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COMMUNICATION NETWORKS AND NONFORMAL EDUCATION IN COLOMBIAN FRIENDSHIP GROUPS

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ALAN H. ADELMAN

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Cole S. Brembeck
Major professor

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COMMUNICATION NETWORKS AND NONFORMAL EDUCATION IN COLOMBIAN FRIENDSHIP GROUPS

By

Alan H. Adelman

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ABSTRACT

COMMUNICATION NETWORKS AND NONFORMAL EDUCATION IN COLOMBIAN FRIENDSHIP GROUPS

By

Alan H. Adelman

This is a group-level analysis of an agriculture-based education program in a developing country - the Friendship Group program of the National Federation of Coffee Growers of Colombia. The purposes of the study were three-fold: 1. To assess the effectiveness of the friendship group program in promoting dialogical orientation, self-reliance, and activity for situation improvement based on indigenous knowledge and experience; 2. To determine the knowledge and use of the technical practices introduced in the program as well as their relevance as perceived by group members; 3. To ascertain the actual contribution and capacity of these friendship groups for improving the welfare of small-scale coffee-growers in Colombia.

To accomplish the purpose of the study two types of hypotheses were advanced: 1) hypotheses pertaining to relationships between dialogical orientation (communication function) and network variables (communication structure); and 2) hypotheses relating leader role conception and dialogical orientation to agrarian activity for situation improvement.

The population consisted of all eligible coffee-grower respondents (544) belonging to sixty-five friendship groups in the northern region of the state of Tolima, Colombia. The survey instruments used were two questionnaires, designed by the researcher and pre-tested in the field. To carry out the interview process, eight interviewers were trained and divided into four teams for the conduct of personal interviews. Interviews were conducted intensively over a period of ten weeks.

The construct validity of the major multidimensional variable, dialogical orientation, was ascertained by factor analysis. Frequency counts, network analysis, and zero order and partial correlations were the major statistical methods employed in the analysis of the data. The level of significance was .05.

The study revealed that the relative level of dialogical orientation and participatory education in the groups strongly reflected the group leaders' conception of their roles as facilitators of dialogue or depositors of information. The author believes that the National Federation of Coffee Growers suffers deficiencies as a promoter of local participation in education and collective action for social change due to opposition of traditionally dominant interests within and outside the Federation.

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PREFACE

Arrangements for an evaluation study of the program, methods and purpose of the friendship groups began in May, 1978 with the submission of a preliminary research plan to FEDERACAFE's Technical Division. I was no stranger to either FEDERACAFE or the friendship group program, having served as a Peace Corps Volunteer in the Communications Office of FEDERACAFE from August, 1973 to February, 1975. The personal experiences, documentary materials, and results of preliminary investigations on the friendship groups which I brought back from Colombia in 1975 provided the inspiration for the research proposal.

Although FEDERACAFE immediately accepted the proposal, the arrangements for procurement and training of interviewers, and coordination of interviews with friendship group meetings took 12 months to complete. FEDERACAFE extended to me the services of 8 practicos to be trained as interviewers, as well as transportation to group meetings and office space in Bogota. The assistance was offered and accepted without prior conditions. There was no attempt on the part of the FEDERACAFE administration to influence the design and operationalization of the study.

It would take several pages to mention all the Colombians who assisted me in the conduct of the investigation. But, most particularly, I want to express my appreciation to German Valenzuela Samper, technical director of FEDERACAFE, and Alvaro Rodriguez Grandas, director of

extension, for providing the institutional administrative support necessary for an investigation of this scale. Alvaro Gonzalez Mora, head of the communication department, was also invaluable for his personal friendship and counsel in the preparation of the pre-test. Lastly, it would be unpardonable to omit my Tolima collaborators, Marco Tulio La Serna and Eduardo Micolta, technical director and assistant technical director of the state Coffee-Growers Committee of Tolima. These two men patiently assisted me for several months in the organization of interviews with over 500 friendship group members and provided valued insights into the friendship group organization in Tolima.

The literature search in Bogota was aided by the librarian of FEDERACAFE's own library, the personnel of the IICA library at the National University, and the Biblioteca Luis Angel Arango. Additional research was undertaken wih the assistance of librarians at Michigan State University and the University of Pittsburgh.

For his valuable advice in rendering workable my original ideas for a research project and assisting me throughout the operationalization of the study and organization of the writing, I would like to extend my sincere gratitude to my adviser, Dr. Cole Brembeck.

It is hoped that this work will contribute significantly to the permanent body of research and commentary on nonformal education efforts in rural development and in so doing, repay the many persons who helped me.

CHAPTER I

INTRODUCTION

Importance of the Study

The doctrine or mission of agricultural extension services appears to be the same around the world. In 1966 Colombia's Minister of Agriculture, Jose Mejia Salazar, expressed in his address to the National Congress that the objectives of agricultural extension were to increase "the agricultural productivity of the country and the welfare of the rural people." Extension programs traditionally offer to improve living conditions through non-violent measures without extensive cost-asset redistribution. Such programs have been politically attractive because they offer to work within the existing social system to: directly alleviate poverty; provide agricultural products for urban needs and for exports to increase foreign trade; increase profits and power for rural elites; and assure stable employment for bureaucrats (Stavis, 1979). The extent of support for and involvement with extension programs among diverse interest groups weighs heavily upon the role of extension services in the development process.

Consequently, it is important to analyze extension service programs and methods within the context of the doctrine, organizational structure, linkages and patterns of control within and related to the extension service.

The focus of this study was on the "Grupos de Amistad" (friendship groups) of the Federation of Colombian

Coffee Growers (FEDERACAFE) Extension Service. The analysis of the friendship group program was guided by three questions:

1) Have the friendship groups been effective in operationalizing their ethno-scientific and psycho-sociological goals of promoting self-reliance and innovation based on utilization of inherent knowledge and traditional leadership expertise?

2) Are the technological packages which have been adapted-adopted as a result of the friendship group program relevant to the needs of the group members?

3) Given the long-range objectives of the friendship groups as a rural development acquisition system, what is the actual contribution and capacity of these groups for improving the welfare of the rural people?

The One-Way Bias of Information Flow

It is a common assumption among agricultural extension service personnel and other planners of change in the rural sector that development entails the dissemination of modern and scientific knowledge to inform and uplift the small-scale farmer. The attitude of rural development agencies stems from a variety of factors; most notably, paternalism and direct linkages between extension services and agricultural research stations (the inventors of rural innovation). This latter institutional involvement creates a vested interest in persuasive techniques for adoption of innovation.

The reluctance to deal with participatory styles of education is shared by researchers into knowledge diffusion. Most diffusion studies have uncritically accepted the one-way bias of traditional methods for quantifying changes (Byrnes, 1966). The emphasis has been on transferring messages from a source to a receiver with the intention of persuading the receiver to adopt an innovation as recommended. For example, in most rural diffusion studies changes has been measured by counting the rate at which subjects adopt a given innovation in the form recommended by the change agency; a technique which excludes consideration of knowledge creation and adaption.

A few researchers have begun to express criticisms of the monological assumptions and directions of diffusion research (Byrnes, 1966; Havelock, 1971; Esman, 1974; Beltran, 1974; Diaz-Bordenave, 1977; Busch, 1978). Their view is typified by Esman's proposition that "Government agencies must become active information seekers, rather than information purveyors, in order to insure that their service and advice to small farmers reflect the latter's specific needs and possibilities" (Esman, 1974).

The one-way bias of information flow also impinges on the role of education in development. Paulo Freire, the Brazilian educational reformer, has labeled as "banking type" education much of what Beltran, Busch and others refer to as unidirectional information flow. Both terms operationalize the "transmission mentality;" the extension agent

speaks and the farmer listens; the teacher narrates and the student memorizes. Freire proposed an alternative type of communication which would be more receiver-centered. This alternative, which he calls "problem-posing" education, is built on dialogue between leaders and groups (Freire, 1971).

It is within this context, the establishment and maintenance of effective dialogical orientation, that this study considered friendship groups in Colombia. Agricultural extension agencies in Third World countries have rarely attempted productive strategies for finding out what the small farmer needs, wants and can contribute to the diffusion of relevant agricultural, family planning, credit and other innovations. The friendship group program was selected as the focus for study precisely because its expressed objective seemed to present a challenge to the orientation that knowledge should flow in a downward direction only; conceiving of a role for education that develops the capabilities of people to assimilate, adapt, and create knowledge in order to perform more efficiently in an environmental situation.

Because there is a general lack of research on the relationship between change efforts and the initiation, adoption, and adaptation of knowledge, this study adopted a non-disruptive social structure oriented approach to study this process. Self-reports of populations of coffee-growers were used in order to understand the variables which affect the diffusion of knowledge.

Any study into the diffusion of agricultural and other innovations should take into account the channels through which communication flows. Guimaraes (1972) indicated in his analysis of communication networks that communication could be viewed from two perspectives: the external perspective, which refers to communication to a system; and the internal perspective, which refers to communication within a system. Attention to internal communication channels has helped increase understanding of variables which affect innovation adoption and adaptation.

This study applied a multivariate network analysis to communication flows among the friendship groups. Network analysis, which uses social relationships as its unit of measure, provided the knowledge of the roles and relationships of groups members so that interpersonal communication factors affecting the knowledge, adoption, and adaptation of innovation could be predicted. The knowledge of how messages flow through the community was then applied to a conceptualization of the friendship group as an alternative educational structure within the context of the educational requirements of the community.

Knowledge Diffusion in the Rural Social System Context

Knowledge diffusion does not occur in a vacuum. The extent to which the diffusion of knowledge is planned on the basis of an integrated social system tends to be related to the extent to which the process is successful. Axinn (1976) suggests that change in any one of the following

components of the typical rural social system affects change in all other components: production; supply; marketing; personal maintenance; education; research; health-care delivery; and governance. While scope of activity is only one aspect of system interaction, the more the process of knowledge diffusion is adapted to the functions of the rural social system the greater probability it has of relevance and endurance.

Several studies have indicated that because of FEDERACAFE's multidimensional, integrated approach to rural development, the Colombian farmer tends to view it as the extension entity which gives the greatest benefits to the community. Though generally specific to one crop, the assistance program to coffee farmers includes not only research on experimental farms to develop the most productive systems of coffee cultivation (production and research components), but the design of processing and handling equipment (production and supply), creation, administration or stimulation of coffee warehouses, agricultural supply stores, cooperatives and savings and credit banks (supply, marketing, and governance), formal and nonformal education programs for adults and youth (education), establishment of health centers and campaigns to improve nutrition, drinking water and general hygiene (health care), and the provision of economic and technical assistance for works of common utility such as community roads, water systems, schools and housing (personal, maintenance, education, and supply). (See Figure 1).

In his study of farmers in the State of Antioquia, Rojas-Ruiz (1974) found that FEDERACAFE finances the majority of rural electrification, road construction and other community action projects in the region and that local farmers are aware that FEDERACAFE, to which they contribute or maintain direct relations, returns their contributions with investments to solve their multiple needs. Similarly, Zapata (1971) determined that for reasons of fulfilling promises and providing credit support for its recommended changes, FEDERACAFE was perceived as the most constructive extension service operating in Antioquia.

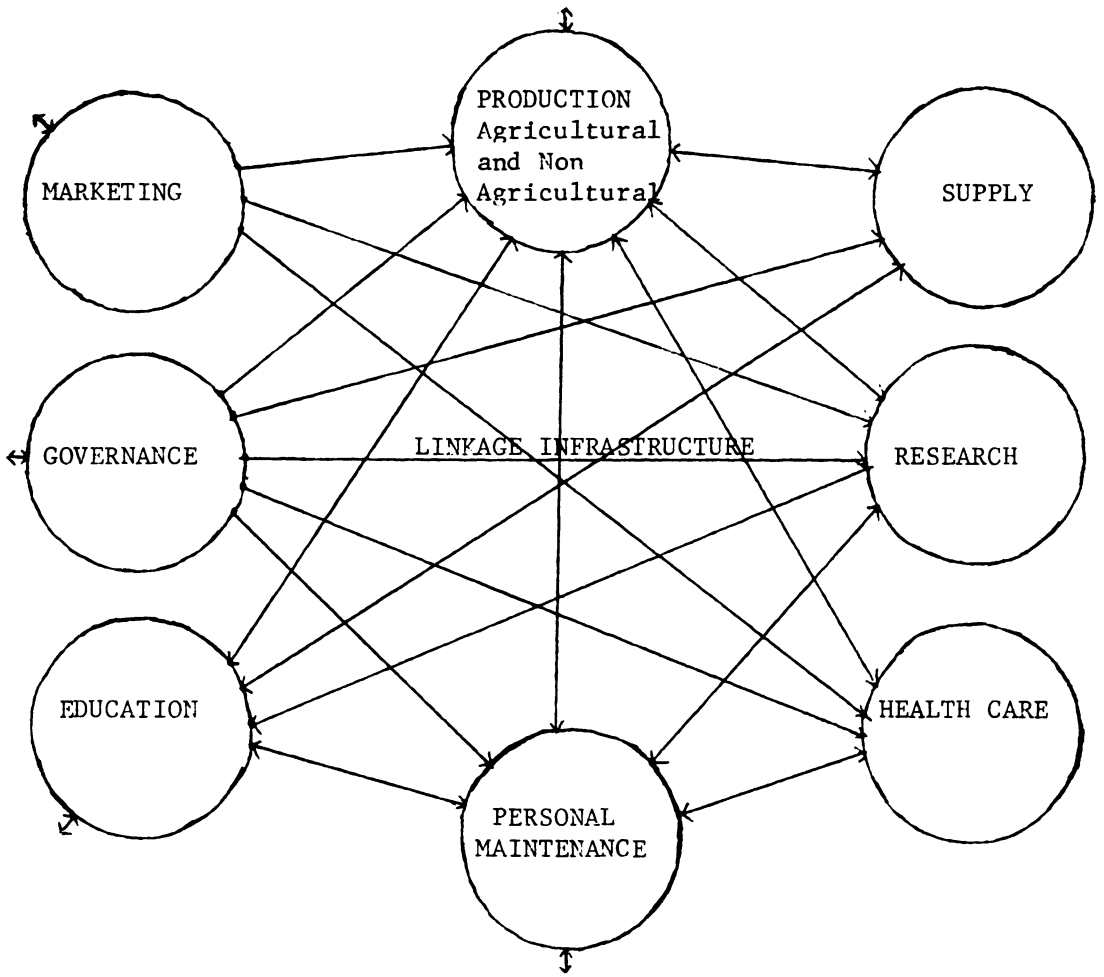
Farm Community Discussion Groups and Innovation Adoption-Adaptation

The most important intermediary functions which communication media can perform within the context of an integrated social system have been conceived by Esman (1974) to include: articulation of needs that take account of "the specific natural conditions and the institutional environment in which the farmers work;" diffusion of technological innovation through horizontal communication networks which "adapt and interpret messages to make them more relevant to specific needs;" integration and coordination of small farmer interests to place pressure on government to provide more service and resources.

Much communication and education research in the past decade argues for the unique advantages that farmers' local organizations can provide for the initiation and

Figure 1

The Integration of FEDERACAFE into the Functional Components of the Rural Social System
(Based on model by George Axinn - 1978)



FEDERACAFE functions:

Production - Technical assistance; design of processing and handling equipment

Supply - Distribution of fertilizers, seeds, and tools at cost

Research - National center for research on coffee

Marketing - Coffee storage; farm-to-market roads; cooperatives

Governance - Communal action programs and creation of cooperatives

Education - Construction of rural schools; NFE programs

Health Care - Medical assistance; septic and sewage systems

Personal maintenance - Home improvement

adoption of relevant innovations. For example, the bulk of the literature in the areas of rural communication and nonformal education suggests that communication within the context of community organizations tends to increase the participant's awareness and responsibility (Hoxeng, 1973; Isaza and Correa, 1975), which may, in turn, lead to more basic societal transformations as pressure for system-wide changes increase (Fals Borda, 1971). This proposition is supported by an underlying rationale in the literature that expresses the idea that the more a social unit is related to other units, the higher the number of opportunities for change to be communicated and implemented (Danowski, 1975; Guimaraes, 1972).

The directional capacity of channels is one of the considerations related to effectiveness of a social system interface in rural development (Axinn, 1976). Mass and interpersonal media channels have separate virtues and disadvantages. Mass media channels can reach simultaneously a larger audience with greater speed in transmission of messages than interpersonal channels. Interpersonal channels allow for greater receiver participation and feedback. The strategy of channel combination in media forums has been viewed as highly productive for establishing dialogue (Braun, 1974). However, radio, television, newspapers and other mass media channels generally have built-in a uni-directional capacity only and are most frequently used as a means through which top-to-bottom transactions flow. Rural development projects which have utilized such channels for the diffusion

of innovations have been criticized for: 1) failure to provide feedback and communication from the rural social system; and 2) insufficient attention to the quality of the innovation to be diffused (Busch, 1979; Byrnes, 1966; Diaz-Bordenave, 1977).

Interpersonal communication, on the other hand, has a built-in capacity for dialogue. Several researchers have suggested that the most productive forms of communication, especially with small farmers, are based on interpersonal contacts (Rogers, 1974; Braun, 1975). This is because the needs and capabilities of small-scale farmers tend to be siutational, specific and individualized (Coombs and Mazoor, 1973; Lionberger, 1974), and resources for assisting small-scale farmers tend to be controlled by agencies that are functionally specific (Esman, 1974; La Belle, 1976).

The validity of these propositions concerning the productivity of interpersonal communications and the specificity of small farmer needs compelled Arze (1966) and Esman (1974) to consider the establishment and maintenance of farmers' discussion groups as providing the most effective two-way communication between extension services and small-scale farmers.

THE FEDERACAFE FRIENDSHIP GROUPS

Sociological Foundations

There is a Spanish word that has been utilized in Colombia and several other Latin American countries to denote rural habitations situated along a road or concentrated in the same general area. This word is "vereda." Fals Borda (1961) suggests that while the "vereda" could have had its origin in ancient Indian social organization or in colonial haciendas, the present-day "veredas" owe their identity less to historical antecedents than to ties the residents have established among themselves.

The friendship group concept has its origin in the collective personality of the residents of the mountainous coffee zone "veredas" of Colombia. Instead of clubs, societies, and other secondary interest groups, the "veredas" have a certain number of primary groups, among which predominate the family, and community recreation and work groups. Within this relatively unspecialized form of primary organization the individual personality is absorbed by the collective one (Durkheim, 1947). A study of linkages between families and neighbors in the coffee zone "veredas" of Colombia by Arze (1966) concluded that the informal organization of primary groups affected the diffusion and adoption of agricultural practices. Arze suggested that these so-called "friendship groups" be incorporated into the extension program of FEDERACAFE in order to accelerate technological change and allow for adaptation of practices to conform to different localities.

Organization of Friendship Group Activities

The method of working with small farmers through friendship groups has been utilized since 1967 when the Extension Service of FEDERACAFE followed Arze's recommendation and initiated a training program for its extension personnel on social groups and leadership. By 1976, there were 3,074 friendship groups in 14 coffee-growing states of Colombia. The friendship group program utilized 388 extension agents at an average approximating eight groups per agent; the average number of members in a group being eleven.

The groups are organized by the extension services of the Coffee-Grower State Committees which conduct informal diagnostic surveys of the leadership in the "veredas" to determine the projects most significant to the areas. If a leader is interested in forming a friendship group, he is asked to gather his friends for a meeting with the extension agent. During this first session, the farmers elect a coordinator to serve as a bridge between the group and the Extension Service.

In the State of Tolima, where the present study took place, extension agents are provided with pre-test questionnaires to determine the degree to which the future group members have adopted the practices recommended by FEDERACAFE. These practices comprise the new coffee technology advocated by FEDERACAFE in the 1970's and include: high density planting of new seed varieties; intensive chemical fertilization; coffee nurseries; depulping machinery; germinators;

erosion control; pest and disease control; and the renovation of coffee fields. The pre-testing of the knowledge and use of these practices forms a baseline for later measures.

Friendship Group Objectives

According to statements by FEDERACAFE administrators, the objectives of the friendship group are to increase the effectiveness of the Extension Service in the diffusion of information to a mass audience and to liberate the small-scale coffee-grower from dependence upon the extension agent by fostering through group meetings increased community dialogue and responsibility (Gonzalez, 1979). In a recent speech, Jorge Cardenas Gutierrez, assistant manager of FEDERACAFE, declared that FEDERACAFE's diresctors have been "permanently preoccupied with promoting greater membership, organizing friendship groups, agricultural clubs, coffee cooperatives, etc., in each and every coffee growing region, in order to create a consciousness among coffee producers of the importance associated with their participation and intervention in the orientation and governance of FEDERACAFE" (Cardenas Gutierrez, 1978).

Study Objectives

The survey of the literature on rural development communication suggests a general consensus on the unique advantages that farm community discussion groups can provide for conformation of agricultural practices to different socio-economic and ecological contexts. The analysis of the friendship groups' basic characteristics and objectives suggests

that they are designed to incorporate certain mechanisms which promise greater efficiency in stimulating an exchange of technical and agrarian information to increase the welfare of the Colombian small-scale coffee-grower.

Therefore, the study is guided by the following goals:

1. To determine by network analysis how technical and agrarian messages flow through the friendship groups in order to understand the relationship between dialogical orientation and network structure in the transfer of knowledge.

2. To understand how demographic, socio-economic, and communication enabling variables are related to and aid in the prediction of: knowledge and utilization of need-specific practices/ information connectedness; information reliance on the extension service; utilization of institutional resources; influence leader concentration; and activity for situation improvement. The central premise of the enabling variable hypothesis is that the dialogical orientation and network structure variables will bring forth the responses they are predicted to produce only if they are integrated with particular combinations of demographic, socio-economic and communication variables.

3. To determine by identification of mechanisms and individuals which connect the friendship group social structure and which channel the process of diffusion the relevance of friendship group communication/education to the needs and capabilities of the small-scale coffee-grower.

CHAPTER II

THEORETICAL FRAMEWORK

Introduction

The objective of this chapter is to review the research literature relevant to the theoretical framework upon which the study was based. To that end definitions of terms which appear in the literature will be presented, followed by a review of the literature and the generation of hypotheses.

Definition of Terms

Innovation - An idea, practice, skill, or technology perceived as new by the relevant unit of adoption.

Adoption - The degree to which an innovation is implemented by the receiver in the form introduced by the source.

Adaptation - The degree to which the adopters of an innovation change the original innovation.

Feedback - The process by which a social system's inputs are controlled as a function of its outputs.

Communication Network - A set of individuals linked by information flows.

Connectedness - The degree to which the individual units of a communication network are linked by information flows.

Opinion Leadership - The ability to influence other members of one's communication network in a consistent and desired way.

Dialogical orientation - The degree to which a social system is open to diverse and conflicting information flows.

Facilitative Role - Attitudes and values of a practico which emphasize internal communication in the group and lessened dependence on the practico.

Coffee-Grower - A farmer who possesses two hectares or more of land planted in coffee or produces 575 kilograms or more of green coffee per year.

Practico - A non-professional technician employed by the Federacion Nacional de Cafeteros (FEDERACAFE) Extension Service who works under the direct supervision of the extension agent.

District - A work zone delegated to a practico of the FEDERACAFE Extension Service.

Section - An area comprised of several districts under the orientation and supervision of a FEDERACAFE extension agent.

Small Farmer - An owner of a farm of less than six hectares.

Medium Farmer - An owner of a farm of no less than six hectares and no greater than twenty hectares.

Large Farmer - An owner of a farm of greater than twenty hectares.

Administrator - A person who directs the operation of a farm in return for a fixed salary.

Sharecropper - A farmer who cultivates a crop on another's land and whose payment is a share of the harvest in accord with a verbal or written agreement.

Types of Hypotheses

Two types of hypotheses were advanced: 1) hypotheses pertaining to relationships between functional and structural variables; and 2) hypotheses relating independent variables to agrarian activity for situation improvement.

Because studies relating communication structure to function are not numerous, it may be that openness of the friendship group communication structure to diverse and conflicting inputs is determined by the groups' communication structure (Guimaraes, 1972). However, most of the available evidence on the relationship between functional and structural variables indicates that the primary factor responsible for alterations in decisions is the content of information and arguments generated in discussion (communication function)

rather than mere exposure to the choices of others (communication structure) (Pruitt and Teger, 1969: 124). In the terminology of behavioral decision-theory the primacy of function is based on the changes within the utility-probability matrix that the individual considers relevant to a given issue (Edwards et. al., 1965; Pastore, 1974). This assumption, that communication function determines communication structure, is reflected in the conceptualization and presentation of the hypotheses.

Dialogical Orientation Theory

Dialogical orientation refers to the openness of the friendship group to diverse and conflicting information flows. Dialogical orientation is basic to developmental education theory. Kohlberg and Mayer (1972: 456) describe the task of developmental education as confronting the individual with diverse and conflicting viewpoints.

Cognitive development, according to Kohlberg and Mayer, is a dialectical progression of ideas in discourse and conversation. In the dialectical model, a core of ideas are redefined and reorganized as their implications are brought into view through experience and as they are confronted by their opposites in argument and discourse. The educator's task is to initiate dialogue, pose problems, and stimulate reflections, not to indoctrinate or persuade.

> Reference to such principles (scientific inquiry) is non-indoctrinative if these principles are not presented as formulae to be learned ready-made, or as rote patterns grounded in authority. Rather they are part of a process of reflection by the student and teacher (Kohlberg and Mayer, 1972: 475).

Freire (1970) characterizes this dialectical model as problem-posing education. Education is viewed as a shared process of inquiry. Dialogue is the chief means by which learnings are shared and consciousness is raised.

It should be emphasized that for Freire, dialogue means "the encounter in which the united reflection and action of the dialogue are addressed to the world which is to be transformed and humanized." Since the term dialogue is used by Kohlberg and Mayer and Freire to signify somewhat different processes, it is appropriate to suggest the use of the term with which this study deals. In the sense that Freire uses it, dialogue is the means for radical restructuring of society. However, the term can also be applied to improvement and feedback within institutions so that they function more effectively, and it is in that sense that dialogical orientation is used here. Dialogical orientation therefore incorporates exchanges of ideas and information among the farmers themselves, as well as communication "upward" from the farmers to the extension service.

Dialogical Orientation Measures

In order to derive measures of dialogical orientation that would have validity for both FEDERACAFE's friendship groups and other rural community discussion groups, two steps were followed.

The first step was an analysis of both the general research conducted on dialogical orientation in nonformal

education and the dialogical orientation objectives expressed by the FEDERACAFE administrators of the friendship groups.

The second step was to define these objectives in terms of broader theoretical definitions for which measures have already been devised.

Lerner (1958) in his investigation of social and psychological characteristics related to socio-economic development, constructed a typology of traditional, transitional, and modern individuals. The key to the difference between the types was, for Lerner, the desire "to have opinions of one's own."

In another investigation of the psychological characteristics of "modernity," Inkeles and Smith (1974) judged an individual to be more modern if he showed "awareness of the diversity of opinions around him and put a positive value on variations in opinion." In their conception, a modern man does not automatically accept the opinions of those above him in the power hierarchy and does not close himself in the belief that everyone thinks alike.

Almond and Vera (1963) found the development of an "evaluational orientation"--judgements and opinions about political objects--to be an indicator of political consciousness and a dimension of modernity.

In terms of the present study, the disposition of members of the friendship groups to express independent or

unpopular opinions is a measure of the openness of the system to diverse and conflicting inputs.

In a study which served as his Ph.D. dissertation at Michigan State University, Diaz-Bordenave (1966) showed how the range of possible decision-making farmers in Northeast Brazil was positively related to their status in the community communication network. Diaz-Bordenave suggested that range of decision-making was positively related to status because persons need to cope with decisions demanded by their status. Range of possible decision-making was operationalized by three social structural dimensions: the individual's relationship to the production factors of land, capital and labor; the diversity of occupational roles he performs; and his educational horizons.

Diaz-Bordenave encountered several limitations in the measurement of the production factor dimension. Information was distorted by failure of landowners to differentiate in their reports between gross and net income, the reporting of extremely low incomes for fear of tax implications, and the fact that many small landowners and renters did not keep any record at all of their farm output. Although the second dimension, occupational role diversity, was reported to have greater validity, it is not relevant to the present research because of the occupationally homogenous population of coffee-growers. The relationship between the capacity for decision coming from education and the range of possible decision-making measured by the educational horizons has

import for the present study. This dimension was operationalized as level of schooling and reading ability.

The limitations in measurement of social structural potential for decision-making suggest that perception of range of decision-making may be a more reliable indicator of dialogical orientation in the friendship group communication network than would social structural potential for decision-making. The self-reported measures of perceived range of decision-making is, of course, also subject to distortion. A person may give one or another answer according to the impression he wishes to create. But by asking how one perceives, the limitations in remembering facts accurately are avoided.

The mere perception of a wide-range of decision-making is important as an indicator of dialogical orientation because what men do is much influenced by the climate of opinion in which they find themselves (Inkeles and Smith: 33). If a man hears all around him opinions which represent perceptions of significant and active roles in decision-making, he is more likely to act in accord with his own impulses in that direction.

Shibutani (1961) supports the notion that self-perception is the key indicator of communication conduct. According to Shibutani, "Voluntary conduct is not so much a manifestation of what man 'really' is, but rests upon the beliefs he develops about himself--on the basis in which he is treated by his associates.... Knowing what is generally

expected of various kinds of people, he places limitations on his own conduct."

Inkeles and Smith's research in Becoming Modern suggested that one key difference between traditional and modern man is the latter's confidence that his world is calculable, and that people and institutions can be relied on to meet their obligations. For Inkeles and Smith, the modern man believes in a reasonably lawful world under human control. The belief that fellow members of the friendship group can rationally control their environment and be relied on to meet their obligations would seem to indicate a system open to diverse and conflicting inputs.

In a study of attitudes of workers in Peru and the U.S., Williams et.al. (1966) found that appreciation of human relations content was positively related to satisfaction with the supervisor. The authors concluded that a high faith-in-people orientation was related to confidence in being able to solve problems through the group. Trust is therefore another theme we would expect to find closely related to dialogical orientation.

On the basis of this initial analysis, a series of questions were derived which formed three scales measuring dimensions of dialogical orientation as this is carried out by the friendship groups:

1. Disposition to express opinions - measures the belief that to overcome problems it is often necessary to express independent or unpopular opinions.

2. Perceived range of decision-making - measures the belief that the farmers' role in decision-making is significant and active.

3. Interpersonal trust - measures the belief that neighbors and the agent or coordinator can be relied on to meet their obligations.

The questionnaire items for disposition to express opinions were adapted from Almond and Vera's The Civic Culture, and Inkeles and Smith's Becoming Modern. These items attempted to measure the possibility of expressing dissenting opinions, history of taking unpopular action, belief in maintaining one's own opinion, and difference of opinion with neighbors.

The questionnaire items for perceived range of decision-making were adapted from the Almond and Vera and Inkeles and Smith studies in addition to Kahl's Measurement of Modernism, conducted in Brazil and Mexico. These items attempted to measure decision-making self-reliance, respect for ideas of peers and superiors, self-confidence in expressing dissent, and belief that one's role in decision-making is significant.

The questionnaire items for interpersonal trust were derived from Inkeles and Smith and from Williams et.al. study of social change in Peru. These items attempted to measure trust in neighbors, belief in the basic honesty of people, trust in extension agents, and trust in new acquaintances.

Hypotheses

The Relationship Between Facilitativeness of the Extension Agent and Dialogical Orientation

In the Leagans and Loomis book on Socioeconomic Change in Modern Agriculture, Triandis comments that in the adoption process it is necessary to consider three closely related elements: the innovation, the agriculturalist, and the extension agent; the first with its characteristics and consequences, and the second two with their respective subjective cultures, personality and social systems.

Whether the friendship group social system is open to diverse and conflicting inputs is a funcation of the attitudes and values of the extension agent and the position of the friendship groups within the structure of the larger social system. Dialogical orientation depends to a great deal on the genuine determination of the extension agent and agency to democratize the rurla education process and encourage participatory styles of development planning.

One of the obstacles to democratic participation of small farmers in generating new technical knowledge is the fact that agricultural extension staff, planners, and research workers commonly use scientific knowledge as an instrument of power to legitimize their superior status. Thus they have a vested interest in devaluing the farmers' indigenous technical knowledge and denying their creativity. This approach can result in the type of forced adoption situation observed by Deuschmann and Fals Borda in Colombia, in which the farmers adopt the measures recommended by the

agents as an acknowledgement of the social hierarchy and a gesture of respect, but resume their traditional practices when the extension agent leaves.

Freire (1972: 58) points out the contradiction between role and attitude in his critique of the banking style of teaching. "The teacher," he writes," presents himself to his students as their necessary opposite; by considering their ignorance absolute, he justifies his own existence."

The attitudes and values of the extension agent related to his role as a depositor of information or a stimulator of dialogue appear to be major determinants of dialogical orientation in the friendship group. In a 1979 evaluation of friendship groups in the states of Huila and Cundinimarca, Colombia, Serna Echevarri determined that group coordinators were reluctant to transfer knowledge to other members out of fear that equality would cause them to lose leadership.

Thus, the proposition could be made that the more an agent perceives his role as facilitative rather than banking, the more open the friendship group system would be to diverse and conflicting communication flows. Hence, we may state the following hypothesis:

H:1 The more facilitative the agent perceives his role, the greater the degree of dialogical orientation.

Relationships Between Independent Variables and Agrarian Activities for Situation Improvement

The Relationships of Dialogical Orientation to the Adaptation of Innovations and the Adoption of Innovations

The past two decades of research into diffusion of innovations in Latin America have raised several questions about the applicability to Latin America of research in the U.S. on the difference between adopters and non-adopters of innovations. While Latin American findings support U.S. findings concerning the relationship between economic status and innovation, conclusions differ related to personal and social characteristics of innovators.

Fonseca (1966) for example, found in his doctoral research on innovation adoption among Brazilian farmers that social participation was not related to adoption. This study supported the conclusions of Deutschmann and Fals Borda (1962) in their study of communication and adoption patterns in a Colombian village. Deutschmann and Fals Borda found that persons whose predominant orientations were to interpersonal communication channels were the latest to be aware of and the latest to adopt innovations.

In another study of innovation adoption among Brazilian farmers, Herzog et. al. (1968) found that innovators were, contrary to the U.S. adoption typology, the least risk-oriented of any of the adopter types. These studies and others suggest that the failure of an innovation to take root is not necessarily the result of an inadequacy in transmission or the relative ignorance of the farmer,

but that much of the problem may reside in the characteristics of the innovation being transmitted.

In relating adoption to demographic variables many researchers fail to take into account the quality of the innovation. Zapata's (1971) doctoral investigation in Antioquia, Colombia pointed out the seriousness of this omission. His study compared innovation adoption between the farmer clients of three extension organizations in Colombia: ICA, the Secretariat of Agriculture, and FEDERACAFE. Zapata found that the clients of FEDERACAFE with greatest economic capacity, highest levels of education, and most exposure to mass media demonstrated the greatest degree of adoption. However, the inverse was true related to the characteristics of the clients of the Secretariat of Agriculture; the clients with greatest economic capacity and education were also those who tended least to learn and adopt innovations.

Pastore (1974) has pointed out two factors which jointly explain the different research findings: 1) an individual's risk-taking is based on the utilities of the actions and the probabilities associated with the attainment of desired goals; and 2) technologies in Latin America are not adapted to most problems of subsistence agriculture. In other words, for small farmers, many recommended innovations would be considered poor risks.

Even before the flood of case histories which document the effects of green revolution technologies on the

smallest farmers (Wharton, 1969; Nulty, 1972; Havens, 1974; and Griffin, 1976), there have been countless examples in which scientifically researched innovations have proven to be much less suited to local ecology, economy, farming habits, and cultural norms than the indigenous technical adaptations of the farmers. Howe (1979) provides an explanation in his review of research into indigenous technical knowledge. He writes that farmers "possess assets in the form of empirical knowledge of the individual elements of their eco-systems, of the relations through which these elements are conjoined, and in the way in which these relations change through short and more extensive periods of time."

Applying Harvey and Schroeder's research (1963) to the relative inavailability of relevant agricultural technologies transferred from research institutions to small farms, it would appear that the more opportunities a system provides an individual possessed of indigenous knowledge for analyzing the technical quality, timeliness, and social and cultural compatability of a recommended innovation, the greater doubts he is likely to have, and the more likely he is to modify or reject the innovation.

Greater participation in decision-making brings greater insights and new sources of information to the adoption process. Consequently, we may establish the following two hypotheses:

H:2 The greater degree of dialogical orientation in a system, the greater the degree of doubts about an innovation.

H:3 The greater degree of dialogical orientation in a system, the greater the degree of innovation adaptation.

Conversely, as Hage and Aiken (1970) point out, role conflict and ambiguity and the different priorities of people in decentralized communication systems reduce the possibilities of implementing an innovation in the form recommended. Hence, we may establish the hypothesis that:

H:4 The greater degree of dialogical orientation in a system, the lesser the degree of adoption of the intact innovation

The Relationship of Dialogical Orientation to the Use of Institutional Services

The research which supports the relationship between dialogical orientation and increased information-seeking activity also supports the proposition that dialogical orientation is related to use of all types of institutional services. Because, the FEDERACAFE state and municipal committees are the only entities which actively lend technical assistance for coffee cultivation, the most valid indicator of this variable would seem to be the frequency of use of the services provided by the state and municipal committees and other non-coffee-specific services provided by other institutions.

The hypothesis may be stated as follows:

H:5 The greater degree of dialogical orientation in a system, the greater the degree of institutional contacts among its members

The literature which relates locus of control to information-seeking behavior suggests that dialogical orientation is a catalyst for activity to acquire more land, income, credit and tools. Consequently, we may establish the hypothesis that:

H:6 The greater degree of dialogical orientation in a system, the greater activity for situation improvement.

Relationships Between Functional and Structural Variables

There are two versions of the hypothesis relating dialogical orientation to system connectedness. One version maintains that exposure to the choices of others, system connectedness, influences the degree of dialogical orientation.

Shaw (1964: 126) investigated communication networks and found that "communication independence" is greater in decentralized or more densely connected networks regardless of the type of function. Shaw defined "communication independence" as "...the degree of freedom with which an individual may function in the group;" a conception analogous to our view of dialogical orientation.

Festinger (154) and Brown (1965) presented evidence in support of the structural hypothesis that group members are influenced by the circumstances under which decisions are made. Brown (1965: 702) maintained that information about others' choices "make individuals move toward greater risk after group discussion." In discussion, according to Brown, individuals will discover the attitudes of others', and this will lead them to change their own attitudes.

Guimaraes (1972) also conceives of communication structure as "solving" functional problems through some form of information exchange among the system's internal units. Guimaraes determined the key structural aspects of a communication system to include: 1) the number and kind of elements in the system, and their relationship; 2) information media available; and 3) social, organizational, and physical distance among the system members (e.g., channel length). The Guimaraes study, as the other studies supporting structural primacy, implies the operation of an affective process -- subjects are influenced by the interpersonal communication and social comparison process.

However, much of the evidence that is cited in support of the hypothesis that system connectedness influences dialogical orientation is equivocal and inconclusive. A study conducted by Blake (1968), for example, indicated that mere exposure to others' choices (structural) is not a sufficient condition for shifts in attitude (functional) to occur.

The second version of the relationship between the two variables implies the operation of a cognitive process -- group members are influenced by the content of the arguments. Harvey and Schroeder's (1963) research into determinants of social interaction provides a cognitive explanation of the relationship between dialogical orientation and system connectedness as well as insight into the relationship between those two variables and the adaptation of innovation. Harvey and Schroeder (1963: 139) point out that:

> "A prerequisite for progressive differentiation and integration, synonomous with increased abstractness, is the openness of the system to diverse and conflicting inputs. From the resulting opposing energies and forces new alternatives or component parts are generated and the groundwork is laid for the evolvement of a system posessed of the capacity to deal adequately with the changing, the different, and the adverse."

Davis and Phares (1967) have shown that information-seeking activity is a function of the degree to which individuals believe that they can control their environments by their own efforts. Their study found that when information is relevant to personal goals, individuals who believe that they can control their environment seek significantly more information than those who think that they cannot control their environment.

These studies complement the research that suggests that the more persons: 1) are disposed to hold opinions of their own (Lerner, 1959); 2) perceive their range of decision-making (Diaz-Bordenave, 1966); and 3) trust people (Stanfield, 1968; Williams et. al., 1972), the more likely they are to seek interpersonal relationships. Disposition to express opinions, perceived range of decision-making, and interpersonal trust are conceptually linked as indicators of dialogical orientation. Consequently, we can establih the following hypothesis:

H:7 The greater dialogical orientation in a system, the greater degree of system connectedness.

The Relationship Between Dialogical Orientation and Information Reliance on the Extension Service

The information reliance variable is conceptualized here in terms of the locus of decision-making in the system. Duncan (1972) and others have indicated that the greater the participation in decision-making in a system, the less reliance on central authority. Dialogical orientation is conceptually linked to decision-making decentralization in a system. Therefore, we can establish the following hypothesis:

H:8 The greater degree of dialogical orientation, the lesser the degree of information reliance in relation to the extension service.

The Relationship Between Dialogical Orientation and Influence Leaders

The literature on rural communities and diffusion of innovations shows that there tends to be a structure of one or more influence leaders in groups. Based on the same rationale as the previous hypotheses, we may posit that greater participation in decision-making and less reliance on central authority will increase the number of influence leaders in the system. Hence, we may establish the following hypothesis:

H:9 The greater degree of dialogical orientation in a system, the greater the degree of influence leader concentration.

Enabling Variables

The relative inattention given social structure variables in most diffusion research has been criticized by Fonseca, 1968; Herzog, 1968; Byrnes, 1966; Rogers, 1970;

and Diaz-Bordenave, 1974. For example, many of these researchers have found the variables size of farm, land tenure, educational level, and media exposure to correlate highly with each other while at the same time to be positively related to knowledge and adoption variables.

Economic Variables

Several studies have analyzed the relationship between economic capacity, land tenure and adoption of agricultural technology. A study by Hernandez (1975) of factors which influence the adoption of innovation found that risk capital, economic stability of the farm, and land tenure were the three factors most commonly cited by farmers in Quindio, Colombia.

In a study of the relationship of economic, educational and other variables to knowledge and adoption of fertilizer by friendship group members in Tolima, Colombia, Barrero (1978) found a highly significant association between the physical adoption of fertilizer and membership in friendship groups. This adoption was not found to be related to the degree of knowledge of fertilizer practices; rather a greater influence was considered to be the economic and technical assistance given group members to increase their coffee production. Barrero notes, however, that the greater influence of economic variables may be related to the emphasis on demonstration to educate the farmers in fertilizer application. He suggests that demonstration is a method which tends to promote adoption without knowledge.

In "The Communication and Economic Decision-Making of Colombian Peasants," Gruning (1971) argues that communication (education) is a complementary factor in modernization and that it can have little effectiveness unless attention is paid to structural and institutional constraints. This argument is supported by a study by Havens and Flinn (1975) which concluded that farmers in a Colombian community where a new coffee technology was introduced were affected differentially according to their economic resources. Their study found that those farmers who began with higher incomes and owned more land could better withstand the short-run loss of production during change-over to the new technology and were eligible for higher credit levels, which further increased their control over income and land.

In order to provide the best explanation of the way in which the structure and function of the friendship group affected each other and agrarian activities for situation improvement, this study controlled for the effect of the following economic variables: farm size, land tenure, amount owed on land, and credit use.

Mass Media Variables

In many studies mass media contact is treated as a dependent variable. It is consistent with the theoretical interests of this study to reverse the emphasis and treat mass media exposure as an enabling rather than a dependent variable. The mass media have become a distinctive

feature of Colombian rural society, along with schools, patterns of land ownership, credit availability, etc. Since the other factors were treated as enabling variables in the relationship between dialogical orientation and network structure, it was appropriate to accord mass media the same status. The indicators of mass media used in the present study are: frequency of exposure to newspapers, magazines, bulletins, and radio; radio ownership; and radio program preference. Exposure to television has been found to be insignificant in the area under study.

Education Variables

In the more developed countries, the educational process has had a significant impact on national development and growth. Similarly, this process is considered vital for the existence and continuity of the so-called developing countries. Education must, therefore, be considered as a universal phenomenon and essential for the moral and intellectual development of the individual in society (Durkheim, 1961).

Basic education emphasizing literacy has been used for some time as a vehicle for and indicator of national development. Because there still exists a strong belief that illiteracy is a constraint on the achievement of development goals, literacy programs have been common to all countries in Latin America.

However, the treatment of reading ability and formal education as enabling variables is consistent with the view

that education is a complementary factor in development. Buitron (1971) notes that "the fact that literacy campaigns and community development projects have been running year after year in practically every developing country without much apparent gain is a clear sign of their failure...The first and most important mistake we have made and continue to make is our belief that we can solve all the economic, social, cultural and political problems through education alone." This study adopted a similar emphasis in controlling for the effect of reading ability and formal education on the relationship between dialogical orientation, network structure, and agrarian activities for situation improvement.

Conclusion

Because there is often little similarity between affective verbal responses and concommitant behavior, the measure of affective outcomes, such as dialogical orientation, is extremely difficult. There is no disputing the validity of Ward's (1971) argument that "verbal data on written tests can rarely be taken at face value. It is too easy to misrepresent oneself, enhancing one's ego or suppressing one's fears and guilts; and even when a person wants to be open and honest he may not be sure of his own feelings to speak or write with confidence." These remarks are pertinent to most nonformal education programs with consciousness raising components in which measures consist of observation, interviews and self-report.

Yet, while the dialectical progression of ideas basic to **Kohlberg** and Mayer's and Freire's definition of education does not lend itself easily to quantitative measure, it can be operationally defined. Keeping in mind the limitations, the coding of responses to existential questions can operationalize the psychological characteristics of a dialogical orientation and provide a measure of affective change.

An early example of a coding system used to measure attitude and value dimensions of dialogical orientation is one developed by Almond and Vera (1965). They divided respondents into three general classes the "parochial," the "subject," and the "participant." Each of these terms describes how the respondents see their relationship with the power structure. The principal scale used by the evaluators was called the Subjective Political Competence Scale, a Guttman scale.

The studies of Inkeles and Smith, Diaz-Bordenave, Kahl, Williams et. al., and Lerner include measures which were judged to be indicators of dialogical orientation. Among the questions derived to measure psychological dimensions of dialogical orientation were those which attempted to measure: the possibility of expressing dissenting opinion; history of taking unpopular action; belief in maintaining one's opinion; difference of opinion with neighbors; decision-making self-reliance; respect for ideas of peers; self-confidence in expressing dissent; and trust in neighbors, change agents and new acquaintances.

The substantive focus of these earlier studies was the attitudes and values of target audiences of farmers and workers. An important aspect of the present research is its effort toward not only deriving measures of friendship group participant orientations, but also toward devising a separate instrument to measure the dialogical orientation of change agents/group leaders. Because dialogical orientation depends to a great extent on the genuine determination of the change agent to democratize the education process and encourage participatory styles of learning, the hypothesis is put forth that the more the leader perceives his role as "facilitative" rather than "banking," the higher level there will be of dialogical orientation.

Despite obvious difficulties in the assessment of affective learning, progress can be made toward the development of relevant measures by borrowing techniques from sociology, anthropology and other social sciences. Galtung and Weise (1972) argue that in order to capture more than the formal elements of education the focus of such "borrowed" techniques should be on the context of social interaction and the connection between subjective states and behavior. One newer, social interaction approach inspired by sociology is network analysis. The network procedure's assessment of communication links among members of a social system can provide knowledge of social interaction which, as Duncan (1972), Harvey and Schroeder (1963)

and Davis and Phares (1967) have shown, is an indicator of dialogical orientation.

The research which supports the relationship between dialogical orientation and social interaction when applied to Pastore, Wharton, and Haven's finding that most innovations for small farmers have been largely inappropriate also supports the proposition that dialogical orientation is: 1) positively related to innovation adaptation, use of institutional resources, and activity for situation improvement; and 2) negatively related to adoption.

The literature of the 1960's and 1970's consistently associated education, mass media exposure, and farm size with adoption of rural innovations and considered the former two significant, if not crucial, to the development process.[1]

Because the available research suggests that certain economic mass media, education, and social participation

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[1]For research on the role of education in affecting social change, see: D. Adams and R.M. Bjork, Education in Developing Areas (New York: David McKay, 1971); J. Coleman, ed., Education and Political Development (Princeton: Princeton University Press, 1965); A. Inkeles and D. Hoslinger, eds., Education and the Individual Modernity in Developing Countries (London: E. Brill, 1974).

For research linking communication with development, see: W. Schramm, Mass Media and National Development (Stanford University Press, 1964); L.W. Pye, ed., Communication and Political Development (Princeton: Princeton University Press, 1963); Daniel Lerner, The Passing of Traditional Society: Modernizing the Middle East (New York, The Free Press, 1958); E. Rogers, Modernization Among Peasants: The Impact of Communication (New York: Holt, Rinehart and Winston, 1969).

The common theoretical problem in these early studies and research reviews is the assumption that education/communication plays an independent role in promoting socio-politico-economic development.

variables are positively related to innovativeness, a partial correlation statistical procedure has been utilized to control for the effect of these variables in the relationship between paired sets of dialogical orientation, network structure, and agrarian activities for situation improvement variables in the hypotheses. These variables include the following: age, farm size, land tenure, amount owed on land, credit use, mass media exposure and program preference, years of schooling, reading ability, and years of membership and frequency of participation in the friendship group. The central premise of the enabling variable hypotheses is that the dialogical orientation and network structure variables will bring forth the responses they are predicted to produce only if they are integrated with particular combinations of complementary variables.

In order to avoid repetitive statements, hypotheses have been summarized and presented in tabular form. Each hypothesis, if stated in full, would be expressed in the following manner:

> The greater the incidence of variable X, then the greater the incidence of variable Y, and the lesser the incidence of variable Z.

Leader Role Conception X1

Functional Variables X2	Structural Variables X3
Dialogical Orientation	System Connectedness
a. Disposition to Express Opinions	Number of Opinion Leaders
b. Perceived Range of Decision-Making	
c. Interpersonal Trust	

Enabling Variables X4

Age
Farm Size
Land Tenure

Amount Owed on Land

Credit Use
Mass Media Exposure
Mass Media Program Preference
Years of Schooling
Reading Ability
Years of Group Membership
Frequency of Group Participation

Dependent Variables Y

Doubts about Innovations
Adaptation of Innovations
Activity for Situation Improvement
Utilization of Institutional Resources

Dependent Variables Z

Adoption of Innovation
Reliance on Extension Service

Leader Role Conception

Functional Variables

Dialogical Orientation
A. Disposition to Express Opinions
B. Perceived Range of Decision-Making
C. Interpersonal Trust

Enabling Variables

Economic
Education
Mass Media
Participation
Demographic

Structural Variables

System Connectedness
Extension agent Reliance
No. of Opinion Leaders

Dependent Variables

Doubts about Innovations
Adaptation of Innovations
Adoption of Innovations
Activity for Situation Improvement
Utilization of Institutional Resources

Figure 2. Relationships of the variables

CHAPTER III

RESEARCH SETTING

Agriculture in Colombia

Colombia is divided by three ranges of the Andes mountains and two large rivers, which provide great variation in elevation, climate, and soil, and allow for a wide range of agricultural pursuits. Agriculture is the single most important economic activity of Colombia, contributing 22.9 percent of the gross domestic product. It also accounts for about 75 percent of export earnings and provides employment to about one-third of the economically active population in the country (or 2.5 million people).[1]

The pattern of land ownership and the size of landholdings is central to the issue of agricultural productivity as well as to other aspects of Colombian economic and social life. The large estate or "latifundio" dominates the pattern of land distribution in Colombia, as it does throughout most of Latin America, in terms of both the value of the land and the percentage of arable land it comprises. According to the 1970 census, the highest 10 percent of farms in size held 80 percent of the arable farmland, whereas 73 percent of the farms (those under 25 acres) occupied only 7 percent of the total farmland.[2]

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[1] Colombia Today, Vol. 14, No. 17, 1979.

[2] DANE, Censo 1970

In further extreme, the lowest 50 percent of agrarian holdings accounted for only 2.3 percent of total farmland.[1] Thus, half of the country' s agricultural holdings are plots usually designated as "minifundia," farms too small or too poor in soil for adequate subsistence.

Another significant feature of the pattern of land ownership in Colombia is that, despite a manifestly unequal distribution, a large number of peasants own at least some land. According to the 1970 census, almost 69 percent of Colombia's farms were worked by their owners, and these accounted for 75 percent of total farmland. Dix (1966: 30) speculated that this phenomenon may explain the slowness with which class consciousness has developed among rural Colombians.

Agricultural Techniques and Practices

The traditional methods of preparing the soil, planting, and cultivating crops, mainly by handtools, are still followed in most of Colombia. The practice of slash-and-burn agriculture, coupled with constant replanting of the same crop and erosion by precipitation, has caused serious soil exhaustion and depletion in many areas, particularly in the highlands.

Most small-scale farmers work their farms with the help of only their families, but in some areas, such as Tolima and Huila, a system of cooperative labor prevails. Originally called "minka," a Quechua word, cooperative

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[1] DANE, Censo 1970

labor is now referred to as a "minga." The "mingas" are work parties or labor exchanges composed of friends, relatives and neighbors and are used to perform particular chores that require large numbers of workers. The work generally concludes by midafternoon and is followed by a meal provided by the host farmer.

Coffee

Coffee is by far the most important crop in Colombia and a source of over 58 percent of foreign exchange earnings.[1] Nearly two million people--ten percent of the total population--aredependent on the cultivation, processing or marketing of coffee as a principal source of income.[2] A detailed census of coffee farmers was taken in 1970; it revealed that coffee was planted on over 2.6 million acres of land on more than 301,000 farms.[3] Thus, coffee is planted on about a fifth of the total cultivated area in Colombia.

Changes in Production Policy and the Pattern of Land Ownership

For years, Colombia has been a steady supplier of ten to fifteen percent of annual world coffee production. However, since the 1969 Brazilian frost, Colombia has followed a course aimed at increasing its share of the international market. For example, during the first five

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[1] Colombia Today, Vol. 13, No. 11, 1978.

[2] Buzarell, P.J. Coffee Production and Trade in Latin America, p. 20.

[3] Censo Cafetero, 1970.

months of 1979, Colombia exported 4.7 million bags of green coffee, compared with 2.7 million bags in the same period of 1978. During the October 1, 1978 to June 16, 1979 period Colombian coffee exports were 8 million bags, or about 77 percent over exports during the comparable period of the previous year.[1]

As a result of this new production policy, great emphasis began to be placed on a technology characterized by new high-yielding varieties, high density planting, and intensive use of fertilizer; all of which contribute to high productivity per hectare. While the annual average of new plantings with modern technology between 1960 and 1969 was 1.913 hectares, for the period 1975-1979 the average was more than tripled to 6.37 hectares.[2]

The traditional system of coffee production is characterized by the use of arab typical and bourbon varieties of coffee, which are planted and maintained under shade. The traditional technology permits the planting of 900-1200 coffee trees and 150 banana trees per hectare. The coffee harvest of these varieties begins the fourth year and continues beyond the thirtieth year, although declining in production after the twelfth year. This system of production generally does not use chemical fertilizer or uses them in limited doses.

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[1] Coffee Intelligence, Vol. 41, Nos. 4/5.

[2] Economia Cafetera Colombiana, p. 77.

The modern system of coffee cultivation is characterized by Brazilian varieties such as Caturra, New World, and Villalobos, which are fully exposed to the sun and receive intensive applications of chemical fertilizer. The density of planting is as much as five times greater than the traditional technology. However, the life cycle of the tree is shorter; after approximately eight years the coffee tree has to be cut to begin a new cycle. This process takes the tree out of production for two years.[1]

The objectives of the Green Revolution in coffee are to use technological innovation to increase coffee production and to improve the standard of living in the rural sector. However, several studies into the effects of similar Green Revolution efforts have revealed that the two objectives can result to be contradictory (Griffin, 1976; Havens and Flinn, 1974). The achievement of greater productivity through more sophisticated and expensive technology has been seen as accelerating the concentration of land holdings and the dimunution in number of small-scale coffee growers. The high productivity of Caturra, for example, provides greater income to the farmer and allows him to resist lower prices. But not everyone can afford the renovation of coffee fields and intensive fertilization required by the variety.[2] Newly-planted coffee

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[1] Economia Cafetera Colombiana, p. 75.

[2] Asociacion Nacional de Usarios Campesinos, p. 68.

trees require three years to come into production, which requires that the land they occupy be taken out of production for the same period. Thus, many small-scale farmers require the extension of credit if they are to take their land out of production.

The changing pattern of land ownership during the period of technology transfer is reflected in two coffee sector surveys. A government survey conducted in 1965 found that 95 percent of the farm units were less than 10 hectares and these occupied 63.3 percent of the area planted in coffee.[1] By 1970, according to the Coffee Census, the number of farm units less than 10 hectares had been reduced to 69.5 percent and these occupied no more than 31 percent of the area planted in coffee.[2]

Credit Allocation for Small-Scale Farmers

At the present time in Colombia, interest rates are controlled and credit is largely rationed to selected economic activities. Agricultural loans are channeled through public or semi-public agricultural banks. In 1978 the Colombian Congress established that lines of credit for renovation of coffee fields and purchasing of coffee depulping equipment be extended by the Fondo Credito Cafeto (Coffee Credit Fund), Banco Cafetero (Coffee Bank), Caja Agraria (Agrarian Bank), Convenio Comite (Coffee-Growers Committee Agreement), and Fondo Rotario Renovacion (Revolving Renovation Fund).

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[1] DANE

[2] Censo Cafetero, 1970.

A study by Havens and Flinn (1975) found that credit was not supplied to over half the coffee growers they interviewed in a Colombian community where Caturra had been introduced. They concluded that those coffee growers who began with higher incomes and owned more land could better withstand the short-run loss of production incurred during the change-over and were eligible for higher credit levels, which further increased their control over income and land.

Concern for the phenomenon represented by the displacement of small-scale coffee growers was expressed by a 1978 government commission report. The commission cited rising property values and insufficient credit resources as the two major reasons for the sale of farms and immigration to the cities on the part of small-scale coffee growers. The 1975 frost in Brazil had produced a sizeable increase in coffee cultivation and coffee land values in Colombia. The credit resources of the major agricultural banks were insufficient to meet the heightened demands of large and small farmers alike. As a stabilizing measure, the commission recommended that agricultural banks develop credit programs aimed directly at the small-scale coffee grower.[1]

After 1978, renovation loans from the agricultural banks could be made only to farmers whose net assets were

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[1] Revista Cafetera de Colombia, No. 169, May-August 1978.

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less than 1 million pesos. This excludes most middle-sized farmers whose property values have increased beyond one million pesos with the coffee bonanza of the 1970's.

The under-utilization of credit is also partly attributed to the collateral needed to obtain loans. A number of small-scale farmers have neglected to register titles with their municipalities. The attitude of the local bank director is all-important in credit extension to such farmers. As indicated in the table below, small farmers with assets of less than one million pesos have utilized in the first semester of 1979 only a fraction of the renovation credit available to them.

Table 1

Credit Use January - June, 1979 (in pesos)

	Renovation		
	Available	Approved	% Utilized
Tolima	40,000	12,155	30.4
Colombia	300,000	41,539	13.8
		De-pulping	
Tolima	40,200	40,200	100.0
Colombia	300,000	263,955	88.0

In the state of Tolima, where this study took place, land is cheaper than the rest of Colombia. Therefore, net assets are less on the average and more farmers qualify for renovation loans. This is reflected in the difference in renovation credit use between Tolima and the country as a whole.

The National Federation of Coffee-Growers

The changing pattern of land ownership and credit allocation relates to recent efforts of the National Federation of Coffee-Growers (Federacion Nacional de Cafeteros - FEDERACAFE) in coffee zone development. The objective of this section is to describe the origins, organizational structure, and nonformal education programs of FEDERACAFE in order to place its role within the rural development process in proper perspective.

Origins of FEDERACAFE

The creation of the National Federation of Coffee-Growers was given impetus by the collapse of coffee prices in the period immediately following World War I. While the price of coffee in New York descended in the course of one year from 31 to 18 cents per pound, the internal price of a "carga" of coffee (125 kilograms) fell even more dramatically from $60 to $20 Colombian pesos. To add to the anxiety of coffee producers, the reduction in price occurred simultaneously with an inflationary rise in the costs of consumer goods, tools, and agricultural wages.[1] In an effort to defend the internal and external price of coffee, several of the larger Colombian coffee producers convened a congress of coffee growers.

The National Federation of Coffee-Growers was created in June, 1927 at the Second National Coffee Growers Congress in Medellin, The basic legislation which established the pattern of relations betwen FEDERACAFE and the

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[1]Koffman, 1969, p. 75.

government was Law 76 of 1927, which provided for a 10 cent tax on each 60 kilogram sack of coffee exported. This tax was designed to produce annually about $250,000 pesos for such FEDERACAFE activities as coffee propaganda, technical instruction to coffee growers, coffee warehouses and study missions.[1]

Functions on Behalf of the Small-Scale Farmer

Although the principal objective of the national coffee organization, the international defense of the Colombian coffee industry, has not changed since its inception, one of the avowed purposes of FEDERACAFE is to protect the small producer and to represent him at the national level. Despite the fact that small and medium-sized producers did not participate directly in the creation and organization of FEDERACAFE, their economic situation was improved by the price support and technical assistance programs initiated by the new interest group. In order to protect the producer from falling coffee prices, FEDERACAFE has since its inception bought the farmers' coffee when prices have descended below a certain minimum, allowing the producer to reap a small profit, and then has sold it in the domestic or foreign market or has stored it within the country.[2]

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[1] Revista Cafetera de Colombia, No. 147, May-August 1970.

[2] Blutstein et. al., p. 358.

The number and kind of FEDERACAFE functions on behalf of coffee producers represent a multidimensional, wholistic understanding of rural social system interrelationships. Though generally specific to one crop, the assistance program to coffee producers includes: diffusion within the country of the most productive system of coffee cultivation; creation of coffee warehouses, agricultural supply stores, cooperatives and savings and credit banks; organization and administration of experimental farms and laboratories; establishment of hospitals and health centers and campaigns to improve nutrition, drinking water and general hygiene; rural youth and rural adult study and discussion groups; and provision of aid and technical assistance for works of common utility such as community roads, electrification, water systems, and housing.[1]

The price support program of FEDERACAFE is reflected in the evolution of internal and external prices of coffee shown in the following table.

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[1]Estatutos de la Federacion Nacional de Cafeteros, 1975, pp. 4-9.

Table 2

Evolution of Internal and External Coffee Prices and National Indices of Cost of Living

(Index: January, 1975 = 100)

	Internal Price	External Price	Cost of Living
Jan. 1975	100.0	100.0	100.0
April 1975	97.4	84.8	107.3
July 1975	102.4	105.4	110.6
Sept. 1975	120.0	115.2	111.9
Jan. 1976	168.0	127.8	116.9
April 1976	208.0	169.1	124.3
July 1976	243.6	204.2	132.6
Sept. 1976	250.9	236.0	136.7
Jan. 1977	296.8	281.0	147.2
April 1977	290.1*	407.2*	171.5*
July 1977	292.0	209.4	187.4
Sept. 1977	292.0	245.1	186.1
Jan. 1978	292.0	262.2	187.8
April 1978	292.0	246.1	199.9
July 1978	292.0	222.0	208.7
Sept. 1978	292.0*	230.2*	209.5
Percent of Increase	192.0	130.2	109.5

Source: Congreso Nacional de Cafeteros, Informe del Gerente, December 1978.

*It can be seen in the table that movements in the external price of coffee from April 1977 to September 1978 are not reflected in the internal prices. FEDERACAFE guarantees a stable price to the producer through the distribution of external income: 52 percent to the producer, 32 percent to the National Coffee Fund, and 16 percent to state taxes. The purchase, storage and sale of coffee is the primary purpose of the National Coffee Fund. In addition the the growers' contributions, the fund is financed by export taxes, export sales made directly by FEDERACAFE and sales to private exporters.

Organizational Structure of FEDERACAFE

The basic elements of the internal organizational structure of FEDERACAFE includes the National Coffee Congress, the National Coffee Committee, the General Manager, and the state and municipal committees.

The National Coffee Congress has been since the creation of FEDERACAFE the maximum body of direction and control. The delegates to the Congress are elected by departmental committees. The representation allowed each department, between one and six delegates, is determined according to coffee production. The Coffee Congress is normally convened in alternate years, however extraordinary sessions may be called at any time. The main activities of the Congress concern the determination of policy on major coffee industry issues, election of members to the National Committee, election of the General Manager, issuance of the FEDERACAFE budget, and decisions on salaries of FEDERACAFE employees.[1]

The National Committee of Coffee-Growers meets once a week, with extraordinary sessions when dictated by circumstances. The executive committee is composed of eleven members, six elected each two years by the Coffee Congress and five representatives of the national government - the ministries of Foreign Relations, Housing and Public Credit, Development, Agriculture, and the Manager of the Agrarian Bank. There are also subcommittees in which

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[1]Estatutos de la Federacion Nacional de Cafeteros, 1975.

only the coffee growers elected by the Coffee Congress participate. Several of these committees, such as the technical and propaganda committees, deal with specialized functions of FEDERACAFE and have considerable autonomy. The National Committee authorizes and implements FEDERACAFE contracts which involve the national government. It organizes the national and international campaigns advertising Colombian coffee, such as the promotion of the image of the "typical" coffee-grower, Juan Valdez. The National Committee promotes any legal arrangements which favor the coffee industry, adopts and negotiates means of developing and defending the industry with private and official groups. The Committee also is responsible for planning and budgeting of technical services or research, instruction, rural projects, and storage warehouses.[1]

The general manager of FEDERACAFE is chosen by the Coffee Congress from a special three-man board elected by a two-thirds vote of the National Committee. The general manager is allowed a high degree of autonomy in both foreign negotiations and the setting of domestic coffee policy. He presents proposals to the Congress in the determination of FEDERACAFE policies, reports monthly to National Committee and the Congress on FEDERACAFE's financial situation and the status of projects undertaken in the international markets.

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[1] Estatutos de la Federacion Nacional de Cafeteros, 1975.

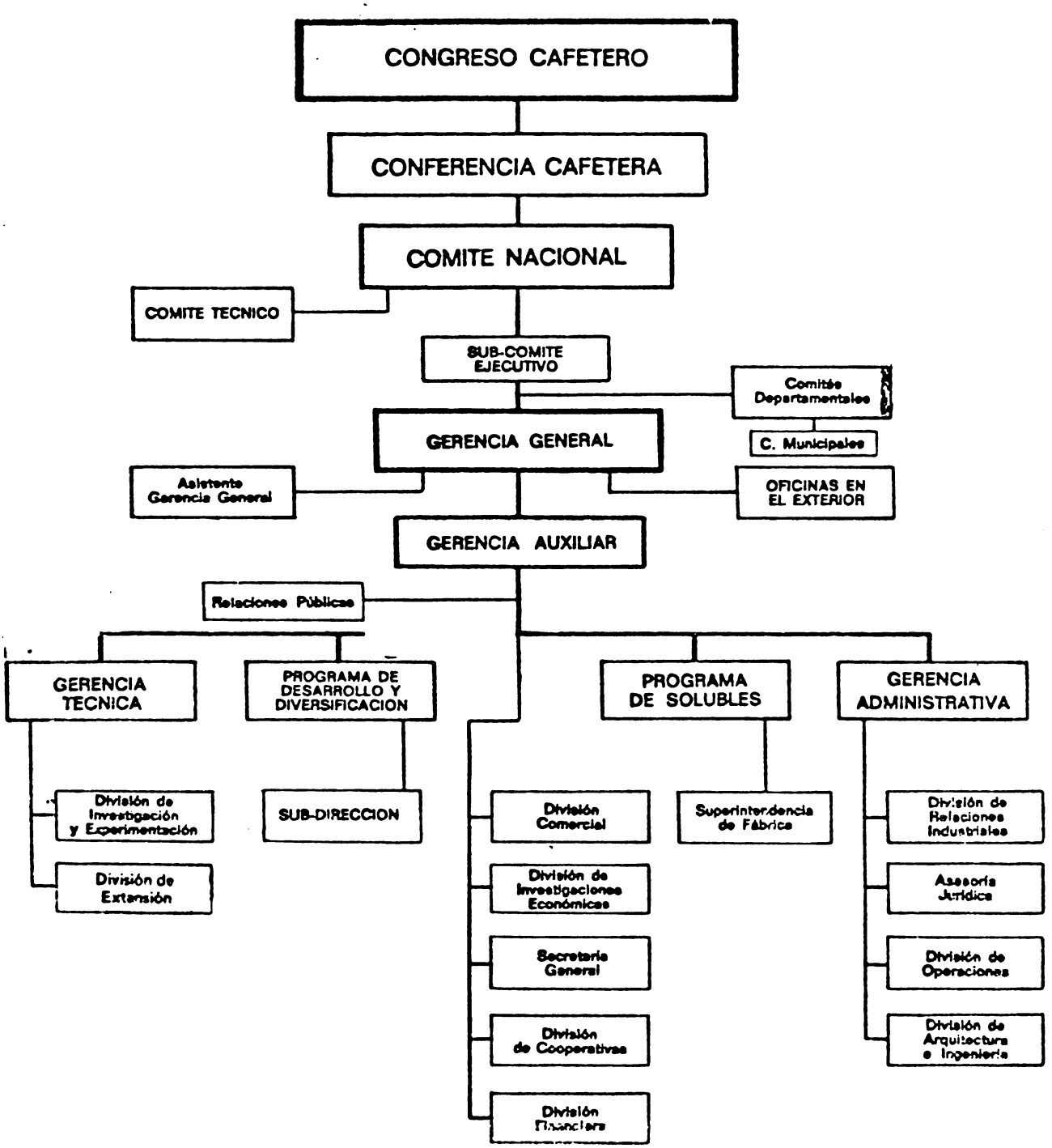
The general manager is the official FEDERACAFE spokesman to Colombia and the world. Arturo Gomez Jaramillo has been the general manager since 1958; the latest of only seven general managers in FEDERACAFE's history.

At the national level, FEDERACAFE maintains a Technical Division, charged with the diffusion of knowledge among coffee growers and the orientation and administration of educational programs through the state committees. Investigation into the methods of coffee cultivation and processing is carried out by the Technical Division in its experimental farms. The Division's Extension Service is responsible for the diffusion of the technical knowledge gained in these investigations. Within the Extension Service are four departments which are responsible for nonformal and formal education programs to improve the standard of living of the coffee growers: Education; Communications; Supervision; and Feminine Programs.

The claims of FEDERACAFE to be a representative, cooperative association are supported by its foundation of state and municipal committees. However, since FEDERACAFE was first organized at the national level, it had to create a local organization. By 1965, FEDERACAFE had organized 70 state and municipal committees in 12 states where coffee is grown.

The National Committee elects half of the members of the state committees and the municipal committees elect

Figure 3



Source: Cenicafe, La Federacion Nacional de Cafeteros de Colombia, Lito Moderna Ltd., Bogota, 1974.

the other half. Koffman (1969) has observed that the subordinate structure of state and municipal committees does not really articulate the views of small coffee producers. The members of state committees are either not primarily coffee growers, or if they are, occupy an economic and social plane beyond most growers. Municipal committees, on the other hand, are often inactive for want of people to serve.[1] This situation can be attributed to the lack of power invested in these committees. The statutes of FEDERACAFE fail to delegate any administrative responsibility or evident function to the municipal committees beyond serving as a channel of communication between the local producers and the state committee.[2]

The development stimulation functions of the state committees concern the provision of technical and marketing assistance and a wide variety of services designed to improve the welfare of the coffee-growing community. One of the major programs is distribution of fertilizer, seeds, tools, and other supplies at cost price to the producers. State committee extension agents visit individual farms and hold group meetings in order to advocate the adoption of modern and productive practices, and recommend financial assistance for approved projects. Budgetary limitations have been a severe constraint on the rante and depth of extension

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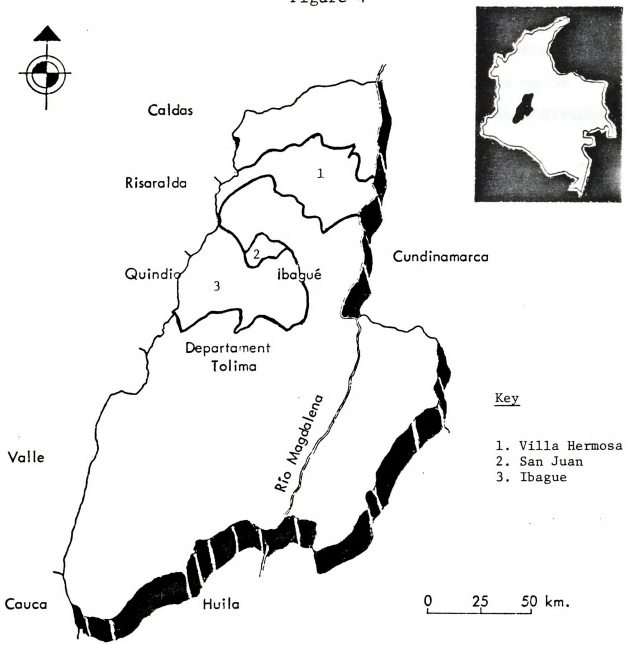
[1]Koffman, p. 187.

[2]Ibid.

Figure 4



Atlas Banco de la República.

activities; it was estimated in 1964 that FEDERACAFE extension was making individual contact with only ten percent of the coffee growers.[1] Cost-effectiveness was a major argument in the conversion of extension work from individuals to friendship groups.

Work with Small-Scale Coffee Growers in Tolima

The State of Tolima covers 23,325 kilometers and is situated in the center of the most economically active area of Colombia. Approximately 44 percent of Tolima is mountainous terrain with the temperate and cool altitudes (1,000 - 3,000 meters) considered most ideal for the cultivation of coffee. The contribution of Tolima's agriculture production to the national agricultural production is around ten percent. Tolima is Colombia's leading producer of rice and peanuts, second in cotton, and third in coffee.[2]

According to a 1974 census, population in Tolima is about one million people or 4.2 percent of the Colombian population. The urban population is 49 percent, most of whom live in the cities of Ibague, Armero, Melgar, Honda, Espinal, Libano, Fresno, Giradot, and Chaparral. About 51 percent of the state's inhabitants live in rural areas and small towns.

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[1] Saldriaga, M. "La Fundacion Manuel Mejia," Revista Cafetera de Colombia, No. 16, October, 1964, p. 14.

[2] Tolima Imagen Socioeconomica, nos. 25-26, 1979.

The farmers of Tolima's mountain highlands were among the groups who suffered most during the period of civil and political strife ("la violencia") which beset Colombia from 1945-1957.[1] Many of the farmers emigrated to Ibague (the state capital), to Bogota and other cities where they added to the urban explosion and social problems.

The production of cotton, rice, corn and other tropical crops has undergone a process of mechanization in the years since "la violencia." As the lowlands became more important centers of agricultural production the Colombian government began a water control development that now provides for the irrigation of some 100,000 hectares of productive lowland farms. However, in the more mountainous terrain, traditional agricultural practices have until recently been unchallenged.

The average size of coffee farms in Tolima is slightly higher than the national average. The average size of a coffee farm in Tolima is 22.65 hectares compared to an average for the country as a whole of 15.02. As the

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[1]The "violencia" in Colombia cost 100,000 lives. Its origin was in the traditional antagonism between the Conservative and Liberal parties as bands of faithful of one party razed villages of the other, provoking vengeance in kind. The Conservative government grew increasingly repressive and utilized police and armed forces against the guerilla armies of the Liberals.

higher average suggests, the number and total acreage of larger-sized coffee farms is greater in Tolima than the number and total acreage of those classes in the country as a whole. Table 3 shows comparative frequencies and areas planted in coffee by size of farm for Tolima and Colombia (all states).

Table 3

	Tolima	
	Frequency (%)	Coffee Area (%)
Less than 1 ha.	3.98	.36
1 - 5.99 has.	32.86	11.39
6 - 9.99 has.	15.86	9.75
10-19.99 has.	20.43	18.45
20-49.99 has.	17.06	25.21
50-99.99 has.	6.14	15.47
More than 100 has.	3.66	19.37
	100.00	100.00
	Colombia	
Less than 1 ha.	12.64	1.59
1 - 5.99 has.	44.20	18.60
6 - 9.99 has	12.69	10.90
10-19.99 has	13.85	18.04
20-49.99 has	10.81	23.24
50-99.99 has	3.63	12.83
More than 100 has.	2.18	14.80
	100.00	100.00

Source: Censo Cafetero 1971, Federacion Nacional de Cafeteros de Colombia, Division de Investigaciones Economicas, Presentaciones Preliminares, Anexo No. 2.

It can be seen from Table 3 that 73.13 percent of the coffee farms in Tolima are small and medium-sized (less than 20 hectares) and these comprise only 39.5 percent of the area planted in coffee. This compares with 83.8 percent small and medium sized farms occupying 49.13 percent of the area planted in coffee for Colombia as a whole.

The size difference between coffee farms in Tolima and the rest of Colombia is also reflected in the average size of the farms of friendship group members. Table 4 shows that: 1) the average size of friendship group members' farms is less than the national average; and 2) the average size in Tolima of non-members' and members' farms alike is higher than the national average.

Table 4

Average size of coffee farms (all coffee growers)		Average size of coffee farms (group members)
Tolima	22.65 has.	15.31 has.
Colombia	15.02 has.	11.77 has.

Source: Estudio de Investigacion Sobre Grupos de Amistad, FEDERACAFE, 1974.

Despite the differences in average farm sizes between friendship group members in Tolima and the rest of the country, the pattern of land tenure among group members in Tolima adheres closely to the national average. As indicated in Table 5, the difference in the frequency of ownership is only 1.1 percent.

Table 5

	Land Tenure of Group Members					
	Owners		Renters		Salaried	
	No.	%	No.	%	No.	%
Tolima	3,984	80	700	14.1	180	3.7
Colombia	15,793	78.9	2,137	10.7	1,153	5.8

Source: Estudio Sobre Grupos de Amistad, FEDERACAFE, 1974.

Based on the preceding tables, we can conclude that coffee farms in Tolima are slightly larger than the national average with a corresponding greater frequency of medium and large-sized farms. While friendship group activity in Tolima corresponds to the rest of Colombia in its emphasis on smaller-scale producers, the group members in Tolima have on the average larger farms than group members in the rest of the country. Finally, the pattern of land tenure among group members in Tolima and in Colombia (all states) is roughly the same.

Although these combinations of factors did not directly play a role in the selection of Tolima as the site of the study, in all probability they have some bearing on the one factor that did determine site selection; i.e., the density of friendship group populations in the state. Approximately thirty percent of the groups and 27 percent of the participants in the nation-wide friendship group program are located in Tolima.[1]

The Tolima State sections of Villa Hermosa, San Juan, and Ibague are among the areas most densely populated with friendship groups in Colombia. Because of their geographical isolation and the significant population which they could provide for census study of communication networks, they were selected as the setting for research.

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[1]The author speculates that this phenomenon is attributed to the greater capacity of the larger-scale farmers to accept new innovations as well as the enthusiasm and organizational ability of the Tolima State Committee's administration.

Table 6

The Number and Membership of Friendship Groups in Colombia and Tolima 1968-1978

	Friendship Groups			
	*Colombia		**Tolima	
Years	Groups	Members	Groups	Members
1968/69	39	4,728		
1969/70	596	7,152		
1970/71	1,109	12,424		
1971/72	1,856	20,649		
1972/73	2,398	27,251		
1973/74	2,767	31,883	750	7,698
1974/75	2,931	32,667	777	7,564
1975/76	2,983	32,278	796	7,342
1976/77	2,861	30,838	769	7,353
*** 1977/78	2,425	26,394	725	7,078

*Economia Cafetera, Vol. 8, No. 12. Federacion Nacional de Cafeteros de Colombia, Division de Investigaciones Economicas (December 1978), p. 5.

**Coffee-Growers Committee of Tolima, report (mimeo).

***Based on interviews conducted in August, 1979 with personnel of the FEDERACAFE extension service and with former members of friendship groups, it is assumed that the statistics for 1976-78 are inflated as much as 50 percent and therefore do not adequately represent the drastic decline in group membership. Local extension personnel have frequently failed to report the disbanding of groups to state and national committees.

CHAPTER IV

RESEARCH DESIGN

Level of Analysis

Research on communication network structure involves various levels of social system complexity. As indicated by Farace and Korzenny (1977), Guimaraes (1972), and Rogers (1975), the social system complexity of which the density of communication flows may be analyzed ranges from the individual to the macro-social level. The focus of the present study is on the pathways through which information in rural community group systems flow.

The purpose of the network aspect of this study is to analyze: 1) the patterns of interpersonal information flows exhibited internally by several friendship groups; 2) the patterns of interpersonal information flows exhibited by each group in reference to each other; and 3) the relationships between the patterns of internal interpersonal information flows and variuos sociopsychological and socioeconomic variables.

Sample Design

The sampling designs of studies which employ network analysis generally consist of all eligible respondents so that all the linkages in a social system can be analyzed.[1] As compared to monadic analysis, network designs place less emphasis on the ability to generalize research results and

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[1] A network analysis study conducted by Braun (1975) of radio school participants in Colombia failed to uncover interconnections between social systems because the sample of five communities in different geographical areas did not allow for outsiders from contiguous communities.

more emphasis on determining how social structure variables affect information flows (Rogers, 1975).

Communities in this study were chose from the same geographic area (northern Tolima) in order to assess linkages which may integrate the various small groups into a larger communication system. The population consisted of 544 members of friendship groups in the Tolima State sectionals of Villa Hermosa, San Juan, and Ibague.

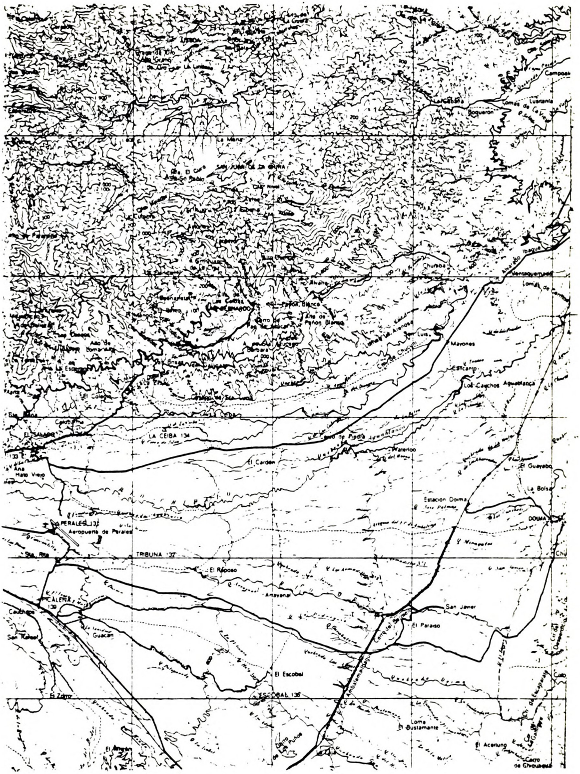
The maps which follow indicate the sectionals or regions, districts and friendship groups involved in the present study. Region I, Villa Hermosa, is divided into four districts (0-3). Each district represents the work zone of a practico and contains a number of friendship groups which ranges from three (District 0) to eight (District 3). The dots scattered around the map indicate the houses of the friendship group members and other farmers in the region.

Region II, San Juan de la China, is composed of one district and ten friendship groups. Region III, Ibague, contains five districts with the number of friendship groups in each varying from one (District 3) to ten (District 1).

The friendship group is the level of analysis for all but one of the hypotheses presented in the study. The exception relates to the facilitativeness of the practico, which uses the district as the level of analysis.

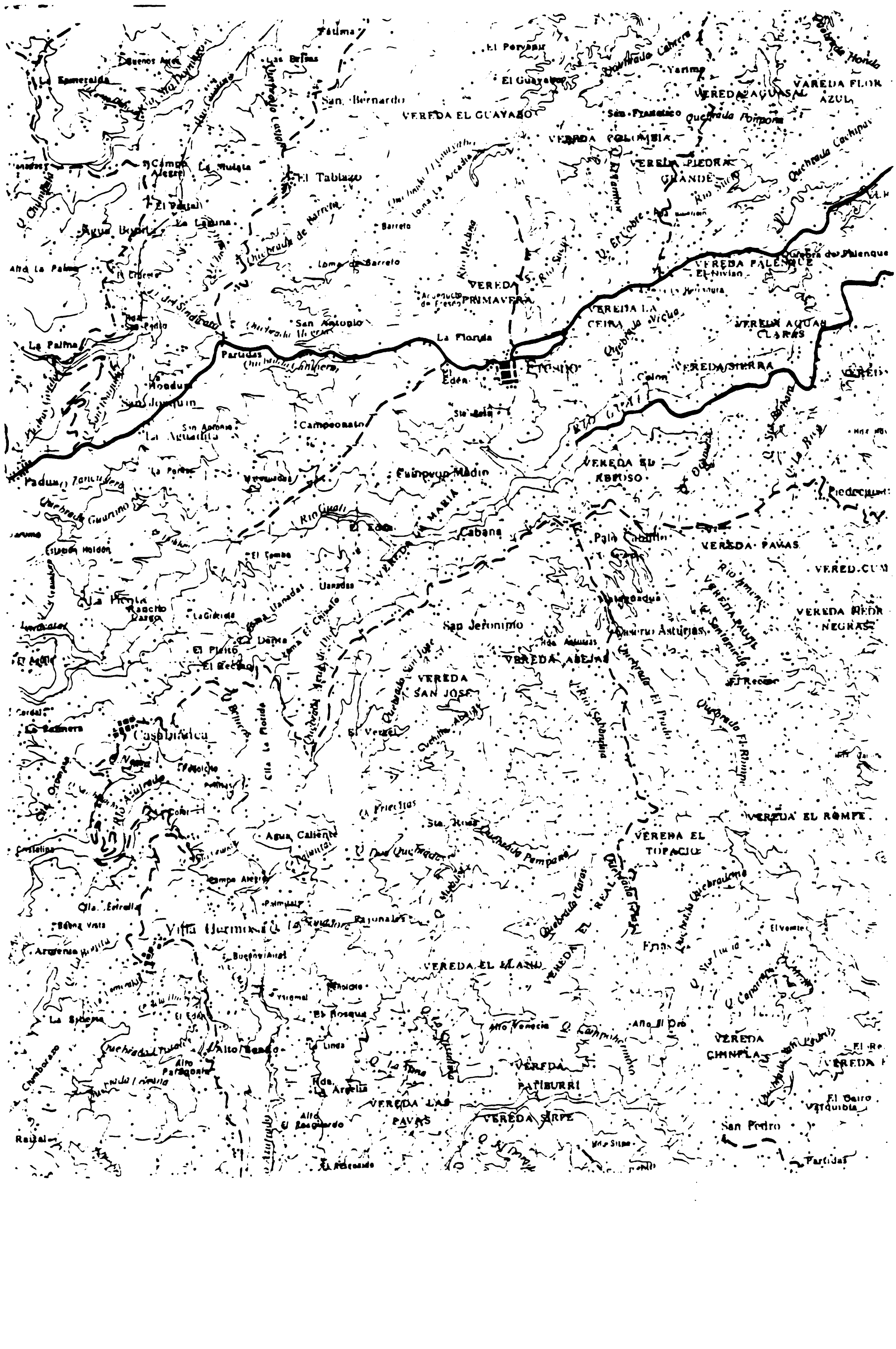
REGION II
SAN JUAN DE LA CHINA

SAN JUAN DE LA CHINA
DISTRICT 11


Boquerón
Lusitania
SAN JUAN DE LA CHINA
Chumba
Alvarado
Ventaquemada
Peñón Blanco
Alto de Peñón Blanco
San Luis
Mayones
Los Cauchos
Aguablanca
El Colegio
EL SALADO
LA CEIBA 134
Waterloo
El Cardón
Hato Viejo
El Guayabo
La Bolsa
Estación Doima
DOIMA
PERALES 131
Aeropuerto de Perales
Sta. Rita
TRIBUNA 132
El Reposo
Arrayanal
PICALEÑA
139
San Rafael
San Javier
El Paraíso
El Escobal
ESCOBAL 136
El Zorro
Loma
El Bustamante

REGION I
VILLA HERMOSA

REGION I
VILLA MARIANA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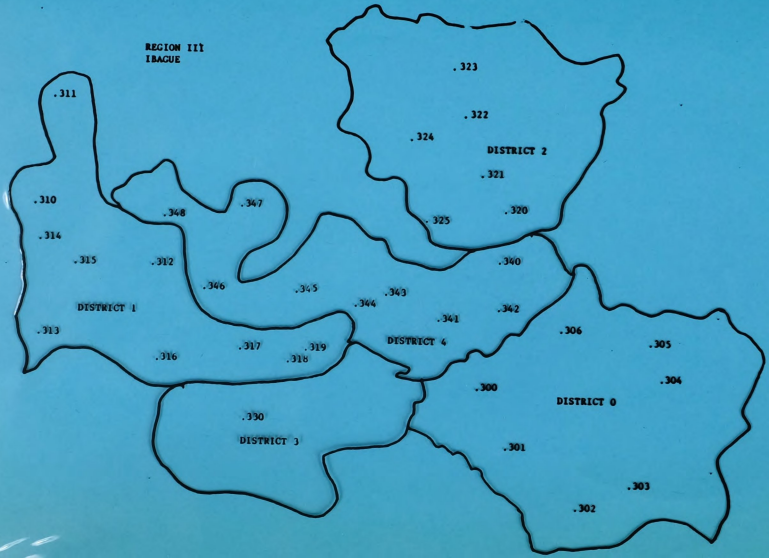
El Guayabo
San Bernardo
VEREDA EL GUAYABO
VEREDA COLOMBIA
VEREDA PIEDRA GRANDE
Quebrada Cachipay
El Tablazo
Barreto
Loma de Barreto
Alto La Palma
VEREDA PRIMAVERA
VEREDA PALENQUE
El Nivian
VEREDA LA CEIBA
VEREDA AGUAS CLARAS
San Antonio
La Florida
La Palma
Paradas
El Edén
VEREDA SIERRA
Colon
San Joaquín
La Aguadita
Campeonato
Río Gualí
VEREDA EL REBOSO
El Edén
VEREDA LA MARIA
Cabana
VEREDA PAVAS
Río Aguacatal
La Picota
Rancho Largo
San Jerónimo
VEREDA ABEJAS
El Recreo
VEREDA SAN JOSE
El Vergel
Casablanca
La Palmera
VEREDA EL ROMPE
Agua Caliente
Quebrada Pompana
VEREDA EL TOPACIO
Campo Alegre
Villa Hermosa
VEREDA EL LLANO
La Sirena
El Bosque
Alto Venecia
Alto Bonito
Alto Patagonia
VEREDA CHINIPLA
VEREDA PATIBURRI
Hda. La Argelia
VEREDA LAS PAVAS
VEREDA ARPE
San Pedro
Partidas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DISTRICT 4
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DISTRICT 5
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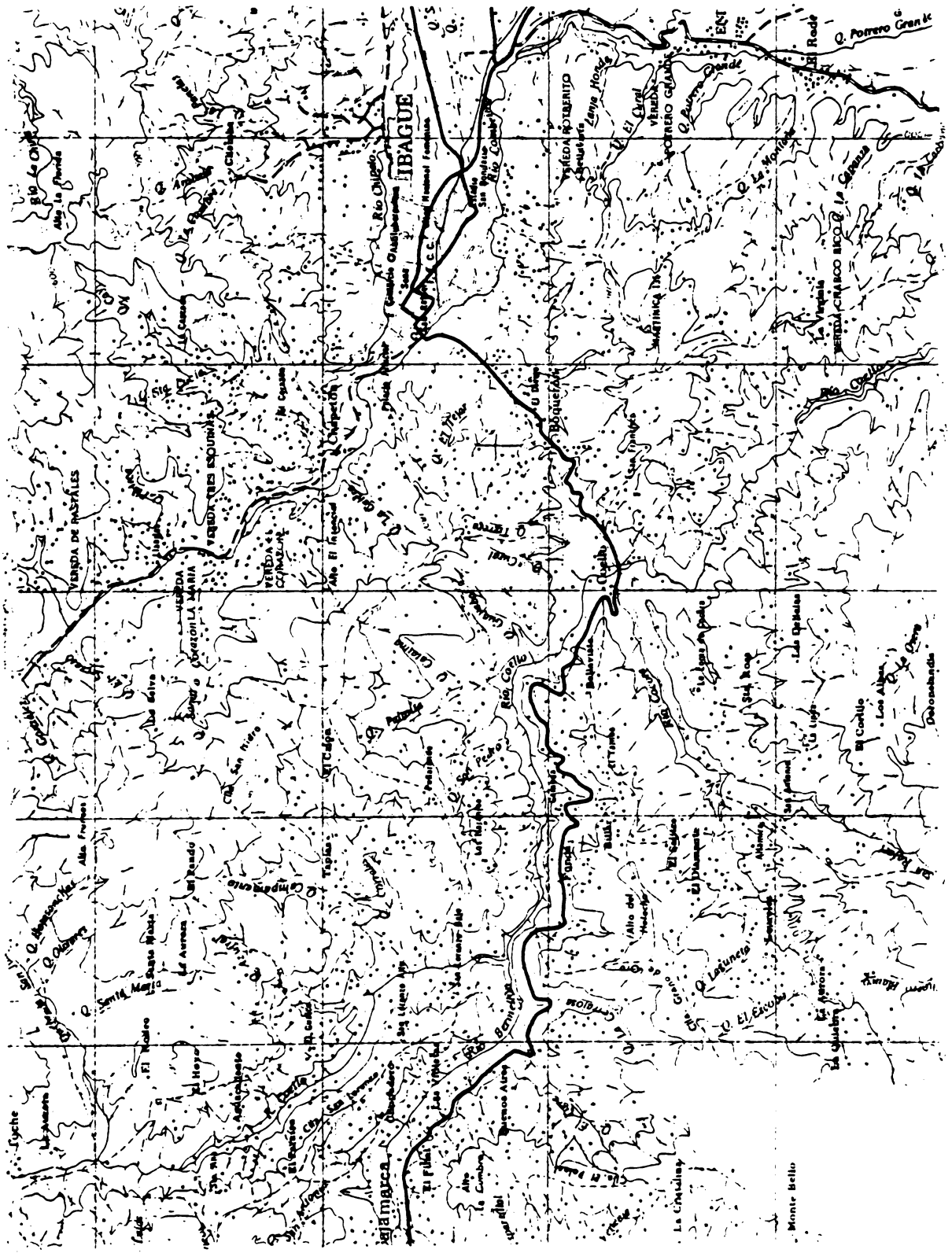
DISTRICT 1
IBADAN
REGION III


IBAGUE
Río Combeima
Río Coello
Río Chipalo
Río Opia
Río Bermejo
Q. Pozuelo Grande
Q. La Montaña
Q. Laguneta
Q. El Escobal
Q. Chipalo
Q. Bermejo
Q. Coello
Q. Opia
Q. Cay
Q. El Tigre
Q. Pozuelo
Q. Cucuana
Q. Combeima
Q. Chembe
Q. Chembecito
Q. Chembe Alto
Q. Chembe Bajo
Q. Chembe Medio
Q. Chembe Viejo
Q. Chembe Nuevo
Q. Chembe Grande
Q. Chembe Pequeño
Q. Chembe Chico
Q. Chembe Largo
Q. Chembe Corto
Q. Chembe Ancho
Q. Chembe Estrecho
Q. Chembe Profundo
Q. Chembe Somero
Q. Chembe Arenoso
Q. Chembe Pedregoso
Q. Chembe Limoso
Q. Chembe Arcilloso
Q. Chembe Humoso
Q. Chembe Turboso
Q. Chembe Cenagoso
Q. Chembe Pantanoso
Q. Chembe Lagunoso
Q. Chembe Ribereño
Q. Chembe Costero
Q. Chembe Insular
Q. Chembe Peninsular
Q. Chembe Istmico
Q. Chembe Archipiélago
Q. Chembe Atolón
Q. Chembe Arrecife
Q. Chembe Barrera
Q. Chembe Coralino
Q. Chembe Volcánico
Q. Chembe Sedimentario
Q. Chembe Metamórfico
Q. Chembe Ígneo
Q. Chembe Mixto
Q. Chembe Complejo
Q. Chembe Simple
Q. Chembe Compuesto
Q. Chembe Ramificado
Q. Chembe Anastomosado
Q. Chembe Meandriforme
Q. Chembe Trenzado
Q. Chembe Recto
Q. Chembe Sinuoso
Q. Chembe Irregular
Q. Chembe Regular
Q. Chembe Perenne
Q. Chembe Intermitente
Q. Chembe Efímero
Q. Chembe Subterráneo
Q. Chembe Superficial
Q. Chembe Endorreico
Q. Chembe Exorreico
Q. Chembe Arreico
Q. Chembe Criptorreico
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Q. Chembe Oxiclino
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Q. Chembe Normoxia
Q. Chembe Hiperoxia
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Q. Chembe Subsaturación
Q. Chembe Saturación
Q. Chembe Desaturación
Q. Chembe Resaturación
Q. Chembe Ciclo
Q. Chembe Estacional
Q. Chembe Anual
Q. Chembe Semestral
Q. Chembe Trimestral
Q. Chembe Mensual
Q. Chembe Quincenal
Q. Chembe Semanal
Q. Chembe Diario
Q. Chembe Horario
Q. Chembe Minutal
Q. Chembe Segundal
Q. Chembe Milisegundal
Q. Chembe Microsegundal
Q. Chembe Nanosegundal
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Q. Chembe Femtosegundal
Q. Chembe Attosegundal
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Q. Chembe Yoctosegundal
Q. Chembe Planck
Q. Chembe Tiempo
Q. Chembe Espacio
Q. Chembe Materia
Q. Chembe Energía
Q. Chembe Fuerza
Q. Chembe Potencia
Q. Chembe Trabajo
Q. Chembe Calor
Q. Chembe Temperatura
Q. Chembe Presión
Q. Chembe Volumen
Q. Chembe Densidad
Q. Chembe Masa
Q. Chembe Peso
Q. Chembe Gravedad
Q. Chembe Inercia
Q. Chembe Momento
Q. Chembe Impulso
Q. Chembe Cantidad de Movimiento
Q. Chembe Conservación
Q. Chembe Transformación
Q. Chembe Transferencia
Q. Chembe Disipación
Q. Chembe Entropía
Q. Chembe Orden
Q. Chembe Desorden
Q. Chembe Información
Q. Chembe Comunicación
Q. Chembe Lenguaje
Q. Chembe Código
Q. Chembe Mensaje
Q. Chembe Receptor
Q. Chembe Emisor
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Q. Chembe Ruido
Q. Chembe Redundancia
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Q. Chembe Subsistema
Q. Chembe Supersistema
Q. Chembe Retroalimentación
Q. Chembe Homeostasis
Q. Chembe Autopoiesis
Q. Chembe Autorreferencia
Q. Chembe Autoorganización
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Q. Chembe Complejidad
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Q. Chembe Ciento Quince
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Q. Chembe Ciento Diecisiete
Q. Chembe Ciento Dieciocho
Q. Chembe Ciento Diecinueve
Q. Chembe Ciento Veinte
Q. Chembe Ciento Veintiuno
Q. Chembe Ciento Veintidós
Q. Chembe Ciento Veintitrés
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Q. Chembe Ciento Veinticinco
Q. Chembe Ciento Veintiséis
Q. Chembe Ciento Veintisiete
Q. Chembe Ciento Veintiocho
Q. Chembe Ciento Veintinueve
Q. Chembe Ciento Treinta
Q. Chembe Ciento Treinta y Uno
Q. Chembe Ciento Treinta y Dos
Q. Chembe Ciento Treinta y Tres
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Instrument Construction and Data Collection

The survey instrument used was a questionnaire. Most of the questions were close-ended and pre-coded. An original English draft was submitted to evaluation by Michigan State University experts and then corrected and carried to Colombia for translation into Spanish and pre-testing.

The corrected draft was pre-tested with small groups of coffee growers, practicos, extension agents, and agronomists, revised and then used in a pilot test involving 8 interviewers and 32 coffee grower respondents. Based on the conclusions derived from the pilot test, several questionnaire items were modified and reorganized. Care was taken to maintain the length of interviews at approximately 45 minutes.

The eight interviewers used in the pilot test were divided into four teams for the final study. An assessment of the pilot study performance of the interviewers was made in order to focus training sessions on problem areas prior to data collection. The actual field work was completed in ten weeks. As a reliability check, each interview was validated and edited by the researcher working with the district supervisor familiar with both the friendship group and respondent in question.

Questionnaires were forwarded to Michigan State University, coded, and transferred to IBM cards.

Operationalization of the Variables

The major purpose of the present study is to analyze the relationships of dialogical orientation and network structure with several other social structure, education and communication variables. The following discussion describes the rationale behind the variables and how each of them was operationalized.

Dialogical Orientation

Dialogical orientation refers to the openness of a system to diverse and conflicting information flows. Our operational definition of dialogical orientation, derived from measures indicated earlier, was the relative perceived range of decision-making, disposition to express opinions, and level of interpersonal trust among the friendship groups in question.

The following items were used to measure perceived range of decision-making or the belief that one's role in decision-making is significant and active:

1. When you are in a group meeting, do you prefer to take decisions yourself, or do you prefer others to take them for you?
2. When the group discusses a subject, should one pay more attention to the ideas of the group members or to the ideas of the practico?
3. Suppose an agricultural practice was being discussed that you considered harmful or inappropriate. What do you think you could do?

4. If you made an effort to have the group reconsider the practice, how likely is it that you would succeed?

The first of the above items was designed to measure decision-making self-reliance, and the second attempted to measure respect for ideas of peers and superiors. The third and fourth items attempted respectively to measure self-confidence in expressing dissent, and the belief that one's role in decision-making is significant.

The following items attempted to measure disposition to express opinions or the belief that to overcome problems it is often necessary to express independent or unpopular opinions:

1. If you considered that the agricultural practice being discussed in the group was harmful or inappropriate, how likely is it that you would actually try to do something about it?
2. Do you ever remember ever doing such a thing?
3. Some people say that an agriculturalist should insist on his own opinion even if his group disagrees with him. What is your opinion?
4. Suppose I talk to other men in this community about coffee cultivation. Would many, a few, or no one have different opinions than you?

The first of the above items attempted to measure the possibility of expressing dissenting opinions, and the second was intended to measure the respondent's history of taking unpopular action. The third item was designed to measure belief in maintaining one's own opinion, and the fourth, the difference of opinion with neighbors.

The following items were used to measure interpersonal trust or the belief that neighbors, the practico, and people in general can be relied on to meet their obligations:

1. When you have personal problems do you discuss them with your neighbors?
2. Would you say that most people like to help others or like to watch out for themselves?
3. Would you say that practicos, in general, keep the promises they make?
4. When you meet someone for the first time, should you trust him until he proves unworthy, be cautious until you know him better, or not trust him because he may take advantage of you?

The above four items were intended to measure respectively: trust in neighbors; a more general belief in the basic honesty of people; trust in extension agents; and trust in new acquaintances.

An index of dialogical orientation was constructed for each group be averaging individual raw scores for the above twelve items. (See Appendix A)

Communication Network Variables

System connectedness refers to the degree to which individuals in a system are linked by interpersonal communication flows.

Influence leader concentration is defined as the degree to which individuals in a system have a relatively greater degree of influence with respect to specific ideas, innovations, and practices.

Reliance on extension service refers to the degree to which members of the extension service have a relatively greater degree of influence with respect to ideas, innovations and practices.

The three variables above deal with patterns of interpersonal communication network interactions. Sociometric questions have frequently been used as the basis for the measure of interpersonal communication structure in social systems (Korzenny, Farace and Greenberg, 1978; Rogers, 1975; Braun, 1975; and Guimaraes, 1972).

System connectedness, influence leader concentration, and reliance on extension agent were therefore measured by the sociometric choices received by the group members in response to questions explicitly concerned with interpersonal discussion of especially selected innovations. The questions asked were:

1. Would you please give me the names of all persons with whom you have talked about fertilizer in the last months?
2. Would you please give me the names of all persons with whom you have talked about credit in the last six months?
3. Would you please give me the names of all persons with whom you have talked about the most appropriate number of children for a family in the last six monts?

The data obtained in response to the questions above were run through a network program, whose output provides an index of the relative integration of each member of the communication structure from which can be derived indices of system connectedness, opinion leader concentration, and reliance on extension service.[1]

Integration through direct links was measured by the degree of direct, one-step connections between pairs of individuals. Because it is too easy to misrepresent oneself, enhancing one's ego, direct message flows were not

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[1]System connectedness is expessed as the ratio of actual communication relationships to possible communication relationships in a group. Influence leaders were identified as those individuals sociometrically nominated by at least 30 percent of the respondents in the group. Reliance on extension service is expressed as the ratio of sociometric choices received by the practico to the number of possible sociometric choices he could receive in the group.

reconstructed by listing people who sought information from whom they had sought information on credit and/or fertilizer. Each respondent and contactee was assigned a 6-digit code which identified him by region, subregion (the territory of the practico), and friendship group (or, as the case may be, as not belonging to a friendship group).

The sociometric data for the 544 respondents were arranged by friendship group in a who-to-whom matrix representing the choosers and the individuals chosen for the credit and fertilizer variables. (The family planning variable was eliminated due to an insignificant number of nodes.) An index of system connectedness for each friendship group was then computed on the basis of all one-step links to all possible in the group. This procedure required 130 computer runs; one run for fertilizer links and one run for credit links for each of the 65 friendship groups.

Leader Role Conception

Leader role conception refers to the attitudes and values of the extension agent related to his role as a depositor of information or a stimulator of dialogue. In order to measure extension agent facilitativeness, a separate seven-item close-ended questionnaire was constructed and administered to all nine of the practicos who coordinated the friendship groups involved in the study. A leader role conception index was constructed by summing the non-zero responses (responses were coded either "0" or "1") for each practico. (See Appendix B)

Knowledge, Adaptation-Adoption and Continued Use of Innovations

Knowledge of innovations was operationally defined as the relative extent of a group's doubts about how to put into practice ten agricultural and credit innovations, as compared with other groups. The approach assumed an equivalency in importance of the ten innovations. The practices used to establish knowledge (as well as adaptation-adoption and continued use were: coffee planting; tiering of terrain; nursery construction; germinator construction; pest control; disease control; erosion control; fertilization; de-pulping machin construction; and use of credit.

The group members were asked the degree of doubts they had about how to put into practice on their coffee farm the above ten innovations.

Adaptation-adoption of innovations refers to the modification, rejection or adoption in form recommended of the ten innovations specified in the present study.

The group members were asked which of the ten practices they modified, discarded, or used as recommended due to the special conditions on their coffee farms.

Continued use of innovations refers to the relevant extent of a group's continued use of the ten practices as compared with other groups.

Group members were asked how frequently they were using the innovations at the time of the interview.

Utilization of Institutional Resources

The operationalization of utilization of institutional resources consisted of asking group members the frequency of their visits to the state and municipal agricultural assistance offices and the motives for their visits.

Activity for Situation Improvement

Activity for situation improvement refers to activity to acquire more land, income, credit and tools. Its operationalization consisted simply of asking the group members whether they were doing something to obtain more land, credit, income and tools.

Enabling Variables

Age.--Respondents were asked their age.

Farm size.--Respondents were asked to indicate the total number of hectares they own.

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

Amount Owed on Land.--Respondents were asked the amount they owed on their land.

Credit Use.--Respondents were asked how many times they had received credit.

Mass Media Exposure.--The indicators of mass media exposure in the present study are frequency of exposure to radio, newspapers and magazines, and journals and bulletins. An index of exposure for each group was created by averaging the percent of exposure for each medium and then calculating the mean for the three categories of media.

Radio Program Preference.--Respondents were asked to rank types of radio programs in order of preference. Agriculture received a 3, news, a 2, and sports and music, a 1.

Radio and Television Ownership.--Respondents were asked if they owned: 1) a radio set; 2) a television set.

Years of Schooling.--Respondents were asked how many years of formal schooling they had completed.

Reading Ability.--Respondents were asked to read a 41-word passage in Spanish and were assigned 1-3 points based on the interviewer's evaluation of their reading proficiency.

Length of Time as Group Member.--Respondents were asked how long they had been members of a friendship group.

Frequency of Group Participation.--Respondents were asked how frequently they assisted in friendship group meetings.

Statistical Analysis

The two main statistical procedures used to analyze the collected data are network analysis and partial correlation. Tests of significance were set at the .05 level of probability.

Network analysis has its origins in sociometry, where substantive interest has been in the interpersonal choices of individuals. The network procedure assesses sociometric data about communication flows among members of a social system (Rogers, 1975). By means of reported

interpersonal communication linkages, network analysis synthesizes the information regarding flows within the communication network, rendering statistical descriptions of the communication roles and relationships in the social structure (Korzenny and Farace, 1978).

The lowest level units described by the network procedure, communication roles or role systems, include contacts, cliques, liaisons, bridges, isolates, and dyads.

A contact (contactee) is defined as a person who is listed on a network questionnaire as someone with whom the respondent has communicated about a specific topic.

A clique is defined as a structural sub-grouping of contacts-contactees whose elements interact with each other relatively more often than with other members of the communication system.

A liaison is defined as an individual who links two or more cliques in a system, but who is not a member of any clique.

A bridge is defined as an individual who links two or more cliques in a system from his position as a member of one of the cliques.

An isolate is defined as an individual who has no links with any member of the communication system.

A dyad is defined as a structural sub-grouping in which two elements are engaged in mutual interaction.

Taking the friendship group structure as the level of analysis, the network routine was used to measure the

communication connectedness and the communication leadership of the groups. The former refers to the degree to which the units in a system are inter-connected by communication linkages. The latter, used to analyze influence leader concentration and reliance on the practico, refers to persons who are sought by other persons in the communication system with a relatively greater frequency than most other members.

In operational terms, a system's connectedness is defined as the sum of actual direct connections between pairs of individuals divided by the sum of all possible direct connections. The formula for computing the system connectedness index is:

$$\frac{a_{ij}}{N(N-1)}$$

where a_{ij} = the sum of actual connections

and $N(N-1)$ = the number of all possible connections.

Once the roles and relationships in the friendship group communication structure have been determined, the network data can be transformed into variables entered into partial correlation equations with dialogical orientation.

Partial correlation refers to the correlation between any two variables when the effects of the other variables have been controlled (Blalock, 1972). This control is obtained by a procedure which adjusts values of the dependent and independent variables in order to take into consideration the scores of the control variables. Partial correlation yields a single measure summarizing

the degree of relationship between dialogical orientation and: 1) network structure; 2) innovation adaptation-adoption, and 3) activity for situation improvement; controlling for the effect of enabling variables.

CHAPTER V

FINDINGS

Validity of the Dialogical Orientation Variable

As indicated in Kerlinger (1964, pp. 444-445), "the most commonest definition of validity is epitomized by the question: Are we measuring what we think we are measuring?" Based on the assumption derived from the review of comparable measures that the most important determinants of openness of the group to diverse and conflicting inputs are measured by the 12 items comprising this variable, we can attribute to them face validity. The issue of construct validity was faced by utilizing factor analysis to obtain correlations which would provide a measure of the internal consistency of the twelve items and three dimensions of the variable.

	Mean	Standard Deviation
A. Perceived Range of Decision-Making		
1. Preference to make own decisions	1.39	.49
2. Attention paid to ideas of group members/agent	1.36	.52
3. Willingness to express doubts about practices	1.44	.51
4. Belief that role in group decisions is significant	2.39	.66
B. Disposition to Express Opinions		
1. Possibility of taking unpopular action in group	2.33	.71
2. History of taking unpopular action	1.59	.69
3. Belief in maintaining own opinions	1.56	.68
4. Difference of opinion with other community members	2.14	.76

C. Interpersonal Trust	Mean	Standard Deviation
1. Frequency consulting neighbors on personal problems	1.67	.72
2. Belief that people place self-interest first	1.24	.44
3. Belief that extension agents fulfill promises	2.78	.43
4. Willingness to confide in new acquaintances	2.00	.27

The following matrix shows the intercorrelation among the items:

Matrix 1. Interitem Correlations of Dialogical Orientation

	1	2	3	4	5	6	7	8	9	10	11	12
1	--	.69	.67	.43	.38	.18	.42	.16	.20	.16	.06	.11
2		--	.58	.34	.30	.14	.48	.12	.25	.22	.01	.09
3			--	.47	.39	.13	.42	.12	.17	.11	.08	.13
4				--	.50	.15	.21	.15	.19	.12	.06	.11
5					--	.22	.27	.17	.22	.16	.01	.09
6						--	.12	.22	.14	.03	.02	-.02
7							--	.18	.16	.08	-.02	.06
8								--	.23	.01	.02	.00
9									--	.29	.02	.11
10										--	.01	.22
11											--	-.04
12												--

The matrix shows a general picture of relatively high, low and even negative correlations, which demonstrates as was expected that the variable as operationalized is multidimensional. In order to analyze the internal consistency of the PRDM, DEO, and IT dimensions of the variables

matrices were developed for the intercorrelation of the four items in each dimension.

Matrix 2. Iteritem Correlations of Perceived Range of Decision-Making

	1.	2	3	4
1	--	.69	.67	.43
2		--	.58	.34
3			--	.47
4				--

The correlations among the items, especially among items 1, 2 and 3 are relatively high. This leads to the conclusion that the PDRM dimension is internally consistent.

Matrix 3. Interitem Correlations of Disposition to Express Opinions

	5	6	7	8
5	--	.22	.27	.17
6		--	.12	.22
7			--	.23
8				--

This matrix shows that although not with a high coefficient, each item is positively correlated to every other.

Matrix 4. Interitem Correlations of Interpersonal Trust

	9	10	11	12
9	--	.29	.02	.11
10		--	.01	.22
11			--	.04
12				--

This matrix evidences five low positive interitem correlations. In one relationship, between items 11 and 12, the correlation was low negative.

The outcome of the factor analysis indicates that the questions used as indicators of perceived range of decision-making and disposition to express opinions were clearly related and the questions used to represent interpersonal trust were less related to some common theme which, on the face of it, could reasonably be called a syndrome of dialogical orientation.

Analysis of Group Leader Consciousness

An important aspect of this evaluation of friendship groups in Colombia is its effort toward not only deriving measures of dialogical orientation and network structure, but also towards devising a separate instrument to measure the relative facilitative or banking attitudes of the practicos' charged with leadership of the group meetings.

In order to best manage the measurement of the leader role conception variable it was operationalized with utmost simplicity. On the basis of an analysis of the dimensions of facilitativeness and banking approaches described by Freire (1971) and O'Gorman (1979), a questionnaire was derived which formed 7 pairs of items measuring leader role conception along the banking-facilitative continuum. One point was given for each facilitative item chosen; zero points for each banking item. The possible range of scores was therefore from 0 (most banking) to 7 (most facilitative).

Each item was presented to the respondent in the form of the following types of questions:

"I am going to read you two ideas. Please tell me which of the two you consider most important.

1. The practico should teach and the group members should learn. (banking)
2. The practico should serve to develop the capacities of group members so that they can become leaders in the area. (facilitative)

1. The practico should serve as an intermediary between the recommendations of the group and the extension service. (facilitative)
2. The practico should serve to bring technical information from the extension service to the group members." (banking)

This dichotomy worked well with the 9 practicos responding to the questionnaire. Scores were well distributed and ranged from 3 to 7. The following table shows the breakdown of the practicos' scores by region, district and friendship group clientele.

Table 7

Practicos' Leader Role Conception Scores by Region, District and Friendship Group Clientele

		Members (N)	Leader Role Conception Score
I.	Region I Villa Hermosa		
	1. District 0 = Groups 100-103	37	5
	2. District 1 = Groups 110-114	47	4
	3. District 2 = Groups 120-125	33	7
	4. District 3 = Groups 130-137	62	5
II.	Region II San Juan de la China		
	1. District 0 = Groups 200-209	86	7
III.	Region III Ibague		
	1. District 0 = Groups 300-306	74	4
	2. District 1 = Groups 310-319	78	7
	3. District 2 = Groups 320-325	54	6
	4. District 3 = Group 330	10	6*
	5. District 4 = Groups 340-348	70	3

*Districts 2 and 3 have the same practico.

Correlational Analysis

Zero-order and partial correlation coefficients, set at the .05 probability level were used in hypotheses one through six. Table 8 presents an analysis of the relationship between dialogical orientation and several independent and dependent variables in the six hypotheses.

The partial correlation technique controlled for the effect of the following sets of aggregated enabling variables: education; mass media exposure; economic; and group participation.

Table 8

Correlation Coefficients of Leader Role Conception and Six Dependent Variables with Dialogical Orientation, Zero Order and Partial

Variables	Zero Order	Partial
1. Leader Role Conception	.40*	.47*
2. Doubts About Innovations	.34*	.37*
3. Adaptation of Innovations	.46*	.45*
4. Adoption of Innovations	.24	.19
5. Utilization of Institutional Resources	-.10	-.21
6. Activity for Situation Improvement	.44*	.41*

*Significantly differs from zero at the .05 level.

Hypothesis I

Hypothesis I suggests a positive association between the leader role conception of the practicos and the degree of dialogical orientation in the friendship groups which was supported. Leader role conception was measured by a questionnaire which consisted of seven dichotomous pairs of items. Dialogical orientation was measured by the aggregate group mean score of the respondents on the twelve questionnaire items which comprised the three dimensions of the variable.

As indicated in Table 8, the zero order and partial correlations for leader role conception and dialogical orientation are .40 and .47 respectively. Both measures show a strong positive correlations, significant at the .05 level.

Table 9 presents a detailed analysis of the relationship between leader role conception and dialogical orientation at the group level. The sixty-five groups interviewed in the study are listed in rank order according to group mean dialogical orientation scores. The leader role conception column indicates the scores received by the nine practicos responsible for groups in the ten districts and three regions in which the study took place. For example, as can be seen in the map on page 57, Region I, District 0 includes friendship groups 100, 101, 102, and 103. The practico's score on the leader role conception measure was 5.

Table 9

Dialogical Orientation and Leader Role Conception Scores for Sixty-Five Friendship Groups of the State of Tolima, Colombia by Rank Order with Number of Members (N).

Rank Order	Friendship Group	Members (N)	Leader Role Conception	Dialogical Orientation
1	200	9	7	25.00
2	202	7	7	24.86
3	322	6	6	24.50
4	131	9	5	24.22
6	121	4	7	24.00
6	125	5	7	24.00
7	316	11	7	23.73
8	123	6	7	23.67
9	122	5	7	23.40
10	345	8	3	23.38
11	318	9	7	23.33
13	120	6	7	23.17
13	304	12	4	23.17
14	133	11	5	23.09
15	130	6	5	23.00
16	320	8	6	22.87
17	124	7	7	22.71
18	206	9	7	22.67
19	325	8	6	22.50
20	136	7	5	22.14
21	205	5	7	22.20
25	134	9	5	22.00
25	317	12	7	22.00
25	207	15	7	22.00
25	321	9	6	22.00
27	100	10	5	21.90
27	330	10	6	21.90
28	204	6	7	21.83
30	303	6	4	21.67
30	311	6	7	21.67
31	300	12	4	21.58
32*	101	10	5	21.50
33	315	5	7	21.40
35	203	5	7	21.20
35	314	10	7	21.20
36	310	8	7	21.12
37	302	13	4	21.08
40	137	6	5	21.00
40	319	5	7	21.00
40	324	7	6	21.00
41	347	10	3	20.90

*median

Table 9 (continued)

Rank Order	Friendship Group	Members (N)	Leader Role Conception	Dialogical Orientation
42	102	9	5	20.89
43	312	6	7	20.83
44	301	9	4	20.44
45	348	9	3	20.33
46	323	16	6	20.19
47	342	6	3	20.17
49	110	8	4	20.00
49	343	9	3	20.00
50	111	9	4	19.78
51	114	5	4	19.60
53	132	6	5	19.50
53	135	8	5	19.50
55	201	12	7	19.33
55	209	6	7	19.33
57	341	6	3	19.00
57	346	5	3	19.00
58	340	7	3	18.86
59	305	15	4	18.67
60	344	10	3	18.60
61	208	12	7	17.75
62	112	16	4	17.69
63	306	7	4	16.57
65	113	9	4	15.67
65	313	6	7	15.67

An analysis of Table 9 by the scores above the median (5) or facilitative end of the leader role conception scale reveals that thirty-three of the sixty-five groups (51 percent) pertained to practicos who scored either six or seven on the leader role conception measure. Twenty-one of these groups with leader scores of six or seven (or above the median in facilitativeness)also ranked above the median in dialogical communication. Thus, sixty-six percent of the groups above the median in dialogical orientation ranked high on the facilitative end of the leader role conception scale.

The relationship between leader role conception and dialogical orientation is even stronger at the bottom or banking end of the scale. Twenty-one of the sixty-five groups pertained to practicos who scored either three or four on the leader measure. Fifteen of these groups were among the twenty-two lowest in dialogical orientation. Thus, while groups with leader scores of three or four represented only thirty-two percent of all groups, these groups comprised sixty-eight percent of the lowest twenty-two groups in dialogical orientation.

The analysis of groups by rank order of dialogical orientation and leader role conception scores helps to further interpret the correlation finding that the relationship between the two variables is significant.

Hypothesis II

Hypothesis II, which claims that there is a positive relationship between the degree of dialogical orientation in the friendship group and the degree of doubts about an innovation, was supported. Innovation doubts was measured by the question "For each of the practices I am going to read tell me whether you have many doubts (scored 3), some doubts (scored 2), or no doubts (scored 1)."

As indicated in Table 8, the zero order and partial correlations for dialogical orientation and doubts about innovation are .34 and .37, respectively. Both statistics show a positive association, significant at the .05 level.

Table 10

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Doubts About Innovation

Friendship Group	Dialogical Orientation Rank Order	Dialogical Orientation Mean Score	Doubts about Innovations Rank Order	Doubts about Innovations Mean Score
200	1	25.00	29	26.56
202	2	24.86	30	26.43
322	3	24.50	6	28.83
131	4	24.22	19	27.56
121	6	24.00	57	23.50
125	6	24.00	37	26.00
316	7	23.73	34	26.27
123	8	23.67	64	18.83
122	9	23.40	46	25.00
345	10	23.38	25	27.00
318	11	23.33	38	25.89
120	13	23.17	52	24.17
304	13	23.17	16	27.75
133	14	23.09	80	24.45
130	15	23.00	47	24.83
320	16	22.87	9	28.50
124	17	22.71	48	24.71
206	18	22.67	2	29.11
325	19	22.50	16	27.75
136	20	22.14	7	28.57
205	21	22.20	18	27.60
134	25	22.00	42	25.56
317	25	22.00	24	27.08
207	25	22.00	21	27.27
321	25	22.00	11	28.11
100	27	21.90	40	25.70
330	27	21.90	12	28.10
204	28	21.83	14	28.00
303	30	21.67	49	24.67
311	30	21.67	9	28.50
300	31	21.58	4	29.00
101	32	21.50	59	23.10
315*	33	21.40	31	26.40
203	35	21.20	14	28.00
314	35	21.20	59	23.10
310	36	21.12	5	29.00
302	37	21.08	28	26.62
137	40	21.00	41	25.67
319	40	21.00	10	28.20
324	40	21.00	17	27.71
347	41	20.90	36	26.10
102	42	20.89	61	21.10

*median

Table 10 (continued)

Friendship Group	Dialogical Orientation Rank Order	Dialogical Orientation Mean Score	Doubts about Innovations Rank Order	Doubts about Innovations Mean Score
312	43	20.83	51	24.33
301	44	20.44	23	27.22
348	45	20.33	39	25.78
323	46	20.19	33	26.31
342	47	20.17	32	26.33
110	49	20.00	43	25.50
343	49	20.00	35	26.11
111	50	19.78	63	19.33
114	51	19.60	60	21.20
132	53	19.50	23	27.33
135	53	19.50	1	29.25
201	55	19.33	55	23.75
209	55	19.33	53	24.00
341	57	19.00	44	25.17
346	57	19.00	20	27.40
340	58	18.86	27	26.71
305	59	18.67	26	26.93
344	60	18.60	45	25.10
208	61	17.75	56	23.58
112	62	17.69	62	20.31
306	63	16.57	5	24.86
113	65	15.67	65	17.33
313	65	15.67	54	23.83

Analysis of Table 10 reveals that 18 of the 32 groups (56 percent) above the median in dialogical orientation also ranked above the median in doubts about innovation. The relationship between the variables is strongest among the groups ranking lowest on the two measures. The sixteen groups ranking lowest in dialogical orientation comprised eight (50 percent) of the sixteen lowest ranking groups in doubts about innovations.

The analysis shows that because in particular, the groups who have least dialogical orientation also have the least doubts about innovations, there is a significant positive correlation between the two variables.

Hypothesis III

Hypothesis III states the proposition that there is a positive relationship between the degree of dialogical orientation in the friendship group and the likelihood to modify or adapt an innovation. It also was supported. The adaptation variable was measured by the question, "For each of the practices I am going to read, tell me whether you have modified it (weighted 3), discarded it in favor of an alternative (weighted 2), or use it as recommended (weighted 1), due to the special conditions on your coffee farm."

As indicated in Table 8, the zero order and partial correlations for dialogical orientation and innovation adaptation are .46 and .45 respectively. Both statistics are consistent with the expectation of a strong positive correlation, significant at the .05 level of probability, bewteen the two variables.

Table 11

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Innovation Adaptation

Friendship Group	Dialogical Orientation Rank Order	Innovation Adaptation Rank Order	Innovation Adaptation Mean Score
200	1	10	12.67
202	2	18	12.00
322	3	36	11.00
131	4	24	11.67
121	6	8	12.75
125	6	41	10.80
316	7	7	12.82
123	8	24	11.67
122	9	18	12.00
345	10	5	13.13

Table 11 (continued)

Friendship Group	Dialogical Orientation Rank Order	Innovation Rank Order	Adaptation Mean Score
318	11	37	10.89
120	13	24	11.67
304	13	13	12.33
133	14	58	9.91
130	15	32	11.17
320	16	57	10.00
124	17	31	11.29
206	18	24	11.67
325	19	44	10.63
136	20	53	10.29
205	21	3	13.60
134	25	52	10.33
317	25	12	12.58
207	25	30	11.33
321	25	26	11.56
100	27	11	12.60
330	27	28	11.40
204	28	52	10.33
303	29	1	14.67
311	30	39	10.83
300	31	36	11.00*
101	32	18	12.00
315*	33	6	13.00
203	35	52	10.33
314	35	49	10.40
310	36	27	11.38
302	37	61	9.54
137	40	2	14.33
319	40	41	10.80
324	40	45	10.57
347	41	18	12.00
102	42	36	11.00
312	43	10	12.67
301	44	30	11.33
348	45	24	11.67
323	46	49	10.31
342	47	39	10.83
110	49	25	11.62
343	49	42	10.78
111	50	47	10.44
114	51	54	10.20
132	53	14	12.17
135	53	46	10.50
201	55	55	10.17
209	55	57	10.00
341	57	35	11.00

*median

Table 11 (continued)

Friendship Group	Dialogical Orientation Rank Order	Innovation Adaptation Rank Order	Mean Score
304	57	19	10.80
340	58	4	13.57
305	59	60	9.73
344	60	43	10.70
208	61	63	8.92
112	62	64	8.75
306	63	62	9.43
113	65	59	9.78
313	65	65	8.67

In Table 11 it may be noted that 21 of the 32 groups (66 percent) above the median in dialogical orientation also ranked above the median in adaptation of innovations. However the most significant and unexpected relationship is apparent at the bottom of the table. The seven groups ranking lowest in dialogical orientation comprised six (or 86 percent) of the 7 lowest ranking groups in adaptation of innovation.

The analysis by rank order contributes to the interpretation of the correlation between dialogical orientation and innovation adaptation. The correlation between groups ranking lowest on both measures is a significant contributing factor in the positive association between the two variables.

Hypothesis IV

Hypothesis IV suggests that there is an inverse relationship between the degree of dialogical orientation in the friendship group and the degree of adoption of

innovation. The innovation adoption variable was measured by the question, "For each of the practices I am going to read, tell me whether you use it often (weighted 3), not often (weighted 2) or not at all (weighted 1)."

As indicated in Table 8, the zero order and partial correlations for dialogical orientation and innovation adoption are .24 and .19 respectively. The zero order correlation is significant at the .05 level; the partial correlation is not significant. However, both correlations are positive; a finding which forces us to reject the hypothesis.

Table 12

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Innovation Adoption

Friendship Group	Dialogical Orientation Rank Order	Innovation Adoption Rank Order	Innovation Adoption Mean Score
200	1	48	22.75
202	2	36	23.86
322	3	2	29.50
131	4	57	22.33
121	5	53	22.25
125	6	38	23.80
316	7	38	23.80
123	7	59	21.50
122	9	43	23.40
345	10	28	24.50
318	11	39	23.78
120	13	17	22.83
304	13	10	27.58
133	14	50	22.55
130	15	45	23.00
320	16	2	29.50
124	17	61	21.00
206	18	18	26.44
325	19	15	27.00
136	20	6	28.86

Table 12 (continued)

Friendship Group	Dialogical Orientation Rank Order	Innovation Adoption Rank Order	Innovation Adoption Mean Score
205	21	20	26.20
134	25	54	22.00
317	25	45	23.00
207	25	35	23.87
321	25	5	29.00
100	27	31	24.10
330	27	3	29.40
204	28	15	27.00
303	30	24	25.17
311	30	19	26.33
300	31	9	28.17
101	32	59	21.50
315*	33	23	25.20
203	35	15	27.00
314	35	51	22.40
310	36	34	24.00*
302	37	12	27.15
137	40	11	27.17
319	40	25	24.80
324	40	5	29.00
347	41	30	24.00
102	42	59	21.50
312	43	44	23.33
301	44	7	28.78
348	45	27	24.56
323	46	16	26.75
342	47	41	23.67
110	49	46	22.87
343	49	34	24.00
111	50	65	14.33
114	51	60	21.20
132	53	22	25.33
135	53	8	28.75
201	55	62	20.92
209	55	49	22.67
341	57	34	24.00
346	57	21	25.60
340	58	40	23.71
305	59	17	26.60
344	60	43	23.40
208	61	55	21.58
112	62	64	17.63
306	63	26	24.56
113	65	56	21.89
313	65	63	20.83

*median

The data in Table 12 show the inconsistent correlation of the variables. Despite the overall positive correlation of dialogical orientation and innovation adoption, only 15 of the 32 groups (47 percent) above the median in dialogical orientation also ranked above the median in adoption of innovations. Again, the strongest relationships are at the bottom of the two scales. The sixteen groups ranking lowest in dialogical orientation comprised seven (or 44 percent) of the sixteen lowest ranking groups in adoption of innovations.

Hypothesis V

Hypothesis V suggests that the greater the degree of dialogical orientation, the greater the utilization of institutional resources among group members. The institutional resources variable was measured by asking the respondents how many visits they made in the last six months to institutions which provide agricultural services. 362 of the 544 persons responding to the question said they had visited an institution at least once in the last six months.

As indicated in Table 8, the zero order and partial correlations for dialogical orientation and utilization of institutional resources are -.10 and -.21 respectively. The correlations not only fall short of significance but are in the opposite direction predicted by the hypothesis. Based on this finding, the hypothesis is rejected.

The distribution of the group data backing the rejection of the hypothesis is presented in Table 13.

Table 13

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Utilization of Institutional Resources

Friendship Group	Dialogical Orientation Rank Order	Resource Utilization Rank Order	Resource Utilization Mean Score
200	1	12	5.20
202	2	36	2.83
322	3	8	6.17
131	4	65	---
121	6	21	4.00
125	6	37	2.80
316	7	22	3.73
123	8	63	.33
122	9	53	1.40
345	10	16	4.50
318	11	44	2.22
120	13	45	2.17
304	13	18	4.25
133	14	65	---
130	15	57	1.17
320	16	3	10.25
124	17	52	1.57
206	18	34	2.89
325	19	2	10.50
136	20	52	1.57
205	21	50	1.60
134	25	63	.33
317	25	56	1.25
207	25	30	3.20
321	25	10	5.78
100	27	42	2.30
330	27	12	5.20
204	28	17	4.33
303	30	29	3.33
311	30	24	3.50
300	31	13	5.17
101	32	58	1.10
315*	33	5	7.20
203	35	40	2.40
314	35	7	7.00
310	36	43	7.00
302	36	43	2.25

*median

Table 13 (continued)

Friendship Group	Dialogical Orientation Rank Order	Resource Utilization Rank Order	Resource Utilization Mean Score
137	40	63	.33
319	40	38	2.60
324	40	4	8.29
347	41	14	4.90
102	42	60	.56
312	43	49	2.00
301	44	25	3.44
348	45	39	2.56
323	46	7	7.00
342	47	29	3.33
110	49	23	3.62
343	49	29	3.33
111	50	55	1.33
114	51	49	2.00
132	53	49	2.00
135	53	60	.63
201	55	31	3.17
209	55	33	3.00*
341	57	35	2.83
346	57	19	4.20
340	58	33	3.00
305	59	15	4.87
344	60	46	2.10
208	61	41	2.33
112	62	26	3.38
306	63	1	11.14
113	65	55	1.33
313	65	9	6.00

*median

The distribution by rank order in Table 13 supports the finding of a low overall correlation. Fifteen of the thirty-two groups (47 percent) above the median in dialogical orientation ranked above the median in utilization of institutional resources. The strongest relationship between the variables is evidenced among the groups at the bottom of the two scales, where eight of the sixteen

(50 percent) lowest ranking groups in dialogical orientation also ranked lowest in resource utilization. However, the positive association at the bottom is counter-balanced by the negative tendency at the top of the two scales. Included among the top fourteen groups in dialogical orientation are the three lowest ranking groups in resource utilization.

The questionnaire item on frequency of visits was followed by an item concerning motivation for the visits. In response to the motivation question, 37.3 percent said they sought technical assistance, 29.5 percent said they solicited credit, 16.3 percent said they solicited approval for fertilizer, 6.4 percent said they sought information on friendship groups, 4.7 percent said they solicited membership in FEDERACAFE, 3 percent said they requested public works, 2.8 percent said they requested electrification, and .6 percent stated other motives.

Hypothesis VI

Hypothesis VI suggests a positive association between the degree of dialogical orientation in the friendship groups and agrarian activity for situation improvement. It was supported. The latter variable was measured by the aggregate group mean score of the respondents on the four questionnaire items which comprised the four dimensions of the variable. The dimensions of the variable were measured by asking the respondents whether or not they were

doing something to: 1) acquire more land; 2) obtain more credit; 3) acquire more income; and 4) acquire more tools. Persons who responded affirmatively to any of the four questions were then asked what specific type of activity they were undertaking or had undertaken.

As indicated in Table 8, the zero order and partial correlations for dialogical orientation and agrarian activity for situation improvement are .44 and .41 respectively. Both statistics are significant at the .05 probability level and consistent with the expectation of a high positive correlation.

The question on the land acquisition dimension drew only 66 affirmative answers; 12.6 percent of the 544 persons responding. In response to the question of what action they were undertaking, 52.2 percent said they had solicited credit, 20.9 percent said they were saving money, 19.4 percent said they had increased agricultural production, and 4.5 percent cited additional employment and other activities.

The question on the credit activity dimension drew 238 affirmative answers; 45.4 percent of the 544 persons responding. In response to the question of what type of credit action they were taking, 70.4 percent indicated that they had consulted with the Agrarian Bank, 17.9 percent said they had technified their coffee lands, 4.6 percent said they had increased agricultural production, 2.5 percent said they had extended mortgages on their farms, 2.5 percent said they had filed ownership papers, and 2.1 percent cited other activities.

The question on the income acquisition dimension drew 325 affirmative answers; 62 percent of the 544 persons responding. In response to the question of what type of income action they were taking, 70.9 percent said they had technified their coffee lands, 22.3 percent said they had increased agricultural production, 4 percent said they were applying more fertilizer, 1.2 percent said they were working with the friendship groups, 1.2 percent said they had acquired additional employment, and .3 percent cited other activities.

The question on the tool acquisition dimension drew only 125 affirmative answers; 23.9 percent of the 523 persons responding. In response to the question of what type of action they had taken, 64.8 percent indicated that they were saving money, 16.4 percent said they had increased agricultural production, 14.1 percent said they had solicited credit, 3.9 percent said they had acquired additional employment, and .8 percent cited other activities.

The distribution by group ranking of the aggregated mean scores on the four dimensions of the variable is presented in Table 14.

Table 14

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Agrarian Activity for Situation Improvement

Friendship Group	Dialogical Orientation Rank Order	Agrarian Activity Rank Order	Agrarian Activity Mean Score
200	1	29	5.33
202	2	4	6.14
322	3	11	5.83
131	4	55	4.67
121	5	33	5.25*
125	6	16	5.80
316	7	1	6.55
123	8	21	5.67
122	9	2	6.40
345	10	5	6.13
318	11	17	5.78
120	13	53	4.83
304	13	25	5.50
133	14	65	4.00
130	15	48	5.00
320	16	33	5.25
124	17	22	5.57
206	18	8	5.89
325	19	25	5.50
136	20	58	4.57
205	21	48	5.00
134	25	55	4.67
317	25	41	5.08
207	25	31	5.27
321	25	8	5.89
100	27	19	5.70
330	27	30	5.30
204	28	21	5.67
303	30	29	5.33
311	30	48	5.00
300	31	25	5.50
101	32	16	5.80
315*	33	16	5.80
203	35	6	6.00
314	35	40	5.10
310	36	10	5.88
302	37	39	5.15
137	40	53	4.83
319	40	16	5.80
324	40	50	4.86
347	41	16	5.80
102	42	35	5.22
312	43	64	5.33
301	44	35	5.22

*median

Table 14 (continued)

Friendship Group	Dialogical Orientation Rank Order	Agrarian Activity Rank Order	Agrarian Activity Mean Score
348	45	29	5.33
323	46	49	4.88
342	47	53	4.83
110	49	10	5.88
343	49	48	5.00
111	50	59	4.56
114	51	57	4.60
132	53	38	5.17
135	53	63	4.25
201	55	38	5.17
209	55	48	5.00
341	57	3	6.17
346	57	26	5.40
340	58	18	5.71
305	59	47	5.00
344	60	36	5.20
208	61	48	5.00
112	62	56	4.69
306	63	62	4.29
113	65	61	4.33
313	65	61	4.33

Analysis of Table 14 reveals that 21 of the 32 groups (66 percent) above the median in dialogical orientation ranked on or above the median in agrarian activity for situation improvement. As the high positive correlation would seem to suggest, the correlations are strong at both the top and bottom ends of the two scales. The top eleven groups in dialogical orientation comprise five (or 45 percent) of the top eleven groups in agrarian activity for situation improvement. At the other end of the scale, 70 percent of the ten groups ranked lowest in agrarian activity are included among the sixteen lowest ranking groups in

dialogical orientation. Even more noteworthy, the three lowest ranking groups in dialogical orientation are also among the six lowest ranking groups in agrarian activity.

Communication Networks

As indicated on page 77, network data were obtained by the sociometric choices of group members in response to questions concerned with interpersonal discussion of three innovations: fertilizer, credit, and family planning. The findings reveal that communication networks differ from innovation to innovation. In nearly all 65 groups, the number of communication contacts decreased from fertilizer, to credit, to family planning. In fact, there was so little family planning contact reported that cliques could not be identified in the majority of the groups. It was therefore determined to limit the network analysis to interpersonal discussions of fertilizer and credit.

There are two readily apparent reasons for the greater number of reported communications concerning fertilizer. First, fertilizer is an innovation which is given particular stress by the FEDERACAFE extension service in its publications and in friendship group meetings. Fertilizer is also obtainable from FEDERACAFE warehouses, whereas credit is usually sought from an institution not directly invovled in the friendship groups (the Agrarian Bank). The family planning innovation is also less the purview of FEDERACAFE than the family planning

agency, Bienestar Familiar. Secondly, family planning messages in the devoutly Catholic rural sector of Colombia belong to the category of taboo communication, in which messages are perceived as extremely private and personal in nature because they deal with proscribed behavior. It is highly probable that the low number of reported communications is an indicant of the degree of tabooness of family planning.

Network Correlations

Zero-order and partial correlations, set at the .05 level of probability, were used in hypotheses seven through nine. Table 15 presents an analysis of the relationship between dialogical orientation and three fertilizer and credit communication network variables.

Table 15

Zero Order and Partial Correlation Coefficients of Dialogical Orientation and Three Credit and Fertilizer Network Variables

Variables	Zero Order		Partial	
	Credit	Fertilizer	Credit	Fertilizer
7. Communication System Connectedness	.01	-.03	-.07	-.09
8. Information Reliance on Extension Service	.03	.11	-.02	.12
9. Opinion Leader Concentration	.07	-.04	-.002	-.10

None of the relationships differ significantly from zero at the .05 level of probability. The distribution of group data is shown in Table 16.

Table 16

Variability on Network Measures

(65 cases)

Variables	Mean	Standard Deviation	Variance
Fertilizer connectedness	.285	.149	.022
Credit Connectedness	.203	.124	.015
Fertilizer reliance extension service	.284	.264	.070
Credit reliance extension service	.278	.167	.028
Fertilizer influence leader concentration	.250	.150	.022
Credit influence leader concentration	.120	.164	.027

Hypothesis VII

Hypothesis VII stated that a positive relationship would be found between the degree of dialogical orientation in the friendship group and the degree to which group members are linked by interpersonal communication flows (communication system connectedness). Data for the measurement of the connectedness variable and the other two network variables was obtained by the sociometric question, "Please give me names of all persons with whom you have sought information on (1) credit and (2) fertilizer during the last six months." Once the ratio of actual

internal group communication contacts to possible group communication contacts was computed, the data were transformed into correlation equations.

As indicated in Table 15, the zero order correlations between dialogical orientation and the connectedness of the credit and fertilizer communication networks are .01 and -.03 respectively. The partial correlations are respectively -.07 and -.09. All correlations are near zero; a finding which emphatically rejects the hypothesis.

Hypothesis VIII

Hypothesis VIII suggests that the greater the degree of dialogical orientation, the lesser the degree of information reliance in relation to the extension service. Based on the sociometric identification of connections in the fertilizer and credit communication networks, the ratio of actual group-extension service linkages to possible group-extension service linkages was determined. This information reliance index was then transformed into zero order and partial correlation equations.

As indicated in Table 15, the correlations between dialogical orientation and information reliance in relation to the extension service are uniformly low; .03 and .11 zero order correlations and -.02 and .12 partials for the credit and fertilizer networks respectively. Once again, none of the relationships differ significantly at the .05 probability level and the hypothesis is rejected.

Hypothesis IX

Hypothesis IX conceptualizes a positive association between the level of dialogical orientation and the degree of opinion leader concentration in the friendship groups. Individuals who were nominated as information sources by at least thirty percent of the group were designated as influence leaders. The opinion leader concentration score was derived by dividing the number of individuals designated as influence leaders by the number of individuals in the group.

As indicated in Table 15, the zero order and partial correlations for dialogical orientation and influence leader concentration are very near zero. Zero order correlations are .07 for credit and -.04 for fertilizer. Partial correlations are also negligible; -.002 for credit and -.10 for fertilizer. Based on these findings, the hypothesis is rejected.

Table 17

Sixty-Five Friendship Groups by Rank Order of Dialogical Orientation and Three Network Variables: Connectedness, Reliance and Concentration

Friendship Group By Rank Order of Dialogical Orientation	Connectedness		Information Reliance		Leader Concentration	
	Credit	Fertilizer	Credit	Fertilizer	Credit	Fertilizer
200	.22	.24	.50	.44	.11	.11
202	.12	.37	.21	.43	.00	.57
322	.22	.29	.25	.25	.17	.33
131	.04	.20	.11	.28	.00	.00
121	.21	.36	.25	.50	.25	.25
125	.40	.20	.80	.31	.20	.20
316	.26	.40	.50	.41	.18	.46
123	.07	.15	.08	.25	.00	.17
122	.10	.10	.20	.20	.00	.00
345	.32	.36	.31	.25	.25	.50
318	.22	.37	.50	.44	.00	.11
120	.12	.26	.00	.17	.17	.17
304	.90	.11	.04	.00	.50	.08
133	.03	.15	.09	.33	.00	.00
130	.19	.08	.25	.18	.00	.00
320	.19	.15	.25	.33	.00	.00
124	.17	.11	.36	.21	.00	.00
206	.19	.48	.39	.33	.00	.56
325	.32	.36	.19	.31	.13	.25
136	.03	.17	.00	.07	.00	.14
205	.35	.60	.50	.40	.20	.80
134	.06	.17	.17	.33	.00	.00
317	.22	.33	.38	.42	.17	.17
207	.20	.31	.40	.33	.27	.60
321	.22	.30	.22	.28	.00	.22
100	.06	.26	.15	.30	.00	.10
330	.19	.31	.15	.30	.20	.30
204	.52	.63	.33	.25	.50	1.00
303	.22	.19	.33	.08	.33	.33
311	.37	.67	.42	.42	.33	.83
300	.14	.67	.08	.42	.17	.83
101	.20	.37	.35	.35	.20	.50
315	.30	.30	.40	.30	.20	.40
203	.75	.70	.50	.40	1.00	1.00
314	.22	.34	.40	.40	.10	.30
310	.21	.46	.19	.44	.13	.50

Table 17 (Continued)

Friendship Group By Rank Order of Dialogical Orientation	Connectedness		Information Reliance		Leader Concentration	
	Credit	Fertilizer	Credit	Fertilizer	Credit	Fertilizer
302	.09	.14	.12	.12	.15	.23
137	.07	.26	.00	.08	.00	.17
319	.35	.60	.30	.40	.20	.80
324	.40	.26	.43	.36	.29	.00
347	.22	.28	.30	.15	.10	.10
102	.07	.15	.11	.17	.00	.11
312	.19	.37	.33	.50	.00	.29
301	.24	.18	.33	.06	.11	.22
348	.20	.26	.39	.11	.10	.00
323	.06	.08	.09	.06	.06	.06
342	.26	.37	.42	.50	.00	.17
110	.20	.23	.50	.44	.00	.00
343	.17	.37	.33	.44	.00	.00
111	.09	.07	.22	.11	.11	.00
114	.30	.45	.00	.00	.40	.80
132	.11	.22	.25	.42	.00	.00
135	.14	.21	.31	.31	.00	.00
201	.26	.26	.46	.25	.25	.42
209	.33	.41	.58	.50	.17	.50
341	.22	.52	.42	.50	.00	.50
346	.25	.60	.30	.50	.20	.40
340	.10	.31	.07	.29	.00	.29
305	.04	.13	.00	.07	.00	.33
344	.19	.32	.30	.31	.00	.00
208	.17	.29	.21	.29	.08	.58
112	.06	.16	.22	.31	.00	.13
306	.14	.20	.07	.00	.29	.23
113	.17	.09	.28	.00	.00	.00
313	.33	.52	.50	.50	.00	.50

The relationship of the network variables with dialogical orientation shown in Table 17 is analyzed in the network connectedness, information reliance, and influence leader sections which follow.

Network Connectedness

Only 17 of the 33 groups (52 percent) ranking above the median in dialogical orientation ranked on or above

the median in credit network connectedness. Similarly, only 18 of the 33 groups (55 percent) ranking above the median in dialogical orientation also ranked above the median in fertilizer network connectedness. These distributions are in accord with the findings of near zero overall correlations for dialogical orientation and the two network connectedness measures.

Moreover, unlike the distribution patterns of the innovation variables, strong correlations are not yet present at the lower ends of the rankings. Following the overall pattern, only 4 of the 16 groups (25 percent) ranking in the lowest quartile of dialogical orientation ranked in the lowest quartile on both the credit and fertilizer network connectedness measures.

Information Reliance on Extension Service

The distribution by groups is generally supportive of the finding of a low overall correlation between information reliance on the extension service and dialogical orientation. Only the ranking distribution for the credit network variable partially supports the inverse relationship predicted in the hypothesis. Twenty of the 33 groups (61 percent) ranking on or below the median in dialogical orientation ranked above the median in credit information reliance on the extension service. However, in the fertilizer network, only 17 of the 33 groups (52 percent) ranking on or below the median in dialogical orientation ranked above the median on the extension service reliance measure.

The overall distribution is also supported at the bottom of the scales. Only 4 of the 16 groups (25 percent) ranking in the lowest quartile of dialogical orientation ranked in the lowest quartile on the credit network measure. Likewise, only 5 of the 16 lowest ranking groups in dialogical orientation (31 percent) ranked among the 16 lowest groups on the fertilizer network measure.

Influence Leader Concentration

Due to the large number of scores on or about zero on the influence leader measures for credit and fertilizer, the median measure of central tendency is less significant than in the other two network variables. Twenty of the groups scored zero in influence leader concentration on the credit measure. Sixteen groups of the groups scored zero in fertilizer influence leader concentration. Consistent with the negative partial correlations, 14 of the 20 groups with no credit information leader ranked above the median in dialogical orientation. Less consistent however, is the finding that only 7 of the 16 groups with no fertilizer influence leader ranked above the median in dialogical orientation.

In sum, the group data in Table 17 shows the inconsistent relationship of the network variable with dialogical orientation.

Additional Analyses

The results of the correlation of the dialogical orientation index with nine variables supported four of

the hypotheses and refuted five others. In order to examine in more detail some of the most unexpected results yielded by the data, additional analysis were made.

The prediction in Hypothesis IV of an inverse relationship between dialogical orientation and adoption-continued use of innovations was not supported by the correlational findings. The zero order and partial correlations are .24 and .19 for dialogical orientation and adoption-continued use, as opposed to .46 and .45 for adaptation of innovation. The findings show that while dialogical orientation is more strongly related to adaptation-modification of innovation, as was predicted, it is nonetheless also related to adoption-continued use of innovations in the form recommended.

One possible explanation for these results is that the overall quality of the ten innovations recommended in the friendship groups was found to be superior by many friendship group members who did consider other alternatives. This interpretation would support the claims by FEDERACAFE that the technology developed on its experimental farms is the most relevant to the environmental and economic situations of coffee-farmers in the area.

Another explanation, perhaps more realistic, is related to the degree of usage and complexity of the individual innovation being considered. Several innovations listed in the questionnaire dealt with technical knowledge needed to modify the labors most basic to coffee-growing;

most or all of which in one form or another were already in practice. In these labors most basic to coffee growing, farmers require little impetus beyond knowledge to adopt and continue to use innovations; particularly innovations which are relatively inexpensive, easy to learn and involve low risk. Among the innovations listed in the questionnaire that fall into this category are coffee planting, rowing or tiering, fertilization, and construction of germinators and nurseries.

On the other hand, several innovations require more decision-making on the part of the farmer because of their relatively greater complexity, cost, and more indirect effect Such preventitive measures as erosion, disease, and pest control fall into this category as well as costly innovations such as depulping machinery. Finally, credit, which requires substantial effort for qualification, could be considered within this group.

A computerized breakdown of the responses of the 544 farmers on the ten dimensions of the innovation variable revealed that the innovations in the first category most definitely did provoke more affirmative responses in the adoption-continued-use question than did the innovations in the second category. On a one-to-three scale, the mean scores were as follows: fertilization, 2.67; nursery construction, 2.65; germinator construction, 2.65; coffee planting, 2.64; rowing, 2.61; pest control, 2.35; disease control, 2.33; erosion control, 2.32;

credit, 2.24/ depulping machinery, 1.79. The evidence leads to the conclusion that the weight of the first category of practices, acting almost as a constant, influenced the overall positive correlation of the variable with dialogical orientation.

Hypothesis V, which predicted a positive correlation between dialogical orientation and utilization of institutional resources was also rejected. Moreover, the zero order and partial correlations of -.10 and -.21 were in the opposite direction of what was predicted.

A frequency breakdown of the motives for utilizing institutional resources revealed that 362 of the 544 group members visited assistance agencies in the six months prior to the interviews. Thirty-seven percent of these coffee-growers sought agricultural assistance; 29 percent solicited credit; 16 percent requested fertilizer; and 6 percent sought information on friendship groups.

Perhaps the most insightful finding of the frequency breakdown is the data on types of institutional offices visited. Seventy-nine percent of the total institutional visits were to extension offices of FEDERACAFE; 11 percent were to the National Apprentice Service (SENA); and 4 percent were to the Colombian Agricultural Institute (ICA). A comparative frequency analysis by group ranking indicated that groups 200, 201, and 318, which respectively ranked 1, 2 and 10 in dialogical orientation, were among the top 4 groups in utilization of institutional resources other

than FEDERACAFE. These same groups were also infrequent users of FEDERACAFE services.

The frequency analysis by assisting agency when combined with informal interviews provides further insight into factors affecting the relationship between the two variables in the hypothesis. The analysis showed that in about half of the veredas in the area of the study, there were no visits to assistance agencies other than FEDERACAFE extension offices. Thirty-three of the 65 groups reported zero visits to assisting agencies other than FEDERACAFE. Based on conversations with group members and local FEDERACAFE extension personnel, we may surmise that this situation accrues from either the inexistence of other assisting agencies in the veredas or the non-coffee-related nature of services provided. Hence, it is reasonable to assume that many groups with greater dialogical orientation are presented with the option of seeking assistance from FEDERACAFE or not seeking it from any agency. A case study approach would be required to explore further into the issue of whether greater consciousness leads to assistance-seeking or frustration and to determine whether the application of dialogical orientation in the friendship group includes apprising members of where to go to seek social services. Nonetheless, the comparative frequency analysis by group ranking does point out that in those cases where other agencies are present in the area, the groups ranking highest in dialogical orientation rank among the highest in seeking assistance outside of FEDERACAFE.

Because of the extensive body of research literature supporting a positive relationship between functional and structural communication variables the most surprising finding in this study was the rejection of the three hypotheses relating network structure to dialogical orientation. Unlike the other two rejected hypotheses, there are no exceptions at the extremes of the scales and no readily apparent extenuating factors which help to explain the results.

On the contrary, a more detailed analysis of the relationship of the network variables to the other correlates of dialogical orientation gives further credence to the finding that the functional and structural variables operate independently. Table 18 presents the partial correlations of the three network variables with the six dependent variables included in the other hypotheses.

Table 18

Partial Correlation of Connectedness, Reliance and Concentration Network Variables with Six Dependent Variables

	Connectedness		Info. Reliance		Ldr. Concen.	
	Credit	Ferti-lizer	Credit	Ferti-lizer	Credit	Ferti-lizer
Ldr. Role Concept.	.13	.15	.13	.14	.06	.31*
Innovation Doubts	-.03	.09	-.15	.002	.03	-.003
Adaptation	.01	.02	.002	.02	.10	- .06
Adoption	-.12	.07	-.30*	-.32*	-.02	- .13
Util. of Resources	.02	-.13	-.11	-.19	.04	- .05
Act. for Sit. Imp.	.10	.07	.17	.12	.02	.08

*Significantly differs from zero at the .05 level.

A comparison of the correlates in Table 8 and Table 18 evidences the disparity between dialogical orientation and network structure. Dialogical orientation is significantly related to leader role conception, doubts about innovations, adaptation of innovations, and activity for situation improvement. Neither the fertilizer nor credit connectedness variables are significantly related to any of the six variables. Both the credit and fertilizer dimensions of the reliance on extension service variable were found to have significant negative relationships with adoption of innovations. Finally, the two dimensions of the leader concentration variable correlated significantly on only one of the twelve possible correlations (fertilizer, leader concentration and leader role conception).

In sum, the lack of a significant positive relationship with utilization of institutional resources is the only common correlate among the six dependent variables, dialogical orientation and the network variables.

An interpretation of this phenomenon based on an analysis of the effects of group processes upon individual communication behavior is offered in the next chapter.

Limitations

Due to the fact that the network routine used in the study is still in a relatively early stage of development and contains several "bugs" that require refinement through costly experimentation, the network measures used in this study may not be tapping all the critical dimensions

of communication structure. Therefore, the correlations of the network variables with dialogical orientation may not represent a refutation of the structural-functional interconnections, but a refutation of a particular set of operationalizations. In this regard, a more comprehensive analysis of the cliques, liaisons, bridges, isolates and dyads described by the network procedures may render statistical descriptions which more closely approximate the actual communication roles and relationships in the social structure.

Two other constraints relate to the relatively limited variation in the leader role conception score and the lack of open-ended interviews with practicos to accompany this measure. Although the scores were well distributed (3 to 7 from a possible range of 0 to 7), a questionnaire which incorporates a greater number of paired items would have allowed for greater range and variation, more reflective of the attitudinal differences among the practicos. Moreover, time constraints prevented the conduct of intensive interviews with the practicos; interviews which would have served to give some indication of the validity of the leader role conception measure.

CHAPTER VI

DESCRIPTIVE ANALYSIS AND CONCLUSIONS

Friendship Group Methods

In order to seek an explanation for the independent operation of the dialogical orientation and network variables, it is necessary to consider the pedagogical methods and psychological processes operating within the group meetings. FEDERACAFE communication objectives and recommended procedures for friendship group leadership are contained in a guide which is supplied to each practico working with the group.[1] Following the practico's pre-demonstration planning and preparation of written material, the meeting structure is as follows:

1) The coordinator (elected by the group) introduces the theme (usually centering aroung an agricultural practice);

2) Group members are asked to relate positive experiences and/or negative experiences that they have had with the practice;

3) It is discovered through discussion with members, if any have had favorable experiences with the practice, so that one of them can be chosen to demonstrate the practice with the assistance of the practico.

4) The establishment of discussion over the practice makes it possible for the practico to assess the existing level of knowledge and the depth at which he should cover the subject;

5) Group members are urged to discuss the economic significance of the innovation. In order to stimulate dialogue, the practico asks questions such as the following: Why does the farm of Don Jose produce so much coffee per hectare? A possible answer could be: Don Jose uses fertilizer, coffee nurseries, etc.;

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[1]FEDERACAFE, "Pauta Para Demostracion de Metodo Humanizada," August 23, 1978.

6) The extension agent moderates the group members' discussion of their experiences, and the ideas and recommendations of the members concerning the innovation;

7) If demonstration materials are used which are unknown to the majority of members, their purpose and function are explained;

8) During the demonstration, the practico reminds the members of the positive and negative experiences previously discussed in order to emphasize the proper application of the innovation;

9) Once the demonstration is completed, questions are solicited and the key points and different stages of the practice are reviewed. Each of the members of the group are urged to repeat the demonstration. If this is not possible, small groups are organized so that everyone can participate in the repetition. The practico observes the members, pointing out errors and emphasizing key points.

Analysis of Friendship Group Methods

One way to assess the goals and character of friendship group communication is through feedback. Although the disparity in leader role conception scores suggest that pedagogical methods vary from one practico to another, feedback within the context of the guidelines given for friendship group meetings appears to be a highly structured message-adjusting mechanism, enabling the practico to elicit the desired behavior from the group members. While the communication flow is bi-directional, its character is monological; the emphasis in the guidelines remains on transferral of message from source to receiver with the intention of changing the receiver's behavior. The group members are asked to relate positive and negative experiences that they have had with the practice in order to discuss the proper application (and not the merits) of

the practice. The character of the guidelines diverges considerably from the conception of friendhip groups as vehicles for extension service information-seeking, fostering dialogical orientation to promote local self-reliance and services more adapted to local needs.

As Schramm and Lerner (1976) noted, approval by the group tends to permit an individual who changes in a group context to feel more secure in his or her decision. The inverse proposition seems equally valid. Disapproval by the group tends to make the individual who changes in a group context to feel less secure in his or her decision.

Individuals who promote changes other than those recommended by the leadership of the friendship groups may be, depending on the facilitativeness of the practico, made conscious of their role as deviants from the group norm. If this is the case, this might negatively affect the tendency of individuals with greater dialogical orientation to become engaged in interpersonal communication with other group members.

The responses to two questionnaire items seem to back this supposition. One question asked, "When the group is discussing a practice, which two group members express the most doubts about the suitability of the practice?" The second question asked, "Which two group members are the first to adopt new practices?" The individuals named in response to the first question may be considered doubt-adaptation leaders. The names offered in response to the second question clearly belonged to adoption leaders.

Although the level of analysis in this study was group and not individual, one could not help but notice in the coding of the questionnaires that persons designated as doubters-adaptation leaders were infrequently named as communication network contactees. On the other hand, farmers designated as adoption leaders were commonly the first listed as network contactees. Quite obviously, a positive relationship existed between early acceptance of innovation and group communication activity. Viewed in this context, the rejection of the network hypotheses is less surprising.

The network hypotheses were based on the suppositions that friendship group methods consisted of problem-posing, dialogue and critical co-investigation, and that this non-indoctrinative approach would lead to, as Davis and Phares suggested, increased information-seeking activity among the members. But the methods in many friendship group sessions lean more toward persuasion and generate an atmosphere that promotes interpersonal communication while perpetuating paternalism. This argument is supported by the results of the analysis of friendship group evolution.

Evolution of Friendship Group Self-Reliance

Theoretical Evolution

Beyond serving the immediate purpose of increasing the effectiveness of FEDERACAFE in diffusing information to a mass audience, an objective of the friendship group is to liberate the small-scale coffee-grower from the direct and continued influence of the extension service. According

to FEDERACAFE this end is fostered in group meetings by emphasis on increased community dialogue and responsibility.[1]

Gonzalez (1979) illustrated the theoretical function of the friendship groups with a baseless triangle model, focussing on intra and extra-group linkages of group members.[2] In situation I (see Figure 5), the extension agent or practico (A) establishes individual contact with small-scale farmers (F1, F2, and F3). Group activities organized among farmers in the area are infrequent, relegating many of the farmers in the region (F4) to marginal provisions of technical education and assistance. There are neither linkages among the farmers themselves, nor ties between the farmers and other service institutions which exist in the region (I). This triangle represents a classical situation of dependency; a group of peripheral entities unconnected to each other, yet all tied to a dominant core, or, in this case, apex.

Situation 2 represents the initiation of non-formal education activities within a friendship group structure. An important feature is the establishment, through participation in the group activities, of bi-directional linkages among farmers and between farmers and the extension agent.

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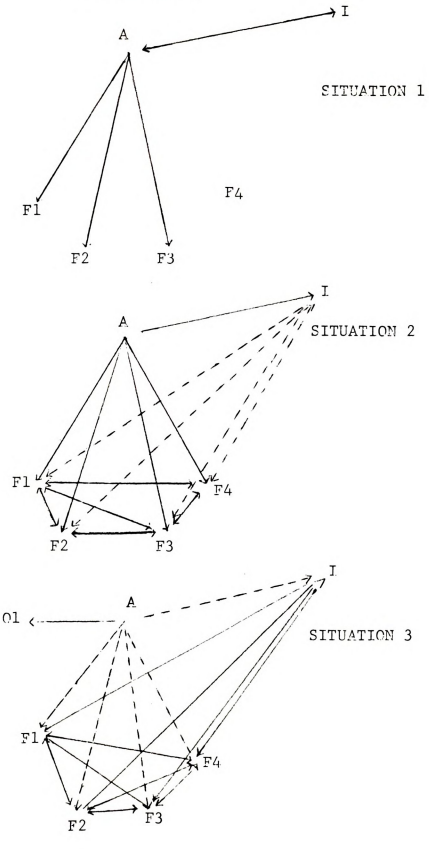
[1]Gonzalez, A. "Independencia Tecnologica en el Cultivo de Cafe," FEDERACAFE, Bogota, February, 1979, p. 1.

[2]Ibid.: 9-12.

Figure 5

Theoretical Evolution of Friendship Group Linkages



The farmers are encouraged to exchange ideas and information, analyze problems and seek solutions within the group before consulting with the extension agent.

During a period of two or more years and as the non-formal education program develops, friendship group members' dependence on the practico to mediate between them and other service institutions will theoretically diminish. Situation 3 represents the evolution after two or more years of more direct ties between the members and service institutions in the community, fortified internal communication within the group, and lessened dependence on the practico, (freeing him to initiate Situation 2 activities in other regions).

Friendship groups, according to this model, are designed to perform most of the important intermediary functions necessary to rural development: articulation of needs that take into account specific natural conditions and the institutional environment in which the farmers work; aggregation of small producers into horizontal communication networks which diffuse technological innovation and at the same time adapt and interpret messages to make them more relevant to specific needs; integration and coordination of farmer interests to place pressure on support institutions to provide more services and resources, etc.

Thus far the discussion has been confined to the theoretical realm. The study has found the actual performance of the groups to diverge somewhat from the model.

Actual Evolution

In order to test the effectiveness of the friendship groups in meeting their stated objectives, zero orcer and partial correlations were run on years of group membership and: 1) communication network variables; and 2) dialogical orientation. The tests yielded quite opposite results.

Table 19 confirms the positive relationship predicted in the model between years of group membership, communication system connectedness, and influence leader concentration. However, the finding that a positive relationship also exists between mean years of group membership and information reliance on the extension service refutes the model's assumption that increased member communication exchanges are accompanied by diminished communication with the practico.

Table 19

Zero Order and Partial Correlations of Years of Group Membership and Three Credit and Fertilizer Network Variables

	Zero Order		Partial	
	Credit	Fertilizer	Credit	Fertilizer
Communication System Connectedness	.50*	.49*	.48*	.40*
Information Reliance on Extension Service	.34*	.31*	.32*	.20*
Influence Leader Concentration	.29*	.36*	.27*	.31*

*Significantly differs from zero at the .05 level

In contrast to the results presented in Table 19, the zero order and partial correlations of years of group membership and dialogical orientation are -.03 and -.19, respectively. The distribution by mean years of group membership is presented below.

Table 20

Friendship Groups by Mean Years of Group Membership and Dialogical Orientation

	Number of Groups	Mean Dialogical Orientation Score
Less than 1 year	5	19.9
1 - 2 years	6	21.5
2 - 3 years	6	21.6
3 - 4 years	10	21.1
4 - 5 years	21	20.7
More than 5 years	18	21.6

The prediction implicit in the model is that the inter-group comparison would show the friendship groups that have been longest established to be significantly higher in dialogical orientation. However, the data in Table 20 suggests a more curvilinear evolution. The dialogical orientation index manifested its greatest increase in the second year of activities. A slight increase was also registered in the third year. These findings are consistent with the Situation 1 and Situation 2 expectation of evolving consciousness and self-reliance. However, the fourth year of activity appears to represent a dialogical orientation threshold: scores dropping off in that year and the next to a level well below that of the second year.

In order to interpret the dialogical orientation scores for groups with five or more years of activity, it would be useful to refer back to Table 6 on page 66. The data in Table 6 indicate a decline in the number of friendship groups in Tolima from 796 in 1975/76 to 725 in 1977/78. It is also noted in Table 6 that these official statistics do not adequately reflect the drastic decline in group membership. Based on these statistics, it may be hypothesized that at least part of the increase in dialogical orientation for groups with means of more than five years of membership is attributable to the disbanding of groups with lower dialogical orientation scores. An alternate hypothesis is that the evolution of dialogical

orientation is a slower process than conceptualized in the model and that states of consciousness consistent with Situation 3 do not develop until after the fifth year. Questions remain therefore, for future research, as the most responsible factors for the apparent rise in dialogical orientation after five years.

It can be said, however, that the finding of low and negative correlations of dialogical orientation with communication network connectedness and years of group membership forces a reinterpretation of the theory linking communication function and structure. It appears that an absolutist expectation of more internal communication, greater communication independence has less validity than an immanent approach which allows for a negative relationship, depending on the norms of the group and communication methods employed.

Factors Affecting the Disbanding of Groups

The data in Table 6 indicate that work with the friendship groups had two definite phases. A growth phase occurred through 1976. The second phase was characterized by a decline in the number of groups in 1977.

In a 1978 report from the General Manager of FEDERACAFE the decline of friendship group activity in several states is attributed in part to the emphasis given in 1976 to increased coffee production and neglect of educational activities with small and medium-scale farmers.[1]

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[1]XXXVI Congreso Nacional de Cafeteros, Informe del Gerente, December, 1978, Anexos, p. 111.

The so-called "coffee bonanza" in Colombia, engendered by the 1975 frost in Brazil, produced a sizeable increase in Colombian coffee cultivation. The credit resources of the Agricultural Finance Fund, Coffee Bank, and Agrarian Bank were insufficient to meet the heightened demand for credit. As part of the tightening measures, special credit incentives extended to group members were terminated.

In support of the credit argument, an analysis of Region I in this study by an extension agent of the Tolima Committee concluded that the number of groups in the region was highest when the credit was highest.

However, in interviews with former group members, two other factors, unrelated to credit availability, were identified as contributing to discontinuance of group activities. Several former members complained that the practico responsible for the group lacked credibility; failing to attend group meetings and fulfill his promises to the group. This criticism gains credibility when considered along with the argument of one practico, who observed that once a group succeeded in achieving its "goals," there was no longer any need to continue meetings.

The second factor relates to the agricultural practices in Tolima, discussed in Chapter III. Interviews with former group members revealed that a confusion existed between the educational function of the groups and the "minga" (a form of cooperative assistance in which one day a week all members work on the farm of a group member).

Among the sources of friction associated with the minga were: 1) lunches for all group members served by the host farmer were of varying quality; 2) the levels of difficulty of the work on each farm varied in the extreme; and 3) some members sent children to act as substitutes. Given that a distinction was never made clear between the educational function of the friendship groups and the work function contained in the mingas the disillusionment of group members with the minga engendered the disintegration of some groups.

Finally, a third factor, which came to light in discussion with friendship groups administrators, indicates that in at least a few cases, the disbanding of groups was the result of a conscious effort by FEDERACAFE. In a number of municipalities, coordinators from different veredas had formed regional juntas to coordinate activities and increase their political bargaining power with local and national governments. Junta demands often involved challenges to the local power structure. Interviews revealed that FEDERACAFE has constricted the "pressure group" role of the juntas, arguing that the friendship group movement has to be an apolitical, technical program. This rationale has been employed for disbanding any juntas that take dissident or radical stands.

Implications for Practice

One conclusion of the field study is that rural community discussion groups can greatly facilitate information

exchanges among their members and help to increase the effectiveness of extension services in transmitting messages to their mass clientele. Perhaps the most obvious implication of the friendship group program is that it has reduced the cost in reaching great numbers of farmers, as compared with individual contact. However, more important than the size of the audience is the issue of actual behavioral change. Impersonal mass media channels have by definition capacity to disseminate messages to large audiences. But, in the view of extension services, the factor which has made programs like the friendship groups a viable alternative to mass media is their effectiveness in giving participants the knowledge and skills which necessarily must precede the adoption of new technologies.

As instruments for persuasion, the methods employed in the friendship groups have been highly effective. Demonstration in which every participant performs new skills under close supervision of extension personnel, has enabled the FEDERACAFE Extension Service to realize significant progress in its program aimed at adoption of a coffee technology characterized by new high-yielding varieties, high density planting, and intensive use of fertilizer.

Nonetheless, education is only a complementary factor in development and it can have only limited effectiveness unless attention is paid to socio-economic constraints associated with the wider social system. If a nonformal education program is to raise the standard of living of

the majority of people in the community, it must provide for more equal access and control of institutional resources. Considered in this context, the FEDERACAFE friendship group program is vulnerable to the same two criticisms waged against programs which rely on mass media channels: failure to provide for feedback and insufficient attention to the quality of the innovations being promoted.

In looking at the friendship group methods and the leader role conception of some of the practicos, it is clear that a large part of the program operated in one-way banking fashion, with the practicos imposing their views on what the people need. As the evolution of friendship group activities suggest, communication must ultimately imply a dialogue in which the initiative can come just as well from one of the parties involved in the process as another. It is not enough to pay lip service to the concept of feedback or even to administer, as FEDERACAFE did in Tolima, methods for systematic feedback information.

Social Structure

The key constraint to social change through the friendship group program is the structural inequity of the coffee zone. Any effective rural development program must begin by taking account of the ownership of the land, the size of the land-holdings, and the traditional sources of control. As is true of most of Latin America, the possession of large concentrations of land by comparatively few owners has been the greatest contributor to the molding of Colombia extension service programs. Despite its two-way directional

capacity, the friendship group program is a product of this inequitable social structure.

Three factors which the study has identified as most contributory to the elaboration of the friendship group program are: 1) the commitment of a large part of the extension bureaucracy to progressive social change; 2) the economic policy aimed at increasing Colombia's share of the world coffee market; and 3) the social structure of the leadership in the coffee sector.

The commitment to the maintenance of the small-scale farmer and programs tending to support him on the part of FEDERACAFE's extension workers had its greatest impact in the design and establishment of the friendship groups. The more progressive extension personnel designed a program ideally controlled by the participants which would help them express their concerns and acquire what they need from governmental and private institutions. However, the designers of this strategy did not take into account the amount and strength of pressures resisting a considerable increase in the power of the small-scale coffee-growers. Hence, the problem originated in the earliest conception of the friendship group program, which did not sufficiently acknowledge the national commercial interests and the interests of local elites.

As a result of coffee's importance to Colombia's economy and foreign trade balance, the middle and upper sector coffee producers are closely integrated with the government. These interests, which can easily absorb the

economic loss by adoption of new technologies, are clearly served by changing technology to increase production. The study found that the effect of the coffee bonanza had been to de-emphasize work with the friendship groups. One must conclude that national economic interests made production efficiency a higher priority than the defense of small-scale farmers who cannot afford to take their land out of production and purchase much greater quantities of chemical fertilizer.

The social structure of leadership in the coffee zone also emerged as a significant constraint on the political responsibility and participation goals of the friendship groups. In the few cases where friendship groups succeeded in provoking the participants to collectively challenge vested interests, the programs were terminated. This policy was enacted because FEDERACAFE relies on the support of the traditional leaders (medium and large-scale producers) to accomplish its production objectives. Once the junta of friendship group coordinators began to pose a threat to these traditional leaders by absorbing their political functions and supplanting their leadership, institutional support for the groups was withdrawn.[1]

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[1]According to one FEDERACAFE official, the juntas were terminated because the coordinator leadership tended to attract various ideological streams, which could provoke conflict with the government and engender a reaction from the latter to end the educational activities of the friendship groups.

The most significant conclusion and implication for practice to be drawn from this study of the friendship group program is that the participatory capacity of rural community discussion groups is limited by the inequities of the social structure with which they interact. The degree of participation originally designed into the friendship group program was circumscribed by the opposition of traditionally dominant interests within and outside the establishing agency. No rural community discussion group can effectively serve as a mechanism for local participation in education and collective action for social change unless the institution(s) supporting it is willing to accept local control and the consequences of such control.

Implications for Research

The group level analysis of a rural community discussion group program in Colombia has provided some interesting findings and speculations which may prove useful for the development of theory in the fields of nonformal education and communication. Therefore, some concluding statements are in order regarding the interrelations of the variables analyzed in the hypotheses.

First of all, the study provides evidence that the degree to which the group leader genuinely desires to democratize the educational process and encourage participatory styles of learning is a consistent predictor of dialogical orientation, adaptation of innovations, and activity for situation improvement. Zero order and partial

correlations between leader role conception and these three variables were found to be highly significant. Future research into the role of group processes in promoting social change may be more efficient by giving priority to the systematic measurement and evaluation of the training, attitudes, and values of the group leaders related to their roles as depositors of information or stimulators of dialogue.

Secondly, dialogical orientation does seem to be conducive to objective questioning and doubts of innovations as well as the active modification of innovations. As predicted, when the norms of the group are favorable toward dialogue and critical co-investigation, group members adhere to the norms and actively question, adapt and reject recommended changes. While empirical studies have consistently found group norms to be related to change behavior, the overwhelming majority of this research has been of the diffusionist perspective, focussing on innovation adoption. Scant attention has been given the development of independent thought and action. The finding, in this study, that small-scale farmers can develop self-reliance and self-confidence in their indigenous knowledge and that these farmers are neither innately fatalistic nor dependent on superiors, constitutes a strong rationale for pursuing research into the democratization of rural educational processes in Latin America.

Moreover, the study found that dialogical orientation is not conducive to utilization of institutional resources. This finding implies that disengagement from traditional norms of resignation and acceptance is accompanied by a rejection of institutions associated with previous dependence and exploitation. This result is consistent with Freire's second level of raised consciousness, which he terms naive consciousness. Longitudinal studies with the friendship groups or other programs with consciousness-raising components may establish whether or not utilization of institutional resources increases, as suggested by Freire, as participants enter the highest stage of consciousness and begin to work with institutions to transform their situation.

The study made clear, however, that resistance to institutional services by groups with higher dialogical orientation does not mean a corresponding decline in activity for situation improvement. On the contrary, zero order and partial correlations for dialogical orientation and activity for situation improvement were high. The typical pattern seems to be that these groups more actively defend their own interests while disengaging from traditional sources of assistance. Appropriate research designs and measurement techniques need to be developed in order to understand the effects of various states of consciousness on activity for situation improvement and enrich our capacity to accommodate these activities.

This work also has implications for future research on communication networks. It should be clear from this study that contextual effects mitigate against an absolutist interpretation of the linkages bewteen communication function and structure. The potential of network analysis for illuminating the role of structure in the social change process has been illustrated in this study. For example, the network method provided the most appropriate measure for testing the validity of the baseless triangle model of the evolution of the friendship group. Network analyses should be incorporated in further studies on communication system effects in non-formal education.

In conclusion, despite isolated examples, research of an empirical nature on the application of consciousness-raising education is scarce. Moulton's (1977) assessment of Animation Rurale in West Africa typifies the literature on the impact of consciousness-raising programs:[1]

> It cannot be demonstrated conclusively that animation rurale has either "succeeded" or "failed". Quantitative data is not very instructive, since an account of the numbers of villages affected and of animateurs trained, gives not indication of the animateurs achievements. Although such statistics are available and have been cited in this study as relevant, they are misleading if not accompanied by an account of the qualitative results of the training and village development programs. Unfortunately, there has been a lack of this kind of evaluative information--a lack which has made it difficult to adjust the program on the basis of formative evaluation information.

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[1]Moulton, J., Animation Rurale: Education for Rural Development, p. 70,

Clearly, in order for evaluation of nonformal education to capture more than only the formal elements in educational settings, it should seek inspiration from the case study and survey techniques of anthropology and sociology. It is hoped by the application of affective coding instruments, network analysis, and open-ended interviews in this study that some educational researchers and planners will become aware that despite obvious difficulties in the assessment of affective learning, progress can be made towards the development of relevant research and evaluation designs.

APPENDIX A

Municipality_____ Vereda _____

Name _____ Group Name _____

1. What is your opinion of the friendship groups? _____

_____

2. When you are in a group, do you prefer to make decisions yourself or do you prefer others to make them?

(2) Self _____ (1) Others _____

3. Suppose I talked to other men in the group. How much much attention should I pay to the ideas of the group members as against the extension agent?

(3) Most attention to what the group members say _____
(2) Equal attention to what the group members say _____
(1) Most attention to what the extension agent says ____

4. Suppose an agricultural practice was being discussed in the group that you considered to be harmful or inappropriate. What do you think you could do?

_____

5. If you made an effort to have the group reconsider the practice, how likely is it that you would succeed?

(3) Very likely____ (2) Somewhat likely___ (1) Not at all likely____

6. If you considered that an agricultural practice being discussed in the group was harmful or inappropriate, how likely is it that you would actually try to do something about it?

(3) Very likely____ (2) Somewhat likely___ (1) Not at all likely___

7. Do you remember ever doing such a thing?

(3) Many times _____ (2) A few times____ (1) Never _____

8. Some people say a boy should insist on his own opinion even if his group disagrees with him. In the face of disagreement by his group, should you teach a boy:

(1) Most times to go along with the group _____
(2) Sometimes to go along with the group _____
(3) Most times to hold to his own opinion _____

9. Suppose I talk to other men in this community. Would:

(3) Many have different opinions than you _____
(2) A few have different opinions than you _____
(1) All have the same opinion as you do _____

10. Some people say if your neighbors know all about your private affairs they may take advantage of you. What is your opinion?

(1) There is a good chance they will take advantage _____
(2) Little chance _____
(3) No chance _____

11. Would you say most people like to help others or like to watch out for themselves?

(2) Help others_____ (1) Look out for themselves _____

12. Would you say extension agents, in general, keep the promises they make?

(3) Almost all the time____ (2) Some of the time___ (1) Almost never___

13. When you meet someone for the first time what should you do?

(3) Trust the person until he proves to be not worthy of that trust _____
(2) Be cautious about trusting the person until you know him better _____
(1) Not trust the person because he may take advantage of you _____

14. Do you have doubts about how to put into practice on your coffee farm any of the following practices?

	Many doubts	Some Doubts	No Doubts
1. sembrar cafe	_____	_____	_____
2. trazado de cafetales	_____	_____	_____
3. construccion de almacigo	_____	_____	_____
4. construccion del germinador	_____	_____	_____
5. control de plagas	_____	_____	_____
6. control de enfermedades	_____	_____	_____
7. control erosion	_____	_____	_____
8. fertilizacion	_____	_____	_____
9. uso de credito	_____	_____	_____
10. construccion de beneficiadero	_____	_____	_____

15. Who have you consulted with about these practices?

Coordinator of the group_____ Group member _____
Extension agent _____Non-member farmer _____
Manuals or booklets _____
Others _____
Nobody _____

16. Which of these practices have you had to modify or had to discard in favor of an alternative due to the special conditions on your coffee farm?

	Modified	Discarded	Used as Recommended
1. siembra de cafe	_____	_____	_____
2. trazado de cafetales	_____	_____	_____
3. construccion de almacigo	_____	_____	_____
4. construccion del germinador	_____	_____	_____
5. control de plagas	_____	_____	_____
6. Control de enfermedades	_____	_____	_____
7. control erosion	_____	_____	_____
8. fertilizacion	_____	_____	_____
9. uso de credito	_____	_____	_____
10. construccion de beneficiadero	_____	_____	_____

17. Which of the following practices are presently being used on your farm? Tell me if you use them much, little or not at all.

	Much	Little	Not at all
1. siembra de cafe	_____	_____	_____
2. trazado de cafetales	_____	_____	_____
3. construccion de almacigo	_____	_____	_____
4. construccion del germinador	_____	_____	_____
5. control de plagas	_____	_____	_____
6. control de enfermedades	_____	_____	_____
7. control erosion	_____	_____	_____
8. fertilizacion	_____	_____	_____
9. uso de credito	_____	_____	_____
10. construccion de beneficiadero	_____	_____	_____

18. Who in the group do you regard as generally being the most likely to introduce doubts about the appropriateness of a practice into group discussion? WRITE NAMES

    Most likely _____

    Who do you regard as the second most likely to introduce doubts?

    Second most likely _____

19. Who in the group do you regard as generally being the first to adopt new practices? WRITE NAMES

    First _____

    Second _____

20. Are you doing something to acquire more land?

    (2) Yes _____ (1) No _____

    IF YES: What? _____

21. Are you doing something to obtain more credit?

    (2) Yes _____ (1) No _____

    IF YES: What? _____

22. Did you receive credit before becoming a member of the friendship group?

    Yes _____ No _____

    IF YES: (IF NO GO TO 24)

23. How many times? _____

24. Are you doing something to acquire more income?

    (2) Yes _____ (1) No _____

    IF YES: What? _____

25. Are you doing something to acquire more tools?

    (2) Yes (1) No _____

    IF YES: What? _____

26. How often have you used services provided by the Comite de Cafeteros in the last six months? _____

27. What types of services did you request? _____

_____

28. What other institutions have provided you with agricultural services in the last six months?

_____

_____

29. How old are you? _____

30. How many years have you attended school? _____

31. Please read the following paragrah:

LOS HOMBRES Y LAS MUJERES DEL CAMPO DEBEN ESTAR PREPARADOS PARA ENFRENTAR LOS DESIGNIOS DEL FUTURO. COLOMBIA NECESITA DE LOS TRABAJADORES DEL CAMPO Y TODOS DEBEMOS ESTAR UNIDOS EN LA TAREA COMUN DE HACER QUE COLOMBIA SEA CADA DIA MAS PROSPERA.

INTERVIEWER: THANK THE PERSON AFTER THE PARAGRAPH IS READ. WRITE YOUR EVALUATION OF THE INTERVIEWEE'S READING CAPACITY:

Reads well _____Reads with difficulty ____ Does not read ___

IF READS WITH DIFFICULTY OR DOES NOT READ: (IF READS WELL GO TO 33)

32. Is there someone who regularly helps you to read?

Yes _____ No _____

33. How often do you read or have someone read for you newspapers or magazines?

(4) (3)
Every day____At least once a week____
(2) (1)
At least once a month Less than once a month ____

34. How often do you read or have someone read for you agricultural bulletins or manuals?

(4) (3)
Every day_____ At least once a week ____
(2) (1)
At least once a month____ Less than once a month ____

35. Do you own a radio? Yes_____ No _____

36. In a normal day, how many hours do you listen to the radio?

Morning_____ Afternoon _____ Night _____

37. What are your favorite radio programs? Rank them in order of preference: 1 for most favorite through 4 for least favorite.

_____sports _____music
_____news _____agricultural information programs

38. What is the number of hectares on your farm? _____

39. Do you: Own the land _____
Rent the land _____
Work for another _____

IF OWN: (IF NO GO TO 41)

40. What amount is the mortgage on your land? _____

41. How long have you been a member of the friendship group?

_____ years _____months

42. How often do you attend group meetings?

(4) Every 15 days _____ (3) Once a month _____

(2) Once every 2 months _____ (1) Less than once every 2 months__

43. Did you vote in the last FEDERACAFE Municipal Committee Election?

Yes _____ No_____

44. Are you a member of FEDERACAFE?

Yes _____ No _____

INTERVIEWER: THANK THE PERSON FOR HIS/HER ASSISTANCE.

NETWORK DATA

Would you please give me the names of all persons with whom you have talked about seed selection in the last 6 months? This could be any person in your family, friendship group, village or outside the village. WRITE NAMES. Did you mostly seek information and advice from this person? Or Did this person mostly seek information and advice from you? or Did you mostly share about equally information and advice?

NAME	IDENTIFICATION (2) (ADDRESS, NICKNAME, JOB, NAME OF SPOUSE, ETC.)	TIMES IN LAST SIX MONTHS (3)	STARTS	RECEIVES	SHARES (4)

APPENDIX B

Coordinator_____

Extension Agent _____

Name _____

Group Name _____

Length of time in present position _____

A. I will read you two ideas. Please tell me which of them is the most important

- The Coordinator should serve as an intermediary between the recommendations of the group and the Extension Service of the Committee.

- The Coordinator should serve to bring technical information from the Extension Service of the Committee to group members.

B. I will read you two ideas. Please tell me which of them is the most important

- The Coordinator teaches and group members are taught

- The Coordinator serves to develop the capabilities of other farmers so they can run the vereda.

C. I will read you two ideas. Please tell me which of them is the most important.

- The Coordinator should analyze issues raised by group members

- The Coordinator should select themes for the group meeting and have group members adapt to them.

D. I will read you two ideas. Please tell me which of them is most important

- The Coordinator should assure that the group studies entirely production problems.

- The Coordinator should attempt to have the group consider economic problems and others that can affect the farms of each farmer.

E. I will read you two ideas. Please tell me which of them is most important

- The Coordinator should convince the group that practices discovered on experimental farms are better than those traditionally used.

- The Coordinator should have the group discuss different techniques to adapt them to each farm.

F. I will read you two ideas. Please tell me which of them is most important

- The Coordinator should encourage open discussion in group meetings even when it is in conflict with adoption of recommended practices.

- The Coordinator should have the group discuss only topics shown by the extension agent.

G. I will read you two ideas. Please tell me which of them is most important

- The Coordinator should have the group present ideas that serve toward better programming of the Committee.

- The Coordinator should see to it that farmers are concerned only with problems of the group.

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