nonwhite attitudes has narrowed considerably because of the rapid change in non-white attitudes, due in part to increasing education.

Although we can see a clear correlation between these more favorable attitudes toward birth control and the decline in the U.S. birth rate, the implication from Westoff

and Ryder's work that various types of U.S. citizens will soon share equally in information and attitudes may be optimistic.

In a study involving 50 college freshman women's communication about contraceptives, Angrist[9] found that most respondents had contraceptive information to some degree, and nearly all desired more authoritative information. But they tended to view contraceptives as an area peripheral to their central interest in sexual behavior and standards. More important to our point, contraceptive communication varied according to religion, college major, birth position, and verbality. Conclusion: even among the educated, not everyone is equally well informed.

And what about the disadvantaged or minority groups? How well informed are they? In his study of attitudes and knowledge relevant to family planning among New Orleans negro women, Beasley[10] found that although 72 percent of these women did not want more children, 29 percent did not know of any effective birth control method, and 57 percent had not used family planning methods in their last year of cohabitation.

Talbot's study[11] reinforces this finding of the lack of family planning knowledge among minorities. She inquired into the knowledge of selected aspects of conception and contraception of a group of unmarried, pregnant black girls 16 years of age or younger. For these girls, communication media were at the bottom of the list as sources of information. And the level of language used for sex education in their schools was beyond their comprehension levels.

## Mass Media

Should we indict the U.S. educational system and mass media for underachievement in diffusing family planning information? Are newspapers, in reacting to community needs, likely to increase their coverage of this topic? Shaw[12] looked at newspaper presentation of population and family planning news and found that such news was no more prominent in cities with greater concentrations of poverty according to fertility rates, housing, and economic conditions than in cities not as needful of such information.

In Darity's study[13] of cultural and social factors related to use of oral contraceptives, he found that mass media were very poor sources of information. Seventy-one percent of the first information came from co-workers, friends, and families. Darity concludes from this that any educational program must be carried out at the community level to get maximum personal contact and exchange of ideas.

If mass media are to be effective in behavioral change, there is some evidence to suggest this may take a massive, high cost effort. Udry[14] reports a mass media experiment in family planning—a multimedia advertising campaign directed at changing reproductive behavior. Paid advertisements simulated a $20 million per year national campaign in two large cities, and a $7 million level of expenditure in two smaller cities. The ads were humorous, abrasive, animated cartoons. Although the campaign produced high levels of awareness, there were only minor (though statistically significant) increases in new patient treatment. But the cost per clinic recruit was exorbitant and prohibitive. Further, there were no increases in contraceptive sales, no decline in births compared to control cities. Udry concluded that the minor behavioral effect was not worth the cost of massive media use.

Assuming that mass media could economically be effective in disseminating family planning information, what type of approach with content should be taken? Hutchinson[15] compared television spot announcements having "informational" and "testimonial" approaches. While both television spots conveyed a considerable and equal amount of information about a family planning clinic (medical services, professional care, choice of contraceptives, safety, etc.) the testimonial spot was predicted to be more motivational. That is, the endorsement of real clients with whom the viewer could identify was expected to change or at least reinforce the motivation to use birth control. The information spot,

however, got the best response with three times as many calls as the testimonial spot, 303 to 87.

If mass media have not been particularly useful or perhaps have not been well used in disseminating such information in the U.S., would the two-step flow principle be useful in distributing such information? Palmore,[16] as a result of his Chicago study, does not think so. He studied the flow of influence and information about family planning and found people of all types, not just opinion leaders, being reached by mass media information. But the main flow came in the interpersonal channels. He described the flow not as two-step, but multi-step, or an interpersonal chain of dissemination.

Communication researchers have indicated that for opinion leaders to function with information as personal as that associated with family planning, the opinion leader or information giver must be as nearly like the receiver of such information as is practical.

Several communication experts have called for using communication helpers or aides chosen from among the clientele group so as to maximize homophily and credibility, and thus increase communication. In her nationwide study of nutrition aides (women chosen from communities to distribute nutrition information in those communities), Brand[17] surveyed the extent to which these women were also asked about family planning. Although the nutrition aides were not trained nor responsible for giving such information, two-thirds of them had been asked for such information, and 97 percent of those asked had given information. Forty-one percent had volunteered such information. These nutrition aides perceived themselves as similar to the families they worked with, and they were able to effectively communicate with them on topics other than nutrition.

Brand's findings are reinforced by Beasley's[18] eastern Kentucky study of the frontier nursing service. Here the communication and services of nurse-midwives were found equal, and equally effective to, that provided by physicians, regarding distribution of contraceptive pills and insertion of IUCD's.

### Summary—Family Planning Communication

To briefly summarize the U.S. situation regarding family planning communication, we can state that:

(1) U.S. communication researchers and family planning communication experts don't think we are doing enough research in this area, nor the right kind.
(2) They think we must structure our research methodology to pay more attention to the situational aspects of the diffusion process, to get closer to the practical questions, to apply results of other types of diffusion research to this subject matter, to devise measuring instruments that are not researcher-biased, but instead are respondent-free, and to pay more attention to information relative to attitudes.
(3) Although attitudes are becoming more favorable and levels of knowledge greater with regard to family planning, this information is not evenly distributed among all population groups.
(4) Further, mass media are not particularly useful sources of such information for disadvantaged groups and minority groups. And, newspapers in cities where such information is clearly needed have no better record of carrying such information than those in other cities.
(5) When mass media do carry such information, a straightforward informational approach may work better than a personal approach.
(6) But using well-informed personal contacts seems to be a better method of distributing such information and getting acceptance of it than is use of mass media.

## *Recent U.S. Research in Diffusion and Flow of Information*

In the beginning of this paper, we stated that some U.S. researchers do not feel that diffusion research is a priority area. In his paper concerning new directions for research in

communications and international development, Grunig[19] says, "We no longer need research on the diffusion of innovations," and he lists a raft of topics as "dodos." Grunig says research on the relationship of communication and development is at a standstill because theorists have assumed for too long that messages given to traditional individuals will modernize them, and these modern individuals will change their political, social, and economic systems toward modernity. Grunig says this is false. The fallacy lies in the restrictive systems which bind the individuals. Therefore, he says we need research to show how communication can bring about structural change.

Tichenor, Donohue, and Olien[20] make a similar point. They feel that social structure and social conflict are underemphasized in one of the very areas of social science where they are highly relevant—the area of mass communication research. The position they take is that mass communication researchers would benefit from a macro-conceptual framework that gives increased attention to structural factors and the systematic control of information and conflict. Such research requires extensive structural analysis of the community, regional, and organizational contexts in which communication occurs. Tichenor and company emphasize structural factors as compared to personality factors in explaining social change. They say that a macro-conceptual model, then, necessarily points to media structure, message environment, audience system structure, and social conflict as vital factors in information flow.

Allen[21] has examined this idea further in research titled "social relations and the two-step flow: a defense of the tradition." He found that social pressures and social support, two types of social contacts, were increased by public affairs discussion among individuals. In other words, people seem to gather information they can use in social interaction with others.

That idea is not new, of course, and it is echoed in a recent paper by Chaffee.[22] He states clearly that the use of mass media is not a discrete individual behavior. Rather, an individual is continually, often simultaneously, involved in both mass media and interpersonal communication. The principal social function of the mass media may then be to facilitate interpersonal discussion.

In reporting an information campaign that changed community attitudes, Douglas, Westley, and Chaffee[23] found a positive correlation between information gain and attitude change regarding mental retardation information. The campaign produced great interpersonal dissemination, and even the lower-educated people in the community had knowledge gain. The researchers believe that the reason the knowledge gain was associated with a positive change in attitude is that the topic of mental retardation is relatively non-controversial, and a majority of the community was uninformed and probably had few attitudes regarding the topic before the campaign.

## Nine Hypotheses

In a paper of four years ago, I reviewed the two-step flow theory and gave some implications for cross-cultural generalization.[24] I presented nine hypotheses regarding how the two-step idea would apply in developing countries:

(1) Mass media messages are normally non-influential. Even for the opinion leader, mass media carry a low ratio of instrumental information, or information which would contribute to decision-making or to changing attitudes, as compared to non-utilitarian messages. People do not normally expect to receive instrumental information via mass media, nor do they readily perceive its utility when it is present.

(2) The two-step flow is rarely operative. There is little influential information available and little reason for opinion leaders to function using information transmitted by mass media as their source.

(3) When locally relevant, instrumental information is available via mass media, the two-step flow operates at a higher level than in developed countries. Normal com-

munication is personal and local; leaders are on the lookout for instrumental information; a local demand exists for such information, thus increasing the chance of a two-step flow.

(4) Interpersonal channels and thus the two-step flow are more important for news of maximum interest than in developed countries but less important for news of minimum interest than in developed countries. Since media are not ubiquitous, "important" news has a high two-step flow rate. Minimum interest news has a low interpersonal flow because news important to special interest groups is rarely available via mass media.

(5) Influence is an important motive for relay of information. That is, most information is relayed because of a persuasive element. There is a low degree of information-seeking and a high degree of information-sharing. This increases passage of influence and influential information versus a gatekeeper relay of news per se.

(6) Opinion leaders and followers share fewer characteristics than do their counterparts in developed countries. A greater proportion of opinion leaders are formal leaders rather than simply members of the community, neighbors, or friends. But since communication is more personal and local, this does not diminish the information flow nor the flow of influence.

(7) When opinion leaders are neighbors and friends (share characteristics of their followers) they normally innovate or adopt the behavior or attitude in question, before informing others.

(8) Initiation of the information flow between leader and follower is normally made by the follower. Leaders do not normally transmit to followers except after information-seeking or request of the follower.

(9) Information availability via mass media creates new gatekeepers, and these gatekeepers eventually become opinion leaders.

Subsequent research indicates support for most of these ideas, and only number seven seems either nonoperative or nonsense.

In a paper prepared with Fett, I did some additional thinking about the application of diffusion theory to rural situations in other countries, especially regarding mass media-interpersonal linkages.[25] We made several tired but valid generalizations, most of which have already been discussed at this symposium. We emphasized that the flow of information depends on its content. If mass media do not carry information sought, needed, or useful to the rural audience, that information carried will not flow into the interpersonal channels. We stressed that relevant information is needed in mass media—information that meets the content needs and the local situation of the recipient. We repeated that opinion leadership is partly a function of information held by the opinion leader, but we cautioned that gatekeeping and personal influence are distinctly different phenomena.

To summarize this related research, I believe we need to measure the structural, institutional, and social aspects of any community when we study the diffusion of information within that community. This is likely to give us far more explanatory power than studying individual personal or cognitive variables. Secondly, and related, we must consider diffusion in the interpersonal network context, even when dealing with the individual's personal use of mass media. Thirdly, we should periodically review the body of knowledge we have regarding diffusion theory, and re-evaluate and revalidate the generalizations thereof. A major value of this symposium is that it permits us to do just that.

# Some Additional Comments*

THE paper I presented at the symposium in written form indicated that North American communication researchers are not particularly interested in diffusion and adoption research. And when the communication researcher studies diffusion of information and technology, it is with new subject matter areas in vogue, such as with family planning communication. The written paper also indicated that many researchers are questioning the utility of the types of research they have been doing and the methodologies involved.

I believe we are experiencing fundamental changes in research interests and approaches in the U.S. Rogers has graciously shared with us some of the changes in his personal views regarding research approaches. Others here have alluded to new trends in communication research approaches. I am going to summarize and rephrase certain portions of my written remarks to indicate more clearly what is happening with communication research related to development questions in the U.S.

## *Emphasis on Problems of Development*

The first point I wish to make is that although U.S. researchers are doing very little adoption and diffusion research, they are increasing the amount of research related to the use of information in solving development problems. U.S. researchers seem to be studying all types of development questions except those related to agricultural technology. You may attach almost any adjective to the word development to describe this research. We are studying the communication aspects of rural development, community development, regional development, resource development, environmental development, etc.

In studying the role of communication in development we have made basic changes in research approaches from those prevalent in the 1950's and 1960's. We have definitely moved from the social psychological theories to the more social ones. We no longer expect demographic and psychological variables to provide key explanations of communication behavior. We are less interested in personal attributes and values than we are in structures and social systems. We are less interested in simply testing theory, and thank God for that.

In the mid-1960's, we probably had 50 percent of all U.S. communication research tied up in testing the theory of cognitive dissonance. Because my personal value judgment dismissed this theory as unimportant, I had considerable dissonance in seeing such effort wasted. Most researchers are now less interested in testing a specific theory to see if that theory is functional than they are in examining communication situations and determining whether theory is in operation.

Why this change? I believe more and more communication researchers are taking what I call a problem approach. They are looking for development problems and then examining the communication aspects of the creation or solution of such problems. They begin their research with an orientation to people—people who have communication problems. And they are not willing to follow the old communication model which identifies people as either senders or receivers. Likewise, the problem approach does not require them to take an *a priori* theory or model in examining the situation.

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*Addendum to assigned paper.

QUESTIONS ASKED BY RESEARCHERS

Why this new freedom which might appear to be less rigorous and scientific? The change in the communication researcher's frame of reference is due to information received from communication practitioners. In the late 1950's, when the communication researchers thought they had most of the answers and useful theories in their bright new discipline, few communication researchers would have admitted learning anything from communication practitioners. But feedback from the field leads the researcher to ask very basic questions about development communication.

The researcher is now asking questions such as:

(1) Who should define a development problem? Are the people affected by the problem involved in its identification and definition?
(2) Who selects the relevant content needed in solving the problem? Do the people who will make the decisions and will be affected by the decisions have adequate power in content selection?
(3) Who selects media and designs strategy? Do those needing information make their preferences known? Are those who design strategy as familiar with measuring effectiveness as they are with achieving efficiency?

These are natural questions for those who attended the symposium. But they reflect a new awareness on the part of many U.S. communication researchers without experience in developing countries. They are becoming more and more concerned with the points raised by other speakers. They are interested in who determines content, in viewing diffusion and adoption as a problem-solving system, and in appropriate strategies in actual communication situations.

## *Changes in Research Designs*

Along with this basic awareness are appearing some changes in research designs and methodology:

(1) I note more communication researchers using the case study method or combining the case study with field experiments. They like the case study for its potential reflection of development reality and the field experiment for its control and measurement of key variables. They are willing to trade the generalizability of random samples for the greater depth of understanding of case studies. And the survey becomes a tool within the case study or experiment, not a method in itself. They are interested in measurement over time, by continual observation or through before-after or multiple time measurement.
(2) Regarding theory, testing theory per se is not often the approach. On the contrary, I detect an increasing desire to see if communication theory can be found operating in communication situations.
(3) I see a local approach to communication research, the choice of a locale where a development problem is real and cries for solution. And I see a structural and systemic approach in terms of variables to be tested. We look at communication within normal social boundaries or at least recognize that reality.
(4) I see more of an interdisciplinary approach where economists, sociologists, and planners help define and structure the communication problem.
(5) I see renewed interest in studying the use of information in decision-making. And there is increasing interest in studying interpersonal communication linkages. Mass media are less often being studied apart from the social situation and interpersonal relationships.
(6) Finally, I see communication research which centers on the citizen as a key decision-maker and actor—research which examines the citizen's role in policy formation. Perhaps the growth in bureaucracy and the centralization of authority in the U.S. is stimulating the communication researcher to place value on such

studies. Whatever the researcher's ideology, more and more U.S. development research examines the citizen's role as a power actor, both in planning for development and in carrying out development programs. It is a fact that on many questions related to development, citizens as decision-makers and actors are forcing local governmental units to alter policies and plans. This is happening with communication questions related to land use, to transportation alternatives, to energy production and consumption, and other major human environmental questions.

If what I see is reality, and not just a representation of my own personal research views, then we are on an exciting frontier in development communication research in the U.S., and I believe we are attacking questions in a manner which will present greater comparison and validity with similar research work in other countries. Time will tell.

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# Comments on the Feliciano, Diaz-Bordenave, Bortei-Doku, and Bostian Papers

L. E. SARBAUGH*

IN attempting to cope with the many points covered in the four presentations, I feel that I'm in the situation of the person who said, "Please excuse the long letter, I didn't have time to write a short one." I'm finding it very difficult to adequately comment in the time and space available. I will attempt to look at similarities among the points presented, implications of the various items for communication practice, and I'll suggest some areas of emphasis for further study. First, I'll site some points of agreement and some concerns and then elaborate on these.

## *A Network of Variables*

I'm pleased that all the speakers have referred to the importance of a systems perspective in studying and developing action programs related to rural development. They also noted the complex set of factors which are involved in communication in every development situation.

I concur in the need for increased attention to structural variables in research and action programs; however, I'm disturbed by the suggestion that we need not give attention to psychological variables. I see the structural and psychological variables as being interdependent.

Mention was made of the importance of appropriate language shared and used by the persons communicating. I wish that more explicit mention had been made of the interplay between the verbal and non-verbal codes, recognizing that research in the area is limited. I also wish that more attention had been given to the difficulty of changing norms, a process which often is required in development programs. I will consider these points in more detail later, and I will plead that we open our minds to new ways of thinking about research needs and ways of conducting research.

While the basic systems language is easy to use, the application of a systems perspective in the research and practice of communication is very difficult. I'll try to illustrate that complexity.

It was noted in the papers that the correlational data from diffusion and other communication research have provided some insights, but the data have not been entirely satisfactory in providing generalizations which could be used in guiding communication practice. Zero-order correlations have generally been low; often they may be no more than .20 or .30, which means they account for less than 10 percent of the variance in adoption levels. Combining the variables in multiple regression analyses have increased the correlations suggesting that many variables are contributing to the outcome; but, even then, the variance accounted for may be only 25 to 30 percent. This may suggest that interactions are occurring which wash out relations among the variables and that much random error is present.

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An indication of the number of variables which one might consider is found in the Ph.D. dissertation of Otis Oliver of Puerto Rico; he included 69 variables in a factor analysis dealing with the diffusion of technology in his country.

## *Studying Communication as a Process*

To increase our appreciation of the dynamic nature of systems with which we are dealing, let's take a piece of bread. What is it really? One answer is to name the ingredients. Can you show me flour in the bread? Of course you cannot because it is no longer there as flour. In the process of becoming bread, the ingredients have changed and are no longer present as ingredients. If I were to ask you which is the most important element in making the bread, what would you say? After some reflection, some of you are saying that all of the elements are important. If we were to change any one of the elements, the product would be different. If in this conference, 10 of the persons were to leave, the outcome of the conference would be different; if we were to add one or more persons, the outcome would change. Thus, in one sense, every element in the bread is important, just as every element in the communication process is important; and a change in any element in the communication process will alter the outcome of the communication.

What I'm trying to suggest is the importance of studying the communication process as a process, granting the difficulty of doing this. I'm not willing to admit that it cannot be done; we may have to alter our ways of looking at the world in order to study it as a process.

## *Need for the Unconventional*

We have been talking about how difficult it is to get rural residents (farmers and villagers) to change their ways of thinking and behaving. I wonder if we also may have some of the same difficulty ourselves. Many times we fail in our efforts to solve problems because we cannot think in other than traditional ways of looking at the problem; we cannot break outside the conventional boundary.

A good example of thinking outside a conventional boundary occurred in a development project in southeastern Ohio. One town in the river valley was trying to develop a plan to prevent flooding of the town. They were considering the usual approaches of building levees and of widening and deepening the stream channel. They called in an engineer who told them the problem was not flooding but soil and water conservation. Many of those working on the project thought he was crazy. Others insisted that he be heard. He pointed out that it would not be economically feasible to protect one town from flooding; that to be economical, they would have to think in terms of 18 counties, far beyond the original boundaries being considered. Without going into many more details, the decision was to build 14 dams on the headwaters of the river and introduce soil and water conservation practices. The flooding was controlled and, today, the recreation benefits from 10 lakes maintained behind 10 of the dams exceeds the flood control benefits.

Bortei-Doku's paper noted an example of someone breaking outside the constraints: A professional took 50-pound bags of fertilizer and divided them into smaller bags with the result that fertilizer use increased markedly. Farmers did not have money to buy the larger amount, and thus could not use the fertilizer, even though they were convinced that it was a good practice for them.

I'm urging that we also attempt to think outside the usual approaches to communication research in relation to development programs. I believe if we do that we may discover ways to study communication from a systems perspective, looking at it as a dynamic process.

## *Interdependent Variables*

One of the points I want to question, in at least two of the papers, is the statement that we should concentrate on structural variables instead of psychological variables which have not proven very fruitful in the past. I agree that we should pay attention to structural variables, but I would contend that we also should consider the psychological variables. I hold that there is an interdependence between structural variables and psychological variables. Individuals comprise and influence the structures of which they are a part, and the structures influence the beliefs and behavior of the individuals; communication variables are influenced by the structure and in turn influence the structure. The point is that these variables are interdependent and that both structural and psychological variables need to be considered in studying communication.

### A Transactional Analysis

Perhaps I can further support the above notion by referring to transactional gestalt, a way of looking at behavior which has attracted my interest during the past year. It is presented in the popularized book by Thomas Harris, *I'm O.K., You're O.K.* This book, plus one by James and Jongeward entitled, *Born to Win*, presents the position that each of us develops a lifescript early in life, probably by the time we are three to six years old, which says that as a person we feel we are O.K., or we feel we are not O.K. In one case the lifescript says, "You're a loser;" in the other it says, "You're a winner." It may say several somewhat more specific things such as, "You're not as good as other people." One's lifescript determines how he responds within the social system, and the social system contributes to the kind of lifescript he has—an interdependent relationship.

The lifescript may be a strong factor in determining which persons will be apathetic and resist change and which will be stimulated by new ideas and continually seek ways to grow.

Discounting messages can have a very debilitating effect on an individual. Let me try to illustrate. How do you think you would react if, for two hours, I gave you a continuing set of negative messages about yourself, messages such as the following: Can't you do anything right? I thought you knew better than that. Oh well, wrong again. You'll never amount to anything. Then there is the more subtle discounting which can be equally as devastating: Here let me do it for you. That seems to say that you are not capable, so I who am superior will do it for you. With an accumulation of such messages, I predict you will begin developing "I'm not O.K." feelings and your behavior will reflect the feelings.

I suggest that a mass of discounting messages may very well be a factor operating within minority groups within our societies; it may be a factor contributing to underachieving children and adults. This leads one to ask whether development programs must take into account what is happening to children in various segments of society and how this influences their potential for future growth and contributions to society.

Bortei-Doku referred to a form of the discounting when he mentioned professional staff who talk about farmers not being very intelligent. These professionals may not say that to the individuals in words, but their non-verbal cues may reveal the feeling to the farmers in communication situations.

## *Verbal/Non-Verbal Interplay*

That brings me to the point about the interplay of verbal and non-verbal codes. Watzlawick, Beavan, and Jackson in their book *Pragmatics of Human Communication*, claim that the content aspect of communication is carried mostly on the verbal code, while the relationship aspect is carried mostly on the non-verbal codes. I can illustrate the operation of this with an example from our family in which my wife was annoyed with our daughter who was late for dinner. My wife was trying to conceal her annoyance by speaking casually

and in a normal tone of voice. The daughter responded, "Well, you don't have to shout about it." My wife replied that she didn't believe she had spoken harshly. Whereupon our daughter replied, "It was the way you looked." The non-verbal had indicated the relationship at that point in time.

In what I have stated above, I believe there is a definite suggestion to look at communication from a systems perspective, taking into account both structural variables and psychological variables. As we take a systems view we get involved with questions about boundaries of systems.

## *Boundaries*

One of our MSU anthropologists, Iwa Ishino, and some of his colleagues have been looking at the concept of boundaries in studying human behavior. In a sense, they are playing a "what if" game, a game I feel all of us should play more often in attacking problems. It's the kind of thing Bostian did when he listed some different approaches to communication research. Diaz Bordenave did it when he asked us to look at another model of diffusion.

"What if" we were to look at development questions as boundary maintenance or boundary penetration problems? What communication takes place to maintain which boundaries? What communication takes place to penetrate which boundaries? If we stop to consider, we realize that boundaries exist in the minds of people (individuals), even physical boundaries between countries. Yet, the boundaries are treated as though they were some continuing physical reality. Where is the boundary between developed and non-developed?

In thinking of the behavior of rural people, who wants the boundary penetrated; who wants it maintained? What kind of communication will maintain boundaries; what kind of communication will produce boundary penetration? What are the norms which prevent a farmer from considering a new practice, and how can that boundary be changed to allow acceptance of the change?

In conclusion, I believe the presentations of the four persons have been very useful in bringing together for us a sample of communication research and in helping us focus on needed future emphases. I trust that our boundaries are permeable enough to allow the penetration of some new approaches.

# The Sharing of Communication Research: The International Dimension

ROBERT P. WORRALL*

THE East-West Center was founded in 1960 by the U. S. Congress as a national educational institution in cooperation with the University of Hawaii. The Center's goal is to promote better relations and understanding between the United States and nations in Asia and the Pacific through cooperative study, training, and research. Its programs provide a framework within which staff members, visiting Fellows, graduate students, and other participants from the United States and a number of countries in the Asia-Pacific area can combine their efforts to define, explore, and work toward the solution of problems affecting both East and West, learning about both the problem areas and each other's culture at the same time.

The Communication Institute is one of the Center's five problem-oriented institutes. It studies the problems of sharing information across cultures and between nations—the processes by which knowledge is exchanged, decisions arrived at, roles and relationships learned and signalled, and social change stimulated and directed, and the flow of communication which makes it possible for East and West to understand each other and cooperate. The Institute is concerned with three broad subdivisions:

(1) International communication—how communication can be used to improve understanding and peaceful relations among nations and increase the sharing of mutually useful knowledge across political and cultural boundaries.
(2) Developmental communication—the use of communication and communication technology in facilitating adjustment to change, in altering the direction and pace of change toward improving the quality of life for individuals and nations.
(3) The communication of popular culture—how the values and understandings of popular culture are communicated and their effect on the nature of society and the quality of life.

## *Established Criteria*

The projects and activities conducted by the Institute to reach the broad objectives of each subdivision must meet a set of criteria which make research sharing a high priority goal. Each project must:

(1) Be multinational in focus, in staff, in composition, or in dissemination. (Hopefully all four.)
(2) Be cooperatively designed, implemented, supported, and evaluated. Evidence of cooperation includes cost sharing, co-directing, co-sponsoring, co-hosting, and exchange of staff and participants.
(3) Involve a cross section of EWC participants and professional staff as an interdisciplinary team.
(4) Include participants who come from both Asian/Pacific countries and the United States and who return to their respective countries of origin to share their experiences.

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The Center's goal is not to maximize the volume of research (or numbers involved in professional development programs), but to bring together Asians and Americans to focus their talents on mutual problems. Thus, the Center not only shares research but shares researchers.

## *Family and Population Planning*

Through an institution-building grant from the U. S. Agency for International Development, the Institute is responding to one particularly pressing issue of development: the role of communication in combating the negative effects of population growth on social and economic development. Since 1970, the Institute has been developing a resource base of research, training, and service designed to meet the needs of professionals in the communication components of family and population planning programs worldwide. This paper draws on the three-year history of experience in building a resource of knowledge, a resource of expertise and experience, a resource of learning and instruction, and a resource of cooperative activity.

### Building a Resource of Knowledge

The Institute's capability as a resource of knowledge is achieved in two areas: Development of new knowledge through research and through synthesis and analysis of its program experience, and facilitation of better and wider use of existing knowledge, through identifying and organizing it, communicating it to those who need it, and using and evaluating it in Institute programs.

Priority areas in building a resource of knowledge at the Institute are based on needs analysis carried out by the Institute and involving key individuals in institutions in the communication field. For example, an assessment of needs for communication research focuses on the professionals whose decisions determine policy and procedure.

Activities underway at the Institute to both develop new knowledge and facilitate better and wider application of knowledge include the following:

(1) An assessment of needs for information and knowledge, determination of what people need what knowledge and in what form they can best use it.
(2) A program of case studies of effective family and population planning communication programs including new topics as needs are identified. All such studies are done cooperatively with Asian individuals and institutions.
(3) A worldwide inventory and analysis of international support for communication in family and population planning, stressing the analysis and interpretation of findings to present a profile of the field and current unmet needs within it.
(4) A continuing analysis and documentation of in-country programs, increasingly focused both on issues included and countries studied, designed to point up emerging trends and needs.
(5) A series of topical reports growing out of the foregoing inventory-analysis and documentation activities such as communication training, communication research, consultant/advisory services, audio-visual support, etc.
(6) "State of the art" papers based on key communication topics resulting from exploration of field needs, periodically summarizing the state of current knowledge and the implications of that knowledge for program action. Topics for such papers include fieldworker training, media selection, effective appeals, audience analysis, and pre-testing.
(7) Computerized programs of organizing knowledge around problem areas and providing systematic classification and efficient retrieval of resource materials.
(8) Use of microforms and other technology to explore and improve the process of information distribution, drawing on studies of diffusion of innovation related to new forms and processes of dissemination.

(9) Research and development of low-cost technology adaptable to rural areas.
(10) Professional development (training) programs incorporating experimental and theoretical findings.

## Problems of Getting Research Used

Wilbur Schramm says the first problem of getting research into action is the sheer glut of information which is flowing. How many of us can really absorb the 40 or so scholarly journals that come to us regularly? Add to that the mimeographed, cyclostyled, and typewritten reports which characterize this field, plus the substantial number of new books coming on the scene, and you have a formidable problem for a scholar, not to mention the development planner, the newspaper man, the family planning administrator.

A second problem in getting research used is the nature of the research itself. Social science research findings are simply more difficult to apply than those of physical sciences. What may apply in one situation and in one location doesn't necessarily apply in another.

A third related problem is that gaining access to existing research results is difficult, especially in developing countries. As a result, there is much duplication of effort, and even where that is not the principal problem, researchers often fail to benefit from the experience of others in the design and conduct of their studies.

These and many other problems were addressed during the December 1973 conference at EWCI on "Making Research Useful." In addition to the more long-term requirements for making research useful (such as changes in the academic system's attitudes toward and rewards for conducting "applicable" research), the conference recommendations drew attention to a number of practical and immediate problems:

### *The Process of Research Utilization*

Participants recognized that research utilization is a process, not a single function, for bridging the gap between research results and their use in programs. This process should be made more explicit so that each element in it can play a proper and effective role, from the point where a research question is identified, through the use of findings in programs, to the feedback to researchers of problems related to application and the sharing of this knowledge with others who need it.

### *The Elements in the Process*

Particular stress was placed on the need to develop and support information and analysis centers at national, regional, and international levels, and to maintain the kind of "networking" at all levels that would permit two-way flow of research results and resulting technical information, facilitating the full range of identifying, collecting, classifying, transforming, processing, retrieving, and disseminating information in usable form to specific users in practical time frames. Other existing institutions which can be better used to share research are meetings, conferences, and training programs. There could be a "research news" section in all important gatherings of this kind; a "feedback" section could also be a routine part.

### *Creating New Institutions*

Collecting, consolidating, storing, processing, and disseminating the existing body of knowledge in each country could be undertaken by a national institution which should maintain a continuous link with all other relevant national agencies producing and using research and with relevant international agencies. Another "institution" suggested was the establishment of a "research manager" position to insure that research is tailored to programs. The research manager could diagnose program problems, identify research needs, feed readily available information into research, initiate and promote needed research using national capacities. He should also communicate available research findings to administrators in terms of program implications and should feed researchers problems for investigation.

## ICARP Program

Related problems have been recognized in the formation of the International Committee on Applied Research in Population (ICARP). Encouraged by The Population Council, ICARP promotes and conducts collaborative operational research on promising action improvements or "leads" in the population and family planning field. As only a small number can be pursued at any one time, leads are carefully chosen and they are selected by a set of criteria to give a balance among such features as probable impact, researchability, and administrability.

The committee meets several times a year and is presently composed of persons from major programs and associated research units in Colombia, Philippines, South Korea, Taiwan, and Thailand. To be considered for selection a "lead" should:

(1) Promise considerable impact.
(2) Be empirically researchable.
(3) Be administrable.
(4) Be transferable from one country to another (though this is not an absolute requirement).
(5) Be supported by sufficient experience/evidence to be more than a "mere idea" but not yet be thoroughly demonstrated.
(6) Be "acceptable" under an amalgam of ethical, political, and social considerations.
(7) Not be under intensive research elsewhere (e.g., the maternity-centered approach).

## EWCI Program

The information overload to which Schramm refers and a resulting demand for condensing, distributing, and interpreting of research results is being met in various ways. The East-West Communication Institute is one of a growing number of institutions throughout the world with clearinghouses or documentation centers.

As part of EWCI's attempt to define its own role in this area, in 1971 Radel described the services of 16 such units serving the needs of family and population planning personnel worldwide. His definition of clearinghouse services embraces a three-stage process:

(1) Active gathering of information and materials from multiple sources.
(2) Processing of these in some fashion (e.g. preparing for storage and retrieval, abstracting, translating, cataloging, collating, selecting, simplifying).
(3) After identification of appropriate audiences, disseminating the processed materials to external users, generally by mail.

Eight separate services were being provided by the 16 clearinghouses:

(1) Storage, retrieval, and dissemination of sample or prototype educational and family training materials.
(2) Storage, retrieval, and dissemination of research and consulting reports and related fugitive materials.
(3) Information services for population/family planning professionals.
(4) Staff information services.
(5) Information services for interested leaders, non-population/family planning professionals.
(6) Translation services.
(7) Storing and cataloging of holdings, referring users to original sources.
(8) Support for clearinghouse services.

The International Planned Parenthood Federation (IPPF) was shown to be providing the greatest variety of clearinghouse services—six of the above eight types listed. In addition, by providing support for the work of the secretariats of its affiliates, IPPF was pro-

viding selected international clearinghouse services at regional level. The second widest range of services was being provided by the Population Council. (Included five of the above categories and in addition were supporting translation through a grant program.)

In the information, education, communication component of family and population planning, five agencies have active or planned services—UNESCO, Carolina Population Center of the University of North Carolina, Community and Family Study Center of the University of Chicago, Office of International Health of the U.S. Department of Health, Education and Welfare, and the Communication Institute of the East-West Center.

*Documentation Service*

Since late 1970, the Institute's documentation service has been putting a strong emphasis on the collection and dissemination of educational campaign materials (leaflets, posters, and various audio-visual aids) and "fugitive" literature on IEC aspects of family and population planning programs.

These services are part of the Institute's broader program in developmental communication, which also includes agriculture, rural community development, health, and education. Although particular emphasis is given to Asia and the Pacific, the collection includes materials from all parts of the world. It stresses unpublished reports and other documents that are not routinely collected by libraries nor listed in standard bibliographies. New materials on family and population planning information, education and communication are being added at the rate of about 50 titles per month. The existence of these new additions is regularly made known through publication in the Institute's IEC Newsletter under the following categories:

(1) General strategies and programs.
(2) Use of mass media.
(3) Formal population education.
(4) Extension education/interpersonal communication.
(5) Education for functionaries, professionals and leaders.
(6) Training for IEC roles.
(7) Research and evaluation.
(8) Social, cultural and psychological aspects of family planning.
(9) Information sources and bibliographies.

Program administrators, communication specialists, and other interested practitioners, trainers, and researchers are welcome to request copies of these materials for use in their work. The Institute provides reproductions of most of these materials in the form of either photocopies or microfiche. When it is not possible to supply copies of a particular item due to its bulk or due to limitations on its circulation, the requestor is referred to the original source.

Copies of materials are provided by the Institute at cost or on an "exchange" basis. "Exchange" simply means that in return for reproductions sent to the requestor, the Institute asks that he supply relevant reports, newsletters, campaign materials, or other items available. These are then added to the collection to maintain and expand the clearinghouse service for the benefit of people working in communication components of family and population planning programs around the world.

Although most of the document copies distributed have been photocopied, the Institute is encouraging the use of microfiche. The Asia Foundation is cooperating with the Institute to test-demonstrate microfiche equipment in locations where there has been a concentration of requests.

To assist users in the selection of relevant documents, preparation of annotations was initiated early in 1973. To test this service, selected users of documents were sent special annotated lists and asked to indicate whether the annotations gave adequate descriptions. Results have helped the Institute to adapt its services in this connection. By the end of

1973, all documents available through the IEC materials service were being annotated and made available through a regular supplement to the newsletter.

*Use of IEC Materials Service*

The IEC materials service was established to serve the needs of practitioners and administrators in action programs. In March and April 1973, an analysis was made of the first 18 months of the operation. It showed that about one third of all users are involved in action programs, another third are in research, and about one quarter are staff members of international assistance agencies.

The IEC Newsletter is sent to at least one person in 115 different countries, but users requesting the materials listed in the newsletter were shown to be concentrated in 27 countries.

During the 18-month period under review, 110 individuals requested 1,636 documents or an average of 15 documents per request. Requests from developing countries were generally for more documents than those from developed countries. For example, each of the 50 requests from Asia was for an average of nearly 25 documents whereas each of the 46 requests from North America averaged 5.3 documents. Over 83 percent of all documents sent went to the 53 percent of the users located in developing countries.

What kind of materials do users want? The most popular topics were those listed under "general strategies and programs" and use of mass media. In each of these categories 4.4 copies of each document were requested. At the other extreme was "information services and bibliographies," where 1.2 copies of each document were requested.

Users of the service were particularly interested in:

(1) Documents giving trends, overviews and general principles.
(2) Documents on the use of a specific medium, e.g., radio, newspapers, etc.
(3) Documents on "beyond family planning" topics, e.g. incentive schemes, impact of female employment on birth rates, etc.
(4) Information services or bibliographies on or from developing country projects and programs.

*Assessing Needs for Information*

The Institute utilizes a variety of methods to assess information needs in the region and elsewhere. They include staff travel, visits to the Institute by administrators and practitioners, contact with participants in training programs, and correspondence.

In 1973, Sumiye Konoshima visited nine countries and 34 institutions involved in family and population planning programs. Her findings indicate that materials requested from the Institute are used primarily by program staff for training and in research and evaluation activities. Academic staff typically use materials in teaching and research. Use of materials in action programs extends beyond the requesting agency or office and involves active dissemination of information contained in the materials. Organizations like IPPF, ECAFE, and UNESCO are actively involved in promoting use of information in materials they request.

Little evidence was found that materials requested of the Institute were being utilized directly by field workers or other local functionaries. Instead, training institutions and central program officers tend to process and sometimes adapt information before disseminating it to field staff with the intention of making it better adapted to local situations.

Many of the recipients are in positions of key decision-making administrative roles. Here the provision of appropriate resource materials represents a vital linking function, though it is recognized that greater utilization could be achieved by appropriately processing information contained in the materials being distributed.

## A Concluding Note

In sum, Institute experience to date has centered around the identification of needs in the field and the assessment of those which the Institute, through its programs, can most appropriately fill. Since its programs are multinational and cooperative, every program functions, in a sense, as an "international conference"—bringing together people with similar interests from many parts of the world. They come to study and learn together and wind up "teaching." Program participants learn from each other, and we at the Institute learn from as well as "teach" them. The international dimension of our programs is what enables us to learn of the problems of sharing research across cultures and across national boundaries. It is a process of mutual exploration, trial and error, and, we feel, progress toward understanding and improving the process by which we share the knowledge we have gained.

# Some Additional Observations

Y. V. L. Rao*

COMMUNICATION research, especially in the context of development, has not percolated downwards, (if that's how we want to look at it) to those who are actually in the business of mass communication. Although we are concerned about mass communication, we are not in control of the media. We are not in control of policy-making or decision-making. We can criticize the decisions that have been made. We can study and evaluate communication campaigns. We can study and evaluate the performance of the media and write books about them in words or phrases which only other educators can understand.

But actually, much of the communication research that has piled up in various libraries and research institutions has really not been effective. This was one basis for the idea of setting up a communication sharing mechanism. Another was to make it possible for one country to learn from another country's experience. Usually what happens is the communication research done in an institution in a given country has remained within that institution. Researchers have patted each other on the back in conferences like this where they do get an opportunity to present a paper, but it is not widely distributed and it is not widely known or shared. But now a kind of worldwide "network" is developing for sharing research information.

## *Worldwide Network*

At the present time, there are at least seven institutions or organizations involved in this "network." Among them are the Asian Mass Communication Research and Information Center (AMIC) in Singapore and the East-West Communication Institute (EWCI) in Honolulu. Others are in Latin America, Europe, Canada, and the United States, and efforts are being made to set up a documentation center in Africa. Some of these have been assisted by UNESCO. (Addresses can be obtained from AMIC.)

The responses from mass communication researchers in Asia to AMIC's program have been extremely good—far better than we expected. As mentioned previously, communication researchers in Asia, Latin America, and Africa have been working for a long time in isolation. They were more familiar with work done outside of their own regions or countries than work done within their own countries or regions. And this is one of the reasons, I believe, why a center like AMIC has become so popular in such a short time. They suddenly had a feeling of belonging; they suddenly had a feeling they were not isolated; they found that a lot of research had been done of which they were not aware.

We have been surprised in AMIC about the amount of material we have been able to collect from Asia itself—let alone studies done elsewhere. But we only have a good start. We have just published a "Directory of Asian Mass Communication Institutions," and I have brought a copy to present to the organizers of this symposium. It not only lists institutions but the names, titles, and addresses of researchers and ongoing research. The idea behind the latter is to make it possible for people who are working in the same area, dealing with the same problems, to write to each other and perhaps collaborate.

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*Director, Asian Mass Communication Research and Information Center (AMIC), Singapore. Worrall's paper was presented by Rao who added this information on the sharing of communication research.

### Seminars and Conferences

One of the functions of these "clearing houses" has been to plan and conduct seminars and conferences—bring people together. For a long time the criticism has been that there is an international circuit to which the same people go and say more or less the same things. But now things can be different. We know about those people who are working on projects in research institutions—younger people—and those who are working on problems in the field. We can get together in small seminars or in countries like this and give us—the older people—who have been on the international circuit for a long time—some new, fresh ideas. This has happened to a large extent. The East-West Communication Institute, AMIC, and others have brought together these newly discovered researchers who, perhaps, have not published for the simple reason the publication channels are too few. This is another thing the documentation centers are doing. They are becoming publishers, not in the commercial sense, but in mimeographed and locally-printed, inexpensive offset material.

### Trend Analysis

Under the coordinating influence of UNESCO, a panel on communication research has called for a world-wide trend analysis of research already done. This is important because much research is being done in disparate fashion by lots of people, all competing for the same sources of funds. The analysis will show the duplication and point out the gaps. Another proposal the international panel suggested as a priority item is an inventory of basic communication data which generally is not available. And we hope to achieve a kind of a standardization to help in gathering, documenting, and disseminating information on a world-wide basis.

Now this is the future plan. It hasn't worked too well, yet. But we're moving in the right direction. In addition to providing full documents to researchers, we need to do something different for administrators, media people, and others who do not have the time and can not be bothered to read the whole document. So abstracting, summarizing, simplifying is very important. This is one of the tasks documentation centers have to undertake, but to get experienced personnel for this is difficult. They must be able to understand the jargon and have the capacity to summarize the research in a simple, short form so the administrator can read three or four paragraphs. That is all he wants. We need to develop this talent in our training programs and in our schools and universities which have communication programs; either bring them from the media and then train them or at the graduate level try to impress upon young people that they don't have to be elite researchers to be respectable or useful to society.

## *Appendix I*

### Documents Most Frequently Requested from EWCI Resource Materials Service (First 18 Months of Operation)

Schramm, Wilbur. *Ten Things We Know About Family Planning Information.* Prepared for the WHO Inter-country Workshop on Development of Health Education Media with Particular Reference to Family Health. New Delhi, October 1971.

Amritmahal, G. R. *Problems and Prospects in Utilizing Mass Media and Inter-personal Channels in Family Planning.* 1970.

Roppa, Guy M. *Communication Strategy for Family Planning.* Prepared for the WHO Inter-country Workshop on Development of Health Education Media with Particular Reference to Family Health. New Delhi, October 1971.

Burleson, Noel-David. The First Five-year Plan for Population Education. (With a bibliography for population center libraries) Chapel Hill, N.C., 1972.

Levin, Harry L. and Robert W. Gillespie. *Use of Radio in Family Planning*, n.d.

Bindary, A. *Social Structure Change and Specific Women's Employment: A New Theory in Family Planning*. Cairo, Supreme Council for Family Planning-Executive Board, January 1972.

Ables, Higino A. and Monina S. Movido. *The Status of Communication Research in Family Planning: The Philippine Experience*. From Institute of Mass Communication-UNESCO Project on Research, Development of Materials and Training in Family Planning Communications: First Progress Report, January–February 1972.

Bautista, Paulina F. *A Review of Trends in Family Planning Information Campaigns in the Philippines*. From Institute of Mass Communication-UNESCO Project on Research, Development of Materials and Training in Family Planning Communications: First Progress Report, January–February 1972.

Jha, Prem Shankar. *Family Planning Motivation Through Newspapers*. Prepared for the Western Regional Conference on Population Policy and Programmes, Ahmedabad, India, October 1971.

Saunders, Lyle. *Family Planning Communication in the Context of National Development: Communications for Information and Motivation in Family Planning*. Prepared for the International Workshop on Communications in Family Planning Programs held in Teheran, Iran, June 1970.

*Recommendation for a National Communications Program for Family Planning*. Prepared for the POPCOM (Commission on Population)/NMPC (National Media Production Center)/ECAFE Seminar for Communications in Family Planning held in Manila in January 1972.

Gokhale, L. N. *Mass Communication Advertisement and Motivation Newspaper*. Prepared for Western Regional Conference on Policy and Programmes, Ahmedabad, India, October 1971.

# V. Implications and Application of Communication Strategies: Working Group Reports

# Implications and Application of Communication Strategies: Working Group Reports

## *Research*

Y. V. L. Rao, Leader

BECAUSE of the pressures of time and the problems of detailed editing in committee, this report is presented in outline form. A few points are added which arose in the general discussion after presentation of the report.

### *The Needs*

(1) Research (and researchers) should be an essential component of all activities directed at change and at development. It should be included at the planning and policy-making stages and through execution and evaluation.

(2) The two broad categories of research are:
   (a) Those which are problem oriented.
   (b) Those which are basic, leading to theory building. It is stressed, however, that these two categories are not necessarily separate or distinct. One may very often lead to the other, and together they should be looked upon as a continuous process.

(3) Research and research models should not be static in societies which are constantly in the process of change. Therefore, researchers must themselves be capable of change, sensitive and adaptable in their willingness to identify problems, to set up hypotheses, to test and to modify methodologies—and, if necessary, to admit errors or failures.

(4) Past research has been useful, but not entirely satisfactory or sufficient. Theories, models, and methods have been questioned and researchers have generally shown a willingness to refine, to sharpen, and to modify them. Gaps in knowledge have been identified and efforts are being made to rectify defects and to fill the gaps.

(5) Drawing from past experience and present assessment of successes and failures and of the effectiveness and ineffectiveness of communication strategies throughout the world with particular reference to developing societies and to development projects, the group makes the following general observations and specific suggestions—identifying approaches and priorities:
   (a) Research must be cumulative, leading to systematic analysis and the continuous testing of integrated development strategies.
   (b) It should provide for increased understanding of the communication process in development programmes and activities by identifying the significant elements related to the outcome of communication efforts, the relationship among those elements, and the consequences of altering one or more of those elements.
   (c) To facilitate such an understanding, researchers need to study the entry points and the process of the flow of messages within a given social system. It should be possible to find out what types of social structures induce what kinds of flow for what kinds of messages. Such questions may be applied to various levels and varieties of communities and organizations, such as a

village or a farmers' association or other formal and informal groupings, including the mass media.

(d) Attention needs to be given especially to:
  (i) Typologies of audiences based on the nature of the communication flow, i.e. to find out how open or closed a social system may be in this regard.
  (ii) The level of economic security and of individual freedom.
  (iii) The relationship between the internal structure and the structure of the external system with which exchange of messages may occur.

(6) Methodologies which may conveniently and economically be used in the early stages—especially in those countries where relatively less is known—should permit the studying of a large number of variables and with measures which can be extended over time. It should be ensured, however, that any efforts at meeting such research needs do not interfere with the communication strategies already under operation as part of action programmes and that they do not lead to even a modification of such action programmes.

(7) Researchers may move gradually towards field experiments or pilot studies where appropriate and feasible. Initial data gathered through case studies, observational techniques, etc., should provide the necessary base for designing and conducting experiments and for surveys which may deal with a smaller number of variables but which can be conducted on a scale that will permit generalizations—to assist in theory and model building.

(8) Case studies which will help in comparisons of structures and strategies in different communities—preferably on a cooperative and coordinated basis—should be done nationally, regionally, and internationally.

(9) In the planning and the conduct of research and in the gathering and use of data, the collaboration of the users and potential users of research findings should be actively sought.

(10) The thematic approach of Paula Freire, where appropriate, needs to be attempted—using the clients of communication strategies to conduct research about themselves.

## *The Priorities*

Following discussions on the priorities for communication research as part of developmental strategies in such crucial areas as agriculture, family planning, health and nutrition, etc., the group recommends that:

(1) The focus should be on the *users* of information and the channels of communication leading to them within a given social system and within the context of the interpersonal networks that exist within that particular system. Information sources which exist within the system as well as those which operate from without (including the media) need to be studied in any such network analysis.

(2) Case studies such as these should be able to identify, within the social structure, the information sources, the gatekeeper, the information carriers, etc., which individually and collectively facilitate or impede the flow of information and knowledge—information and knowledge which may assist the users in achieving group defined ends. (It is important to differentiate between user defined ends and non-user defined ends).

(3) Such studies which would assist in the building of effective strategies would imply that the social structure of which the user is a part (i.e. family, kinship, special interest groups, etc., along with intervening agents and agencies) must be regarded as a conditioning influence in the selective exposure and selective perception and in the response to developmental messages.

(4) The study of communication channels, whether interpersonal or mass media or professional, needs to be done within the context of the requirements of user defined objectives and goals. Continuing research should provide for the

necessary feedback mechanisms which would assist in the modification and the development of research techniques, as well as of developmental strategies.

(5) The main user-audiences which should be the researcher's priority are the disadvantaged elements within a society, defined by whatever criteria seem appropriate for that society.

(6) It is suggested that micro studies of successful farmer organizations and other such bodies should be undertaken together with those of unsuccessful ones so that comparisons may be made and the reasons for successes and failures isolated. Conflicts within and between organizations can be an extremely fruitful area for study. Comparative case studies of this kind are strongly recommended.

(7) It is important that researchers should not assume that nothing is known of the societies which are their concern. As a first step in all their efforts, they should obtain the information which may already exist to avoid wastage of scarce resources. Mechanisms for exchange of research information should be encouraged and utilized. Existing information storage and retrieval operations and centers and their contributions to research efforts in this regard must be recognized.

(8) The production and dissemination of knowledge is another area worthy of intensive study. Researchers should be aware of the fact that knowledge need not be produced exclusively by specialized institutions; it may often be produced by peers of the ultimate users, whatever their socio-economic level. Information thus gained on the how and the what of the production of knowledge and of its dissemination and use can assist greatly in the planning of strategies.

(9) In recommending case studies as a high priority, the group wishes to underline the fact that other techniques such as surveys and field experiments should not be ignored or underestimated. There is no single design for every problem that needs to be studied.

(10) The group wishes to point out that the problem of shortage of qualified researchers—especially those who have the necessary equipment for undertaking case studies needs to be tackled as an urgent problem.

(11) It also wishes to point out that there is a dearth of publication channels for researchers in most of the developing countries. This also applies especially to those channels which can reach administrators and practitioners as well. All efforts at developing such information programmes should be encouraged. There is also a great need to develop channels for adequate reporting of research findings and of other experiences in the language of the country in which the studies are conducted.

(12) The group wishes to point out that it has deliberately not dealt with many other important questions having to deal with the media, the communicators, and the audiences, as well as those pertaining to content and messages. It confined itself to identifying the most pressing questions which need to be answered before strategies can be planned and mounted—with some assurance of meeting the felt needs of the ultimate users of developmental information.

# *Training*

FRANCIS C. BYRNES, LEADER

WHILE recognizing the need for training in subject matter relevant to rural development, the group decided its mandate was to consider specifically training in communication and proceeded to identify the categories of development-related persons for whom some kind of communication training was desirable.

## *Three Groups Identified*

Discussion led to the identification of at least these specific groups of professionals and specialists engaged in rural development:

(1) Professional communication teachers, professors, research workers, and practitioners.
(2) Policy makers and development administrators.
(3) The vast group of individuals engaged in development tasks at regional, community, village, and farm levels of activity.

By far, this latter group is the largest and while they work in agriculture, family planning, nutrition, and related fields, much of their success depends upon their ability to communicate, with each other as well as with farmers, homemakers, and children.

Another important communication area was defined as that involving policy makers and administrators, first of all to facilitate effective communication among those working at policy and implementing levels, as well as effective communication with the thousands of workers in the field.

The professional communication personnel were regarded in a somewhat different light. Some of these, of course, do engage directly in helping plan, prepare, and communicate development messages. More are involved in helping prepare materials to be used in development programs, while others contribute directly through the training of field workers or by serving as communication consultants to policy makers. General discussion tended to highlight the importance of establishing more opportunities in the developing countries where nationals might obtain advanced training (at the master or doctoral level) in communication and the related social sciences.

Given the magnitude of the development task and the few professional communication specialists currently available, members of the group expressed strong sentiment for the establishing of more development-oriented advanced degree programs in communication. Recognizing that the needs are urgent and that creation of new programs takes time, others urged maximizing the opportunities presently available.

## *Abilities To Be Developed*

Having identified the principal groups to be trained, the task force next directed its attention to identifying the key abilities to be developed through training, as well as how this training might be accomplished.

Both professional and development communicators need to be able to:

(1) Establish behavioral objectives associated with the implementing of development communication.
(2) Identify and know their audiences.

(3) Identify the needs of those audiences.
(4) Obtain and analyze feed back from the audiences.
(5) Choose and use appropriate channels (media, code, etc.).
(6) Interpret subject matter with respect to people's needs and to translate information into an understandable language.
(7) Generate and facilitate communication between, among, and within organizations, both vertically and horizontally.
(8) Inform others of their deficiencies in communication and to stimulate an appreciation for the need to improve.

The professional in communication needs to be able to:

(1) Develop and test communication strategies.
(2) Teach communication strategies to development communicators.
(3) Define audiences in terms of knowledge (cognitive), attitudinal, and other factors.
(4) Appreciate communication research, to interpret it, and to do it.

Development communicators—the district or village level workers need to know:

(1) Their subject matter.
(2) Objectives of their organization.
(3) Possible linkages with other organizations.
(4) How and when to use available communication techniques.
(5) How and when to employ interpersonal skills.
(6) Communication problem-solving skills.

The development policy makers and administrators need to know:

(1) Technical background for the position held.
(2) How to conceptualize the communication process, as well as the development process.
(3) Consequences of alternate communication strategies.
(4) How to identify effective communicators.

Among the many suggestions for accomplishing the training of the respective groups, the following are noted:

### Professional Communicators

(1) Encourage establishing of more graduate schools in the developing countries.
(2) Encourage graduate students in communication to do their thesis work in their own country, if they are from a developing country.
(3) Include communication components in technical training at both the graduate and undergraduate levels.
(4) Encourage more communication specialists to concentrate in the problems of developing countries.
(5) Provide greater opportunities for those working in the field to communicate with one another.

All of these and related suggestions were concerned with developing a core of social scientists primarily concerned with communication problems related to rural development, as well as persons in the various mass media who specialize in producing materials relevant to development, and for use by people working in development.

### District and Village Level Workers

(1) Provide communication training, as part of pre-service training.
(2) Provide for communication training as part of the process of orientation of new employees.
(3) Offer periodic courses in communication principles and specific practices.

(4) Encourage, where possible, the inclusion of communication training as part of subject matter training rather than separately.
(5) Where appropriate, arrange for special courses for selected employees; these courses, such as to prepare a group to carry out a campaign, should be comprehensive and of sufficient duration to assure acquisition of desired competencies.
(6) Build into administrative reward systems adequate recognition for those who through training or experience demonstrate they are effective communicators.

DEVELOPMENT POLICY MAKERS AND ADMINISTRATORS

(1) As members of this group may react negatively to the idea of being "trained," it is important to provide opportunities for them to learn in appropriate settings, such as executive seminars, policy symposia, and evaluation conferences.
(2) Given the high mobility in this population, it is important to create mechanisms by which members can avail themselves of various study opportunities, and these must be available in a variety of forms and at a number of times and places. This would include self-study programs, reference services, and libraries.
(3) Provide for study tours, travel grants, and case studies of both successful and not-so-successful communication or development projects.
(4) Make available a list of communication consultants and strategists whom policy makers might draw upon as consultants.
(5) When the opportunity does arise for communication people to work with policy makers, take advantage of every opportunity to explain the why as well as the how of the work being undertaken.
(6) Invite key policy makers to serve on evaluation for development projects.

## *Basic Overall Consideration*

Finally, the group returned to the basic overall consideration: What are we training people to do? For what roles are we preparing them? What, in addition to training, will they need to do their work successfully?

These questions led to a more general one: What might be appropriate communication training goals regardless of the person being trained or for what particular role? The concensus was an emphasis on communication as a process, with the further development of human interaction with sensitivity and in depth. The group felt that these points, along with the ability to identify relevant audiences and relevant information for these audiences, were most important, never forgetting that development requires dealing with people as humans.

The group members agreed, too, that as individuals they should not forget themselves and their own responsibilities and opportunities. They stressed the importance of considering seriously what each person could accomplish individually and to seek in themselves and their institutions opportunities for these recommendations and suggestions to take root.

# *Design and Use of Materials*

HAL TAYLOR, LEADER

THROUGHOUT this symposium innumerable suggestions have been made relating to the design and use of materials for communication strategies. This work group attempted to outline some of those factors to which special attention should be given. The following three were considered to be of major importance:

(1) Establish a coordinated, centralized communication structure according to individual institution or agency needs in order that communicators can participate effectively in policy formation.
(2) Encourage adequate and separate funding for communication units or departments (or whatever they may be called).

At this point, the group considered the lack of adequate and specific guidelines for developing communication strategies. We thought that communicators themselves would benefit from instructions relating to such items as when to use various kinds of approaches—mass media, interpersonal methods, audio-visual techniques—under various types of conditions and for differing program purposes.

Representatives from Cornell offered to coordinate the development of strategy guidelines, including the various forms of communication structures useful in different parts of the world. In addition, representatives of the Colombian Institute of Agriculture (ICA) offered to collaborate and make translations into Spanish. The group urges each documentation center to publish and distribute copies to agricultural and rural development communicators throughout the world.

(3) Encourage inclusion of funds for communication support when establishing research projects or special programs. In this way, communication of information can be more quickly attained. Otherwise, there could be a considerable time lag between research itself and dissemination of information or delays in starting special programs. Early planning for needed funds keeps an agency or individual from having to wait for funds before starting the communication activity.

## *Recruitment, Research, and Production*

Other factors which the work group felt deserved attention included the following:

(1) Recruit and use professionals in communication, not only to develop adequately prepared communication materials—whether for mass media or interpersonal use—but also to assist in the training of subprofessionals, program leaders, and administrators who can multiply the effects of communication efforts.
(2) Use communication research to produce materials and pre-test materials before making decisions regarding distribution and use.

The subject of research and pre-testing created a major discussion in the work group. Dr. Juan Flavier explained his concern about the need for research results on such simple matters as size of lettering to use on posters, size of illustrations for a given audience number, and use of color. He, and others too, urged that the Asian Mass Communication Research and Information Center at Singapore and the East-West Communication Institute in Hawaii provide abstracts or a periodic digest of recent applied communications research results which could be adapted easily for use in the field.

The discussion also pointed to the need for development of recommendations or specifications that will help workers in agricultural and rural development communication select equipment and methods appropriate for their needs. Similarly, there was concern about the lack of standardization of equipment, the need for adaptive research on visual perception, on audience analysis techniques, on simple interview methods and the sharing of case studies in the use of mass media. In fact, we thought that guidelines on these and similar subjects should be designed and deposited at the international centers for widespread distribution. The work group urges the symposium to make suggestions as to who might expedite the development of these materials.

(3) In dealing with mass media, the symposium already has suggested to us that we provide information in formats the mass media wants.

(4) The symposium also has suggested that multi-media approaches be developed where possible and appropriate and more attention be given to the use of traditional media.

(5) Agricultural universities, departments of agriculture, and other appropriate institutions and agencies should plan and publish cooperatively publications which make recommendations to farmers. Too often these institutions and agencies within a country will issue conflicting recommendations which add to the confusion of farmers and slow down, rather than speed up, the adoption of improved practices. (Two examples of successful cooperative publishing of recommendations can be found in the Philippines and India. . . . IRRI and the College of Agriculture at Los Baños and the Bureau of Plant Industry in Manila; and the University of Agricultural Sciences and the Department of Agriculture in Bangalore, India.)

## *Professional Meetings and Local Contacts*

The group stressed the importance of frequent meetings between communication specialists in agricultural and rural development and commercial mass media representatives. Since Julio Roberto Bermudez is a member of Sigma Delta Chi, professional journalism society, we urged him and others to organize local chapters of SDX or to establish similar organizations in their countries to which communication specialists and mass media representatives might belong and thereby create a means for the interchange of ideas.

Dr. Flavier described again his family planning project and how he developed materials that showed analogies between colloquial expressions and scientific recommendations regarding birth control. Consequently, the group agreed that communicators should visit farms and homes frequently. They could see local solutions to problems and become more familiar with farm terminology which could then be used in materials they prepare for particular communication projects. This also reflects a common theme throughout the symposium of the need to foster local participation in the communication process.

Finally, the group discussed the need for freer importation of communication materials and equipment for use in agricultural and rural development. Frequently, governments profess to be interested in communicating with rural families, yet those same governments impose unreasonable import duties on materials and equipment that might be considered vital to the rural development programs. Governments also, in some cases, impose license fees and taxes directly upon the consumer. The group, therefore, urges this symposium to make a request to the United Nations to pursue the matter to obtain some relief.

# VI. Some General Comments

# *Some General Comments*

GABRIEL VELAZQUEZ

AS you all know from my presentation during the initial ceremony, I came here to learn. Before coming, during the last five or six weeks, I read more than 20 papers on rural development, communication strategies, and such. I want to congratulate the organizers of this symposium and the participants because in these four days you have taught me a great deal.

I also mentioned that not being an agricultural scientist or communication specialist I had the feeling of being an "outsider." So please take these comments or suggestions as those of an "outsider."

## *Shift in Emphasis*

First, I have detected a very positive shift in emphasis from agricultural development to rural development. I think this is very positive. Several participants stressed the fact that we need to consider and give a lot more attention to the several inter-related factors or variables that constitute rural development. I fully endorse this recommendation of giving more attention to all of these variables.

Agricultural productivity or agricultural development, important as it is, is only one. I was specially pleased with the recommendation of the need to study more about how to improve the capacity of "self-determination" of the small farmers. How can they improve their chances on deciding what is good for them? How can they create a mechanism for independence—for more dignity to better the quality of their lives? Diaz Bordenave, Beltran, and Feliciano, among others, presented very practical and conceptual suggestions.

## *Concern for All Poor People*

The second tendency, equally impressive, is to be concerned with all of the poor people living in rural areas, not only with those that own small plots. To me, rural development has to do with the well-being of human beings living in rural areas. Studies demonstrate that close to 30 percent of them do not own land or work in production of crops or animals. Bradfield indicated that in one of his experiences more than one-third of the heads of households earned the majority of their income in other activities, and almost half of this group worked full time outside of agriculture. We need to study what we can do for them, and how we can help them improve their skills. I am sure that they, in turn, will help make life easier for small farmers.

## *Quality of Life*

My third comment has to do with the shift of emphasis from communication as a goal to communication as an instrument to improve the quality of life of rural people. Communication and the people "playing" this instrument realize now that when we are talking about rural development the fundamental and final goal is the improving of the conditions of the people.

One good example of this new trend is the recommendation of Diaz Bordenave to move from the "classical" model of diffusion of information to a "problem-solving" model such as the one he presented. Another good example is the emphasis of Pastore on the need to help small farmers make decisions under conditions of uncertainty.

# VII. We Resolve to...

# *We Resolve To . . .*

GORDON A. SABINE

*(Note: At the final session of the symposium, Dr. Sabine voiced the following script he wrote, as an original motion picture visualized the story of Antonio Guerrero, a Colombian campesino.)*

THERE comes a time to say enough is enough.

There were, if you can believe it, 480 pages of text in the papers; 144,000 words.

There were, and surely you will believe this, 30 hours of talk; 270,000 more words.

Enough is enough. The channel is stuffed.

There comes a time, and that time is now.

If ever you are going to get a perspective, you leave Conference Room A and the Great Arches and you go outside and you take a long look at that extraordinary establishment which is called CIAT, that oasis with an ever-widening circle of influence, and then—then you head for the hills.

There had been so many messages, but one that started early and repeated itself sticks in the brain:

"Why don't we listen? Why don't we listen? Why don't we listen to the campesino, the have-not, the down?"

Experts from 14 different nations there had been. Very probably the most able gold-plated gathering of its kind ever assembled under one roof. We talked, we listened, we spoke; oh, we spoke so often, of the campesino—but nobody ever invited a campesino to speak to us.

And so past the smoke and alongside the hills and then beyond the high rises of Cali you speed to the high road toward the coast. You never really do intend to get there, of course, because there comes a time—and it is now—when there is something else you must do, when you decide you are going to make a visit—to a campesino.

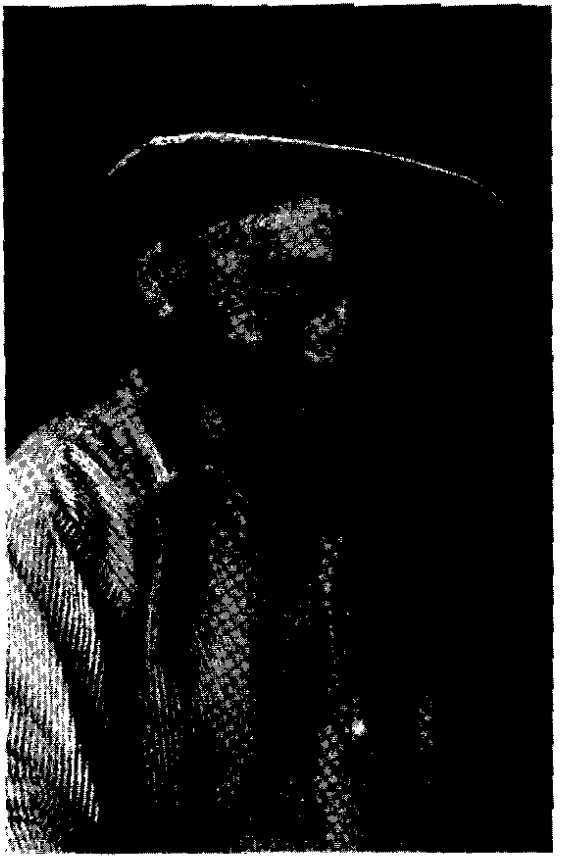
And as you bump off the pavement, you remember what Carroll Streeter wrote in his major piece for the Rockefeller Foundation about farming and farmers in Colombia. You remember where he says the road ends abruptly, and is succeeded by a narrow path worn deep into the hillside by the foot traffic of humans from the farms above and by the cascading water during the rain.

And you have an overwhelming desire to find that path and climb it yourself. And you do.

With you is your photographer, a lovely and talented young lady who most of the time works for CIAT taking pictures of cassava and other earthly things. She is called Maria Isabel Carvajal, and she is the daughter of one of South America's great publishing families. And at her trade, she is good.

You keep on going, up and up, and finally you are at the home of Antonio Guerrero, and his beautiful wife Mercedes, and their three lovely children.

It is not a large place, but it is large enough. There is one bedroom for the parents, another bedroom for the children, a tiny kitchen with a wood stove in back, a porch with a clothesline for the wash in front.



*Antonio Guerrero, campesino.*

At last, this is your chance to walk around with a campesino while he does the chores, and to listen to him, and to learn all sorts of things about him—something the Cornell-CIAT International Symposium on Communication Strategies for Rural Development talked a lot about doing, but never did do.

Antonio, you find, is over 60 years old. Mercedes is 37. Their farm is 16 acres, and on it they have a happy life.

The only problem Antonio can think of, despite urgings, is that they have no water. Every drop, 40 pounds or more deadweight to the five-gallon can, must be hand-carried over and up from a kilometer away.

Antonio and Mercedes and family also have no electricity, and no light, and no clock. Their light and their clock is the sun, from along about 6 of a morning to along about 6 of an evening. After that, if there is a real need, there is a candle.

Perhaps two-thirds of the 16 acres are planted to corn. The skies bring the only water there is for the crop, and Antonio uses almost no fertilizer. There also is some kind of white bug that kills everything it touches, and while the CVC man did come around some time ago and said to use something on it, Antonio tried that once and it did not work; so he does not bother any more.

Therefore, from his farm Antonio gets only about 14 bags of corn, or only about one-

third the output of the usual mountainside campesino, which in turn is only about one-seventh the average rate of production in next-door Cauca Valley.

But Antonio and his family are self-sufficient. They also grow a little coffee, and cassava, and some sugar cane, and some onions, and there are chickens, and a still-mooching calf, plus a cow that gives four bottles of milk a day—when Antonio can get there first.

Antonio stands only some 58 inches tall and weighs only about 100 pounds.
His life is work, all day, every day, from some time before sun-up.
He reads nothing.
He sees no television.
He sees no movies.
He has no mailbox because there are no letters.
He belongs to no organizations other than the church.
In the course of a week, he sees and talks to few outside his family.
He does not know where Bogota is.
For him, a lifespan of travel has been 19 kilometers to Cali on the one side, 5 kilometers to the next village on the other.
He has never been on an airplane.
He has never been on a train.
He has never seen a map of his country.
He knows nothing about the ocean.

At night is the only time for recreation and entertainment—listening to the radio. All he tunes in is the evening news, and what he particularly likes to hear about is the crime news—the robberies, the bank stick-up, the murders in Cali.

They are exciting, and they make him feel so good and so safe.

In many ways, Antonio is unusual. He has had two years of school himself. All three children are in school, the eldest in the fifth grade. He wants them to continue, even to high school. He and Mercedes think learning is good.

Antonio takes good care of his family, and if the cow is generous, there may even be enough extra milk to sell so he can buy some meat every now and then.

And so what if it does require 16 acres to feed one male adult, one female adult, three children?

So what if he may be producing only one bag of corn where the best technology could make 21 grow?

You cannot fairly accuse Antonio of being selfish or lazy; he grows no more because he has enough, because his family does not live with hunger, because no one ever told him how hungry so many others are, because no one ever suggested he grow more.

By his own hard work, he has proven he can get along without the rest of the world. He does not need us.

It was a good day.

You never did get to a great deal that a good researcher would have been careful to gather and store, but you did make one point:

Antonio was not hard to find.
Antonio was willing, even eager, to share.
All it took was someone who would listen.

During that day, you remembered another day last November and a long conversation about this week's symposium with a U.S. government official who during the

preceding five years had directed the investment of the astounding sum of 22 billion dollars, most of it aimed at rural development in developing countries.

There are a few simple areas that are important, the former chief administrator of A.I.D. had said, and Number One is food.

And what else is important, John Hannah had added, is the poor little people of the world.

*Number One is food.*
*The poor, little people.*

The phrases keep running through your mind. No perspective for the next decade can ignore either one. You had seen both, up on that mountainside, this day with Antonio. Everyone at this symposium will be able to find both, back home, in quantity.

Now we are back to the symposium. And it is not because of what any one person said or did not say this week, it is just a general impression that leaves you still wanting, almost irritated. You're disturbed with questions, not conclusions really, and not perspectives, really, but shadows on your mind, questions that sort of eat at you.

The brightest stars of the communication research firmament, and yet almost none among us admitted to being very effective in narrowing the knowledge gap or the affluence gap or the hunger gap.

How come?

We did it through two world wars; how come, then, we cannot today persuade the citizens of our lands to wage another war—subject: hunger, rather than hate?

Many intellectuals turn up their noses at Madison Avenue, not understanding that it gets results for do-good causes, as well as for not-very-different-brands of cigarettes. But in a race to persuade, which would you bet on—most of the campus communication strategists you know, or Madison avenue?

If we're so good, why can't we match their results? If they're so good, why don't we—for the excellent causes of family planning and nutrition and rural development and planning communication strategies for all of those—why don't we ask them to join us? Has anyone, ever?

Continue as now, and the world's food supply will not double in 18 years or even in 28. Go on as we have, and "a few notes about the world food crisis" will lengthen into the full notices of an obituary. (So you thought when tired, and pessimistic, and upset because you wished more answers were available.) But today is better, and you decide OK, the past is past, let's now do a better job. Above all, let's do a much better job of listening to and working with and for the little people.

The margin of survival, you know, may not be the large growers, but rather the one extra bag of corn someone somehow persuades out of each Antonio in the world.

After a week of conference, the only real focus is what each of us takes away, in both the head and the heart. Likewise, the only real perspectives for the next decade are inside each, and depend upon where one starts, in both head and heart.

So no catalog this, nor yet an inventory, but rather a sample boring, a scan, a fly-by. For instance:

There has been a repeated call for us to listen more, to attend more to the downs.

There has not been that much said, not enough, about our need to know much more about our audiences, to do descriptive studies before we lay on any more prescription, to learn more about the "downs" but also the very high ups, the decision-makers, and what

they know or do not know about communications, and what will persuade them to take the paths we consider right.

We know our dilemma—we need Antonio even though he does not need us.

We do not seem to know our strategy.

So perhaps the greatest strategic move of all would be to grow more applied communication scientists, or to get present basic communication scientists to transplant themselves to the applied field.

The pearl beyond price this next decade very well may be that person who can and will cut through the fog and do the hands-on research, which while it indeed may be quick and dirty, nevertheless will produce results that are hard and decisive.

Switching to applied requires no re-tooling, only re-intention.

The benefits to the scientist still will be there. There still will be appreciative audiences, but different ones; these made up of now-not-quite-so-hungry millions, rather than the select few at ICA or SCA or AEJ or wherever it was we used to go to talk, well-fed, to each other.

One note of caution: We have heard the words "government restrictions" and "social justice" and the suggestion that we are going to be permitted to move on only so quickly—or so slowly—as the first recedes and the second tides in.

Nations outside the United States have no monopoly on the first; citizens of the United States have no monopoly on the second.

But none of us is justified in using either of these as an excuse for non-action. There are so many alternative flight paths; not to fly at all simply is not an acceptable response.

Antonio. Look at him again. Remember his face. Remember his case. He may be the difference.
If at 5 percent efficiency he could feed five, what if—but you figure that one out.
Look at him. Memorize his face. Remember the two billion others.
Remember, also: he does not need us. It is we who need him, mightily so.

Look at him. Memorize his face so next week and next year and through the next decade, you can recall him to your mind and to your conscience as you apply something new, to help him, to help all those two billion.

We have these days been in a beautiful and hospitable country, and those of us who do not have the privilege of living here permanently will take away warm memories of Colombia and our Colombian hosts and colleagues. Pray God this week can be made to last by our future thoughtful, perceptive, sensitive, effective, human, humane work with and service to other human beings.

This is no mere game we play, this rural development and family planning and war on hunger.

This is no make-believe studio production before us.

Each must choose between the sidelines and the action—and that is no simple decision.

Before we say goodbye, there are two very special thank-yous.

To Kenneth Leroy Turk, for whom this must have been a high one of all the 44, on the banks of the Cayuga.

To Francis Clair Byrnes, who runs a tight ship, and who somehow always is able to see ahead and around the corners.

To all the members of both their teams, who conceived and planned and executed so very well.

Three years in the making. They paid off.

The people who were here were good people. Your careers prove that you are committed, and your attitudes prove that you are involved.

The program planners had an obvious strategy. It worked.

There was a time, and now it is gone.

And what it all added up to, after so many hours and so much debate, is what can we do, here and now, or next week, or at least sometime?

What has happened here has not been earth-shaking, but we can hope it has been people-shaking. Down the road, it will be—as it always has been—people who shake this earth, one way or another.

And the question is how each of us comes to feel personal responsibility . . . how this becomes a part of each, and not some generalized and vague all-those-other-people, but a part of each one who wants to nudge the future toward something better.

We leave this place. CIAT fades into the background. Just who said just what to just whom becomes less distinct.

*The Number One problem is food.*
*The poor, little people.*

We take memories, and we take resolve. The kind of individual, personal, even-if-no-one-else-does-it, I'm-going-to-do-something-about-it-myself resolve.

We take resolve.

We really do.

(That *is* right, isn't it?)

(That *is* right, isn't it?)

(That *is* right, isn't it?)

(That *is* right, isn't it?)

# *List of Symposium Participants*

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