

COMMUNICATION, NON-FORMAL EDUCATION AND
NATIONAL DEVELOPMENT: THE COLOMBIAN RADIO
SCHOOLS

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This is to certify that the
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ABSTRACT

COMMUNICATION, NON-FORMAL EDUCATION
AND NATIONAL DEVELOPMENT: THE
COLOMBIAN RADIO SCHOOLS

By

Juan Ricardo Braun

This was a study of five Colombian rural communities. The focus was on participants and non-participants in the radio schools conducted by Accion Cultural Popular (ACPO), a private Colombian agency funded to help raise the educational and skills level of that country's rural population.

The study had three main objectives:

1. To determine the diffusion, adoption and continuation rates for ten agricultural, home, and family planning innovations in the five communities; and to relate these rates to participation or non-participation in the radio schools.
2. To look at ACPO radio school participation patterns.
3. Through network analysis techniques, to examine the role of radio school auxiliars (moderators) and participants in diffusion in each community; and to look at how agricultural and family planning information flows through the five communities.

ACPO radio schools are looked on as the model for other Latin American countries to follow in trying to reach and help their rural

ABSTRACT

ORGANIZATION, NON-FORMAL EDUCATION
AND PERSONAL DEVELOPMENT. 200.
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poor via radio. According to ACPO sources, their radio schools reach almost 170,000 "campesinos" (farmers) a year. To do its work with radio and other educational media, ACPO has an annual budget of nearly 4.2 million. Thus it is important to know more about the impact of Colombia's program--both so ACPO will have a better idea of how effective it is in these efforts, and so other countries might have clearer guidelines in setting up similar programs.

A fourth objective of the study was to test out the research methodology to see if it might provide a model for future use in assessing radio schools. The goals were to find and test methods that were not too costly, relatively easy to use, and from which results could be drawn in a relatively short time.

This research was carried on in five rural Colombian communities: La Aguada, Morros, Centro Alto, San Jose and Holguin. A total of 220 interviews were completed--180 structured interviews and 40 open-ended interviews. The results are presented in the form of descriptive analysis, Pearson product moment correlations, and an analysis of interpersonal communication networks.

Nearly 20 percent of the sample were radio school participants. Most of them enrolled in the basic course, and some of them in the advanced course. The fewest enrolled in the complementary course. About ten percent of those enrolled in the basic course completed it. Dropouts seem to be a major problem for ACPO.

Most of the campesinos know the ten innovations they were asked about, nearly half of them have adopted the innovations, and one-third report using the innovations at the time of the interview.

Accepted by the Faculty of the Department of Administration
and Higher Education, Michigan State University, in partial fulfillment
of the requirements for the Doctor of Philosophy Degree.

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CHAPTER I

INTRODUCTION

Importance of the Study

In spite of the tremendous diversity among Latin American countries, they have all been labeled as less developed. They are said to have the following common characteristics: (1) a relatively low income per capita, (2) low productivity per person, (3) high illiteracy rates, (4) limited transportation facilities, (5) little industrialization, (6) politically unstable governments, (7) inadequate nutrition and (8) high birth and death rates and short life expectancy.

Authors like Borgstrom (1973, a, b, c) and Myrdal (1968), among others, point out that two major factors are the direct cause of these eight characteristics: shortage of food and high population. They indicate that the food/people imbalance aggravates the living conditions of the campesinos. Other authors such as Fromm (1968) and Lerner (1958), indicates no country has achieved development without a high level of education.*

Consequently, it is important to study aspects of these three factors that affect the process of country development: specifically,

*We acknowledge the importance of food, population and education. But we should point out that development is a multi-variable process and factors such as external dependency and internal colonialism also affect it.



to study how agricultural and family planning innovations* flow through communities in a less developed country, and how campesinos can become literate out of a non-formal educational system like the radio-schools.

Innovations and literacy usually are promoted by a change agency. In this study this change agency is Acción Cultural Popular (ACPO), a Colombian institution which started operations in 1947. We are particularly interested in ACPO because its methods employ imagination and ingenuity to fulfill the needs of the individuals they serve. They operate nearly 22,212 radio-schools** whose members are the campesinos living in the rural areas of Colombia.

A change agency needs constant information to know if its objectives are being accomplished, at what cost, if there are gaps in the functioning of the organization, and the like. In order to do so, it is necessary to use a methodology adaptable to the change agency, its needs, and to the social context in which the change agency operates. Therefore, we decided to try a methodology which is basically simple, one which from the design of the study to the final report does not take more than three months, has a low cost, and does not require the use of a large number of specialists.

In summary, three areas were emphasized in this study: (1) analysis of the variables affecting the participation in ACPO's radio-schools by campesinos from five Colombian communities; (2) analysis of the variables affecting the diffusion of agricultural, family planning,

* We have also included the analysis of Home Innovations.

** This number changes according to source and year.

and home innovations; and (3) analysis of interpersonal communication networks in the areas of family planning and agriculture. To the author's knowledge this is the first time that interpersonal networks have been measured in this way in a Latin American country, and in a rural setting.

Diffusion of Family Planning and Agricultural Innovations

Diffusion can be thought of in four parts: (1) an innovation, (2) which is communicated through certain channels, (3) over time, (4) among members of a social system.

An innovation is an idea, practice, or object perceived as new by an individual. It does not matter so much whether the idea is objectively new, as whether it is perceived as such by the receiver. Innovators are those who first adopt the innovation. This characteristic of early adoption is called innovativeness.

Food and Population

It is a belief of many authors such as Myrdal (1968) and Borgstrom, (1973 a,b,c) that no other problem facing mankind today is so crucial as the food and population imbalance. They see this imbalance at the root of many other problems such as domestic and international unrest, the widening gap between the haves and have nots, and the lag in economic development by the less developed countries. Unless these and other problems related to food supply and population can be solved, all other efforts to build a better world may come to naught.

In most Latin American countries, the agricultural sector heavily contributes to balancing the national deficits, is the most

and other functions; and (3) analysis of interventional communication
 systems in the areas of design and operation. To the
 extent that these functions are performed by the

important source of revenue, and makes up a big part of the gross national product. Moreover, in countries such as Argentina and Ecuador, it is the agricultural sector which directly finances the urban sector and the local and national governmental bureaucracies.

This is paradoxical. On one hand the campesinos are considered to be the poor brothers, but on the other hand they are the ones who help pay for the tremendous deficits in the national budgets.

It is not easy to understand this situation and most difficult to find the causes of it. Quite often the analysis is influenced by controversial issues with high emotional content, such as those related to the external and internal dependency analyzed in depth by authors like Beltran (1970) and Garcia (1966).

In any case campesinos can probably improve their livelihood if they can be helped to improve their crop yields and diminish their number of children.

There have been millions of hungry people for thousands of years in this world. It seems there will be millions more for the many years to come. Of the 60 million deaths recorded annually in the world, 30 to 40 million have to be attributed to malnutrition. Hunger is the most widespread of the endemic diseases as well as a serious manifestation of world poverty. Malnutrition refers to an inadequacy in the quality of the diet. By hunger is meant a state of acute undernourishment persistent enough to cause physical discomfort or pain to the individual. By undernourishment we refer to an inadequacy of calories or other food elements required for normal body functions.

Scientific studies continue to broaden the domain of the diseases that have their origin in inadequate nutrition. Some of these diseases are pellagra, beri-beri, anemia, tuberculosis, leprosy and intestinal worms. Their development depends in great part on the state of organic resistance in the human groups--that is, in their state of nutrition.

A lack of vital energy, an incapacity for work, is in a majority of cases a consequence of chronic malnutrition. It was calculated that for a Far Eastern worker, where hunger is more deeply sensed, productivity was 13 times lower than the average productivity of a US farmer, because of malnutrition.

It seems clear that population growth exacerbates food problems. This is so because the more people, the more food needed to feed them. Brown (1972), Borgstrom (1973 a,b,c), Myrdal (1968) among others, describe sufficiently the problems that must be overcome because of the population explosion. By the year 2,000 they indicate the total world population will increase to nearly 7 billion. This is almost double the figure for 1960. Under this condition, enormous efforts are needed to avoid serious, tragic levels of hunger, malnutrition and death from starvation.

Any comprehensive national developmental project in the "Less Developed Countries," should include action programs to increase the availability of food and to decrease population growth. Agriculture will have to increase its outputs. And countries have to diminish their population growth. The techniques to overcome these problems and suitable for many of the countries involved, are available now.

We think now that it is probably mainly a matter of diffusion and adoption of these techniques.

Structural Factors for Adoption

The adoption of agricultural and family planning innovations does not occur in a vacuum. It depends on the setting, the basic resources, the state of technology, the social attitudes and goals and the effectiveness of the countries involved in setting up an efficient system of extension of new and improved techniques and practices to the target system. It also involves the existence of price and income incentives to adopt and the social and political organizations to bring about all these conditions.

To better understand how agriculture and family planning are affected by structural factors, we give the following examples. In the region of Zapatoaca, Colombia, the maize harvest was an almost 100 percent loss due to severe drought this year (1974). As a consequence the campesinos will not have enough corn to sell at the market and their income for this year would be near zero.

On the other hand in previous years when the maize harvest was really good, prices fell due to speculation. This means that in neither good nor in bad crop years can the campesinos substantially increase their income. It seems they are caught in a vicious circle. Speculation and bad harvest don't let them improve their living conditions, and instead help keep them in poverty.

In regard to family planning, several rural leaders have pointed out that the campesino seems to be caught in a psychological

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conflict. On one hand the Catholic Church, through the priest, tells them it is a sin to control the number of children. On the other hand institutions like Pro-Familia, in most cases, promote methods of control per se without emphasizing "why" it is important to follow such practices.

Often when some explanation of birth control is given it is too abstract for the simple reasoning of the campesino. Campesino leaders suggest that family planning education should be undertaken explaining the several alternatives available so the husband and wife can make a more rational decision. Their opinion often is that family planning is something imposed on their countries from abroad, by more developed countries trying to eliminate a problem at the expense of the less developed countries. Only effective information methods aimed at clearly showing the campesinos the "why's" can hope to overcome this opinion.

These are some examples of how structural factors can affect the degree of adoption of an innovation by members of a community. In some circumstances they might be more important than the diffusion process per se.

The Importance of Literacy

Latin American countries today face the challenge of educating more of their people for a longer time: 120 million Latin Americans are illiterate. They need to be educated. It is no longer possible that such a huge mass of people remain without the benefits literacy can bring.

The technical development these countries are experiencing also means greater need for literate and skilled personnel.

In developing countries human and financial resources are known to be scarce. There is an urgency to do many things at once and in many areas at the same time such as in agriculture, industry and unemployment. Because of scarce resources, not all needs can be satisfied. Priorities have to be established. This implies that certain sectors will have preference over others. This means that if resources are given to education, for example, other sectors will have diminished shares of the national budget.

To better invest the scarce resources in these countries it is imperative to know which sector will give the country the greatest benefits. Is the alternative of literacy priority number one? The answer is yes and no. First, we should better ask what literacy can do for an individual and for the social system in which he lives. At the social system level (e.g. country) Lerner (1958) and Schramm (1967) have suggested that no country has achieved "development" without a literacy level of more than 80 percent. Niehoff (1973) indicates that literacy has been considered essential to any country, regardless of the degree of development.

At this point we should mention that literacy alone does not develop a country. A literate will be as handicapped as an illiterate in helping a country to develop. Other things are needed. As an example we should look at structural changes in agriculture: tenure, capital distribution and tax system. History tells us that literate individuals have failed in developing a nation. . . because development

is a multi-variable process*. The effort of developing a country should be done in several areas at once, and not only in the field of education.

How can literacy help the individual? What does literacy give him? Lerner (1958) indicates that literacy helps develop the basic personal ability to modernize. Through literacy the individual not only learns how to read and write but trains himself in the complicated mechanisms of empathy. He says, in general, literate people have more modern attitudes and a higher level of empathy.

Holden (1972) indicates that a literate person has a higher degree of autonomy than an illiterate. Autonomy is closely related to the individual's modernization. A person with a low degree of autonomy tends to conform to the norms and goals of the system he belongs to. On the contrary a person with a higher degree of autonomy tends to have a lower degree of conformity. He is more open to new ideas, to trying something his neighbors have not tried first.

Literacy is well established as perhaps the most important influence upon the individual's level of assimilation (Peterson and Scheff, 1965) and modernity (Inkeles, 1969; Kahl 1968; Rogers, 1969). According to Waisannen (1971) education (including literacy) is (1) a social system rooted in and representative of the core of modernity, and (2) a powerful mechanism of intersystemic linkage and a vital component in the idea diffusion process.

* For example, Argentina has the highest literacy rate in Latin America (91 percent) but in spite of this it is considered a developing country. It's political stability is shaky, and economically it has been stagnant the last 30 years.

The Latin American Radio Schools

This study was conducted in Colombia with the help of Acción Cultural Popular (ACPO), who runs Radio Sutatenza, the national broadcasting system which tries to reach with its messages--instructional and entertainment--the illiterate campesinos living in marginal and remote areas of the country.

We chose to study ACPO because (1) it is the first organization in Latin America to start radio school operation--in 1947; (2) the scope of its operation--nearly 22,212 radio schools, 167,451 participants, and a yearly budget of 4.2 million dollars--make this a unique enterprise; (3) they use a combination of mass media and interpersonal channels, which combines the advantages of both channel systems; (4) many other institutions in several Latin American countries are implementing radio school systems based in ACPO and adapted to the local conditions.

There are some common characteristics between ACPO and the radio schools from the other 17 Latin American countries. Examining these will help us define radio schools in general.

Organization

(1) The Catholic Church and other related private groups are responsible for the system's operation; (2) the radio school finances come from private funds, donations, government subsidies and self-financing; (3) efforts are directed mainly at increasing literacy, diffusing innovations, and entertainment.

The Latin American Trade Schools

The History

Established in 1911 with the help of Action

Committee, the school began

1911-1912

The Medium

Radio has several advantages over other types of media. As an example, illiterate people can understand the message transmitted via this medium. Also, once the transmitter is installed, signals can be received regardless of the geographic characteristics (mountains, for example) of the particular place. Only a small usually cheap battery operated radio is needed.

McAnany (1973) indicates that the potential advantages of radio involve time, cost, and localizing:

1. Time: The broadcast signal is immediately received by the listeners. The diffusion of cheap transistor sets through rural areas is sufficient to guarantee virtual coverage of most countries. It may reach all populations in all countries in all languages at the same time.

2. Cost: It's low. It's lower than television and other media--both for the producer of programs and for the person receiving the programs.

3. Localizing: It is relatively inexpensive medium which allows for creating local stations that serve a relatively limited area with homogeneous language, culture, and interests. Programming may reinforce local values that may be threatened by dominant groups anxious to develop a marginal area or group (Schmelkes, 1973). Local stations broadcasting in local languages can contribute to the solution of local problems and provide a voice for their audiences through a more appropriate feedback mechanism.

Each program uses radio as a central medium, but there are more media than just radio in the system. Booklets, periodicals, tape

recorders, records, and the like make this system a multi-media approach (See Figure 1).

Channel Combination: Mass Media and Interpersonal

The Latin American radio schools use a strategy based on the combination of interpersonal and mass media channels (Figure 2). Each of these has its own characteristics which make them unique. When we have an interpersonal communication situation, we mean two persons, source and receiver, who are directly linked by facing each other at the same time and place. If the source says something to the receiver, he can immediately verify the responses the receiver makes. These responses are called feedback.

When a source uses mass media--for example, sends a message via a channel such as radio--the receiver does not come in direct contact with him and vice versa. The message is mediated.

Interpersonal and mass media channels have their own advantages and disadvantages. Interpersonal channels, as suggested by research, are more likely to produce attitude change, and allow for greater and quicker feedback, than mass media channels. On the other hand, mass media channels can reach simultaneously a larger audience and have more speed in message distribution (Table 1).

The strategy of channel combination is highly productive, then, because it puts together the separate virtues of mass and interpersonal channels. What one lacks, the other provides. Theoretically two assumptions seem to lie behind this strategy: (1) the joint use of channels is more effective than the separate use of them; (2) such



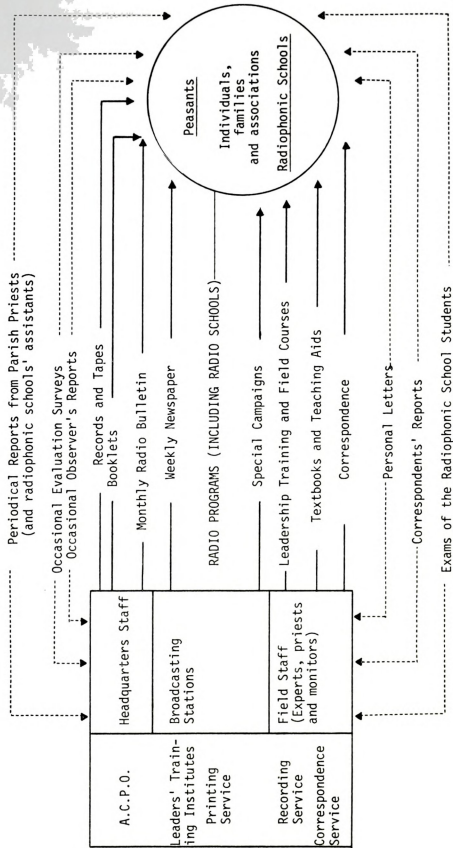


Figure 1.--Graphic Representation of ACP's MULTI-MEDIA Approach to Rural Mass Education. Source: L. Beltran, 1969.



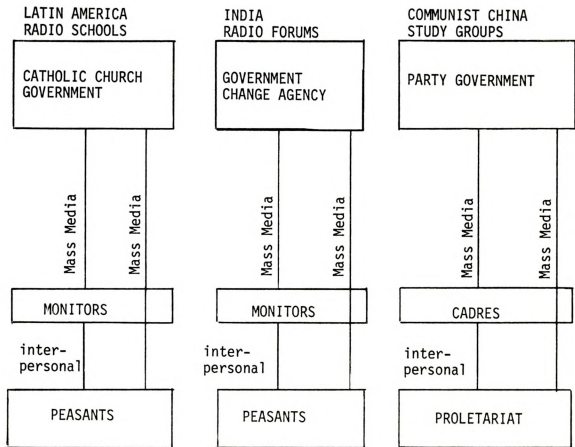


Figure 2.--Radio Schools, Radio Forums and Study Groups. Basic Operational Characterism. Source: Braun, 1974.

TABLE 1.--Comparative Summary of Characteristics of Mass Media and Interpersonal Channels. Source: Braun, 1974.

CHARACTERISTICS	TYPES OF CHANNELS	
	Interpersonal	Mass Media
1. Allowance for feedback	High +	Low -
2. Promptness of feedback	High +	Low -
3. Ability to choose audience	High +	Low -
4. Ability to overcome selectivity processes	High +	Low -
5. Ability to induce attitude change	High +	Low -
6. Ability to reach simultaneously a scattered audience	Low -	High +
7. Speed in message distribution	Low -	High +
8. Number of people that can be reached	Low -	High +

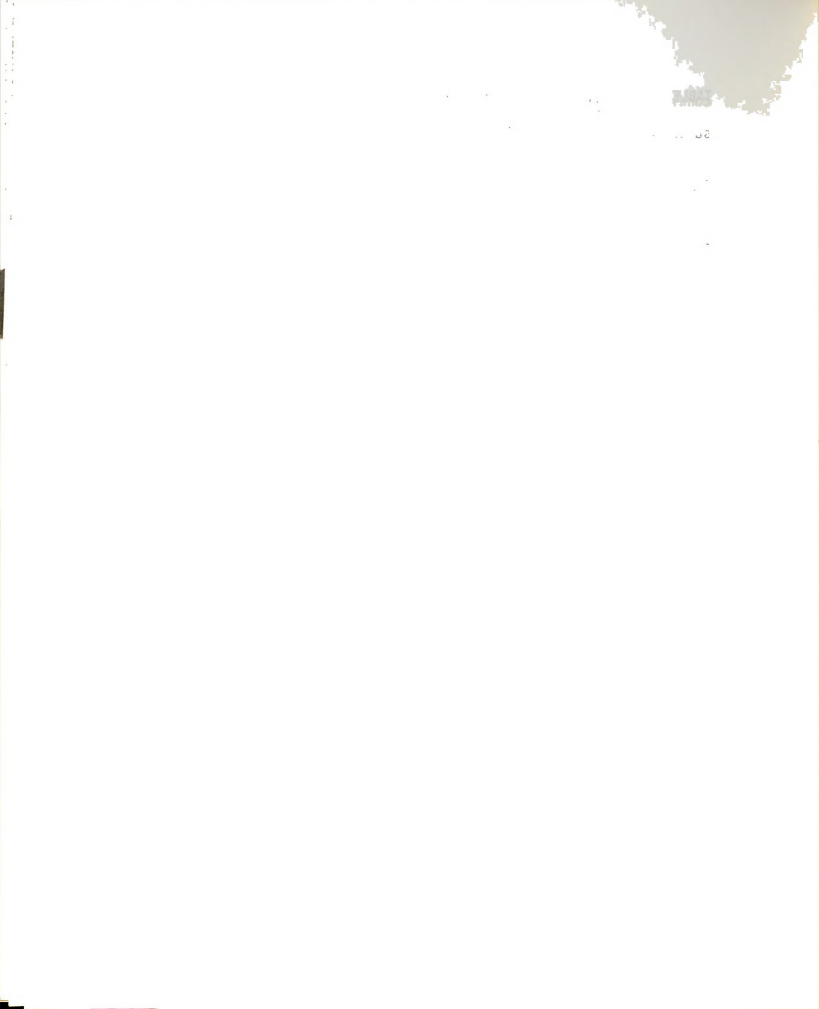
effectiveness increases as the number of channels is increased (at least to some level).

The Audience

Usually the participants are thought of as illiterate men and women campesinos on the middle years of life. But the figures indicate that a substantial number of youngsters and elderly persons of both sexes formally register to take the courses.

Group Sessions

They facilitate discussion of the topic being taught. Feedback is less difficult to obtain in group circumstances than in individual



conditions. People in group situations are sometimes easier to persuade than people in individual situations.

The Content

The course content usually includes information on the following main areas: reading and writing, elementary math, basic health notions, economics and work, morality and religion.

Out of the course hours, the radio presents entertainment in the way of music, soap operas and news.

The Auxiliars

The radio school system resorts to the use of what has been called auxiliars or monitors. They have the task of coordinating the groups, giving feedback to the sponsors, having the radio sets ready, and sometimes supplying the places for the meetings. They are usually appointed by the local priests or supervisors.

A Definition of Radio School

Having analyzed some of the main characteristics of the radio schools we can now attempt to present a definition: A radiophonic school is a channel combination strategy of communication, which uses radio as primary channel, but also employs printed media and other mass media channels as well as the interpersonal ones. It serves learning groups consisting of neighboring peasants ranging from 3 to 20 men and women, of varying ages (usually 15 to 60) under the guidance of a local auxiliar. These peoples voluntarily meet for an hour each day, six days a week, during ten continuous months (depends on the country), in order to receive a series of broadcast lessons supported by written

and visual materials, specifically prepared to teach them basic notions of literacy, arithmetic, health, agriculture, religion, cultural, civic and social rudiments.

ACPO and ALER*

One of the most widespread strategies for using radio in rural development began in the small town of Sutatenza, Colombia, in 1947. The idea began with Father Joaquin Salcedo who saw radio as a better means--than person to person action--of reaching his rural people with both an educational and spiritual message that might improve their lives.

A quarter of a century later the effort has a national organization, Acción Cultural Popular (ACPO), with an annual budget of 4.2 million U.S. dollars (McAnany, 1973).

Its apparent success in Colombia has been influential in other Latin American countries as well. There were reported 25 projects similar to ACPO's which have formal relations with the international organization ALER. An interesting thing is that many other Latin American countries have planned similar systems which presumably will get under way in the very near future (see Table 2).

In Table 2 we include information about 25 radio school programs which in one way or another are trying to help the poor masses of Latin Americans. The number of "adults" apparently benefiting are nearly 200,000 counting all 25 projects. Eighty percent of those

*ALER (Asociación Latinoamericana de Escuelas Radiofonicas).

and visual materials, especially prepared to teach the basic notion
of literature.

and last

TABLE 2.--Radio School Projects in Latin America, 1973 (Source: McNaney, 1973).

Country	Radio School	Date Begun	Target Audien.	No. Centers	No. Students	Ed. Levels	Radio Books	News Charts	Other	Field Organ.
Argentina	INCUIPO	-	RI	-	-	L	X	X	wkbs.	VN/S
Bolivia	CAMCOS ERSAR ACLO	- 1970 1967	Aymara RI Quechua	443 67 126	6,167 866 1,890	L L L	X X X	X - X	- - -	VN/S - VN/S
Brazil	FEPLAN MEB	1965 1961	RA RA	- -	675 8,912 4,776	L equiv. sec. L 1,2 cycle	X X X	- - X	- - -	VN/S - P(?)
Chile	Sta. Clara	1967	RA	-	-	1 cycle	X	-	Freire mt.	-
Colombia	ACPO	1947	RA	22,212	167,451	L/1/2/	X	X	Other read. material	VN/S
Costa Rica	ICECU	-	-	-	-	-	X	-	-	-
Dom. Republic	S. Maria	1964	RA	-	10,000	L prim. equiv.	X	X	-	PM/S
Ecuador	EPPE SEMA SUCCA	- 1964 1972(?)	RA RA Shuar A	- 65 50	- 1,000 2,035	L/1 L/prim. L/1	X X X	X - -	Wall newsp. - -	- VN/S VN(?)
El Salvador	Rad. Schools	-	RA	-	-	L/1/2/	X	-	-	-

Honduras	Rad. School R. Progreso	1962 1969	RA RA	- -	- -	L/1 L	X X	X X	- -	- -	Freire mt. Freire mt.	VM/S
**Guatemala	R. Schools	-	Native Ind. Ladino pop.	-	-	L	X	X	-	-	-	-
Mexico	Tarahumara	1957	Tara prim. child.	46	1,081	L/prim to 4 gr.	X	X	-	X	-	PT
	Huayocotla	1964	Indian RA	80	2,000	L	X	X	-	-	-	VM/S
Nicaragua	R. Catolica	1966	RI	67	2,000	L	X	X	-	-	-	VM/S
Panama	CEPAS R. Hogar	1969 -	RI RI	50 -	470 -	L L	X X	X X	- -	- -	Freire mt.	-
***Paraguay	Sch.Soc.Com.	-	-	-	-	-	X	-	-	-	-	-
***Peru	R.Onda Azul R.800 HuTaya	- -	- -	- -	- -	- -	X X	- -	- -	- -	- -	-
Venezuela	IVT	planned 1973	RI	-	-	L	X	X	-	X	film strips	VM/S

KEY: RI = rural illiterate
RA = rural adult

L = literacy

V = volunteer

M = monitor

/S = or supervisor

p = paid

*White (1972) makes no information available on numbers of centers or students in his summary.

**Guatemala has six separate stations with groups of students; no numbers available (Gomez, 1971).

***Information not available from OSAL (1972) but from Musto (1971).



participants are in the Colombian radio schools--nearly 160,000 radio-fonicos attend the classes transmitted by ACPO-Radio Sutatenza. The second largest number of radio school participants are from the Dominican Republic, with 10,000.

Besides radio, most of the programs also use printed media in the form of books and newspapers to reach their audience. The audience is usually made up of rural adults, most of the time illiterates and Indians. With the exception of ACPO and the Mexican Tarahumara project, which is not operating anymore, most of the projects were started in the sixties.

Study Objectives

Having stressed the importance of food, population and literacy, and analyzed the basic characteristics of the Latin American radio schools, it seems important to find out how those radio schools can be more efficient in the diffusion of agricultural and family planning innovations and to increase the literacy level of the campesinos.

Therefore, it seems important to undertake a study with the following goals:

1. To understand what the variables are which may help predict the adoption of innovations by the campesinos.
2. To find out about those variables related to, and which will help to predict, radio school participation by the campesinos.
3. To understand how family planning and agricultural messages flow through the rural communities, and the role the radio school participants may be playing in this process.

participants are in the Columbia radio school--mostly 160,000 radio-

stations along the

second, third

fourth

The Setting and Hypothesis

The study was carried on in Colombia, South America. One hundred eighty structured interviews were undertaken in the rural communities of La Aguada, Morros, Centro Alto, Holguin and San Jose. The communities are from three different "departamentos" (states) in the country.

They were purposively selected. Criteria were established in advance for such purpose. Mainly they had to be communities with no more than 50 households, and had to have radio schools in operation. All the heads of households from four out of the five communities were interviewed. This was so because it was decided to undertake a micro study to better understand how the information--family planning and agricultural--flows through a given community. These data then could supplement macro- level studies on a regional or national scale, which use sampling procedures, and where obviously the information can be used to make generalization to the larger population.

A total of seven hypotheses were developed. In general they tend to predict relations (1) between radio school participation and 24 independent variables classified in demographic, economic, communication and modernization; (2) adoption of innovations and 23 independent variables classified in demographic, economic, communication and modernization; (3) that radio school participation will vary with adoption of innovations; (4) bridges and liaisons tend to be linked to participants and non-participants of the radio schools; (5) bridges and liaisons also tend to be the auxiliars of the radio schools; (6) that there is a linkage between those campesinos participants of the radio schools and

non-participants; and (7) that the radio school auxiliary will tend to have more contactees in the network than will the radio school participants.

Limitations

Two major limitations of our study are:

1. We do not have a sample of villages. On the contrary they were purposively selected. Consequently our findings cannot be generalized to other villages or to the national level.
2. We only analyzed family planning and agricultural networks among the campesino heads of family. This is a limitation, particularly in the family planning network in which the woman plays an important role. If the findings indicate we have a "weak" type of network among the heads of family, this does not eliminate the possibility that we have a strong network among other community members, such as women.

Chapter Summary and Dissertation Review

In this chapter we analyzed the importance of agricultural and family planning innovations in the context of developing countries. We indicated there may be a necessity for increasing agricultural production and decreasing population growth. The food-population imbalance is thought to be the root of many problems such as domestic and international unrest.

An extensive analysis of the characteristics of the Latin American radio schools is presented. These schools are based on the combination of mass media and interpersonal channels, and in general, use a multi-media approach in the diffusion of messages. There are 25

non-participants; and (7) that the radio school facilities will tend to have more influence on the subjects than will the radio school participants.

projects of this type in Latin America, of which ACPO-Radio Sutatenza is the most important by far.

We have stressed the necessity to understand how the individuals adopt innovations in rural communities, and what some of the variables are which may help to predict such acts; to find the variables predicting radio school participation by the campesinos; and better understand how messages--agricultural and family planning--flow through rural communities.

The setting of the study was the five rural communities located in Colombia, South America. A series of seven hypotheses was tested.

In Chapter II, the theoretical framework, we present background information used to set up a research paradigm and hypotheses to be tested. Chapter III includes information about the setting and design of the study, including a description of the country and the five communities, how the communities were selected, instrument construction and data collection, measurement of the variables, and statistical analysis.

Chapter IV includes the findings. The information is presented in three sections: descriptive analysis, correlation analysis and analysis of interpersonal communication networks.

Finally, Chapter V includes a summary of the study, interpretation and discussion of the findings, and suggestions for researchers and the change agency as well.

projects of this type in Latin America, of which ACU-Rio de Janeiro

is the most important

infrastructure

about

CHAPTER II

THEORETICAL FRAMEWORK

Peasants constitute a major portion of the population in less developed countries. Asia, Africa and Latin America have a total population of no less than 1.75 billion peasants. Most of them barely make a living and have only a bowl of rice or similar local staple food for their daily meal.

The food-people imbalance creates a double need: (1) to increase agricultural production, and (2) to control the population growth. Therefore, it seems appropriate that we focus our research upon the problems of diffusion of innovations relating to increasing food production and family planning in a rural setting.

The diffusion of innovations as a process is so complex that it is difficult to isolate all its components and determine how they affect each other. However, research can help us gain a better understanding of how campesinos adopt innovations; what some of the variables affecting this process are; how innovations are communicated through the community; and what the role of radiophonic schools is in this process.

Participation in the Radio Schools and
Adoption of Innovations

Studies on the effectiveness of radiophonic schools are not numerous. Those dealing with the impact of the schools on such behaviors as diffusion of innovations are in considerably lesser supply, and only in connection with ACPO activities.

Two studies in the late 1950's attempted to assess the effectiveness of ACPO radiophonic schools. Ferrer (1959), in a research project sponsored by UNESCO, gave special attention to the role of the radiophonic schools in influencing the adoption of innovations and improving the rural level of living. With a sample of 82 schools, he reported an average adoption rate of 51.4 percent on a scale of practices related to agricultural crops and soils, 73.8 percent on a scale of innovations dealing with animal health and care, 69.4 percent on a scale of human nutrition innovations, and 45.9 percent on a scale of human improvement and hygiene practices, for students of radiophonic schools.

Ferrer (1959) attempted to place a monetary value on the adoption of these innovations (assuming that these data can be generalized to the 112,576 students enrolled at that time in ACPO classes). He calculated the value of ACPO radiophonic schools influence at \$US 14,414.087. Dividing this sum by the total population produces a per capita increase of \$US 1.04. Using the number of students enrolled in ACPO classes yields an average benefit per student of \$US 128.03.



Bernal (1971) questioned Ferrer's (1959) conclusions, pointing that he failed to report how market prices and production costs were calculated, and how cost of farm labor was figured. He also pointed out the difficulty of calculating the value of student input to infrastructure construction. Although 14,289 students worked on community roads and bridges, it is almost impossible to sort out the extent and value of this contribution. Despite severe methodological shortcomings the Ferrer (1959) study demonstrates that the radiophonic schools do contribute toward the improvement of the campesinos' living conditions.

Torres and Corroder (1961) selected three Colombian municipios (counties) in the same geographical region, differentiated in degree of local parochial organization and involvement in the radiophonic schools. Involvement was indexed by: regular visits from the parish priest to the schools, the priest's support of the students, and attendance by school monitors in the monthly meetings. Using an inventory of innovations similar to those of Ferrer Martin (1959), Torres and Corroder (1961) found that communities of higher levels of parochial participation had, generally, better homes and home improvements, followed better health and nutrition practices, and had adopted more agricultural innovations.

Probably the most extensive research project to include effects on adoption of innovations was conducted for ACPD by the German Development Institute and reported by Musto (1971). They found that, overall, students in the radiophonic schools had higher scores on an

innovation scale than listeners of radio Sutatenza or those not influenced at all*.

Their analysis included four main variables: modernity of attitudes, adoption of innovations, integration into the community, and income. They were also careful to take into account the differing levels of regional development for different segments of their sample.

Musto (1971) reported that:

1. In the more developed regions the students are more modern, they accept more innovations and are more integrated, but they do not have a higher income than those who are not influenced and are inhabitants of the same region.

2. In the less developed regions the students are not more modern but they accept more innovations, they are more integrated and they have a slightly higher income than those who are not influenced in the same region.

3. In the more developed regions the students are more modern, they accept more innovations, are more integrated and they have a higher income than those who are not influenced and live in the less developed areas.

4. In the less developed areas the students are not more modern nor do they accept more innovations, but they are more integrated and they have a lower income than those who are not influenced and dwell in the more developed regions.**

*More than half of the innovations diffused by ACPO were adopted by radio school participants; one seventh of them were adopted by non-participants, (Musto, 1971).

**Translated and reprinted in ACPO (1972 a).

innovation scale than literature of radio literature or those not in

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radio

The conclusion appears to be that acceptance of a given innovation depends both on the degree of development of the respective region and on the influence of the radiophonic schools. The interaction of variables is complex but a definite effect attributable to the radiophonic schools emerges.

In considering the land ownership variable, Musto reports that owners, in general, are more innovative and more integrated than non-owners, but not necessarily more modern in their attitudes; and that owners influenced by ACPO are more innovative and more integrated than owners not influenced. There is no significant difference in modernity between owners influenced by ACPO and those not influenced.

Musto (1971) and his colleagues conclude that the radio schools exercise their greatest impact in the field of explicit behavior of peasants, and not in teaching them to read and write or in the changing of traditional mentalities.

Bernal (1971) conducted a case study in the municipio (county) of Sutatenza, the "birthplace" of the radiophonic schools. His sample consisted of 916 households, drawn from nine communities. He compared 70 "participant" households with 846 "non-participant" households. Participants were defined as those who "follow the program of the radiophonic schools." The questionnaire included measures of adoption of innovations promoted by ACPO, including use of fertilizer, production and consumption of cheese, preventive measures against soil erosion, growing of gardens and consumption of certain vegetables, construction of stables for milk cows, home improvement construction, and knowledge of and participation in cooperatives. Of the 14 indicators of

innovativeness, there were significant relationships on 11 variables between adoption of that practice and participation in the radiophonic schools. Bernal (1971) notes that the finding of a significant relationship between radiophonic school participation and adoption measures does not prove a necessary or causal link between these variables.

These represent the principal studies, to our knowledge, that shed light on the role of radiophonic schools as channels for promoting the adoption of innovations. In general they indicate that those individuals who participate in radiophonic school activities adopt more innovations than those who do not. But they also suggest that there are other variables related to innovativeness. So far we do not have a clear picture as to how these other variables interact with the radiophonic school impact to lead to more innovative behavior.

Consequently, and based on the information presented, we set up our first hypothesis:

H₁: Radio school participation is positively related to the adoption of innovations.

The Diffusion of Innovations Process

Most of the studies in the area of rural communications were specifically devoted to the verification of the diffusion process of agricultural innovations, within a conceptual model in use in various parts in the world.

The model, actually under heavy criticism in Latin America*, defined diffusion as that process by which an idea spreads from the

* See Beltran (1974) and Felstehausen (1971).

source of invention or creation to its ultimate users or adopters. It considered an idea to be an innovation if it is perceived as new by individuals in the social system. Four crucial elements in the process are postulated: the innovation, its communication, the social system in which the innovation diffuses, and the time period in which the diffusion occurs. The model identifies five stages in the diffusion process: awareness, interest, evaluation, trial and adoption. As we can see, level of continuation of the innovation after adoption is not taken into account by most authors*.

Bernal (1974) reports that the research inspired by this model found numerous variables to be of importance in predicting the innovation decisions of individuals and the rate of diffusion of innovations in different social systems. The main sets of variables studied were: (1) those describing the traditional or modern state of the individuals and of the social system; (2) those specifying the chief characteristics of the innovations themselves; (3) those referring to the type of decisions required in order that the person adopt the innovation; (4) those identifying the communication situation itself; and (5) other descriptive variables of the individual and of the structure of the social system in which he lives.

We will not attempt to summarize the diffusion studies because this has been done by many other authors**. What we include here is a summary of the findings most relevant to our research.

*One exception is Rogers (1971) who analyzes this topic.

**For summaries see: Felstehausen (1965), Fonseca (1968), Diaz Bordenave (1974), Rogers (1962), Beltran (1972).

Diffusion studies have found that certain variables are consistently and positively related to the adoption rate for agricultural innovations--for example, the variables size of farm, income level, educational level, social prestige and exposure to mass media, which at the same time correlate positively with each other.

Echavarria (1967) found that farmers owning land are more innovative than sharecroppers. Parra (1966), Grunig (1969), Diaz Bordenave (1974), Fonseca (1968), Herzog (1968), and Rogers (1970) indicate that farmers with high levels of education and of access to mass media adopt innovations more readily than do landless, uneducated peasants with little access to communication media. These farmers are also considered to be more innovators.

Innovators play a key role in the diffusion process. They are those who adopt innovations earlier than others. They are willing to take risks; they present evidence to other members of the community on how new ideas or practices work in real life conditions. They are the first category of adopters out of the five characterized by Rogers (1962): (1) innovators, (2) early adopters, (3) early majority, (4) later majority, and (5) laggards.

The available research suggests that innovators differ from non-innovators in several aspects such as socio economic status, level of modernization and the like. More specifically, Rogers (1970) and Herzog (1968) have found the following variables generally related to innovativeness: age, level of living, farm size, land tenure, status, total income, mass media exposure, social participation, empathy and cosmopolitaness.

In this research we chose not to study in depth the innovators but to emphasize more the adoption of innovations per se--the number of innovations each individual adopts as compared with other members of the system. We made this decision because: (1) the body of research on innovators is quite extensive; (2) we are interested in knowing about the characteristics of those individuals who adopt more innovations than others (in the last analysis the goal of the change agency is that all the individuals in the community adopt all the appropriate innovations).

Based on the above information we are able to establish our second hypothesis:

H₂: Adoption of innovations tends to vary with selected demographic, economic, communication and modernization variables*.

It has been indicated by Musto (1970) in his Colombian study that those who adopt more innovations tend to be radio school participants, as compared with those which adopt fewer innovations.

Consequently, at this stage we hypothesize the following:

H₃: Radio school participation tends to vary with selected demographic, economic, communication and modernization variables.

Interpersonal Communication Networks

In spite of the importance of interpersonal channels in the diffusion-adoption processes, relatively little is known about their exact nature within a local system or community. Studies at the

*The Appendix includes a list of variables. Chapter III includes operational definitions of them.

community level have failed to report on the interpersonal networks and how the information about new ideas or practices passes through them. Communication research from a number of developing countries indicates that interpersonal channels are the most important in the adoption process when compared with mass media channels. When adopters of innovations are asked how they were persuaded to adopt, they overwhelmingly report such interpersonal channels as friends, neighbors and relatives (Rogers, 1974).

To know about an innovation is not synonymous with adoption. Rogers (1970) and Herzog (1970) report that in general only 50 percent or less of those who knew about the innovations adopted them at any one point in time. So, it is important not only to know information flows within the community but also to know about interpersonal influence toward adoption.

Whenever the campesinos exchange a particular message they become linked to each other. Via interpersonal network analysis* we are often able to map the information flow network for a particular community. There can be different information networks for different types of messages. For example, agricultural and family type messages may flow through different networks.

Once we have mapped the information flow network for the community, different kinds of communication roles in the community: isolate, peripheral, group member, bridge and liaison. A communication network,

* A network is a set of nodes (individuals) linked by communication flows. The members of a network do not have formal positions and titles but certain individuals do perform specialized roles in the network such as liaison, bridge and so on.

as indicated by Farace (1974), Danowski (1973) and others, usually includes all of these (see Figure 3).

Isolate, Type 1

He is a person who communicates with no one else in the community in some specific topic: daily, weekly or monthly. Isolates are persons not involved in the communication flow of the community.

Isolate, Type 2 (Peripheral)

He is a person performing a communication role in which he has a minimal involvement in the communication network--he is only attached to one person in the network. He is out of the mainstream of the communication flow.

Tree Node

He is a person who might have links to a group participant, and also has Type 2 isolates attached to him.

Group Member

To be a group member a person must have strong links with a sub-set of people--made up of three or more persons. We can consider persons in the group member role to be quite highly involved in the communication network--provided that the small group itself is inter-linked with other groups in the community.

Dyad

A pair of persons with links only to each other.

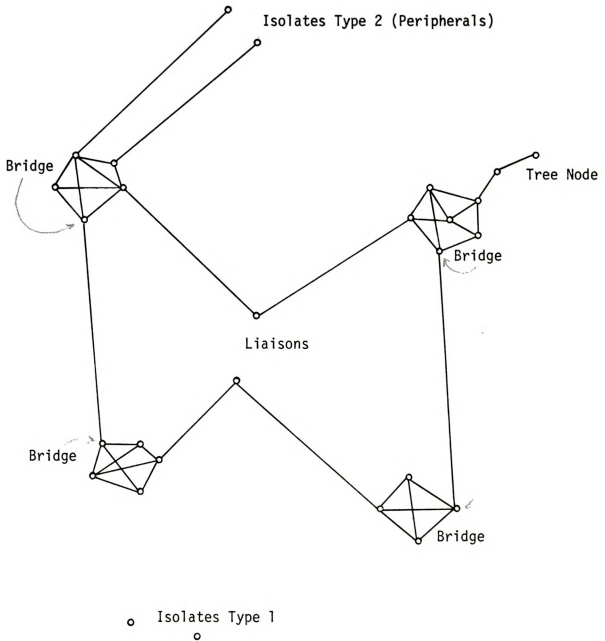


Figure 3.--An illustration of peripheral, isolate, group members, bridge and liaison roles in a communication network with four groups.

Bridge

A person performing a bridge role is, in addition to being a group member, a person who receives communication inputs or messages from other components or groups than his own in the organization and sends outputs to the other components.

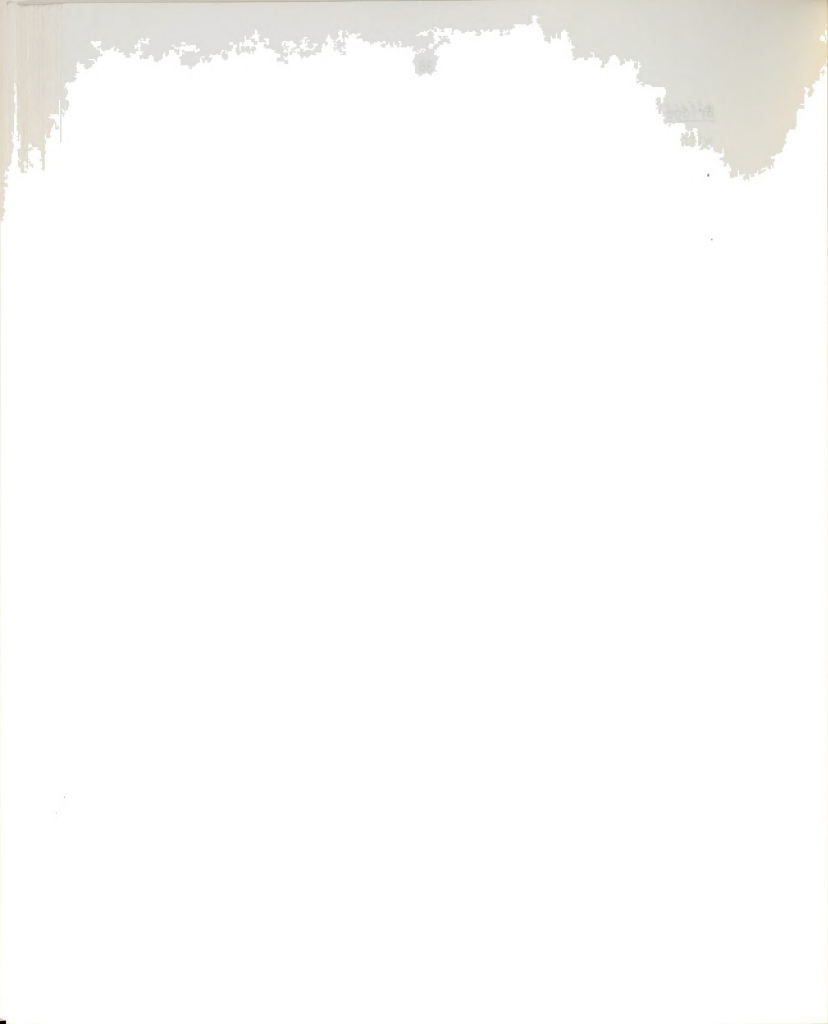
Bridges perform a critical role in the communication network linking up the various small groups--tying them into the communication system. A bridge exercises control over the information coming into and leaving the small group. Bridges are more important than those persons whose roles we have discussed up to now.

Liaison

He does not belong to any one group--he does not share a majority of his communication with a single group. The liaison divides his loyalties among more than one group. He serves as their communication link with the messages which flow in the network. By controlling the information inputs for a number of different groups, the liaison can control the perceptions, attitudes and subsequent behavior of a large number of people in the community.

The liaison is like an information center. He tends to be a decision maker in the community. The importance of these persons in the diffusion and adoption processes is obvious.

One aspect of networks which is especially critical is the existence of linkages between various groups in the network. It is these linkages which make the community a whole system and not merely an assortment of independent small groups. Each small group, for most



effective integration into a community, should have a connecting channel with at least one other group--whether it is through a bridge or a liaison--on a highly regular basis (Danowski, 1973).

We should mention that it is important for ACPO to have bridges as members of the radio schools, and liaisons linking groups made of participants and non-participants. This is so because we want the information, which is sent via the radio school, to flow through as many groups within the community as possible so all the campesinos get the chance to be informed and consequently make better decisions.

One of the many differences between the people who live in a rural community and those who work for an external organization is that the latter are linked to the community temporarily, most of the time with a low sense of belongingness and are members of it to get a reward, to make a living in most instances. They are pieces within the formal structure of the organization who in most cases occupy a small piece of territory and might not be allowed to know or to communicate with most of the other organization members.

On the other hand, in the case of those living in a rural traditional community made of 50 to 70 households (e.g. Tabacundo in Ecuador), they were born there and so were their grandparents and their sons. They know each member of the community and some cases they have strong "padrinazgo"* ties with many members. They go together to church, to the "bebedero"*** and "bailadero"*** and in general they

* Padrinazgo: Godfather.

** Bebedero: Place where the campesinos get together, usually over weekends or holidays, to drink alcoholic beverages.

*** Bailadero: In most towns, this is the place where the campesinos go to dance.

know pretty well what is going on, and what most of them think and do. Probably they share the same norms of the system and defend them.

If a person becomes a radio school participant in a rural community, he probably does so because this is a role accepted by the community. If the campesinos were against radio school participation, they would set up this decision normatively, and if you break this norm, you might well be rejected by the group. There is evidence that members of traditional communities usually would not play a role which is not accepted by the members of the community. Therefore we establish here our fourth hypothesis:

- H₄: Participants of the radio schools tend to be linked via interpersonal channels to non-participants of radio schools.

The community members who play the roles of bridges and liaison act in some way as information centers.

They tend to be decision makers. They have the power to release or withhold the information which gets to them. We do not have information about their personal characteristics, because studies about them are nonexistent. But based in the same rationale which we follow for hypothesis four, we can predict they might be linked to participants and non-participants as well. Consequently, our fifth hypothesis is:

- H₅: Bridges and liaisons tend to be linked to participants and non-participants of the radio schools as well.

The auxiliars are important to the effectiveness of the radio schools. It has been said that the success or failure of the radio school depends in degree of the drive and motivation of the person playing this role.

1894-1895

1895-1896

An auxiliar in some degree may also occupy a position of centrality within the community, because at least he acts as gatekeeper for the 20 or so radio school members, which in one way or other are dependent on him to achieve success while attending the courses.

Bridges and liaisons also control the information flow in the community. Consequently, we expect that the auxiliars and the bridges and liaisons often are the same person.

H₆: Bridges and liaisons tend to be the auxiliars of the radio schools.

It is obvious that if the auxiliar occupies a more central position in the community he will be linked to more people in it. Consequently we state our seventh and final hypothesis:

H₇: Auxiliars tend to have a higher number of linkages than do the participants of the radio schools.

Taboo Communication

A word has to be said about the agricultural and family planning innovations we are going to study. ACPO is a Catholic-run organization. Their clients, the campesinos, are mostly Catholic. A topic like family planning is in opposition to traditional Catholic values. If it is still somewhat taboo in "modern" U.S. to talk about sex, intercourse and pills in many situations, this is more so in rural traditional areas of developing countries. But even in rural societies some people must talk about intercourse and the pill. Consequently it will be important to know if they do, and who they are.

The picture is completely different when we deal with agricultural innovations. In this regard, Marshall's (1971) study well summarizes the idea that agricultural information is not taboo



communication. He found that information about a new wheat variety spread more quickly in his Indian village than did a new family planning idea (the IUD).

Because of the degree of tabooeness, we expect the agricultural network to be more integrated, with more links and more groups, and fewer isolates and peripherals than the family planning communication network.

Paradigm and Hypotheses

Paradigm

In summary and in order to have a better understanding of our research objectives, it might be of interest to look at the paradigm included in Figure 4. In the paradigm the following are implied:

1. Members of a community have certain characteristics that can be measured adequately. The characteristics are certain selected social, economic, modernization and communication variables. (See Appendix A for list of variables.)

2. Researchers such as Musto (1971) indicate that those who adopt more innovations tend to be radio school participants, as compared with those which adopt fewer innovations. Therefore, we expect an association between radio school participation and adoption of innovations.

Also, Rogers (1970), among others, indicates there is a significant relationship between those who adopt more and several demographic, economic, communication and modernization variables. Consequently, we expect that there will be an association between the four groups of variables specified and radio school participation.

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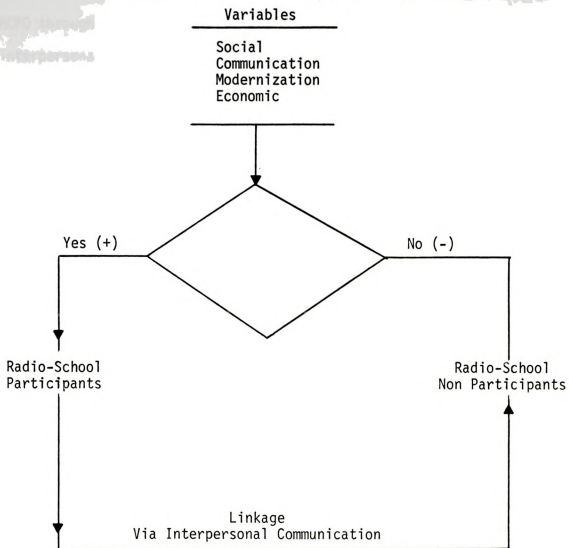


Figure 4.--Variables related to radio-school participation and community members linkage.

3. It is expected that those exposed to the messages sent by ACPO through radio and printed media will diffuse these messages via interpersonal communication to the other members of the community. We expect a two-step flow of information, from mass media to the participants of the radio schools, and from them, via interpersonal channels, to the rest of the community members, including the poorest campesinos who need this information the most.

4. We expect the auxiliar of the radio school to occupy a central position within the community. This is to be an opinion leader, a bridge or liaison, depending on whether we are analyzing inter- or intra-group linkages (in fact, in this study we stress the inter). We have underscored the importance of the auxiliar in the effectiveness of the radio school. It allows the person playing such a role to control the flow of information. We have indicated that bridges and liaisons are special types of gatekeepers. Consequently we expect them to be the auxiliars.

Hypotheses

The review of selected studies in the field of diffusion of innovations, radio schools and interpersonal network analysis has helped us to narrow down the investigation into a number of research hypotheses:

- H₁: Radio school participation is positively related to the adoption of innovations.
- H₂: Adoption of innovations tends to vary with selected demographic, economic, communication and modernization variables.

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- H₃: Radio school participation tends to vary with selected demographic, economic, communication and modernization variables.
- H₄: Participants of the radio schools tend to be linked via interpersonal channels to non-participants of the radio schools.
- H₅: Bridges and liaisons tend to be linked to participants and non-participants of the radio schools as well.
- H₆: Bridges and liaisons tend to be the auxiliars of the radio schools.
- H₇: Auxiliars tend to have a higher number of linkages than do the participants of the radio schools.

CHAPTER III

THE SETTING AND DESIGN OF THE STUDY

Some of the objectives of this study, exploratory by nature, are to provide insights into how the radio schools in Colombia help the campesinos and their communities in areas such as the diffusion of innovations and what some of the relationships among adoption, radio school participation and other related variables are.

It also was important to understand how the innovations in family planning and agriculture travel through the community, and how persons participating in the radio schools fit into this scheme.

Another goal was to develop and test a research methodology which is simple enough, has a low cost and will allow program decision makers to set up a similar system so they can obtain fast feedback for decision-making.

This also is believed to be the first time this form of network analysis has been used in rural settings in Latin America*.

In this chapter, we include information about (1) the setting--the country and the five communities in which this research was done; (2) the criteria for village selection and sampling; (3) instruments

*Only one other study of this kind has been conducted. This is the study by Rogers, Park, Chung and Lee (1975), in Korea.



used for data collection; (4) operational definitions; and (5) statistical analysis.

The Setting

Geography

Colombia, the fourth largest country in Latin America, is located in the northwestern portion of South America, adjoining the isthmus of Central America, and has coasts on both the Pacific Ocean and the Caribbean Sea. It has an area of 439,513 square miles and a population of just over 20 million people (Table 3). The country is divided into four rather distinct regions by the Andes mountains which occupy about two-fifths of the land. The lowlands are generally hot and experience heavy rainfall. The highland climate varies with elevation and is pleasant and temperate in the higher elevations.

Colombia's population is concentrated in the valleys and basins between the Andes ranges. Eleven of the fourteen urban centers are located in these mountain valleys. The other urban centers are found on the Caribbean coast.

Vast plains extend from the eastern range of the Andes into valleys along the northern ends of the Amazon River basin where the jungle areas are almost unpopulated. Mountain valleys along the northern ends of the Andes ranges also are uninhabited.

The principal means of transportation for much of Colombia is by water, but roads are flourishing and there is a good air service (Dame, 1968).

Washburn, Henry

1834-4

Washburn, Henry

1834-4

TABLE 3.--Colombia: Basic Data.

Area (square miles)	439,513
Population: 1970	21,116,000
Urban population (percentages)	57.7
Rate of population growth (1960-1970)	3.2
Death rate (per thousand, 1967)	9.4
Percentage of literacy (1964)	72.9
Percentage education expenditures out of Government expenditures (1969)	12.7
School enrollment, preprimary and primary (1968)	2,843,926
School enrollment secondary (1968)	586,704

Source: Inter-American Development Bank, 1970.

Political - Governmental Situation

Colombia is a former Spanish Crown Colony which achieved its independence in 1819. In 1946 anarchy verging on civil war developed. Revolts in the provinces and a wave of terrorism commenced. In 1953 Rojas Pinilla a military leader, seized power via a coup, and held it until 1957, when a Liberal was elected by a Conservative-Liberal coalition. This government soon began to restore stability to the country. Last year, the era of the coalition ended, and a new president was elected.

The Rural Sector

Agriculture, the economy's most important sector, accounts for 29 percent of the Gross Domestic Product (GDP) and about 50 percent of the total employment in Colombia. The sector generates 75 to 80 percent of earnings from commodity exports, among which coffee remains the

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most important item. Exports from other agricultural items are increasing. But coffee still remains the Colombian economy's most important product: it usually accounts for about ten percent of the GDP and 30 percent of the total agricultural output.

The 1960 census divided land use into six categories: arable land, cultivated 7.1 percent; arable land, fallow 5.8 percent; land in permanent plantings (such as coffee) 5.5 percent; land in pastures 53.4 percent; land in forest or woodlands 23.4 percent and other land 4.8 percent.

The above information shows why the nation's rural area is devoted principally to cattle ranching. This is despite most of the foreign exchange earnings coming from the coffee exports.

In Table 4 we see that a mere two percent of the producers (20,595) have ranches above 200 hectares in size. They account for 55 percent of all the land, however, whereas the 60 percent of the farmers with establishments of less than five hectares have only 4.5 percent of the land.

The farms of five hectares or less are the minifundios, the subsistence tracts of the farm laborers. At the other extreme of the minifundia we have the large haciendas and plantations, the so called latifundia which are the farms made up of more than 200 hectares.

The Farmers

There are about 1.5 million families in Colombia who are directly dependent upon agriculture and pastoral activities for a livelihood. Of these, by any reasonable criteria, only about 35 percent

Amphibian

Reptile

Bird

Mammal

Fish

Invertebrate

Plant

Fungi

Protist

Other

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TABLE 4.--Some of the Correlates of Size of Farm in Colombia.

Correlative	Less than 5 hectares	5 to 50 hectares	50 to 200 hectares	Over 200 hectares
Number of farms	756,605	370,165	62,307	20,595
Land in farms (ha.)	1,238,976	5,375,526	5,676,623	15,046,702
Land in farms (percent)	4.5	19.7	20.8	55.0
Owners: number	446,139	248,260	44,987	15,932
Owners: percent	59.1	32.9	5.9	2.1
Owners: hectares of land	723,158	3,725,555	4,168,249	11,162,623
Owners: percent of land owned	3.7	18.8	21.1	56.4
Maize: number of farms	301,578	196,152	32,452	9,069
Maize: hectares harvested	231,301	368,409	156,933	114,535
Maize: percent	26.6	42.3	18.0	13.1
Coffee: number of farms	230,978	166,424	17,304	3,161
Coffee: hectares	209,431	557,475	145,494	55,919
Coffee: percent	21.6	57.6	15.0	5.8
Cattle: number of farms	170,176	207,845	44,748	17,551
Cattle: head	576,115	2,207,390	2,200,853	4,659,231
Cattle: percent	6.0	22.9	22.8	48.3
Manpower only: number of farms	537,934	201,786	33,583	8,413
Manpower only: percent of farms	68.8	25.8	4.3	1.1
Resident farm population	3,497,412	2,320,735	494,270	253,867
Resident farm pop. per farm	4.6	6.3	7.9	12.3

Sources: Censo Nacional Colombiano, 1960; Lynn Smith, 1970.

can be considered to be operators of the farms on which they are dependent. This leaves almost two-thirds in the precarious condition of farm laborers. Most of the campesinos are still relying upon systems of agriculture that are more rudimentary and primitive than those the Egyptians were using at the dawn of history (Smith, 1967).

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Peons or Jornaleros

They are the casual agricultural laborers who work in return for a meager daily or monthly wage and occupy the position at the bottom of Colombia's social scale. Probably 50 or 60 percent of all male workers in Colombia assume the role of peon for at least a portion of every year. They account for 26 and 30 percent of Colombia's entire labor force.

They live in miserable huts, are undernourished, in poor health conditions and deprived of almost all the social benefits an individual should have.

Arrendatarios

The second large class of agricultural laborers in Colombia is composed of those called arrendatarios or renters--around 200,000 people. The basic arrangement is as follows: the family of the campesino receives from the landowner a small tract of ground on which its members themselves erect a rude dwelling and on which they grow some subsistence crops, keep a small flock of chickens, and possibly care for a cow or a few head of sheep.

In return, the members of the family are obligated to work on the hacienda at nominal wages for a certain number of days per week. The exact number of days' service required varies widely, although often it is all six, with only stated periods off during the course of the year. In some sections of the country, only three days of work per week are required (Fals Borda, 1957; Garcia, 1966).

Minifundistas

Probably almost as numerous as the arrendatarios are the propietarios or owners of the small tracts of ground from which they gather a few subsistence crops. Even though they own a few acres of ground and usually are considerably better off than those who do not, very few of them can live exclusively or even mainly from the small amounts of produce they are able to extract from their small plots.

Like the arrendatarios, most of them count on other employment mostly on the fincas and haciendas, in order to gain a modest livelihood. For most of them, the role of agricultural laborer is the dominant one in their lives.

Social Stratification and Class Structure

Lebret (1958) indicates that the rural population of Colombia can be divided into four categories of social class: (1) the burguesia, which includes not more than one or two percent of the population; (2) the clase media, which might be estimated at 15-20 percent; (3) the popular class, which is the most numerous, in general 75 percent and running as high as 85 percent; and (4) the clase indigente, including some day laborers, unemployed laborers, and beggars.

The Colombian society is highly stratified. The differences between the social status of the small upper crust (one-two percent) and that of the great masses of the population are tremendous. The former enjoy wealth and income, political power and prestige, education, culture, leisure, and positions of honor to a high degree. Those at the bottom are undernourished, poorly housed, disease ridden, and largely abandoned to their misery. Most of the campesinos, peons, fall

in this latter category. It has been just recently, in the last few decades, that a genuine Colombian middle class began to emerge, principally in the large cities so far.

The population is composed of four principal ethnic groups: European 20 percent, mestizo (mixed European and Indian) 68 percent, Indian 75 percent, and Negro 5 percent. The Colombian people are Roman Catholic. The different origins and the geographical isolation of several groups within the country have developed groups of people who are culturally and socially distinct and only loosely associated politically.

Education

According to the 1960 census* the general literacy rate was 73 percent: 85 percent among the urban population 15 years of age and older, and nearly 59 percent in the rural sector. In spite of increasing enrollments in both primary and secondary institutions, the average number of years of schooling for the population, placed at less than four years in 1964, remains low.

In 1968, about 96 percent of all children between seven and 12 years of age in urban areas, and over 62 percent of those in the rural sector, were attending school. However, in the secondary school group age, the enrollment was placed at just 21 percent (both, rural and urban sectors). There are no data on dropouts.

* We could have used data from the 1970 National Census. But when undertaking this research in Colombia, we learned this census was not reliable, and the government was undertaking serious investigation to find out why the census was a failure. Therefore, we decided to use data from 1960.



In 1970, which was designated internationally as the year of education, the Colombian government embarked on numerous programs to further education among the population at large. Ministry of Education programs have included: (1) an increase in community development programs; (2) establishing new literacy, functional education, technical training and middle level instructional programs; and (3) formulation and promotion of a new program for fundamental education aimed at assisting adults 14 years of age and over in furthering their education.

ACPO has as its main audience the poor campesinos, those thousand illiterates, peons or laborers, arrendatarios and owners as well of the smallest plots of land. Most of them are mestizos located at the bottom of the social scale.

Community Selection

Colombia was chosen for this study because the first radio schools in Latin America were started there in 1947. Nowadays, the radio schools are united in a national organization called Acción Cultural Popular, which takes credit for coordinating approximately 22,000 radio schools in this country, and runs an annual budget of 4.2 million.

The criteria we used for the selection of the communities were:

1. To select communities located in different geographical areas. We decided to choose one close to a large urban area--Bogota--This community was Centro Alto. Another community or two was to be rather isolated and in the mountain ares of the country. These were

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Morros and La Aguada. Finally, we looked for another pair of communities to be located in the Valley area--San Jose and Holguin.

2. The communities should have had radio schools and a sizeable portion of the campesinos (at least ten percent) should have been radio school participants. This criterion was particularly hard to meet. The number of people enrolled and the radio schools as well, were scarce in each community. Many of those which were formally enrolled on paper, I discovered were not now participating or never had participated in the radio schools. This matches with what was said in open interviews with Monseñor Ardilla who indicated that probably out of 100 campesinos formally enrolled, only around 40 participate. The priest Dolores Solano, among others, also said that out of the 14 radio schools on paper for his area, only three or four are in actual operation at most.

3. Each community should be made up of about 50 households. All heads of family were to be interviewed. All of them except Holguin met this criterion. Holguin had 300 households, so a sample had to be taken. There, the head of family in each tenth household was interviewed.

The communities were first preselected, based on the information provided by ACPO's Department of Planning and Research. In general, four or five communities were preselected from each of the areas and then were visited by the coordinator of the project. After a visual inspection, and informal interviews with the campesinos and village authorities, the decision was made to select the final ones. The villages were purposively selected.

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The Five Communities

Next is a more detailed description of the five rural communities in which this study was carried on: La Aguada, Morros, San Jose, Holguin and Centro Alto.

La Aguada and Morros

These two communities are located in the "Departemento" (state) of Santander. Most of the farmland is located in the foothills of the Andes Mountains. Coffee and maize plus tobacco are the farm products most grown. The coffee and tobacco are sold and are a good source for money for the campesinos.

La Aguada is a community of 55 households scattered along four miles of dirt road which climbs up and down the mountains. Tobacco is the farm product most grown. It is marketed at the towns of Zapatoca and Socorro. Food stuff is mainly purchased at the town of Galan which is within one hour walking distance. In Galan there is a church and a primary school. One hour away by car is the city of Zapatoca where the bishop has his headquarters. There also is a secondary school there. A bus service operates regularly from Socorro to Zapatoca and goes right through Galan and La Aguada.

Morros has approximately 35 households, scattered around ten miles of dirt road and up in the mountains in isolated farmsteads. One end of Morros is one hour walking distance from Socorro, a quite urbanized center. The contact between the inhabitants from Morros with Socorro is almost daily.



San Jose and Holguin

These two veredas are located in the "Departamento" (state) of El Valle, "Municipio" La Victoria. This is a flat area, with a tropical type climate, very different from the other three communities studied. San Jose is made up of 45 households and Holguin of about 300. Most of the farmers own small plots of land, which is the characteristic of the minifundio pattern in Colombia and most of the Latin American countries. There are haciendas nearby, for which the campesinos work as cotton pickers or cattle herders.

The communities are linked by a dirt road, along which most of the households are build. Holguin has a church and a school at the elementary level. Near these communities the government has set up a special rural development program called "Concentracienes de Desarrollo Rural."

Centro Alto

This community is a one hour bus ride from Bogota, the Capital of Colombia. Centro Alto, which is the place where the interviews were held, has its boundaries with Sopo, "cabecera de municipio." Many of the heads of families in Centro Alto work in other farms or in a local dairy industry. The 50 households are closer to each other than in the other four communities studied.

The church located in the urban area of Sopo, can be seen from this "vereda." The priest, who is 70 years old, is respected but, because of his age, lacks energy to undertake many operations related to the welfare of the community and its members.

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The campesinos travel to Bogota quite frequently, and most of them have relatives there.

Instrument Construction and Data Collection

The survey instrument used was a questionnaire. A draft was first written in English and then translated into Spanish. It was submitted to two types of pretests: (1) expert evaluation, and (2) a pretest in a rural community in Colombia.

The first draft was analyzed by experts at Michigan State University. A revised version was translated into Spanish and submitted to ACPO personnel who had experience in the area of research and had almost daily contact with the campesinos.

The corrected draft was then submitted to a rural community located two hours by bus from Bogota in which 25 interviews were done. The wording and scales were corrected again with the special help of the interviewers and ACPO personnel.

Special care was taken in terms of the length of the interview, which finally was reduced to 30 minutes. Most of the questions were close-ended and pre-coded.

Four interviewers were contracted. All of them had field experience and all worked for ACPO before. This means they were familiar with the radio school operation. In order to reduce the sex bias, two were male and two females. In total they interviewed 180 campesinos in the five communities. All the four interviewers went to the five communities.

All the heads of households of the five communities, with the exception of Holguin, were interviewed. An eligible respondent was



defined as: (1) the head of the family, (2) between the ages of 18 and 65, (3) a major provider for the household.

When the "jefe de la familia" was not available, because he might have been working in a far away place, and they did not expect him to be back the next day or so, the interviewers were allowed to substitute his wife, the oldest son or relative living in the same household.

In some instances when the head of the family was working in a nearby field, the interviewers asked if he could be told to remain home the following day, so they could talk to him. In other instances, as happened in Centro Alto, loud speakers from the church were used to inform the community of our presence.

Moreover, the community members were asked through the loud-speakers to cooperate and if possible wait for us the following day. This worked pretty well.

In addition to the regular respondents nearly 40 in-depth interviews were held with selected radio school experts, national and international organization experts in the area of development, members from the Catholic church, rural leaders and campesinos. The interviews were unstructured and in most cases (34) recorded. Most of them were done by the coordinator of this research.

The coding, keypunch into cards and verification as well as the data analysis were done at Michigan State University.

The data gathered was subject to descriptive and statistical analysis--percentages, frequencies and Pearson product moment correlation--and network analysis.

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Measurement of Variables

In an effort to select the most relevant operational definitions for the concepts, dozens of selected research reports in the area of education, communication, diffusion of innovations and communication networks were analyzed. The measurements used by Herzog (1968) in Brazil; Rogers (1970) in India, Brazil and Nigeria; Kincaid (1972) in Mexico; Farace (1974); Monge (1974); and Richards (1974), were the ones most relied upon. Some of the definitions were adapted to the local conditions, and some new ones developed by us were also introduced.

Despite most of the variables being measured in other cultures, such as Brazil and India, we assumed that we could extrapolate validity and reliability to our own setting. In this study, we did not undertake validity and reliability tests. We now know it is important, and something which should be done in further studies.

A. Demographic

Age.--Farmers were asked their age.

Sex.--Farmers sex was recorded by the interviewers.

Years of Schooling.--Each respondent was asked how many years of formal schooling he had completed.

Literacy.--(a)-A 36-word reading test (in Spanish) was constructed based on an actual problem of the campesino. Each respondent was asked to read the passage and was scored on the number of words that were read correctly.

Reading Test: "Los animales son atacados por muchas plagas y enfermedades. El aseo y la higiene permanente y la vacunacion oportuna, nos permite tener unos animales sanos, animales que nos van producir mas y de mejor calidad."

English version: Animals are attacked by many pests and illnesses. Cleaning, permanent hygiene and timely vaccination, allow us to have a healthy animal which will produce more and of superior quality.

(b)-Afterward, to measure comprehension, a question was asked related to the content of the paragraph:

Comprehension Test: Q: "Que cosas, aspectos o puntos se deben tener en cuenta para que los animales esten sanos, produzcan mas y sean de mejor calidad? A: Aseo, higiene y vacunacion oportuna.

English version: What things should be considered to have healthy animals, which produce more and are of better quality? A: Cleaning, permanent hygiene and timely vaccination.

B. Economic

Total Income.--Farmers were asked the total cash income for their family the previous year.

Farm Size.--Farmers were asked to indicate the total number of hectares they own or rent.

Land Tenure Status.--Farmers were asked if they owned, rented the land, or worked for others.

Agricultural Activity.--Farmers were asked to indicate their agricultural activity (e.g. they grow coffee, corn, etc.). Also a compound index was used by adding up the number of crops they grew. As an example, if they grew potatoes only, then their score will be 1. If they grew corn, potatoes and coffee, then their score will be $1+1+1 = 3$.

Reading Tests "Los animales son asociados por muchos diques y entrecabados. El azar y la ligera perturbación y la vacunación oportuna son hechos de los animales con animales que nos van a producir un "colado"

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C. Communication Radio School.--The farmer was asked if he was a
Radio Set Ownership.--Farmers were asked if they owned a radio
 set.

Radio Exposure.--Farmers were asked to give the name of the
 broadcasting stations they listened to. That number was put into a
 general index indicating how many radio stations they were exposed to.

Print Media Exposure.--Farmers were asked to name the different
 newspapers and magazines they read. This gives the number of respon-
 dents exposed to a particular medium. I also calculated the degree of
 exposure of a particular individual to newspapers and magazines by
 adding them up.

Member of Radio School.--The farmer was asked if he was a par-
 ticipant at time of interviews, if he had been but was not anymore, and
 if he had not been at all.

Length of Time as Participant of the Radio Schools.--The farmer
 was asked for how long, in months, he had been a member of the radio
 schools.

Courses He Took as Participant.--The farmer was asked what
 courses he had taken as participant of the radio school, if he approved
 (passed) the course (ACPO requests the individual to take a general
 knowledge test prepared by them and standardized for the whole country),
 and if he had received a certification of approval (completion) from
 ACPO.

Role in the Radio School.--The farmer was asked if he was a supervisor, auxiliar*, promoter or a student in the radio school.

Family Participation.--The farmer was asked if some other member of his family had been a participant in the radio school.

El Campesino Exposure.--The farmer was asked how often he reads the periodical El Campesino**.

Contact with the Local Priest.--Each farmer was asked to indicate how often he sees the priest, and also how often he talks with him.

D. Modernization

Knowledge of Innovations.--Our operational definition of knowledge of innovations was the relative extent of an individual's knowledge about family planning, home, and agricultural innovations, as compared with other members of the system. Knowledge of innovations was measured as to whether respondents had heard of each of ten innovations. The approach assumed that each innovation was roughly equivalent in importance to each other innovation in the scale. The year they had first knowledge was also asked, as well as the source of the information.

* Auxiliar. Person who helps in the coordination of the radio school group, by tuning the radio set, seeking the batteries to run the radio set and helping the students to follow the messages received via the radio. This person usually is appointed by the priest or the regional radio school supervisor.

** El Campesino is edited by ACPO in Bogota. ACPO figures indicate 70,000 copies a week are distributed nationwide. The target audience are the Colombian campesinos. It is printed in color.

Five innovations were related to agriculture, one to family planning and four to home aspects. They were: raised cooking stove, running water in the house, sports field, latrine, vegetable garden, milk cow, manure pit, animal vaccination, roya (coffee disease), family planning method. The practices were common and applicable to all five communities.

Adoption of Innovations.--Respondents were asked if they had adopted any of the ten innovations* and the year of the adoption. If an individual reported having adopted eight out of the ten innovations, for example, his adoption score was eight.

Continuation of the Use of the Innovation.--Respondents were asked if they were using the innovation at the time of the interview.

Cosmopoliteness.--This concept was operationalized as the number of trips each farmer took to the three nearest large cities during the previous year. For example, if a farmer traveled two times to the first city, three times to the second city, and six times to the third city, then his score would be $2+3+6 = 11$.

Empathy.--Each farmer was asked what he would do in a number of different roles: the Minister of Agriculture, the community priest, and the President of the country. We added together the number of

* One of the ten innovations--roya--is a type of coffee disease. It originated in Africa and entered Brazil a few years ago, devastating entire coffee plantations. It is new to Colombians. Thus we were finding out whether or not they were aware of the disease, and whether or not they had the disease in their coffee plants. Adoption in this sense is strictly involuntary--not voluntary as the others in the list were.

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things he would do in each role. As an example, he indicates doing two things as Minister of Agriculture--giving credit and distributing land--, none as priest, and one thing--give titles of land ownership-- as if he were the country's President. Then his score would be $2+0+1 = 3^*$.

Occupational Aspirations for Son.--This concept was operationalized as the degree to which the respondent desired a similar or different job than his own (respondent) for his son.

E. Communication Network

Network analysis allows the researcher to identify the structure of a social system (in our case the community). The analysis is based on nodes (in our case, campesinos) and links which are indicants of a relationship between nodes.

* Empathy was measured in this study as it was by Lerner (1958). He asked respondents, for example, "What would you do if you were President. . .?" Responses to such a question don't necessarily demonstrate presence or lack of "empathy," in the sense of "putting one's self into the shoes of the other." What Lerner found was that some peasants could not answer such a question because they knew that they never could or would be President, and so it was a nonsense question for them. For this study, we felt that responses at least would give us an idea whether or not the peasant could even think in terms what another person in that position might be able to do, and why he might do it. Such skills and abilities would be important where the peasant has to try to understand about what he should or should not do. Where he doesn't have face-to-face contact with those trying to influence him, it is important that he have some ability to "visualize" or "empathize with" the distant source so he can try to understand the motives of the change agency in asking him to change. The more he has these skills and abilities, the better he should be at assessing the relevance of any proposed change for him personally, and therefore the more rapidly he might change if he sees the change as benefitting him.

Our analysis has two primary goals: (1) to produce the typological description of the network under investigation (more specifically, a list of the groups within the system and a description of the roles of all individuals members within the system), and (2) to determine the place the auxiliars, radio school participants and nonparticipants occupy in the network and the relationships among them.

Typically, in a network analysis of this type, the following roles are distinguished: Isolate Type 1, Isolate Type 2 (peripheral), Dyad, Tree Node, Group Member, Bridge and Liaison.

Isolates, Type 1.--They are individuals who have no links to other individuals at all.

Isolates, Type 2.--They are individuals who have only one link and no one attached to them. We also call them peripherals.

Tree Nodes.--They are individuals who have a single link to another individual and have some Type 2 isolates attached to themselves.

Bridge.--Person who is a member of a communication group and who has a link to a person who is a member of a different communication group.

Bridge Link.--One-step, direct communication link between two persons who are members of different groups.

Communication Group.--Three or more persons within a network who have at least 50 percent of their links with each other.

Contact (Contactee).--A person who is listed on a network questionnaire as someone with whom the listener has a communication relationship.

Group Member.--A person who belongs to a communication group. A group member has at least 50 percent of his links with people who share their links with each other.

Liaison.--Person within a network who has links with two or more communication groups, but does not have a predominance of links with any one group.

Network Data.--The major goal of a network analysis is to specify the pathways through which communication flows in a given social system. We gathered data about: (1) the topic of interactions--agricultural and family planning, and (2) the frequency of the interaction.

The sociometric questions asked were: With whom do you communicate about family planning topics? Would you please give me their names so that I may include them in my list? How often do you communicate with them about family planning?

1 ____ 1 or 2 times a year

2 ____ 1 or 2 times a month

3 ____ 1 or 2 times a week

4 ____ 1 or 2 times a day

With whom do you communicate about agricultural topics? Would you please give me their names so that I may include them in my list? How often do you communicate with them about agricultural topics?

(continued)

original group

integrated

- 1 ____ 1 or 2 times a year
- 2 ____ 1 or 2 times a month
- 3 ____ 1 or 2 times a week
- 4 ____ 1 or 2 times a day

NAME	FREQUENCY
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Statistical Analysis

Statistical tests of significance, set at the .05 probability level, were used in the present analysis. Pearson product moment correlation was used in hypotheses one through four.

Because we did not have a representative village sample (they were purposively selected), our findings cannot be generalized to the whole country. Consequently, when generalizations are attempted, they are rather speculative.

Up to the present time, efforts aimed at studying communication networks have been hampered by the inability to manually handle and analyze the great amounts of data necessary to construct networks of relatively large-sized social systems. Recent methodological advances in computerized identification of communication network data now allow us to understand many added dimensions of interpersonal communication networks which were previously hidden (Rogers, 1974).

Rogers (1974) indicates that while the work on matrix multiplication of sociometric data began with Festinger (1949) and Luce and Perry (1949), and was advanced by Hubell (1965) its application to the analysis of communication networks was made by Bott (1957), Coleman (1964), Harary and others (1965), and Lin (1968). Recent

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methodological approaches to measuring various dimensions of communication networks, using computer matrix multiplication techniques, are reported by Guimaraes (1972) and Richards (1971).

The computerized methods of matrix analysis employ strict mathematical criteria for explicitly identifying cliques and communication roles in the network data. With the mathematization of computational rules executed by a standard computer program, judgmental errors--due to visual analysis--can be eliminated, and the capability of making inter and cross-network comparisons is facilitated (Rogers, 1974).

To do the communication network analysis we used the W. Richards (1971) computer program in operation at Michigan State University, Department of Communication. This is a "novel" program, which is only in operation in two places in the United States.

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CHAPTER IV

FINDINGS

This chapter presents the analysis of the data gathered in the five Colombian communities. A total of 180 questionnaires were administered.

This chapter is divided into three main sections:

First, descriptive analysis. It includes information about the typical Colombian campesino; the participation in the radio schools by community members; and diffusion of agricultural, home and family planning innovations.

Second, correlation analysis of two dependent variables, participation in the radio schools and adoption of innovations, with several independent variables classified as demographic, economic, communication and modernization variables.

Third, analysis of two interpersonal communication networks, agriculture and family planning, in each of the five communities.

I. Descriptive Analysis

The Typical Colombian Campesino

The 180 individuals interviewed were predominantly heads of families; where the head of family was not available, the spouse or oldest son was interviewed instead. Data are also presented indicating

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the actual total number of heads of family in each community. Note that in Holguin, because of the larger size of the community, a sample was drawn rather than attempting to interview all family heads (Table 5).

Occupational data are also presented in Table 5. Forty percent of the sample are engaged in agriculture as their primary source of livelihood. Although these are rural communities, several non-agricultural occupations are substantially represented. A third of the sample was unemployed at the time these data were collected.

The data in Table 5 indicate that 97 percent of the sample own land. In the peasant culture of Latin America, this is a vitally important possession and may at times mean the difference between starvation and survival. Almost half the sample owns one hectare or less, an indication of the prevalent minifundio (small farm) problem. Only ten percent own more than 20 hectares. This supports the now familiar generalization that in Latin America most of the land is in the hands of few, while the majority of the rural population has barely enough land to scratch out a meager existence.

Income data are presented in Table 5. Twenty-five percent of the sample earns US\$ 70 or less a year. Eighteen percent have an annual income of an equivalent between \$70 and \$270 a year. Twenty-six percent of the respondents declined to give an answer when asked about their income.

Data were also collected about the agricultural activities of the families. Fifty percent of the sample grow corn as their principal crop. Coffee, while a main export of Colombia, was grown by only 11

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TABLE 5.--Description of the Sample of Five Colombian Communities.

1. Number of respondents.

Community	Number of Respondents	Percent of Total Sample	Total Number of Heads of Family in Community
La Aguada	48	27	55
Centro Alto	44	24	50
Morros	26	14	35
San Jose	42	24	45
Holguin	20	11	300
	<u>180</u>	<u>100</u>	

2. Primary occupations of respondents

Occupation	Number of Respondents	Percent of Total Sample
Agriculture	70	39
Laborer (bricklayer, factory, etc.)	13	7
Other (artisan, shopowner, etc.)	38	21
Unemployed	59	33
	<u>180</u>	<u>100</u>

3. Size of farm owned

Farm Size	Number of Respondents	Percent of Total Sample
Owns no land	5	3
Owns less than $\frac{1}{2}$ Hectare	63	35
From $\frac{1}{2}$ to 1 Hectare	18	10
Over 1 to 5 Hectares	58	32
Over 5 to 10 Hectares	13	7
Over 10 to 20 Hectares	5	3
Over 20 Hectares	18	10
	<u>180</u>	<u>100</u>

4. Annual family income

Income	Number of Respondents	Percent of Total Sample
Less than US \$70/yr.	45	25
70 to 270/yr.	32	18
Over 270/yr.	56	31
Declines to respond	47	26
	<u>180</u>	<u>100</u>

percent of the present sample. Other crops indicated were: tobacco, 27 percent; and yucca 13 percent. In general, the data indicate "monocultivation," where farmers grow one, or at most two, cash crops. Sixty-three percent of the sample grow two different crops, while the rest grow only one. There is virtually no growing of fruits or green vegetables.

Thirty-five percent of the respondents sold part of what they grew, while 26 percent sold all of it. The latter group is composed mainly of those who grow tobacco and coffee. One-third of the sample consume all the crops that they produce.

Respondents were asked about the quantity of the previous year's harvest. Most answered that it was less than the year before, although 17 percent reported a higher yield than the year before. They attributed their larger harvest to better weather and improved techniques in that order.

Only 11 percent of the respondents reported keeping records of their farm transactions.

Table 6 presents data on radio exposure in the five communities. As can be seen, Radio Sutatenza, the station operated by ACPQ, is the only one heard nation-wide. The national chain "Caracol" is heard in three of the five communities. The other ten radio stations have only local coverage. Campesinos from San Jose and Holguin listen to the same local radio stations--Cartago, Cali and Cauca--because they are geographically close to each other. The same thing can be said about the communities of Aguada and Morros.

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TABLE 6.--Radio Exposure: Broadcasting Stations Most Listened to in Five Colombian Communities.

Radio Station	Aguada N=48	Morros N=26	Centro Alto N=44	San Jose N=42	Holguin N=20
Sutatenza	73%	69%	73%	81%	100%
Galan	40	42	--	--	--
Atalaya	46	20	--	--	--
Socorro	35	42	--	--	--
Bucaramanga	10	23	--	--	--
Caracol	--	--	41	24	15
Cartago	--	--	--	45	30
Cali	--	--	--	24	40
Cauca	--	--	--	29	40
Melodia	--	--	34	--	--
Santa Fe	--	--	30	--	--
Voz de Bogota	--	--	16	--	--

In Table 7 is a list of the newspapers the campesinos from the five communities are most exposed to. El Tiempo and El Espectador are read in all the communities.

The data suggest a lack of local or at least regional newspapers for the campesinos. The newspapers listed are all printed in large metropolitan centers and distributed nation-wide.

The data gathered also indicate that the Colombian peasants are less exposed to print media than to radio: 52 percent do not read any newspapers or magazine, but only eight percent do not listen to radio.

El Campesino is a weekly newspaper published by ACPO and specifically written for a rural audience. According to the present data, it is the publication most frequently read by these Colombian peasants. Fifty-six percent of the sample (Table 8) report reading El Campesino with some regularity. Thirty percent read it every week; nine percent twice a month, and 17 percent at least once a month.

Holguin and Sopo are the communities in which this weekly newspaper is most read: 66 percent and 85 percent of the campesinos, respectively, are exposed to it regularly.

The campesinos, in general, have a high literacy level. Most of the respondents have more than one year of formal school (86 percent). Moreover, 63 percent perfectly read 31 or more of the 36 words given in the reading test.

Twenty-three percent of the campesinos have been radio school participants; most of them have been enrolled in the basic course, and some have also taken the progressive course. None of the "radiofonicos" ever received a certificate of course completion.

TABLE 7.--Exposure to Newspapers in Five Colombian Communities.

Newspapers	Aguada N=48	Morros N=26	Centro Alto N=44	San Jose N=42	Holguin N=20
El Tiempo	19%	23%	32%	7%	5%
El Espectador	8	8	11	19	5
Vanguardia	17	19	--	--	--
Espacio	--	8	20	--	--
El Pais	--	--	--	40	55
Occidente	--	--	--	47	35

TABLE 8.--Exposure to the Periodical El Campesino in Five Colombian Communities.

Frequency of Exposure	Aguada N=48	Morros N=26	Centro Alto N=44	San Jose N=42	Hoguin N=20	Total of Five Communities N=180
Every week	16%	12%	43%	21%	80%	30%
Once 15 days	16	4	9	10	0	9
Once 30 days	19	31	14	14	5	17
Never	52	54	34	55	15	44

Seventy-five percent of those participants in the radio schools have had at least one family member (e.g. brother, son) also enrolled (Table 9).

Table 10 shows that most of the respondents know about the ten agricultural, home, and family planning innovations. Often adopted were the raised cooking stove, latrines and vegetable garden. The least adopted were the sports field and the manure pit.

After adoption, an important number of campesinos discontinued the innovations.

The birth control pill is reported known by 61 percent of the respondents. Near 70 percent indicate they might use a method of birth control if necessary (Table 11).

To the question, "would you like your son to work in the same occupation you do?", almost 80 percent reported they would prefer their son to work in a different occupation. Asked "why," 72 percent said they prefer that their son go to school; 12 percent think the life in the farm is too hard; and eight percent replied there are more opportunities in other places.

Almost all the respondents indicate they would prefer to have a different profession than the one they have now. Instead of farmers, they would like to be mechanics, bricklayers, teacher and so forth.

Most of the campesinos have a certain degree of empathic ability. This is they can put themselves in the shoe of another person. Ninety-two percent of the respondents indicated they would do one or more things if they were the Minister of Agriculture, the priest or the

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TABLE 9.--Radio School Participation in Five Colombian Communities.

	La Aguada N=48	Morros N=26	C. Alto N=44	San Jose N=42	Holguin N=20
1. Number of radio school participants					
-Enrolled in 1974	11%	4%	11%	10%	70%
-Enrolled in 1973 and before	6	23	5	2	0
-No participants	83	73	84	88	30
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%**</u>
2. Number of months as participant					
-Seven months or less	13%	4%	2%	7%	70%
-Between 8 and 12 month	2	11	5	-	-
-More than 13 month	2	12	9	5	-
-No participant	83	73	84	88	30
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%**</u>
3. Courses the participants enrolled in					
-Basic course	50%	57%	28%	50%	53%
-Basic completed	12	28	28	-	-
-Progressive course	25	-	44	25	39
-Progressive completed	-	15	-	-	-
-Complementary course	13	-	-	25	8
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%*</u>

*100% of those participants in the radio schools.

**100% of all the sample (N=180)

country's president. Moreover, 51 percent reported they would do three or more things if they were to play those roles.

In general, the campesinos are cosmopolite. They move physically off their regular local community boundaries. Only eight percent of those interviewed do not travel at all to any of the communities they

TABLE 10.--Knowledge, Adoption and Continued Use of Ten Innovations in Five Colombian Communities.

Innovations	La Aguada (N=48)		Morros (N=26)		C. Alto (N=44)		San Jose (N=42)	
	Know- ledge	Adop- tion	Using Now*	Know- ledge	Adop- tion	Using Now*	Know- ledge	Adop- tion
Raised Cooking Stove	56%	48%	39%	72%	70%	69%	84%	77%
Milk Cow	98	52	37	92	60	30	84	55
Running Water	58	39	25	72	72	65	72	58
Vegetable Garden	87	45	35	80	71	50	93	86
Sports Field	17	7	4	16	4	-	26	12
Manure Pit	40	1	-	56	37	19	60	27
Latrine	77	19	5	64	43	11	81	74
Animal Vaccination	75	37	31	64	54	30	77	63
Roya	62	-	-	60	-	-	49	-
Family Planning	56	15	14	60	8	7	65	26
							18	74
							31	28

*Using now: The practice was still adopted at the time of the interview.

TABLE 10.--Continued.

Innovations	Holguin (N=20)			Totals for the Five Communities (N=180)		
	Know-ledge	Adop-tion	Using Now*	Know-ledge	Adop-tion	Using Now*
Raised Cooking Stove	80%	79%	65%	72%	64%	56%
Milk Cow	85	31	15	90	47	26
Running Water	45	42	40	60	43	31
Vegetable Garden	85	58	40	86	58	41
Sports Field	30	5	-	24	9	5
Manure Pit	45	10	5	46	15	10
Latrine	100	95	80	82	57	43
Animal Vaccination	70	42	14	67	44	32
Roya	90	-	-	63	-	-
Family Planning	90	21	20	67	21	18

*Using now: The practice was still adopted at the time of the interview.

TABLE 11.--Knowledge and Adoption of Family Planning Methods in Five Colombian Communities.

-
1. Do you think there is a method available by which you can control the number of children?

Yes	90%
No	10
	<u>100%</u>

2. Do you know any specific method of birth control?

Yes	68%
No	32%
	<u>100%</u>

3. Which is the method of birth control you know? Can you name it?

Pill	61%
Other Method	7
Does not know	32
	<u>100%</u>

4. Would you be willing to use a method of birth control?

Yes	67%
No	33
	<u>100%</u>

5. Are you now using any method of birth control?

Yes	18%
No	82
	<u>100%</u>

6. Do you talk/discuss with your spouse the number of children you both would like to have?

Yes	45%
No	55
	<u>100%</u>

N=180 for the six questions.

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were asked about. But 43 percent travel 10 to 15 times a year and 26 percent do so more than 16 times a year.

Radio School Participation

Table 9 shows that 23 percent of the respondents have been enrolled in ACP0's radio schools. This should not be interpreted as a generalization for Colombia. As a matter of fact it was very difficult to find communities which had a sizeable number of radio school groups in operation as well as participants.

In Holguin, the radio schools started in 1973. At the time of the interviews, this community had the most "radiofonicos" attending the courses. The community of Morros had the fewest.

In Section 2 of Table 9 are given the number of months the campesinos attended the radio classes. In San Jose, La Aguada and Holguin, most of the respondents attended classes for less than seven months. In Sopo and Morros it is the other way around--most of the campesinos attended for seven or more months. In general, the basic courses last about ten months.

Section 3 of Table 9 shows that almost half of the radio school participants in the five communities have been enrolled in the basic course. In Morros and C. Alto 28 percent completed it, and in La Aguada 12 percent also did. In the other two communities none of the participants completed this course. Many participants enrolled in the progressive course but only those from the community of Morros report they completed it. Only few campesinos enrolled in the complementary course, the highest level course of all the three offered by ACP0.

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None of the participants from the three different courses transmitted by Radio Sutatenza, received the ACPO certificate of completion usually given after a final examination.

In all five communities campesinos enrolled in the basic course. In only three of them--Aguada, San Jose and Holguin--did they enroll in the "curso complementario."

Three fourths of the radio school members have had family members enrolled as participants. Only 28 percent of those who have never participated said they had had a family member enrolled.

Diffusion of Innovations

Campesinos were asked if they had adopted, and were currently using, any of the ten agricultural home and family planning innovations*. These innovations have been diffused by ACPO. But this institution is not the only one diffusing them. For example, Accion Comunal and the Instituto Colombiano de Agricultura also have as objectives the diffusion of agricultural and home innovations. Consequently, we cannot say that those who adopted made the decision to do so because of ACPO. Other institutions might well have influenced them in this process.

The data included in Table 10 show that the campesinos have a general knowledge of the ten innovations, nearly half have adopted most of them, and a third were making use of most of them at the time of the interview.

*The innovations are: raised cooking stove, running water in the house, sports field, latrine, vegetable garden, milk cow, manure pit, animal vaccination, roya (coffee disease), family planning method.

1880-1881

1881-1882

1882-1883

1883-1884

1884-1885

1885-1886

1886-1887

1887-1888

1888-1889

1889-1890

1890-1891

1891-1892

1892-1893

1893-1894

1894-1895

1895-1896

1896-1897

1897-1898

1898-1899

1899-1900

1900-1901

1901-1902

1902-1903

1903-1904

1904-1905

1905-1906

1906-1907

1907-1908

1908-1909

1909-1910

A more detailed analysis of the campesinos' level of knowledge, adoption, and actual use of the innovations shows there are variations across the five communities. For example, in Table 10 in the community of La Aguada, 40 percent of the respondents said they knew about the "manure pit," one percent had adopted it, and none of the campesinos were using it at the time of the interview. In the community of Morros, the same innovation was known by 56 percent of the campesinos, 37 percent had adopted it, and 19 percent used it at the time of the interview.

We can give another example. The latrine is known by 90 percent of the campesinos from the community of San Jose, 81 percent have adopted it, and 78 percent had one at the time of the interview. On the other hand, the same innovation is known by only 64 percent of the campesinos from the community of Morros, it was adopted by 43 percent, and 11 percent had one at the time of the interview.

In general, and for the five communities, the most known, adopted and actually used innovations are the vegetable garden and the latrine. On the other hand, the least adopted and used are the sports field, roya (coffee disease) and the manure pit.

For eight out of the ten innovations, the campesinos reported having first heard about them from interpersonal channels (e.g. neighbors). The other two innovations--roya and family planning--were first known from the mass media, mainly radio. These two were the innovations most recently introduced in the communities.

Table 11 includes data about family planning, a topic considered taboo by many people from both modern and more traditional societies.

10. A more detailed analysis of the knowledge level of knowledge

11. Knowledge level and variation

12. Knowledge level and variation

13. Knowledge level and variation

14. Knowledge level and variation

15. Knowledge level and variation

Most of the campesinos interviewed (90 percent) indicate they think there is a method of birth control; 60 percent show willingness to use a method if necessary; and 68 percent know a specific method of birth control (the pill was mentioned by 61 percent of the respondents).

Twenty-one percent of the respondents had adopted a birth control method and 18 percent were using it at the time of the interview (Table 11).

Forty-five percent of respondents discuss with their spouse the number of children they ought to have.

II Correlation Analysis

Hypothesis I

We intended to measure the association between radio school participation and adoption of innovations. Radio school participation was measured by asking the respondent if he was or ever had been a participant of the radio school. Adoption of innovations was measured as the number of innovations--out of a total of ten--the interviewee has adopted.

As indicated in Table 12, the correlations for participation on the radio schools and adoption of innovations for each community are: La Aguada $r=.03$; Morros $r=.30$; Centro Alto $r=-.13$; San Jose $r=.04$; and Holguin $r=.52$ significant at the .05 level.

Radio school participation is strongly related to adoption of innovations in Holguin, and it is significant also. Centro Alto also shows a strong positive correlation, although it is not significant.

TABLE 12.---Pearson Product Moment Correlation Between Participation in the Radio Schools and 24 Independent Variables in Five Colombian Communities.

Independent Variables	La Aguada N=48	San Jose N=42	C. Alto N=44	Morros N=26	Holguin N=20
1. Demographic					
Sex					
Literacy	.07	.01	.07	-.05	-.38
Age	.09	.05	-.18	.03	.21
Years of School	.18	.07	.09	.01	.33
	.14	-.22	-.15	.41*	-.08
2. Economic					
Size of Farm	-.02	-.02	.27	.06	.20
Number of Crops	-.25	-.15	-.14	.24	.19
Income	-.08	-.14	.24	.01	-.05
Main Occupation	.30*	-.07	-.19	.15	.29
3. Communication					
Radio Set Ownership	.16	.12	-.10	-.07	-.22
Exposure to R. Sutatenza	.08	.17	.25	.20	.01
Radio Exposure	.11	-.03	-.17	.02	.08
Newspaper and magazine exposure	.14	-.25	-.23	-.19	-.01
Family participation in r-s	.24	.10	.11	.27	.37
Priest Contact	.25	.20	.02	.29	.09
Courses taken as Participant	.56*	.52*	.85*	.61*	.61*
El Campesino Exposure	.47*	.15	.18	.35	.26
Length of Time as Participant	.78*	.92*	.94*	.91*	.85*
4. Modernization					
Knowledge of innovations	.38*	.15	.04	.21	.10
Adoption of innovations	.03	.04	-.13	.30	.52*
Continuation of innovations	-.10	.20	.08	.06	.71*
Aspirations	.06	-.05	-.19	.02	-.42*
Knowledge method family planning	.09	-.23	-.09	-.01	.03
Empathy	.15	.16	-.17	-.24	-.04
Cosmopolitism	.16	.20	.09	.06	.22

* Significant at the .05 level



For Morros, the association tends to be negative, and in La Aguada the relationship is almost non-existent.

In Chapter III we indicated that the village selection criteria included that they come from different geographical locations. It may well be that factors from the different areas are affecting the correlations.

Table 13 presents a detailed analysis of the relationship between radio school participation and adoption of innovations for Holguin. This was the only significant association found. As indicated, 77 percent of the radio school participants have adopted four or five innovations. Meanwhile, 34 percent of those nonparticipants have done so.

Therefore, the first hypothesis--"Radio school participation tends to vary with adoption of innovations"--is supported only for one of the communities, Holguin, and it is not supported for the four other communities.

Hypothesis II

A relationship between the dependent variable adoption of innovations and 23 independent variables classified as demographic, communication, economic, modernization was hypothesized.

As indicated in Table 14, only a few associations--23 out of 115--were significant at the .05 level.

Knowledge of innovations was found strongly related to adoption of innovations in a few communities, and discontinuation of the innovation is strongly related to adoption in all five communities. These are

TABLE 13.---Participation in the Radio Schools and Adoption of Innovations in the Community of Holguin.

Radio School Participation	Adoption of Innovations										
	Actual Number of Innovations Adopted										
	0	1	2	3	4	5	Total				
	N	%	N	%	N	%	N	%	N	%	
Non Participation	-	-	3	50	1	16.7	1	17	1	17	
Participation Now	-	-	-	-	3	23	4	31	6	46	
Total	-	-	3	16	4	21.5	5	26	7	37	
									19	100	

r = 52, significant at the .05 level.

TABLE 14.--Pearson Product Moment Correlation Between Adoption of Innovations and 23 Independent Variables in Five Colombian Communities.

Independent Variables	La Aguada N=48	San Jose N=42	C. Alto N=44	Morros N=26	Holguin N=20
1. Demographic					
Sex	.15	.30*	-.03	.09	-.09
Literacy	.15	.20	.02	.26	-.01
Age	.35*	-.04	.09	.33	.32
Years of School	.03	.27	.12	.35	.15
2. Economic					
Size of Farm	.07	-.01	-.23	.23	-.03
Number of Crops	.26	-.08	.18	.45*	-.13
Income	.02	-.07	.09	.19	.12
Main Occupation	.08	.31*	-.02	-.01	.21
3. Communication					
Radio Set Ownership	.13	.35*	.15	.18	-.36
Exposure to R. Sutatenza	.26	.49*	.09	.38*	.01
Radio Exposure	.22	.30*	.01	.30	-.13
Newspaper and Magazine Exposure	.21	.06	.17	.03	-.07
Family Participation	-.14	.33*	.29	.20	.35
Priest Contact	-.02	.25	.19	.61*	.09
Courses Taken as Participant	.06	-.01	-.20	.32	.31
El Campesino Exposure	.25	.20	.15	.19	.13
Length of Time as Participant	.09	.07	-.14	.32	.54*
4. Modernization					
Knowledge of Innovations	.49*	.75*	.43*	.78*	.34
Continuation of Innovations	.66*	.83*	.62*	.74*	.75*
Aspirations	.02	.31*	.37*	.01	-.14
Knowledge Method Family Planning	-.10	.15	.09	.15	-.06
Empathy	.46*	.17	.12	.25	.12
Cosmopolitism	.18	.22	.19	.23	.16

* Significant at the .05 level.

obvious associations, because in order to adopt you have to know the innovation; and in order to discontinue it you must have adopted it.

Besides there being few significant correlations found they also vary in direction and intensity across the five communities. For example adoption of innovation and exposure to radio in the community of Holguin is $r = -.13$, Centro Alto $r = .01$, Morros $r = .30$, and San Jose $r = .30$ significant at the .05 level, and La Aguada $r = .22$. Thus radio exposure is strongly related to adoption in the communities of Morros and San Jose, and in the positive direction; but it is negatively related to adoption in the community of Holguin, which means the less radio they listen to, the greater their tendency to adopt more innovations.

Again, because the five communities selected are from different areas of the country there may be some factors affecting this relationship in the different directions.

As indicated, we do not have independent variables significantly associated with adoption in all the five communities. Therefore, our hypothesis number 2 "Adoption of innovations tends to vary with demographic, economic, communication and modernization variables" is not supported by the same significant variables across all five communities.

In each community independently, however, several variables were found significantly related to adoption. Other than knowledge and discontinuation of innovations, they include:

Community of San Jose:

1. sex ($r = .30$)

obvious effect

improvement

2. main occupation ($r=.31$)
3. radio set ownership ($r=.35$)
4. exposure to radio Sutatenza ($r=.49$)
5. radio exposure ($r=.30$)
6. family participation in radio schools ($r=.33$)
7. aspirations for son ($r=.31$)

Community of Morros:

1. number of crops ($r=.45$)
2. radio Sutatenza exposure ($r=.38$)
3. Priest contact ($r=.61$)

Community of La Aguada:

1. Age ($r=.35$)
2. Empathy ($r=.46$)

Community of Holguin:

1. Length of time as participant of the radio school ($r=.54$)

Community of Centro Alto:

1. Aspirations for son ($r=.37$)

The greater number of significant associations is found in the community of San Jose. It seems that there are factors in this community which are affecting in a favorable way the predictor variables associated with adoption. These factors are unknown to us.

Two important predictor variables are exposure to radio Sutatenza and priest contact, which were found strongly related to adoption. They are important because the educational messages are transmitted via Radio

Sutatenza; and the priest often acts as coordinator of the radio schools, supervising directly and indirectly the operation of the program.

Table 15 gives information about the relationship between Radio Sutatenza exposure and adoption for the community of San Jose. The relation is strong--100 percent of those exposed to Radio Sutatenza adopt four or five innovations. On the other hand, none of those not exposed to the station adopted these numbers of innovations. At least for San Jose, the more you listen to Sutatenza, the more innovations you tend to adopt.

TABLE 15.--Adoption of Innovation and Radio Sutatenza Exposure in the Community of San Jose.

Adoption of Innovations	Radio Sutatenza					
	Non-Exposed		Exposed		Total	
	N	%	N	%	N	%
0	2	67	1	33	3	100
1	2	50	2	50	4	100
2	2	25	6	75	8	100
3	2	20	8	80	10	100
4	-	-	10	100	10	100
5	-	-	7	100	7	100
Total	8	19	34	81	42	100

$r = .49$, significant at the .05 level

Table 16 shows the relationship between adoption and priest contact for the community of Morros. This is one of the strongest associations in our study ($r=.61$). Those who talk more often with the priest

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TABLE 16.--Adoption of Innovations and Priest Contact in the Community of Morros.

Adoption of Innovations	Priest Contact									
	Never		1-2 Times Year		1-2 Times Month		1-2 Times Week		Total	
	N	%	N	%	N	%	N	%	N	%
1	1	100	-	-	-	-	-	-	1	100
2	2	40	2	40	1	20	-	-	5	100
3	-	-	2	67	1	33	-	-	3	100
4	1	33	-	-	1	33	1	33	3	100
5	-	-	1	17	3	50	2	33	6	100
6	-	-	2	67	-	-	1	33	3	100
Total	4	17	7	29	7	29	6	25	24	100

$r=.61$ significant at the .05 level.

adopt more innovations . . . or the other way around; those who adopt more innovations talk more often with the priest.

Another important association was adoption with number of crops planted. It may have some implications in a society in which monocultivation has been a basic undertaking of the peasantry. If you put more crops under cultivation, you may adopt more innovations, and this may make you put more crops into cultivation (Table 17).

Hypothesis III

A relationship between radio school participation and 24 independent variables classified in demographic, economic, communication and modernization was hypothesized.

TABLE 16.--Adoption of Innovations and Priest Contact in the Community of Morris.

Adoption of Innovations	Never	1-5 Years	1-5 Months	1-5 Years	1-5 Months	1-5 Years
	11	11	11	11	11	11

TABLE 17.--Adoption of Innovations and Crops Planted in the Community of Morros.

Adoption of Innovations (number adopted)	Number of Crops Planted/Harvested											
	0		1		2		3		4		5	
	N	%	N	%	N	%	N	%	N	%	N	%
1	-	-	-	-	1	100	-	-	-	-	-	-
2	1	20	3	60	-	-	1	20	-	-	-	-
3	-	-	-	-	-	-	-	-	3	100	-	-
4	-	-	-	-	-	-	1	33	2	67	-	-
5	-	-	1	17	1	17	1	17	2	33	1	17
6	-	-	-	-	1	33	1	33	1	33	-	-
7	-	-	-	-	1	33	-	-	1	33	-	-
Total	1	4	4	17	4	17	4	17	9	37	1	4
											4	24
												100

r=.45, significant at the .05 level.

Table 12 shows 17 out of the 120 correlations as significant at the .05 level. Course the campesino took as participant in the radio school is strongly related to radio school participation in all five communities; as was length of time as participant. But these are obvious associations because you have to take a course of certain time in order to be a participant of the radio school. And only participants can take advanced courses.

Table 12 again shows there are differences in the strength and direction of the associations across the five communities. For example, the correlation between radio school participation and number of crops planted by community are: La Aguada $r=.25$, San Jose $r=.15$, Centro Alto $r=.14$, Morros $r=.24$, Holguin $r=.19$ --none significant at the .05 level. As we can see for the communities of La Aguada, San Jose and Centro Alto, the fewer crops you plant the more likely you will be a radio school participant. On the other hand, for the communities of Morros and Holguin, the more crops you plant the more likely you will be a "radiofonico." Obviously there are factors in each community affecting the direction of our relationships. These factors may well represent the differences in terms of geographical location of the communities. Remember that the communities were purposively selected in different areas of the country.

As indicated in Table 12, there are no independent variables significantly related to radio school participation in all five communities.

Therefore, our hypothesis number 3, "Participation in the radio schools tends to vary with demographic, economic, communication and

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modernization variables" is not supported across all communities at the .05 level.

Analyzing the relationships community by community, several predictor variables were found significantly related to radio school participation. Besides "the course the campesino took as participant of the radio school" and "length of time as participant," they were:

La Aguada:

1. Main occupation ($r=.30$)
2. El Campesino exposure ($r=.47$)
3. Knowledge of innovations ($r=.38$)

San Jose:

None

Centro Alto:

None

Morros:

1. Years of School ($r=.41$)

Holguin:

1. Adoption of innovations ($r=.52$)
2. Discontinuation of innovations ($r=.71$)
3. Aspirations for son ($r= -.42$)

The communities of La Aguada and Holguin have the same number of significant associations with radio school participation. San Jose and Centro Alto have none, and Morros only one. In general, the number

of associations which are significant in each of the communities is low. Two important predictor of radio school participation are literacy and exposure to El Campesino. We consider them important, because ACPO's basic course is programmed to reach illiterate campesinos. Consequently, we expect to have enrolled those who do not read and write in the radio schools. El Campesino exposure is also an important variable to be looked at, because it may well tell us where the audience for such newspaper is, and if this medium is used for reinforcement by those participants.

Table 18 shows that literacy is positively related to radio school participation in the community of Holguin ($r=.21$): 71 percent of those participants of the radio schools read the test passage perfectly. This contradicts ACPO's basic objective of reaching the mass of illiterate campesinos.

On the other hand, data from the community of San Jose show "years of school attended" is negatively related to participation in the radio schools (Table 19). This means that most of those with more years of formal school tended not to be the radio school participants, as we expected.

Exposure to El Campesino is strongly related to radio school participation in the community of La Aguada ($r=.47$). This suggests those who more often read El Campesino, tend also to be participants in the radio schools. Sixty-two percent of those non-participants never read El Campesino. On the other hand, 60 percent of the participants read the newspaper every week (Table 20).

of association which are significant in each of the communities is

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TABLE 18.--Adoption of Innovations and Literacy in the Community of Holguin.

Radio School Participation	Literacy							
	Cannot read		Reads more or less		Reads perfectly		Total	
	N	%	N	%	N	%	N	%
Non-participant	1	17	2	33	3	50	6	100
Participant now	1	7	3	21	10	71	14	100
Total	2	10	5	25	13	65	20	100

$r=.21$ Non-significant at the .05 level.

III. Network Analysis

Hypothesis IV

When we undertake the difficult task of analyzing the flow of information within a community, we think of the community as a system whose elements are interdependent. In this study these parts or elements are the people, the campesinos who are members of the community.

Students of social change have indicated the usefulness of opinion leaders as change agents in the implementation of action programs. Their use, they believe, can speed up the accomplishments of the program objectives. This can be more so if we add to the classical opinion leaders--who are usually the centers of a group--those who play the roles of isolates, bridges, liaisons and so forth. With these other roles identified for a given network, change agents then would better know who to work with to reach specific parts of the networks. And

TABLE 1
 Distribution of
 subjects

Group	Number
Control	10
Experimental	10

TABLE 19.--Radio School Participation and Years of Schooling in the Community of San Jose.

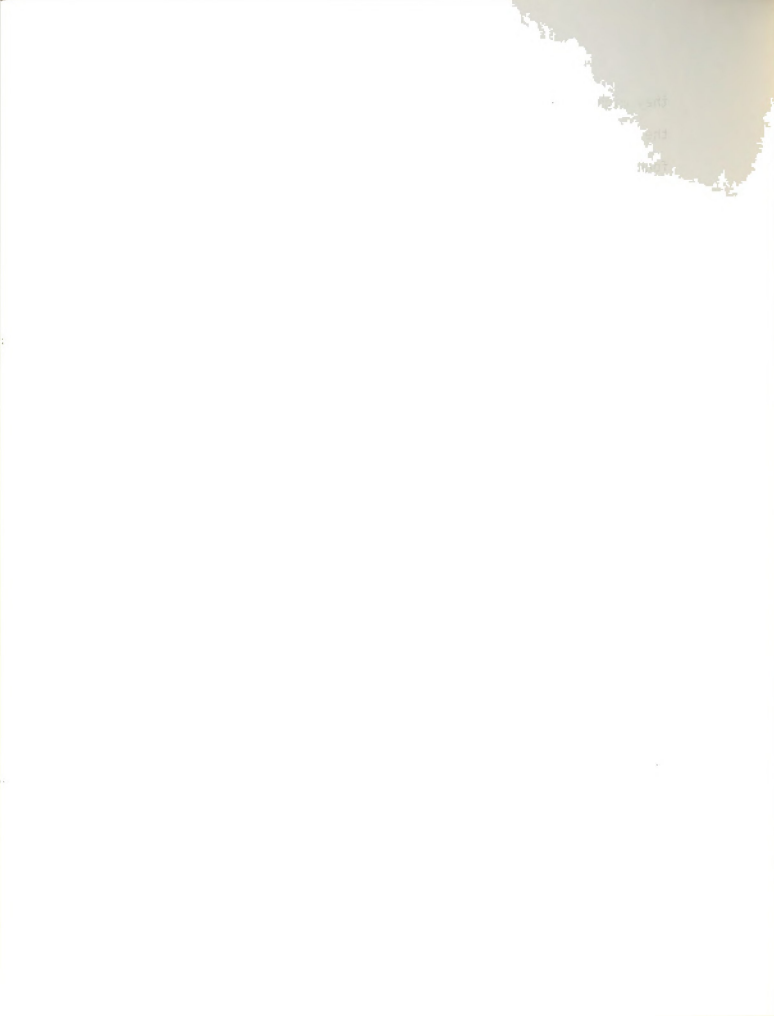
Radio School Participation	Actual Number of Years the Respondent Attended School											
	0	1	2	3	4	5	Total					
	N	N	N	N	N	N	N	%	N	%	N	%
Non Participant	3	8	2	5	5	14	7	19	6	16	14	38
He was participant	-	-	-	-	-	-	-	-	1	100	-	-
Participant now	2	50	-	-	1	25	1	25	-	-	-	-
											4	100

$r = -.22$, significant at the .05 level

TABLE 20.--Radio School Participation and Exposure to the Weekly Newspaper El Campesino, in the Community of La Aguada.

Radio School Participation	El Campesino Exposure							
	Never N	Never %	Once a Month N	Once a Month %	Each 15 Days N	Each 15 Days %	Every Week N	Every Week %
No participant	25	62.5	7	17.5	5	12.5	3	7.5
He was participant	-	-	1	33	1	33	1	33
Participant now	-	-	1	20	1	20	3	60
Total	25	52	9	18.7	7	14.6	7	14.6
							48	100

r=.47, significant .05 level



they might be able to support, reinforce, and add to the influence of the opinion leaders. But first, those playing such roles have to be found. This can be done by means of the study of networks.

Table 21 presents information about the radio school participants and their contactees. The first column gives the number of "radiofonicos." The other columns are made of the contactees of those radio school participants in the networks studied, divided into two main groups: contactees which have been radio school participants and those contactees who never have been radio school participants.

For example, 23 percent of those interviewed in the community of Morros have been radio school participants. In the agricultural network, they report linkage to 26 percent of those household heads interviewed. These latter had never participated in the radio schools. They also report to be linked--in the same agricultural network--to 7 percent of those heads of households who have been enrolled in the radio schools. This means that in the agricultural network in the community of Morros, the radio school participants are linked to both nonparticipants and participants.

A similar analysis was done for each of the five communities in the two networks studied--agricultural and family planning.

Therefore, based on this analysis which is presented in Table 21, our fourth hypothesis "Participants of the radio schools tend to be linked via interpersonal channels to nonparticipants of the radio schools" is supported.

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TABLE 21.--Radio School Participants and Their Contacts in Two Interpersonal Communication Networks in Five Colombian Communities.

Community	Interviewee Radio School Participants (Percent)	Contacts of the Radio School Participants			
		Radio School Participants		Nonparticipants in the Radio Schools	
		Agricultural Network (Percent)	Family Planning Network (Percent)	Agricultural Network (Percent)	Family Planning Network (Percent)
La Aguada (N=48)	14%	-	-	8%	8%
Morros (N=26)	23	7	7	26	3
Centro Alto (N=44)	13	4	4	4	2
San Jose (N=42)	11	4	9	7	9
Holguin (N=20)	70	10	10	5	5

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Hypotheses V and VI

Table 22 shows the number of isolates, peripherals, dyads, tree nodes and group members found in each of the five communities studied.

Isolates and peripherals are reported to be more numerous than dyads, tree nodes and group members. For example, in the community of Morros, in the family planning network we find 16 isolates, 14 peripherals, four dyads, ten tree nodes and no group members.

Isolates are more numerous in the family planning network (81) than in the agricultural network (45) in the five communities--almost double (Table 22).

Groups were found only in the agricultural networks, and then only in two of the five communities: La Aguada and San Jose.

Neither in the two networks nor across the five communities were these campesinos playing the role of bridges and liaisons.

Therefore, it was not possible to directly* test hypothesis five, "Liaisons and bridges tend to be linked to participants and nonparticipants of the radio schools" or hypothesis six, "Bridges and liaisons tend to be the auxiliars of the radio schools."

Hypothesis VII

Table 23 shows the number of contactees that the auxiliars and the radio school participants have in each of the five communities and in both interpersonal communication networks. For example, in the

*However, indirectly, some community members playing the roles of bridges and liaisons could be identified as is indicated in Chapter 5.

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TABLE 22.--Respondent Roles Within Two Networks in Five Colombian Communities.

Communities	Isolates	Peripherals	Dyads	Tree Nodes	Group Members	N1*	N2**
1. La Aguada Agriculture network Family Planning Network	7 31	39 20	4 20	14 26	34 -	48 48	98 88
2. San Jose Agriculture Family Planning	12 15	31 19	6 22	15 16	11 -	42 42	82 72
3. Centro Alto Agriculture Family Planning	14 13	32 36	8 10	24 23	- -	44 44	84 82
4. Morros Agriculture Family Planning	8 16	11 14	6 4	8 10	- -	26 26	49 39
5. Holguin Agriculture Family Planning	4 6	15 11	14 20	11 5	- -	20 20	44 42
Total Five Communities							
Agriculture	45	128	38	72	45	180	37
Family Planning	81	100	76	80	-	180	323

*N1 = sample size.

**N2 = Actual number of people named by respondents.

Note: No bridges or liaisons were identified in any of the five communities.



TABLE 23.---Radio School Auxiliars' and Participants' Number of Contactees in Five Colombian Communities.

Communities	Auxiliar (number)	Contactees (number)	Number Contactees per auxiliar	Participants Radio School (number)	Con- tactees (number)	Number Contactees Per Participant
1. La Aguada Agriculture net. Family Planning	1 1	- -	- -	6 6	16 14	2.66 2.33
2. San Jose Agriculture Family Planning	1 1	2 2	2 2	4 4	9 6	2.25 1.50
3. Holguin Agriculture Family Planning	4 4	8 4	2 1	10 10	12 11	1.20 1.10
4. Centro Alto Agriculture Family Planning	1 1	7 1	7 1	5 5	9 7	1.80 1.40
5. Morros Agriculture Family Planning	2 2	- -	- -	4 4	19 9	4.75 2.25
Total Five Communities Agriculture Family Planning	9 9	17 7	1.88 0.77	29 29	65 47	2.24 1.62

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Centro Alto community agricultural network, the only auxiliar interviewed has seven contactees; moreover, the five radio school participants report to be linked to nine other campesinos from the same community and network. The number of contactees per auxiliar is seven; the number of contactees per radio school participant is 1.80. Therefore, for this network (agriculture) the auxiliars have a higher proportion of contactees than do the radio school participants.

Consequently, and based on the information presented in Table 23, hypothesis seven "Auxiliars tend to have a higher number of contactees than do the participants of the radio schools" is partially supported. This is, it is confirmed only for the agricultural networks of Holguin and Sopo, and the family planning network of San Jose. It is not confirmed for the remaining communities.

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CHAPTER V

SUMMARY AND DISCUSSION

Summary

This research was carried on in five rural Colombian communities: La Aguada, Morros, Centro Alto, San Jose and Holguin. The objectives were:

(1) To better understand Accion Cultural Popular, one of the most important systems of radio schools in the world. In particular we intended to explore the degree of participation of the campesinos in the radio schools, and identify some of the variables which may help predict such participation.

(2) To explore the level of knowledge, adoption and continuation of ten agricultural, home and family planning innovations in the five communities. Specifically we intended to identify those variables associated with the adoption of innovations, and the role of the radio schools in this process.

(3) To explore the feasibility of using interpersonal communication network analysis in studying diffusion of innovation in rural settings. Specifically, to understand how agricultural and family planning information flows through communities, and what the role of the radio school members is in facilitating that flow.

The general review of previous research and literature suggested that radio school participation may well be associated with selected demographic, economic, communication and modernization variables. It was expected that radio school participation would be positively correlated with adoption of innovations.

Adoption was predicted to be associated with the same set of selected demographic, economic, communication and modernization variables.

We also expected that the community members would be linked to each other. Consequently it was expected that participants of the radio schools would be linked to nonparticipants. The auxiliars of the radio schools, because of the significance of this role, were predicted to have more contactees among the nonparticipants than the radio school participants.

A total of 220 interviews were completed: 180 structured and 40 unstructured. The latter were with decision makers from ACPO and national and international organizations and campesinos. The results were presented in the form of descriptive analysis, Pearson product moment correlations and interpersonal communication network analysis.

The analysis of the data indicates that nearly 20 percent of the sample enrolled in the basic radio schools course. Some of them also enrolled in the advanced course. Only about ten percent of those enrolled in the basic course completed it. None of our respondents received the certificate of course completion extended by ACPO. Most of the campesinos attended the courses for seven months or less.

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The campesinos demonstrated a general knowledge of the ten agricultural, home and family planning innovations they were asked about; nearly half of them had adopted the innovations; and one-third continued using the innovations at the time of the interview.

Isolates, peripheral, dyads, and tree nodes were found in the agricultural and family planning network. Groups were found only in the agricultural network. Liaisons and bridges could not be found in any of the ten interpersonal networks studied.

Of the seven hypotheses established one was supported, two were partially supported, two could not be directly tested, and two were not supported.

The hypotheses predicting network linkage between campesino participants of the radio schools and campesino nonparticipants and participants as well is supported.

The hypotheses predicting (1) that the auxiliar will tend to have more contactees in the network than the other radio school participants, and (2) that radio school participation will tend to vary with adoption of innovations, are partially supported.

It was not possible to directly test two of the hypotheses (1) that bridges and liaisons tend to be linked to participants and nonparticipants of the radio schools, and (2) that bridges and liaisons also tend to be the auxiliars of the radio schools.

Hypotheses predicting relationships for all five communities (1) between radio school participation and 24 independent variables classified as demographic, economic, communication and modernization, and (2) between adoption of innovations and 23 independent variables classified in the same four categories, were not supported.

The Commission
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has been set up
to study the
situation in
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on the subject.

In the analysis of each community independently of the others, radio school participation was found to be related to exposure to El Campesino, knowledge of innovations, years at school, discontinuity of innovations, aspirations for son. Adoption of innovations was found related to radio set ownership, radio Sutatenza exposure, family participation, aspirations for son, number of crops planted, priest contact, age, empathy, and length of time as participant of the radio school.

Conclusions

The main conclusions of the present study are:

1. Campesinos listen more to Radio Sutatenza than other competing national broadcasting chains and local stations located nearby the communities studied.
2. The weekly newspaper El Campesino edited by ACPO in Bogota, is read more often by participants in the radio schools than by nonparticipants (conclusion for Holguin).
3. All the newspapers the campesinos are exposed to are edited in large metropolitan centers. There are no local newspapers edited and circulated in the local communities.
4. Campesinos are more exposed to radio than to print media in general.
5. The "matricula" is not a reliable instrument to find about how many participants and radio schools there are in operation. There are many fewer participants and radio schools in the field than are indicated in the matriculas.
6. Most of the campesinos who start the courses never finish them. Moreover, many of those who completed the course never receive the official certificate of completion from ACPO.

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7. None of the independent variables are related to adoption of innovations in all five communities. However, in the analysis by community, several variables were found related to adoption of innovations. For the community of San Jose, those who adopt more innovations tend to own a radio set, listen to Radio Sutatenza and other stations as well, have family members who were radio school participants, and want their sons to work in a different occupation than their own.

In Morros, those who adopt more innovations tend to plant more crops, listen to Radio Sutatenza and see the local priest often.

In La Aguada, they tend to be older, and have a high empathic ability.

In Holguin those who adopt more innovations tend to participate more months in the radio schools. And in Centro Alto, they want their sons to work in a different occupation than their own.

8. Most of the campesinos have a general knowledge of the innovations they were asked about, one-half adopted them, and a third were currently using the innovations. Thus, to know the innovations does not imply adoption, and adoption does not mean the campesino will continue using it "ad-infinitum."

9. Even in rural communities, which in Colombia are heavily influenced by the Catholic Church, people know about family planning methods, spouses discuss the topic, and a minority adopt methods of birth control.

10. The campesinos do not talk about family planning in groups, but rather they do so in dyads.

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11. In the community of Holguin, those who are participants of the radio schools tend to adopt more innovations than those who are not participants of the radio schools.

12. The auxiliars and participants of the radio schools are network linked both to campesinos who are and those who are not participants of the radio schools. This makes possible a two-step flow of information from ACPO via radio to the auxiliars and or radio school participants and from them to those campesinos who are not participating in them.

13. Those who were chosen to be the auxiliars of the radio schools are not necessarily those persons which have the most contactees in the communities. On the contrary in some communities, non-auxiliars tend to have more contactees than do auxiliars.

14. The agricultural network looks more like a network than the family planning network. Agricultural information tends to flow more through the communities than does family planning information.

15. The strength and direction of the associations between the dependent and independent variables vary across the five communities studied. This suggests that there are factors in each of the settings affecting these relationships which we could not determine with accuracy through this study. Anthropological type studies are suggested to be undertaken for an explanation.

16. None of the independent variables is significantly related to radio school participation in all five communities. However, several variables were found related to radio school participation in the analysis of each community independently of the other. For the community

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of La Aguada, those who participate in the radio schools more often read El Campesino, and have more knowledge of innovations. In Holguin, they have more years of formal school. And in Holguin participants tend to know more innovations, discontinue more innovations and prefer their sons to work in a different occupation than they do, than nonparticipants.

Discussion and Interpretation

Radio Schools

General Analysis.--The data show that 23 percent of the campesinos interviewed in the five communities have been radio school participants. In the previous chapter we have indicated this figure can be misleading if extrapolated to the national level. This is so because it was not possible to find communities which were truly representative of the nation on terms of numbers of radio schools and participants.

Field interviews have shown there are more radio schools and participants on paper--matriculados--than really exist on the communities we studied. The "matriculados" are usually those who indicate their willingness to participate in the radio school approached by the promoter, priest or supervisor. Their names, together with data about age, sex and course to be taken, are put in the "matricula" which is sent to ACPO headquarters for tabulation.

These are the figures ACPO releases as number of radio schools and participants. The fact is, many of the campesinos who commit

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themselves with a "yes," never start the course or they drop out after some days or weeks.

There are no comprehensive statistics available for the number of radio schools and participants two, four or six months after the course starts. The other available figures are the number of people who get certificates of course completion. On the average for the whole country about ten percent of those who start actually complete.

The number of dropouts suggests that ACPO has a serious problem in keeping the campesinos attending the courses. We think this might be the core problem of the whole organization. This is so because ACPO was created to help the campesinos, and yet it is the campesinos who are not responding enough to ACPO's messages because they drop out.

It will be of interest to suggest some of the possible causes for the drop outs:

1. The "promoter," who is an ACPO employee, when recruiting campesinos to open a radio school, may press too much so they feel obliged to him and consent to participate. But in fact, the campesino might not be committed to the idea and consequently not show up when the course starts.

Moreover, it was said to us that in Colombia the campesino has not learned yet how to say "no." The implications for the radio schools are obvious. His verbal expression does not match his behavior.

2. The basic course lasts ten months. It appears that for the campesino who works many hours on the fields it might be too much of an effort to listen to the radio in a group, Monday to Friday, for

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an hour in a different place than his home for such a long period. Further if he gets sick, or leaves the farm for a week or so to visit parents or friends, he breaks the pattern of going to the meetings and listening to the classes each day. It is hard for him to regain this pattern or to catch up with the classes and homework. Consequently, his possibility of dropping the course seems high.

3. It is important to keep motivating the campesino during the ten months. Some have suggested there might be a direct relationship between the number of visits by the ACPO supervisor to the local radio school and the percentage of campesinos who finish the course.

The participants need someone to whom they can talk about their course problems and who can help them. This was to be the task of the auxiliar. But in many instances the auxiliars are not qualified enough to cope with the array of problems they encounter.

For example, for an adult campesino to learn how to read and write is not an easy task. It can be very discouraging when he finds out that it cannot be done in a matter of one or two weeks but will take months. Consequently he needs reinforcement, somebody who guides him and tells him "you are making it." Without this reinforcement the possibility of dropping out of the course is quite high.

4. Not long ago, Radio Sutatenza was the only broadcasting station most of the campesinos could tune to. This was due to the fact that the radio sets had their frequency fixed. Moreover, the sets available country-wide were few and had to be shared.

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Nowadays, most of the campesinos own radio sets; the number of radio broadcasting stations has increased; and Radio Sutatenza has to compete with local and national broadcasting stations because the set frequencies are not fixed anymore. The campesino therefore can choose programs by turning the dial and he does not need to walk over to his neighbor's house to listen to the "magic box."

Thus, the wide availability of radio sets and alternative programs, and the elimination of the fixed frequency, might well be factors affecting enrollment figures as well as drop outs from the radio schools.

5. Most of the respondents in the open interviews indicated that ACPO's mystique was not so strong as years before among its own personnel, the campesinos and leaders.

The "mystique" of a movement is important. This is more so in the case of ACPO where most of its success is based on the work of adult volunteers. When people believe in an institution and those in it, they might join it more eagerly than if their belief is somewhat weak. The idea that "ACPO can help you" and in fact "is helping you" has to be instilled in the campesino minds. If this is not accomplished and sustained, serious doubts may arise about the role and accomplishments of the institution. When the campesino doubts, when the mystique is not there, he may very well decide to drop the course.

6. Seasonal factors such as planting, cultivation or harvest time and the consequent migration may also affect the continuous participation of the campesinos in the program. Migration is a seasonal factor in some areas of the country because the campesinos move where

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their skills are needed, to produce or harvest cotton and sugar cane.

7. ACPO produces the program content at the national level. The drop outs may well be attributed to the lack of relevance of the broadcast content for the individual campesino, since the programs can't take all the different situations into account.

Correlation Analysis.--The few significant correlations obtained between levels of radio school participation and the 24 independent variables, can be attributed to the low number of respondents in each of the five communities. We might have obtained a larger number of significant correlations if we had a bigger sample such as $N=1,000$.

An explanation for the low correlations could also be given in terms of the similarities between participants and nonparticipants in the radio schools. Probably both groups have similar characteristics. If this is so, the "true" correlations will tend to be low.

The differences found--for radio school participation and the set of independent variables--in terms of the strength and direction of the associations across the five communities were not expected. Therefore factual information was not gathered about the possible causes. Consequently it is quite difficult to find a reason. But what is clear is that the campesinos are different in the five communities. As change agents, this should be considered an important finding.

ACPO actually plans and produces the programs' content for a mass audience. Thus the campesino in the Bogota area will hear the same program as the campesino in Barranquilla and Cali. Efforts are not made to adapt programs to the local conditions. ACPO justifies

this decision in that it is cheaper to produce and broadcast the same message for the whole country; it involves fewer personnel and is much easier to coordinate.

But if our findings hold for the whole country, that there are important differences across the many communities in Colombia, then it is often necessary to adapt the content to the local conditions. This is not being done and so may be a cause of the dropouts.

Radio Schools: Integrated and Independent.--A topic which deserves careful attention is the degree of independence a system of radio schools should have relative to other institutions engaged in overall national development.

Should the radio schools work independently from governmental institutions? Up to now, the analysis has not brought clearcut conclusions to this issue so they can be used by decision makers.

Therefore, after a thoughtful analysis of the several radio schools operating in Latin America, I include an analysis of both systems: a system integrated with other institutions having common objectives, and an independent system. Pros and cons are suggested.

A. Integrated radio schools. The system of radio school is in itself one of many institutions trying to help the people from a particular society to "develop" in the good sense of the term. It can do the job with or without coordination with the other institutions. The integrated system has several advantages and disadvantages.

Advantages:

1. One of the advantages is that cooperating institutions are able to pool their resources and concentrate their efforts in a



particular area. This may be perceived as a more serious effort by the campesinos to help them to get out from their situation of poverty.

2. Not only radio school specialists participate but economists, agricultural engineers, social workers as well, which is a more realistic approach to development.

3. In case of failure of the program, this failure will not be attributed only to the radio schools. Consequently the danger of program failures is minimized.

4. The likelihood of getting substantial long-term financial support is more viable because there are many private and public institutions involved in the program. Moreover, long-term objectives are more likely to be set up.

5. Because many institutions are involved, more territory and people can be reached through the benefits of the program. If success is obtained, the possibility of having the program adopted nationwide is greater.

Disadvantages:

1. Lack of autonomy in the definition of objectives and in the implementation of the program. Objectives might be those of the several institutions, and compromise has to be considered.

2. Because of the many institutions involved, heavy bureaucracy and lack of speed in the implementation of the program are expected.

3. Identification of the radio school program with the government policy is likely to happen. In case of government changes, there might be a real danger the radio school program is phased-out.

B. Independent Radio Schools.--We call a radio school independent when it in general does not work in coordination with other institutions of that particular social system.

apparatus. They tend to be private institutions which try to help the campesinos to improve their situation without relying on what other agencies do.

Advantages:

1. The independent radiophonic system tends to have greater autonomy in the definition and implementation of the program.
2. The possibility to adopt the content to the local level seems more realistic because in most of the cases, the radio schools operate in a restricted area.
3. More flexibility in seeking and accepting external financing. This is funds from international foundations, for example, which may not be accepted by public institutions because of political overtones.
4. Speedy action because there are not other institutions from whom permission has to be asked.

Disadvantages:

1. The system of radio schools per se have definite limitations in trying to affect or produce a direct change in the power structure (e.g. land tenure) of the particular social system.
2. Independently, and because they are often heavily linked to the Church, they lack government support and are limited in their funding to grants from external sources (e.g. American and German foundations).

3. Because radio, an electronic medium, is the main channel used, it is easily subject to censorship. Therefore, autonomy can be lost when the radio station acts independently from the government apparatus.

Diffusion of Innovations

In the five communities studied, the campesinos were asked if they knew, have adopted and were currently using, a series of ten home, agricultural and family planning innovations.

Most of the campesinos interviewed know the ten innovations, half have adopted them, and a third are currently (at the time of the interview) using them.

Therefore, to know about the innovation is not the same as adoption. Moreover, adoption does not mean that the campesino will keep using the innovation forever. On the contrary many of them discontinue the innovations after adoption.

Most of the studies in the area of diffusion have been centered on topics such as the why of adoption, and on the innovators--those who first adopt the innovation. The researchers have neglected somewhat the study of continuity after adoption. This is most evident if we look at the traditional model of diffusion of innovations which does not include continuation, but only adoption.

Because we did not expect continuation to be so low, we did not gather specific information to help us explain why it happened and what some of the factors influencing the farmer to discontinue may be. But in speculating we are able to present three possible causes:

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1. Physical mobility. Our data indicate that many of our farmers have been residents in their communities for five years or less. Therefore, one of the ways discontinuation can be explained is that in the place or farm he lived before, he had adopted the innovation we are asking about. When he had to move to his new home or farm, maybe he could not bring the innovation.

For example, take the case of a latrine. He may have built one on his first farm (adoption). When he moved, he could not bring it with him; moreover, he did not have time to build a new one. Consequently the time of the interview he did not have one, so he is said to have discontinued the innovation.

2. Failure of the innovation. Many farmers, mainly the poorer ones, live in what has been called marginal land. This is land in where hardly anything grows because of poor soil and unfavorable weather. It is very common in these areas that agricultural innovations fail.

For many farmers, a milking cow is one of the most important possessions they can have. Besides the cow's value as a status symbol, the campesino sells the milk which might increase his annual income in a sizable way. Consequently, the whole family may work hard just to get the money so they can finally buy a cow.

Everything goes fine. They sell the milk, drink some of it, feel they are richer than other community members and they are perceived as such. But then, the cow gets sick, the farmer is not ready to handle the sickness, and the cow dies. He has discontinued the innovation but not by choice!

3. **Reward/effort ratio.** The campesino may perceive that the handling of some innovations may demand too much effort in relation to what he gets out of it. For example, he may start a vegetable garden. He has the expectation to eat some of the vegetable, and to sell the surplus in the Sunday market.

He works hard at it, and also has the help of one of his sons. At harvest time, he feels he did not get what he expected: only some vegetables to feed himself. Nothing to sell. He may try again. He invests in seeds and bug killers. But again he does not obtain a surplus. Consequently, he may analyze the whole situation and decide that it's too much effort just for consumption only. Then, he may discontinue the innovation.

Family Planning.--The data seem to indicate that even in rural communities which in Colombia are heavily influenced by the Catholic Church, people know about and use family planning methods.

Near 20 percent of the campesinos say they use a method of birth control and talk with their spouses about family planning. Therefore, we can infer that this topic is important for them to know about and they might be taking it rather seriously.

In regard to those who adopted a method of birth control, we think this was a tremendous decision for them. It challenges a traditional value system, and also the stand of the Church. This matches with the opinion of several young women being trained as leaders at Sutatenza who said, "we don't like to have children as in the old days, one after the other; we think birth control is necessary."

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Correlation Analysis.--The few significant correlations obtained between adoption of innovations and the 23 independent variables can be explained in terms of the low number of respondents in each of the five communities. If the number of respondents had been higher, say a thousand, then we might have gotten more significant associations.

The data show the strength and direction of the correlations vary across the five communities. This finding was not expected. On the contrary, we predicted similar data in the different communities.

Therefore, the conclusion seems to be that the communities are not similar on these dimensions. Maybe the concept that "there are no two persons alike" also holds when applied to communities: "there are no two communities alike."

Radio school participation is not significantly associated with adoption of innovations in four out of the five communities. Again, the strength and direction of the association varied across communities. This indicated that to participate in the radio school does not necessarily lead to a higher rate of adoption. Moreover, the data from Centro Alto show that those participating in the radio schools there are the ones who adopt fewer innovations.

As we indicated before, the few significant associations can be attributed to the low number of respondents. The low correlations may also be a product of almost no differences between the participants and nonparticipants of the radio schools.

The variation in strength and direction of the correlations can be attributed to community differences.

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This is a good point for planners. Strategies aimed at the adoption of innovations by campesinos should take the regional or community differences into consideration, if success is to be achieved. Generalizations may not apply country-wide, at least in Colombia.

Network Analysis

The use of opinion leaders to speed up social change is considered an important strategy by change agents. Followers tend to seek opinion leaders for advice. This implies that if the change agent makes the decision to work with leaders, he may be indirectly influencing other campesinos as well.

Communication Roles.--In formal organization studies, it has been found that besides those playing the role of opinion leaders, there are also persons who have bridge, liaison, isolate, peripheral, dyad, tree node and group node roles.

Adapting the methodology from formal organizations to rural communities in regard to interpersonal communication networks, we found campesinos playing some of the same roles.

We found isolates, peripherals, tree nodes, dyads and group members. Bridges and liaisons were not found because they are the persons who are supposed to connect the several groups in the network, and we had only a few groups in the ten networks analyzed. Only one group was found in the community of La Aguada, and two in the community of San Jose.

All the groups belong to the agricultural network. No groups were found in the family planning network.

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It is difficult at this stage of the development of network analysis to give an explanation for the few groups found. This is more so if we remember that this is the first time a study on networks has been undertaken in a rural community in Latin America.

Consequently, the rationale that follows should be taken only as speculative.

1. A common stereotype for the Latin American man is that he usually prefers not to work in groups. He is individualistic and egocentric--characteristics which seem to be inherited from the Spaniards. When campesino leaders and officials from developmental agencies were asked about this matter they confirmed that it was very difficult to have Latin Americans work in groups.

During the structured interviews, when the campesinos were asked to whom you go for advice . . ., in many instances they answered, "To nobody" . . . "I can manage everything by myself."

2. The geographical isolation of most of the farms. We have indicated that the Colombian campesino usually lives in scattered farmsteads located on the mountain slopes. Each farm may be a few miles from the next. This is the opposite of what is going on in India, where the farmer lives in a village type of setting, with the families close to each other.

3. The interviewers sensed that some farmers were hesitant to give names of their neighbors and/or parents when they were requested to do so. This is something which should be considered in further network analysis research, and could be a distortion in the information gathered.

It is difficult at this stage of the development of network

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Also most farmers just gave one name and thought that it was enough for the purposes of the question. It was rather painful to get more than one name. We did not want to press too much, feeling that we might bias the farmers against us and the questions.

Groups and Liaisons Reexamined.--The definition for "group" in the network analysis involved three or more persons having at least 50 percent of their linkages with one another. Using this definition, no liaisons or bridges were found. However, when the criteria for "group" are relaxed to being one person linking with three or more others, then more groups appeared and liaisons as well.

In Figure 5 we show that we could isolate four groups in the San Jose community. We were also able to find a liaison between two of the groups--group I and III. Groups II and IV are rather isolated from the other groups and do not have linkages between them as well.

In Figure 6 we present data from the interpersonal agricultural network of the community of Centro Alto. As we can see we were able to isolate three groups. In this community and network, liaisons could not be found and the groups themselves are rather isolated from each other.

The Auxiliars within the Network.--As it was expected the auxiliars of the radio schools are linked to the nonparticipants and participants as well (Figures 5 and 6). Also, we found that in some of the communities, the auxiliars are not the ones with more contactees. Some of the reasons can be the following:

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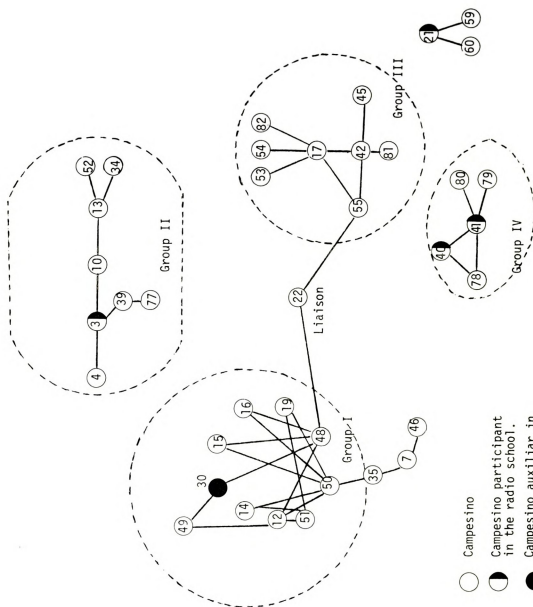


Figure 5.--Partial analysis of the agricultural network of the community of San Jose, Colombia.



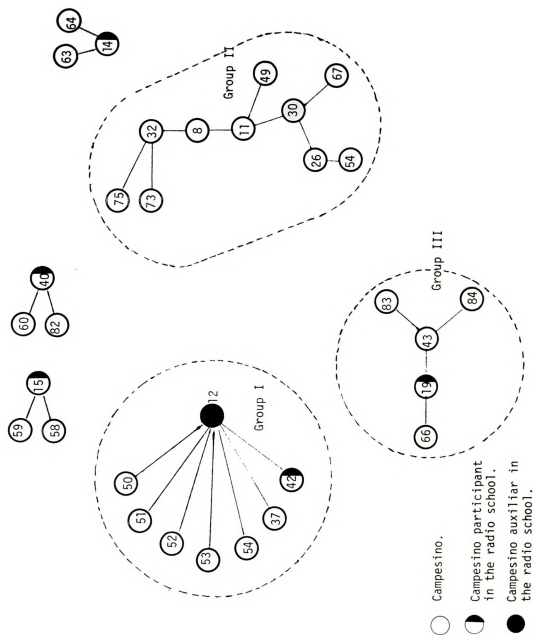


Figure 6.--Partial analysis of the agricultural network of the community of Centro Alto, Columbia.

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1. The information gathered through the open-ended interviews seems to indicate that it is not an easy task to find campesinos who are willing to be appointed as auxiliars. The same conclusion can be given for those promoters and supervisors of the radio schools.

The auxiliar works as volunteer. He has to give his free time, which may be scarce. Also, we found that some of those appointed as such did not know what to do in their new role. If this was sensed by the "other" participants, then he might experience a loss of credibility.

The promoters and supervisors receive a small remuneration. When they were asked if it was enough, some of them indicated that it was not. Maybe this explains a little bit their high turnover (drop-outs).

Because it is hard to convince people to do the job as auxiliar, the ones appointed may not be the community opinion leaders as predicted, or the best qualified for the job.

An example follows. In the community of Centro Alto, the person who is in charge of the coordination of the radio schools, and has been appointed as auxiliar as well, is in permanent conflict with most of the community members. The meetings he organizes with the other radio school auxiliars are a failure because only ten percent attend.

This conflict is so manifest that the community members do not allow him to get water from a nearby river (ditch). He is obliged to walk miles, and not through the neighbor farms, in order to get it. This has been going on for months. Obviously most of the radio schools in that community exist only on paper (matricula).

2. Type of radio-school group. Some years ago, most of the radio schools were made of groups of people from different households, which met periodically to listen to the classes. That was the time when radio sets were rather scarce. But now, with the fact that almost every campesino owns a small radio set, there is no perceived need to go to a neighbor's home to listen to the classes. The same thing can be done at their own homes. In these cases the mother or the eldest son are the auxiliars.

Consequently, the auxiliar by logic cannot be the more important person in the community, the one who has more contactees. We did not know about the existence of the family type before the research started. There are not evaluations available about the differences and similarities of the traditional and the family type of radio school.

Implications for Practice

The main recommendations for the change agency are:

1. To Decrease the Number of Dropouts and Increase Enrollment

a. To shorten the number of months of the broadcast basic course to a more realistic span of time. Experimentally, it should be reduced gradually and research conducted to find the "optimum" time of attendance (before drop out) and the participation curve of the campesinos.

b. The institution should try to adapt the content to the local conditions. Instead of preparing the courses with messages uniform for the whole country, attempts be made, at least experimentally, to focus

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content more on local characteristics of the campesinos. Usually anything that "concerns me" is more important than what may be the concern of others.

c. Individualized instruction should be emphasized with the intention that if the campesino cannot listen to the class a specific day and time, he should be given the chance to do it at his own time. Also, he may set up the pace according to his speed of learning. Sets of equipment and materials for individualized instruction may be distributed in a specific area and coordinated by a "true" community leader.

d. The content of the programs should aim at what the individual's real and felt needs are. If these needs are different than those the change agency thinks they are, the agency should radically adapt the content to the campesino's needs. Maybe gaining literacy is not the prime mover anymore, and the campesinos may be needing other things which should be detected by the change agency. To believe that the needs of individuals do not change over time is a serious misjudgment. And ACPO has not changed the content of the courses for a long time.

2. To Build up Interpersonal Networks

If in a community network we do not have groups, liaisons and bridges, the information probably will not spread as fast as if we had some. If we want to introduce innovations in the communities, we will be more efficient if the information flows "smoothly" through the community.

For example, in the actual conditions, in which most of the individuals are isolates, peripheral and dyads, the change agent will

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have to work most of the time in a one-to-one basis. It is obvious that in developing countries this may well be considered a waste of his time and energy. Moreover, in large communities, he may never be able to reach many members, who then may never get the benefits of the particular innovation the change agent is working on.

Therefore, we suggest one of the tasks of ACPO's change agents may be to help build a interpersonal communication network in a particular village. They might work to have more established groups and try to change the attitudes and behavior of isolationism in the campesinos. This may speed up the flow of information in the community, and probably the adoption of innovations.

3. To Appoint as Auxiliars those Campesinos with more Contactees in the Community

The change agency should try by all means to have as auxiliars and participants those with more contactees or those playing the roles as bridges or liaisons. These people can be found quite easily via network analysis. For example in the agricultural network of the community of San Jose (Figure 5) the campesino number 22, a liaison, links two of the groups. A change agency in charge of diffusion of innovations of the agricultural type, can achieve a higher degree of success if it makes use of him, to engage him in the program activities (e.g. appoint him as auxiliar).

If the change agency can have him on its side, it may well be that the rate of adoption would be higher than if he is not made a participant of the program. We might have a higher flow of information across the community as well.

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Moreover, the program itself (radio schools) may be perceived as more credible, and also there is the probability that overall efficiency can be increased.

Implications for Research

Methodology

One of our research objectives was to use a methodology easy to manipulate in the field and at the analysis level. "Easy" was defined as a place of research which will not be too expensive, will not require a large staffing, and the results of which can be presented to the source in no more than two or three months.

Here are some of the good points and shortcomings of the method used.

1. The Colombian data, close-ended interviews in five rural communities, and open-ended interviews with decision-makers and leaders from national and international agencies, were gathered in less than a month.

2. The questionnaire was almost entirely precoded. This facilitated the analysis. The findings, and interpretation, could easily have been presented in one more month. It takes two weeks for coding, keypunching and computer analysis. The other two weeks, working full time, can be used for interpretation and writing the recommendations for the change agency.

3. We should point out that a computer is needed. But most of the data can be analyzed by other means. In Colombia computer and programmers are available, as well as personnel able to interpret the data.

For a complete
description of
the book, see
the back cover

For speedy action, we suggest a research center for all the radio schools be created and work as a data bank center, not only for the Colombian radio schools but for those from other countries as well.

4. A shortcoming to this approach, the data bank center, would be that the staff might not have constant contact with the problems and characteristics of each particular program. That might be so at the beginning. But if the staff is first quality, and has the chance to know first hand the radiophonic programs, then the error they introduce might be not so relevant.

5. The interviews in the five communities were handled by a team of four interviewers. If we were going to study more communities, we could have handled it with the use of more teams, with a coordinator handling the administrative and related duties. We sensed that in the fifth community they were bored or tired of traveling through the country, asking the same questions. It would not have been possible for them to start with another community.

6. The interviewers hired had considerable experience. This helped a lot in the data collection, because they made decisions by themselves when confronted with a problem. It is fundamental to have good and reliable staff. The higher cost is a good payoff in the long run.

The interviewers were in the field for considerable time. We suggest that the team be made of both sexes, preferably be friends or know each other. This will keep a balance in the group, will help to avoid sex bias in the data, and may also help the team be perceived better by community members.

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7. We did not have a representative sample. We consider that area sampling or country sampling cannot be done with precision in developing countries. Some of the factors for this may be that there are no recent census data available, what there is may prove inaccurate, and many people live in far away places difficult to get at. Also it is a time-consuming enterprise to prepare a sample and carry out the interviewing process.

We had interviewed all the heads of family of four of five communities. This proved to be useful but we have doubts about the possibility of generalizing the results to a larger population.

Consequently, we suggest that in further studies, a set of communities from the same area be investigated. For example, we could interview the heads of family of the ten or so "veredas" which go from the town of Galan to the city of Zapatoca, and try to see if the results hold for the area.

Another reason we suggest analyzing communities from the same geographical area is in terms of the network analysis part of our research. When the campesinos were asked who they went to for advice, they tended to name an "outsider"--persons from places other than their own community.

8. Another interesting point is that to interview the heads of family was a good decision, but it was not enough in order to understand how the information flows across the community and who those participants of the radio schools are. This was also so for the network analysis. Many people tend to name relatives or spouses, which we did not have information about. Therefore, we suggest that the next studies might

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interview all adults (e.g. 18 years and older) from the communities under investigation.

9. What should be done in each research, especially the type that tries to present immediate feedback to change agencies is to have unstructured interviews with community members, leaders and so on. This should be informal, where the campesinos want them to be, relaxed, and just a type of conversation. A tape recorder may be used only in the case that it does not interrupt the informal atmosphere of the conversation. The data gathered this way, can be very valuable to understand, support and help interpret data gathered via structured questionnaires. Also, the campesinos, in general start talking about the topics considered more seriously after one hour or two of warm-up conversation.

Of course you will have to have a stomach resistant to the mixture of guarapo, milk, coke, and the like, all drunk in two hours of interview. But you cannot say no. These are maybe the few things the campesino can offer you, so do not hesitate in accepting them.

10. We cannot use a list of interviewees for the network analysis study. People get bored when asked about to whom of the forty or so persons they go for advice. Also, it is difficult to find a complete list of campesinos in the community. It may prove impossible for communities made up of 300 or 500 inhabitants. The first ten or so names asked, the campesino answered quite promptly, but then he started to get bored, and we infer that by the number 40, the answer was not reliable enough.

11. One of the many problems a researcher has to cope with is that he is rarely given the chance to reformulate and repeat his study

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again and again. He usually does not go back to the place where his investigation took place, in order to test a new methodology or look for data that will tend to support or refute his new hypotheses.

The problem is that many questions arise after the first attempt. Usually there is no opportunity to answer these questions thru research. So, we request that the responsible institutions cooperate in financing and allowing long-term research.

12. The costs of this research were between the expected limits. Transportation within Colombia, interviewing, coding, key-punch, verification, and computer time run into only a couple of thousand dollars.

13. We arbitrarily set our significance level at .05. In this type of research, with the imprecisions that occur, it may have been more realistic a .10 level. This is more so when the study is exploratory in nature as this one was. On the other hand, when analyzing the strength of the associations and their significance levels, it is more important to look at the variance explained than whether or not the association is significant.

Topics for Research

Here we include a tentative list of some of the topics we suggest be subject to research. We think that to have information about them will help the campesinos and the change agents as well.

1. The number of radio schools and participants. It is not possible for us to indicate with 100 percent accuracy how many radio school participants were in each of the five communities. Moreover, the difficulty we may have in estimating their number nationwide is

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clear. What is more depressing is that ACPO cannot tell at any particular moment with any real accuracy how many participants and radio schools they have in operation.

We think that this is so because the methodology used to determine this is too inaccurate. Consequently we suggest the following: To undertake a study which we may call "5 O'Clock Study."

At five PM the basic course is broadcast. Then, we may draw a sample of radio school participants enrolled, and go to their places of meeting between five and six PM, without their knowing that we are going to go, at all. This is quite important. One of the problems we find is that when radio school participants find out we were in their community, they dressed up with "Sunday" dresses and waited for us to come and see how they were working. But other sources told us that some of them never show up in the course ordinarily.

This procedure can be repeated at intervals during the ten months. This will give us a much better picture of the participation rate.

2. Participant motivation. The adult campesino joins the radio school voluntarily. We have indicated that the number of drop-outs is quite high. This may indicate the motivation to stay with radio school is not enough strong. Therefore we should investigate what are the topics of interest of the campesino, that will help him to decide in not dropping the course. How can ACPO motivate them to join the radio schools in larger numbers? Why they do not participate . . . drop out? Under what circumstances they would not drop out?

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3. Training leaders. ACPO trains many campesinos a year so they can help attain the goals of the institution. It is our impression that many of those who are being trained are not the "real" community leaders, but youngsters, who may or may not become leaders in the near future.

The community leaders also need to be trained. But they cannot and usually do not leave the community for several reasons: they are too busy; each time they leave the community they lose money because they do not have substitutes who can take care of their businesses. Consequently ACPO should look into systems of training which can be done in the community itself. Research can be done on what is the most effective method of training those leaders.

4. The use of bridges, liaisons, and those with more contactees. We indicated that in the community of La Aguada, the people with more contactees were not members of the radio schools. We suggest to undertake research in communities in which the bridges, liaisons and so on are used by ACPO to help in the accomplishment of their objectives, and compare the results with communities in which these people were not used at all.

5. Adapt content. We have indicated that the Colombian campesinos are exposed to the same message from ACPO wherever they are. Probably, a good suggestion will be to adapt the content at least experimentally, to the local conditions of the different communities, and see if this has an effect on the campesinos in terms of drop out, adoption of innovations, discontinuation and overall efficiency.

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6. Group and family type radio schools. In Colombia the information available seems to indicate that there are more radio schools of the family type every year. Consequently, it seems important to undertake a study trying to find out about similarities and differences of both systems, in terms of operation, efficiency and so on.

7. Financing institutions. The Latin American radio schools are financed through an array of private institutions. Among them we have American and European foundations as well as Church-related institutions. It should be interesting to understand what the overall objectives of these financing institutions are, and what the necessary conditions to be met by a Latin American radio school program are, so the institutions will commit resources either for their creation or expansion.

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GAD (GAD) is a chronic condition
characterized by excessive, persistent
worry about a variety of events or
activities. The worry is often
disproportionate to the actual
likelihood of the event occurring.
Symptoms include restlessness, irritability,
difficulty concentrating, muscle tension,
and sleep disturbances. The condition
can significantly impact daily life and
may be associated with other anxiety
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APPENDIX

List of Variables

APPENDIX



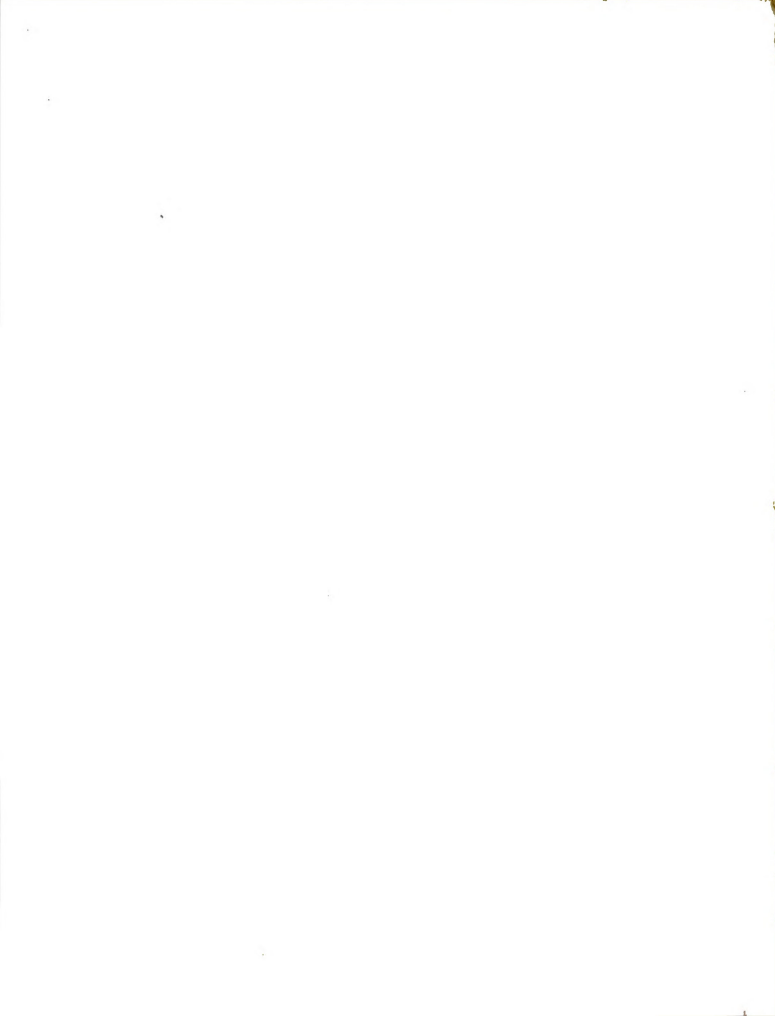
APPENDIX

List of Variables

1. Demographic
 - Sex
 - Literacy
 - Age
 - Years of school
2. Economic
 - Size of farm
 - Number of crops
 - Income
 - Main occupation
3. Communication
 - Radio set ownership
 - Exposure to Radio Sutatenza
 - Radio exposure
 - Radio school participation
 - Newspaper and magazine exposure
 - Family participation in radio school
 - Priest contact
 - Courses taken as participant
 - El Campesino exposure
 - Length of time as participant
4. Modernization
 - Knowledge of innovations
 - Adoption of innovations
 - Continuation of innovations
 - Aspirations
 - Knowledge method family planning
 - Empathy
 - Cosmopolitism







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