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INTERACTION AND COMMUNICATION IN A PHILIPPINE BARRIO:
A STUDY OF SOCIAL SPACE AND SOCIAL DISTANCE

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN GEOGRAPHY

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By

John Sanford Parsons

Dissertation Committee:

Robert J. Earickson, Chairman
Donald Fryer
Brian J. Murton
Gary A. Fuller
Florangel Z. Rosario
ABSTRACT

This dissertation examines networks of interaction and communication among women in a rural barrio in the Philippines. The purpose of the research is to identify the social and spatial factors affecting the formation and maintenance of these networks so as to better understand the nature of the diffusion of family planning information.

In order to evaluate the relative importance of various determinants of interaction and communication, Social Field Theory, a specific model of dyadic behavior, was applied to small group behavior in the Philippines. Social Field Theory posits that the degree and direction of interaction between pairs of individuals is a function of the extent to which these individuals share basic social, economic, psychological and spatial attributes. At the heart of Social Field Theory is the notion of social space which is conceived of as consisting of the basic attributes of the actors making up the social system. The basic potential for movement or interaction in this space is hypothesized to be a function of the extent to which actors share a similar location in social space, which in turn is defined by their similarity of attributes or, alternatively, by the amount of social distance separating them.

Social Field Theory, as developed by Rummel in political science, is isomorphic with the mathematical system of linear
algebra. Each of the axioms of Social Field Theory is capable of empirical verification through the multivariate techniques of correlation, principal axes factor analysis and canonical analysis.

Data on individual attributes and dyadic interaction were collected over a fourteen month period from 1971 to 1972 in a barrio on the island of Marinduque in the Philippines. Using principal axes factor analysis, seven structural dimensions of social space and six dimensions of interaction space were extracted. The factor scores for each of the respondents on the social space dimensions formed the basis for calculating the social distance between each possible pair of respondents.

Taking only those dyads where interaction occurred on at least one of the twenty different interaction situations, 2969 dyads were obtained for analysis. The factor scores for each of the 2969 dyads on the six dimensions of interaction space were canonically correlated with the social distance scores for the same dyads as well as with two additional measures of distance-relational closeness measured in terms of blood or marriage ties and physical proximity between respondent's houses.

Canonical analysis revealed that the social distance measures were poor predictors of dyadic interaction. However, relational closeness and physical proximity were the best
single predictors of networks of interaction in two
different, general patterns of social behavior.

Certain aspects of the diffusion process involving
family planning information were found to parallel general-
ized networks of interaction, but crucial components of
the diffusion process--namely, opinion leadership and the
communication of personal experiences with the innovation--
were found to be lacking in the barrio. This suggests that
the diffusion of family planning information differs in
several significant aspects from the diffusion of other
innovations.

Several possible explanations are suggested for the
lack of observed relationship between social space, social
distance and networks of interaction. These include:
(1) problems with the selection of variables used to define
social space; (2) methodological considerations which
revolve primarily around the mathematical properties of the
data employed; and (3) a variety of cultural and situational
factors peculiar to Philippine barrios mitigating against
social distance acting as a force on interpersonal behavior.
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CHAPTER I
THE PROBLEM IN PERSPECTIVE

I. Introduction

This thesis examines networks of interaction and interpersonal communication among a population of women in a Philippine barrio. The purpose of the research is to determine how various factors, from the social, economic, psychological to the spatial, influence the formation and maintenance of these networks generally and how these factors affect the word-of-mouth diffusion of family planning information specifically.

The present research augments the current body of social science knowledge and is a logical extension of geographic theory, particularly as it relates to the spatial aspects of human behavior. Hägerstrand's work on the spatial diffusion of innovations has led to the development of a school of geographic thought concerned with the theoretical constructs of the diffusion mechanism and with the simulation of the spread of various types of innovations.

Coupled with this general interest is a more recent trend in geography which deals with the nature of spatial behavior. Building on a long tradition of analysis of spatial patterns and distributions for new perspectives on man and
his cultural landscape, geographers have begun to ask more specific questions about the effects of geographic space on individual patterns of behavior. To understand the small-scale generating mechanisms producing aggregate patterns, it has been found necessary to draw upon and make more explicit certain behavioral postulates. The theoretical literature on spatial behavior of individuals is increasing and forms the basis on which better deductions can be made concerning aggregate behavior.

The remainder of Chapter I develops the theoretical frame of reference for the study. Specifically, geographic contributions to the study of interaction and interpersonal communication are examined, and some weaknesses in the traditional geographic approaches are discussed. Contributions made by other social and behavioral sciences to the understanding of interpersonal behavior in general as well as in the context of Philippine culture will be presented. Finally, a summary statement of the organization of the thesis and the remaining sections will conclude the section.

II. Thesis Frame of Reference

A. Geographic Contributions to the Study of Interaction and Communication

Until the late 1960s and early 1970s, little appeared in the geographic literature pertaining specifically
to interaction and interpersonal communication.\textsuperscript{1} Where this particular topic has arisen and has received closest attention is in that branch of geography concerning the diffusion of innovations where the word-of-mouth spread of information has been identified as an important component of the diffusion process.

The Swedish geographer Hågerstrand recognized the role of interpersonal communication in the diffusion of various agricultural innovations over time in his country.\textsuperscript{2} He was interested in identifying the factors accounting for the spatial and temporal distribution of adopters of farm innovations, such as the control of bovine tuberculosis and the acceptance of state subsidized grazing improvement schemes. Based on his review of the literature on the adoption of innovations, Hågerstrand hypothesized that the time of a particular innovation's adoption was a function of a farmer's receptivity to the innovation which in turn depended on the relative size of his farm. The larger the farm, it was suggested, the greater the likelihood that the adoption would


\textsuperscript{2}Torsten Hågerstrand, \textit{Innovation Diffusion as a Spatial Process}, trans. by A. Fred (Chicago, 1967).
occur early. However, for both innovations, he found that when the spatial location of adopters was plotted over time, "... the order of acceptance among the bulk of the cultivated holdings [could not], in terms of area, be distinguished from a purely random sequence." He did find, on the other hand, that the rank order of acceptances was clearly related to the location of one farmer with respect to another. Therefore, he concluded that "... it is not the receptiveness factor but rather the information factor which is most crucial to the creation of a functionally efficient model." H"gerstrand narrowed the scope of his investigation further by concentrating on the role of "private information" --especially face-to-face conversation--rather than "public information" as the primary vehicle in the spread of information about the innovation. At the heart of his research rested the premise that acceptance of an innovation is primarily a function of the frequency of exposure of the individual to relevant information about the innovation. Resistance to adoption breaks down gradually as the individual obtains repeated information. Exposure, in turn, depends upon the individual's proximity to the sources of information, the dispersion of which is governed by what he termed the

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3Ibid., p. 156.
4Ibid.
"neighborhood effect." The neighborhood effect posits that the probability of new adoptions occurring in any given area will be higher among those individuals living nearer the earlier adopters than among those living further away. "The importance of the neighborhood effect," writes Hägerstrand, "suggests that the links between individuals in circles of acquaintances and friendships play a remarkably important role for directing information and influence."5

The neighborhood effect concept is based (1) on empirical evidence and observation of the actual spread of several agricultural innovations in Sweden, and (2) on surrogate measures of spatial behavior devised by Hägerstrand, using such indices as telephone traffic and migration distances. From these various manifestations of spatial behavior, he concluded that the links between individuals in farming communities (similar to those found in Sweden) display a strong distance bias. Accordingly, the probability of interaction and communication between any two individuals can be expressed as an inverse relationship to the intervening distance separating them. The probability that an individual would obtain sufficient information about an innovation to overcome his resistance to its adoption—or stated differently, 

the likelihood that a potential adopter would be repeatedly
told about the innovation—could be expressed as a function
of the geographical distance between that person and those
who had already accepted the innovation.

Hägerstrand recognized that his assumptions about the
spatial characteristics of interaction and communication
were oversimplifications of a vastly more complex process
which depended on more than merely geographic distance con­
siderations. He suggested that an ideal basis for examining
"private information fields" would have been sociometry
which investigates the intricate patterns of friendships,
antagonisms and interactions within a population using the
criteria of mutual or unilateral attraction, repulsion and
indifference. However, such sociometric studies can only be
achieved through laborious interviews and tests, and thus he
concluded:

Such studies can be successfully carried out in
adequate detail for closed societies . . . but
hardly for an entire region with its thousands of
inhabitants and millions of interpersonal relations
. . . To perform the research necessary to recreate
the structural ties of . . . social atoms would be
a superhuman task. On the other hand, it appears
feasible to derive at least the approximate values
and types of private information fields.6

These "approximate values and types" were obtained
through a study of telephone traffic and migration distances
which he found to provide an adequate basis for simulating

the probable spatial configuration of adopters of various innovations with a considerable degree of accuracy and reliability.

These surrogates of spatial behavior continue to be the foundation upon which simulation studies of diffusion in geography rest. Little research has been undertaken to ascertain the validity of the parameters of these surrogates in different social contexts and milieux. Morrill and Pitts have examined several of these measures, such as marriage distances in a number of countries, including a non-Western one.7 Marble and Nystuen8 and Marble9 have investigated the use of surrogate measures of spatial movement using household travel behavior, and they raise several serious objections about the adequacy of these measures as indices of actual spatial movement, especially that occurring over short

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Yet, the fact remains that little substantive work has been undertaken in geography on interpersonal behavior which would provide insight into the underlying processes giving rise to particular manifestations of various spatial phenomena, including the diffusion of innovations. The reasons for this are discussed below.

1. Shortcomings of Geographic Studies of Spatial Behavior

Despite Hägerstrand's substantial and widely recognized contributions to diffusion studies, his invitation to other geographers to expand on his concept of physical distance bias to include, among other things, social distance as a potential barrier both shaping and retarding the diffusion of innovations has been slow to be accepted. The reason for this seems to stem primarily from the traditional methodological orientation of the discipline in explaining spatial phenomena, an orientation which emphasizes morphology or spatial form rather than the behavioral processes giving rise to such form.

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10 Marble and Nystuen, op. cit., p. 102.

11 Everett Rogers, a noted authority on the diffusion process, has called Hägerstrand "the father of diffusion simulation research." Everett M. Rogers, Modernization Among Peasants: The Impact of Communication (New York, 1969), p. 347.
King has written:

Existing theoretical statements in geography appear weak on at least two counts. First, it is usually the case with these statements that the basic spatial structure appears as a given, rather than as a logical consequence of the theory... A second weakness... is that the behavioral underpinnings of these statements have seldom been made explicit, and in those few cases where this shortcoming has not been so apparent, the behavioral postulates often have appeared dated with respect to the findings of modern behavioral science.\textsuperscript{12}

Commenting on a conference on model building, Gunnar Olsson was even more specific in his criticism of traditional geographic methodology. Writes Olsson:

The basic premise in the inference [of behavior from spatial analysis studies] discussion was that the widespread dissatisfaction with existing geographic theories may be due to a preoccupation with spatial patterns and a neglect of small scale generating processes... It was found that most of the work reviewed had started from given spatial patterns and then proceeded to indirect inferences about the generating processes and underlying human behavior. Since the behavioral axioms of geographic theory belong to a higher level in the hierarchical structure of hypothetico-deductive system than the spatial axioms, such inferences appear logically peculiar. It was suggested, therefore, that the limited success of current theories may be due to weak linkages between the various levels of the hierarchically ordered statements.\textsuperscript{13}

The object of the criticism by King and Olsson appears to apply to the general area of theory building and especially


the scientific method as used in geography. In his excellent book, *Explanation in Geography*, Harvey undertakes a comprehensive review of the literature and the various schools of thought pertaining to the scientific method, and he relates these to the development of theory in geography.\(^{14}\) He concludes that there has been a notable neglect of the theoretical-deductive approach to theory building in geography, and too much emphasis on what he calls the "Hartshornian orthodoxy" of the empirical-inductive route. Even when theories have been posited, they tend to consist of hypotheses which cannot be verified. In part, this is due to the fact that the hypotheses are stated in such a manner as to be incapable of deductive elaboration. It is also due to the weak and only recently elaborated linkages in scientific methodology itself which run from the statement of theory through the formation of hypotheses, model building, experimental design to verification procedures.\(^{15}\)

That a discipline or science may rely heavily on the empirical-inductive route is partially accounted for by the stage of development of the science. Harvey comments:

> In the early stages of the development of a science, this aim [of a deductive frame of reference] may not be realizable, simply because we do not know enough or simply because our imagination cannot reach that far. In such a situation induction may prove important. The deductive form of scientific theories must


\(^{15}\)Ibid., p. 78.
be regarded as the end product of scientific knowledge, rather than as the mold into which all scientific thought is cast from the very initiation of an investigation.\textsuperscript{16}

Consequently, although the scientific method necessarily requires a blend of the two approaches, the tendency in geography to rely on the empirical-inductive route has relegated much of geographic thinking to the job of finding order and classifying data. More importantly, the lack of theory has often restricted our ability to order and classify data in any meaningful way.

The slow development of the scientific method in geography can also be attributed, in part, to the perceived need on the part of many geographers to carve out an intellectual niche for the discipline which would provide geography the aura of legitimacy and that would ascribe to it and its methods a unique perspective on man and his cultural landscape.\textsuperscript{17} The results of such an undertaking, as Ackerman so aptly pointed out, had the effect of cutting geography off from theoretical and substantive developments in other fields, especially in the social sciences.\textsuperscript{18} King has similarly

\textsuperscript{16}Ibid., p. 38.

\textsuperscript{17}Richard Hartshorne, \textit{Perspective on the Nature of Geography} (Chicago, 1959).

\textsuperscript{18}Edward A. Ackerman, "Where is a Research Frontier?" \textit{Annals of the Association of American Geographers}, Vol. 53 (December, 1963), pp. 429-439.
noted this intellectual isolationism, particularly with regard to the social and behavioral sciences. He writes:

It is worth noting that in the past the interfaces between geography and the disciplines of psychology, sociology and political science have remained comparatively neglected, at least in comparison to those between geography, economics and anthropology. The few probings which already have been made by some geographers in the direction of these other social and behavioral sciences prompt the conclusion that this neglect has deprived our theorizing in geography of considerable stimulation and enrichment.\(^{19}\)

However, during the decade of the sixties and the early years of the seventies, geographers have begun to look more closely at some of the theoretical work in psychology and sociology for concepts and methodological approaches which might assist the study of a variety of geographic phenomena, from the perception of the environment,\(^{20}\) hazard perception,\(^{21}\) and migration and travel behavior\(^{22}\) to the

\(^{19}\)King, 1969b, op. cit., p. 594.

\(^{20}\)D. Lowenthal (editor), Environmental Perception and Behavior Research Paper No. 189, University of Chicago (Chicago, 1967).  


spatial relevance of learning theories\textsuperscript{23} and friendship fields.\textsuperscript{24}

As Hägerstrand suggested, interpersonal communication is a complex process involving a multiplicity of factors. In order to understand, appreciate and take into consideration these factors, many of which are non-geographic, the theoretical developments in the other related disciplines should be considered as they pertain to interpersonal behavior.

B. Interpersonal Behavior as Viewed from Other Disciplines

1. Social Distance and Interaction

Much of the grist for the geographer's investigation of interaction and communication comes from research in other social science disciplines, most notably from sociology and social psychology where interest in small group behavior is long and well-established.

Referring to Hägerstrand's work with spatial variables and simulation of the diffusion process, Karlsson, a Swedish sociologist, has argued that "If we want to have a realistic


diffusion model, we must estimate contact frequency."25 Karlsson argues that the probability of contact frequency is influenced not only by pure physical distance. It also depends on the receiver's social characteristics in general and on his relationship to the communicator, that is, the social distance between communicator and receiver. He states that the probability of communication between two people is higher where social similarities are greater than where they are more diverse.26

A review of much of the sociological and social psychological literature on interpersonal behavior reiterates Karlsson's concern with the relationship between distance—primarily social but also geographic—and the growth and mechanism of networks of interaction and interpersonal communication. Although researchers such as Barnlund and Carroll27 and Festinger and others28 have studied the effect of physical proximity on small group behavior, most of the work to date has concentrated primarily on the social and psychological determinants of communication and interaction.

26Ibid., p. 33.
In seeking to understand and answer the fundamental question of who interacts and communicates with whom for what purpose in what situations, attention has focused on an examination of the personal characteristics of the individuals involved in the process of interaction and/or communication, especially on the effects of similarities and differences in the social, economic and psychological make-up of the individuals involved in interaction. Specific differences have been measured in terms of socioeconomic characteristics, psychological characteristics, prestige and 

29 The most extensive bibliography in this topic is provided by Everett M. Rogers, Bibliography on the Diffusion of Innovations (East Lansing, Michigan, 1967) and in his Modernization Among Peasants, op. cit.


32 Festinger, 1957, op. cit.

value and attitudinal attributes. From this literature emerge such concepts as "homophily," "social distance," and "cognitive dissonance. In their own way each reflects the idea that in positive situations, such as the formation and maintenance of friendships and in the exchange of advice and information, people are behaviorally inclined to interact with others who are closer—or who are perceived to be closer—to themselves in terms of class membership, position in the social structure and shared values. Similarity of personal traits, of interests and activities, and of attitudes acts to direct and solidify still further interpersonal relations.

2. Small Group Behavior

Most of the studies cited above utilize the individual as a member of a larger group as the unit of analysis, with group membership determined by the aggregate characteristics of the separate members. The systematic study of small groups is, according to Robert Sommer, a relatively recent development. In many situations, especially those involving communication and interaction, the most appropriate object


35 Barnlund, op. cit., p. 87.

of concern is neither the individual alone nor the large group as a whole, but rather pairs of individuals or dyads, for it is primarily between such pairs that most interaction occurs. Sommer reports that in a pioneer investigation of group size, "71 per cent of all groups, both informal and work groups, contained only two individuals, 21 per cent contained three individuals, 6 per cent contained four, and 2 per cent contained five or more individuals. These data make it abundantly clear that the size of the informal aggregation in these common situations is small indeed--consisting of two individuals most of the time."  

Focus on the dyad permits investigation of the relationship between similarities and differences of individual attributes and the types of behavior occurring between pairs of individuals. It also emphasizes the fact that interaction itself is as important to the analysis as is the relative degree of similarity of the actors involved. In fact, Blau has argued that greater attention needs to be paid to such interactions than has been the case in the past. He writes:

Most social research, particularly quantitative research, treats social relationships, if at all, as attributes of individuals or groups. Individuals may be described on the basis of their relationships

---


38 Sommer, op. cit., p. 60.
with others as more or less integrated and groups
may be described on the basis of the social bonds
within them as more or less cohesive. An alterna­
tive approach . . . is to treat not the individual
but the interpersonal relationship as the unit of
analysis. The basic question is how various
similarities and differences between people influence
their interpersonal choices and thus the distribution
of social relationships among them.39

The point to be emphasized here is that individual
similarities and differences have been demonstrated to be
important factors in understanding interpersonal behavior,
but that the relative importance of particular similarities
and differences may vary according to the type of interaction
or communication involved. Whether it is the social structure
of groups that gives rise to relationships between people
or the other way around, the two are intricately entwined and
are inseparable.

3. Interpersonal Behavior in the Philippines

Using the dyad as the unit of analysis and dyadic
interaction as the subject of concern, our attention can
now be drawn to interpersonal relations in lowland Philippine
culture. Although much has been written on the subject in
recent years,40 no one has synthesized these diverse ideas

39Peter M. Blau, "Patterns of Choice in Interpersonal
Relations," American Sociological Review Vol. 27, No. 1

40See Frank Lynch's review of this literature in "Social
Acceptance Reconsidered," in Frank Lynch and Alfonso de
Guzman II (editors), Four Readings on Philippine Values
IPC Papers No. 2 (Quezon City, 1970).
nor incorporated them into a general model of behavior in the Philippines.

However, Foster, an American anthropologist, has proposed a model of interpersonal behavior called the dyadic contract which is based on his work among the Tzintzuntzan peasants of Mexico. Although formulated and based on a different culture, the dyadic contract model appears to have direct applicability to generalized patterns of interpersonal relations in the Philippines. The model is reviewed here primarily because it represents—what can be considered—the most general statement of a theory of interpersonal behavior in cultures with attributes similar to those found in the Philippines. As such the discussion is not meant to replace a review of the literature on interpersonal relations among Filipinos but is merely a suggested framework with which to examine highlights of Filipino behavior and to suggest an approach for studying such behavior.

Foster's model can be summarized in his own words:

Every adult organizes his social contracts outside the nuclear family by means of a special form of contractual relationship. These contracts are informal, or implicit, since they lack ritual or legal basis . . . they are unenforceable through authority; they exist only at the pleasure of the contractants. The contracts are dyadic in that they occur only between two individuals; three or more people are not brought together. The contracts are noncorporate, since social units such as villages, barrios, or extended families are never bound. Even

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nuclear families cannot truly be said to enter contractual relations with other families, although spouses often honor the obligations inherent in each other's contracts.\footnote{42 Ibid., p. 1174.}

These contracts are either symmetrical in that they bind people of equal status with complementary reciprocal obligations which average out over time, or they are asymmetrical, as between people of different status, in which case reciprocal obligations are non-complementary and never balanced.

Within this conceptual framework, Foster can account for ideal of interpersonal behavior as well as deviations from the ideal with regard to the three major social structures of Mexican society: the family, the compadrazgo or godparent system, and neighbor-friend relations.

In Mexico, as in the Philippines, the nuclear family provides the individual with the basic model upon which all other interpersonal relations are patterned.\footnote{43 Human Relations Area Files, The Philippines Volume I (New Haven, Conn., 1956), pp. 413-470; Fred Eggan, "Philippine Social Structure," in George M. Guthrie (editor), Six Perspectives on the Philippines (Manila, 1971), pp. 1-48; George M. Guthrie, "The Philippine Temperament," in Guthrie, op. cit., pp. 49-84.} In cultures where kinship is bilateral, that is, where blood descent is traced both through the mother and the father, an individual acquires numerous relatives by virtue of membership in a family. Although more distant relatives are recognized, the
extended family is a highly informal, noncorporate ego-centered entity, and rarely consists of more than three generations—that is, grandparents, parents and children. The greater the collateral distance between individuals, the less binding the relationship becomes. When the individual marries, he acquires a new set of relations through the spouse's family. Considerable psychological stress is exerted on the individual because of the potentially large number of relatives acquired over a lifetime, all of whom, in theory, are to be accorded respect and to whom moral obligations extend. Since the individual completely lacks the option of selecting his relatives and is thus confronted with an ever expanding number of personal obligations, the only real choice he has is the degree to which he will in fact honor the obligations inherent in his various roles and in the selection of the relatives with whom he will honor them. As Foster states:

Thus, through selecting relatively few kinsmen from his total family toward whom he lives up to the behavior forms expected of him by virtue of his roles vis-a-vis theirs, ego in fact established dyadic contracts which determine his actual behavior. His family provides him a panel of candidates. He selects (and is selected by) relatively few with whom significant working relationships are developed.44

The compadrazgo system can be viewed in a similar manner. The institution of godparents; an important

44Foster, op. cit., p. 1181.
structural component of both Hispanic America and the Philippines, is well attested to, and establishes a formal relationship between godparents and godchildren. The relationship is inherently asymmetrical. However, a more significant bond is formed between the godparents and the parents of the child, and, depending on the relative status differences of each, may be either symmetrical or asymmetrical. In theory the compadre relationship, as it is called in the Philippines, is considered the most sacred of human ties in which the rights and moral obligations of the family are extended to nonkin. Yet, by middle age, most people have compadre ties with many more individuals than they are able to maintain at the expected level of intensity. Consequently, as in the case of interpersonal relations with kinsmen, the individual must be selective both in terms of the degree to which he will honor his obligations and also those he selects to honor. Although the compadre tie, once formed, is never broken, it persists as a viable and close bond only so long as the individuals involved chose to maintain and reinforce the relationship through accepted patterns of behavior.

In the case of neighbor-friend ties, the mere fact of physical propinquity creates bonds between individuals, far

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more than can be honored equally. Consequently, one's neighbors, just as one's kinsmen and compadre, provide a panel of candidates for interaction. Selectivity of choice must ultimately be exercised in determining how and with whom the bonds of friendship and interaction will be formed.

The social institution of reciprocity, manifest in a continuing exchange of goods and services in ritual and nonritual situations, both binds individuals together and validates and gives substance to the contract. Over the long run, exchanges among social equals average out, but in the short run, they are often unbalanced, and purposely so since any attempt to balance the ledger sheet signifies a desire to terminate the relationship. Although never formally calculated, each individual knows how the ledger sheet stands. As long as reciprocal transactions continue, the contract is alive and viable; whenever one party fails to fulfill his reciprocal obligations, the contract becomes dormant, only to reemerge when the individuals involved reinitiate the reciprocal transactions.

Foster's model is extremely useful in providing a conceptual framework for organizing and evaluating much of the vast literature on lowland Filipino behavior. It suggests that where interaction occurs, it is basically dyadic. It further implies that interaction between two people is a result of a conscious choice on the part of the individuals involved. In short, Foster seems to argue that interaction
in a variety of situations can be interpreted as the manifestation of a dyadic contract and that the frequency or intensity of the resulting interaction can be viewed as a surrogate measure of the degree of closeness between two people.

The questions addressed by the remainder of the thesis are: (1) What factors influence the selection of interaction partners in the Philippine setting? (2) To what extent are networks of interaction influenced by physical distance, as posited by Hägerstrand? (3) How are these networks affected by similarities and differences of individual attributes—social distance—as suggested by Karlsson and others? and finally, What is the relationship between networks of interaction and networks of interpersonal communication?

III. The Plan of the Thesis

In order to determine what factors affect the selection of interaction partners in a lowland Philippine barrio, a specific model of interpersonal behavior will be employed. The model, which is discussed in detail in Chapter II, provides the conceptual and analytic means for determining social distance between pairs of individuals and for relating social distance to patterns of interaction. The model permits evaluation of the relative importance of various factors
from the social, economic and psychological to the purely physical, on different types of interaction.

After the discussion of the model in the following chapter, the field methodology and analytic techniques employed in the study will be presented in Chapters II through V. The substantive findings regarding social distance in the barrio and general patterns of interaction among barrio women are reported in Chapters VI and VII. Chapter VIII concentrates on answering the primary research question of how the various components of barrio social space influence different networks of interaction. Chapter IX examines more closely the relationship between networks of interaction and the actual word-of-mouth communication of a specific type of information--family planning information. The last chapter of the thesis reexamines the research problem in light of the actual findings and observations concerning interaction and communication and suggests some needed alterations in the theory and its application.
CHAPTER II

A SOCIAL FIELD THEORY MODEL OF INTERPERSONAL BEHAVIOR

The subject matter of this thesis has been defined as the study of networks of interaction and face-to-face communication among a group of women in a small Philippine barrio. In order to determine the influence of various social, economic, psychological and spatial factors on the formation and maintenance of these networks, a specific model of interpersonal behavior, called Social Field Theory, will be employed.

Social Field Theory is based on the work of Rudolph Rummel in political science. Rummel's research interest has been the investigation of the relationship between differences in characteristics of nation states and international behavior among governments.\(^1\) The model was designed to serve as a predictive tool of one nation's behavior towards another on the basis of the relative similarity of pairs of nations in the international system. Through the mathematics of linear algebra, Rummel posited a series of axioms about national attributes and international behaviors and operationalized

these in such a way as to be capable of empirical verification.

Although the theoretical foundation of the model is derived from research in social psychology, Social Field Theory has been utilized primarily in political science and geography. Brian Berry used the model to investigate the relationship between spatial economic structure and commodity flows among the various states of the subcontinent of India.\(^2\) The model has also been applied to the study of population movements in Hawaii and is incorporated into a proposed study of internal migration in India.\(^3\) However, to date no one has investigated the utility of the model as a predictive tool of small group behavior from which the original impetus for the development of the model originated.


I. Background of Social Field Theory

A. Roots in Social Psychology

Much of the stimulus for the development of the Social Field Theory model stems from the writings and research of the German social psychologist Kurt Lewin. Lewin conceived of all behavior as reflecting "a change of some state of a field in a given unit of time." The concept of "field" was borrowed from physics and has been adopted by social science to represent "a complex of coexistent forces (as biological, psychological and social or interpersonal) which serve as causative agents or as a frame of reference in human experience and behavior." Specifically, Lewin conceived of a social field as consisting of the individual's "life space" which is composed of the individual and the psychological environment as it exists for him. The psychological environment, in turn, depends partly upon "... the character of the person, his motivation, his cognitive structure, his way of perceiving, etc. and partly on the stimulus distribution on the retina or other receptors as enforced by the physical processes outside the organism. For the same reasons, the problem of physical or social action are legitimately parts of psychology proper." 

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5 Webster's Third International Dictionary, 1968.

6 Lewin, op. cit., p. 57.
Lewin argued that the social milieu of any group of people—Rummel regards nation states as groups of actors, and Berry sees the states of India as actors—is composed of the individual life spaces of the different actors comprising the social system. An actor's relative location in the composite social milieu expresses "the basic possibilities for locomotion [interpersonal behavior or interaction] within the field." In other words, any system of social units can be considered a spatial field—or social space—composed of the actors standing in definite relation to each other according to the degree to which their life spaces overlap. Interaction between actors in the system is directly linked to their relative location in social space.

Field theory has its parallel in Gestalt psychology which regards social reality as a complex interaction among the component parts. Referring to field theory as a methodological tool rather than an end in itself, Lewin states:

What is important in field theory is the way the analysis proceeds. Instead of picking out one or another isolated elements within a situation, the importance of which cannot be judged without consideration of the situation as a whole, field theory finds it advantageous, as a rule, to start with a characterization of the situation as a whole.8

7 Ibid., p. 200.
8 Ibid., p. 63.
In other words, field theory serves the dual purpose of a model of interpersonal behavior and a methodology for the study of such behavior.

B. Concept of Field in Regional Geography

Harvey wrote in 1969 that the notion of field theory holds great promise for theory building and synthesis in geography because it explores the "links between indigenous theories of spatial form and derivative theories of temporal process."  

Although the systematic application of field theory to geographic research did not occur until the mid-1960's with the appearance of Berry's study of commodity flows in India, the concept of "social fields" appeared in the geographic literature as early as 1948 when Werner Cahnman employed the concept in the study of regions. He wrote that "specific regions," contrasted with "generic" ones could be comprehended as social fields transcending the boundaries drawn by geography and partaking of the character of all the social sciences. He likened these specific regions to the anthropologist's concept of culture regions which form a social field of "patterned conditions, the pattern of which is not pieced

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9 Harvey, op. cit., p. 129.
together by means of individual contributions coming from independent constituents, but is the expression of the dynamic activity of the entire system."\textsuperscript{11}

Perhaps the best examples of Cahnman's specific regions are found in the work of the French school of regional geography.\textsuperscript{12} The French school revolves around the premise that man and society cannot be explained solely in terms of individual biological, psychological or environmental factors. Instead, society must be viewed as the product of an intricate network of ideas and bonds providing stability and orientation to human life in particular geographical milieu. Although much of the emphasis of this French thought concerns the definition of space as perceived by its inhabitants--which is not the orientation of this thesis--the methodology of viewing space as a complex interrelationship of many forces is of particular interest. Space transcends geodesic considerations and finds its meaning in a combination of factors that include the physical, psychological and sociological.

\textsuperscript{11}Cahnman, \textit{op. cit.}, p. 239.

Of equal importance is the notion that the basic possibilities for movement and interaction in space are influenced by the degree to which individuals share values, perceptions and ways of life. In short, geographical concepts of physical space and distance have been enlarged to include the concept of social space in which interaction is contingent upon the extent to which individuals in the social system share similar attributes.

How is the social space of groups defined and the influence of the individual's relative location in that space linked to patterns of interaction and communication? One approach is suggested by Rummel's Social Field Theory model.

II. The Social Field Theory Model

A. General Statement

Basically, Rummel's work on the behavior of nation states towards each other conceives of international reality as a force in which one nation's behavior towards another "is a consequence of the total social situation, and this situation forms a field consisting of social characteristics, or attributes, which stand in definite relation to each other. Behavior, moreover, is relative to other behavior--to a context--as well as to the relative similarities and differences of social units . . . on their attributes. These
attributes and the interactions between social units constituting behavior form bounded systems which define the total situation and in which social units can be located.\textsuperscript{13} In short, interpersonal behavior is thought of basically as a dyadic phenomenon coupling individuals of different characteristics into social systems. Dyadic interaction is hypothesized to be a linear function of the social distance—a measure of attribute similarity—between the individual units comprising the dyad. Thus, the fundamental trait of Rummel's model is the idea of distance—with relative distance rather than the actual characteristics themselves—acting as a force to determine interpersonal behavior.

B. Assumptions

Three basic assumptions underlie the model. First, an actor's attributes and behaviors coexist in a field, and the whole field is relevant to understanding specific behavior. Second, the past is presumed to operate through attributes and behaviors currently coexisting in the field. And, third, the absolute magnitudes of attributes and behaviors is irrelevant; what is of primary importance is the relative behavior between actors and their attributes relative to each other.\textsuperscript{14}

\textsuperscript{13}Rummel, 1965, \textit{op. cit.}, p. 183.

C. Axioms

Formally stated, the theoretical constructs of Social Field Theory are:

1) Social reality is a field consisting of all the attributes and interactions of social units and their complex interrelationships.

2) The social field can be divided analytically into attribute, A, and behavioral, B spaces into which attributes and interactions are projected, respectively, as vectors with length and direction.

3) The attribute and behavioral spaces are spanned by dimensions which generate the spaces and which are finite and empirically determinate.

4) Social units are located as vectors in attribute space and are coupled into dyads in behavior space.

5) The distance vectors in A space that connect social units are forces determining the location of dyads in B space.

6) The direction and velocity of movement over time of a dyad in behavior space is along the resolution vector of the forces.\textsuperscript{15}

7) As modified in later writings, B space is a sub-space of A space.

The first axiom is primarily descriptive and states that social reality consists of a field or bounded system which is composed of the attributes and interactions of actors and their complex relationships. Attributes are relative qualities defining the location of one actor towards all others in the system. These qualities can be any measure

\textsuperscript{15}\textit{Rummel, 1965, op. cit., p. 185.}
of similarity or difference, such as age, sex, education, attitudes, or geographic location. As such, attributes are potentially infinite in number.

Likewise, interactions are defined as behavioral acts linking one actor to another. These, too, are potentially infinite and include such specific acts as gossip, advice or assistance seeking or giving, expressions of friendship, working together, reciprocal social exchanges, and so forth. The interactions link individuals together in a dynamic system.

The attributes and behaviors are all interrelated in a complex way. The object of Social Field Theory is to uncover the specific relationships among them.

The second axiom is provided for analytic purposes, and it separates attributes and behaviors into two bounded systems. It has been mentioned that the attributes distinguishing one individual from another are potentially infinite. For this reason, all attributes cannot possibly be considered. Selection must be made of those attributes that are judged a priori to be relevant to the problem at hand. These characteristics are defined in Chapter IV. The attributes selected for analysis define what is called a vector space which is bounded by the total number of social units or individuals in the system. Within this space, each attribute, consisting of as many values as there are units or observation, forms a vector or a line. The attribute vectors have
length, and their direction from each other is a function of the correlation between them. These intercorrelations, then, constitute the social system.

Illustration 1 presents a schematic representation of a hypothetical social system. Considering for the moment only three individuals--Mrs. Largo, Jordan and Hintay--and two attributes--education and mass media contact--the individuals are represented by the three coordinate axes. For illustrative purposes only, the axes are mutually perpendicular, with the third one--Mrs. Hintey--perpendicular to the plane of the paper. The attributes are plotted as points representing standardized values for education ($P_1$) and mass media contact ($P_2$). A vector is formed by drawing a straight line from the origin to the points; the angle, $\theta$, between the vectors is a function of the product moment correlation between the two attributes. The smaller the $\theta$, the greater the correlation. The relationship between these two vectors forms a system, in "three dimensional, two attribute space."

The system can be enlarged, although not visually depicted, to include as many attributes and as many individuals as desired. The intercorrelations between the attributes constitute what is here defined as a social system.

Behavior space can be represented in a similar manner except that the coordinates of the space represent all possible pairs (dyads) of individuals--$(n^2 - n)$--and the vectors
Figure 1. Attribute Space
represent the individual behaviors, described in Chapter IV, linking the dyads.

The second part of Axiom 2 posits an isomorphism (similarity of form or structure) between social reality and the analytic system of linear algebra and the specific models of product moment correlation, multiple regression and principle axes factor analysis. Rummel states:

The mathematical bases of these well known techniques are part of, and indeed can be derived from, the analytic structure of the theory. They thus can form the bridge to connect the abstract nature of social field theory to data. They allow for the falsifying of the deductions of the theory. To anyone familiar with the mathematics of regression or factor analysis, however, it would seem that these mathematical models are being elaborated in the guise of a social theory. This observation would be largely true in form, but not in substance. The multivariate model has been turned on its head, so to speak. It is employed not as a test of specific hypotheses, nor to generate findings about empirical relations, It is used, rather, as an actual model with a mathematical structure that describes this reality in a form sufficient for prediction.16

Thus, the primitive terms of linear algebra, such as vector, vector space, and distance vector, become the primitive terms of Social Field Theory, such as attribute, social space, social distance. Any deduction permissible within the mathematical structure of linear algebra is also permissible within Social Field Theory, and each of the axioms in both is empirically falsifiable.

It has been stated that the characteristics of individuals and their interactions are potentially infinite in number.

16Ibid., p. 184.
Axiom 3 holds that a finite number of bases or dimensions generate these infinite number of separate attributes and interactions. That is, all the separate attributes and interaction vectors are linearly dependent upon a set of finite dimensions which in turn are linearly independent of each other. In other words, attribute vectors can be mathematically recombined in such a way as to form a smaller number of vectors representing the larger set of data. Each of the original attribute vectors is linearly dependent on the new vectors, but the newly created vectors themselves are unrelated. A vector space contains a number of bases which are unique to that space. The bases are orthogonal or uncorrelated with each other and may be considered a coordinate space with the coordinates at right angles (uncorrelated) to each other.

Each of the individuals comprising the social system is projected as a vector into the social space defined by the finite number of attribute dimensions. The location of an individual depends on the linear dependence of its attributes with the various dimensions. For example, suppose many separate attributes were found to be linear combinations of just three independent dimensions which have been labeled (1) the Propensity to Practice Family Planning (x), (2) Extra-Barrio orientation (y), and (3) Urban Contact (z). These three dimensions, then, would constitute the basic structure of social space. If we project into this social
space two individuals--Mrs. Largo and Mrs. Hintay--on the basis of the degree to which they share these common attributes, we have a visual representation of the location of each relative to the other in social space. Figure 2 shows both individuals as vectors in this three dimensional attribute subspace. The spatial location of the Mrs. Largo and Mrs. Hintay vectors vis-a-vis each other gives a geometric representation of their degree of attribute similarity.

By drawing a straight line or distance vector \( \mathbf{d} \) between the two actor vectors and measuring its length, we have a relative measure of the social distance between the two. The distance vector is determined by subtracting the vector of factor scores for the three factors for one individual from that of the other. The resulting distance vector is a measure of the degree of similarity of location of each in social space. The smaller the distance, the closer they are in social space, and the more they share basic characteristics. The distance vector may be calculated in an attribute subspace, say for a single dimension, or in the total attribute space of all dimensions.

Behavior space can be considered in a similar manner. All of the separate measures of behaviors between pairs of actors can be reduced to a smaller number of dimensions, uncorrelated with each other, but consisting of linear combinations of the original behavior variables. Each individual
Figure 2. Location of Dyad in Social Space and Resultant Measure of Social Distance
is paired with all other individuals into dyads which are projected into behavior space as vectors according to the degree and direction of their dependence on each of the dimensions. These vectors represent the behavior of one member of the dyad towards the other on each of the behavior bases. Figure 3 depicts the location of two dyads—Hintay-Largo and Largo-Jordan—on three of the behavior dimensions—Social Interaction (x), Assistance Seeking (y) and Friendship (z).

The heart of the Social Field Theory rests in Axiom 5, that is, "the position of a dyad vector in behavior space is a linear function of the distance vectors in attribute space connecting the social unit vectors." This statement is axiomatic to the theory and is empirically falsifiable.

The distance vectors, as mentioned above, are conceived of as forces determining the location of a dyad vector in behavior space. Figure 4 shows Mrs. Largo-Mrs. Hintay in the Friendship-Social Interaction plane. The force vectors are the distance vectors (times a weighting scalar) on the relevant dimensions of attribute space. In Figure 4 these distances are the results of subtracting Mrs. Largo's factor score from Mrs. Hintay's on the three dimensions of social space defined in Figure 3. The location of the Hintay-Largo vector in the Friendship-Social Interaction plane is a function of the direction and amount of difference between them on the three attribute dimensions.
Figure 3. Behavior Space
Figure 4. Social Distance as a Force on Dyadic Behavior
The sixth axiom adds a dynamic element to the static relationship defined by Axiom 5. However, this study will be concerned only with the static quality of interaction. The final axiom holds that B space is completely contained in A space and dimensions of B space are linear combinations of dimensions of A space.

D. Social Field Theory Formula

In order to test the Social Field Theory, Axiom 5 becomes the focus of attention, that is, the notion that distance vectors in A space connecting social units act as forces to determine the location of dyads in B space. Mathematically, this can be represented by the formula:

\[ W_{i \rightarrow j, k} = \sum \alpha d_{i \rightarrow j, \ell} \]

where \( W_{i \rightarrow j, k} \) is the interaction of actor i to j on the kth dimension of B space, \( d_{i \rightarrow j, \ell} \) is the distance vector between actor i and j on the \( \ell \)th dimension of A space, and \( \alpha \) is a weighting scalar parameter on that dimension.

Suppose, for illustrative purposes, that we want to determine the effect of Urban Contact--one dimension of attribute space--on Friendship--one dimension of behavior space for one dyad--Mrs. Largo and Mrs. Jordan. If Mrs. Largo had a factor score of +2.0 on the Urban Contact factor and Mrs. Jordan had a score of +1.5, the social distance
between them on this factor (d\textsubscript{Largo + Jordan, Urban Contact}) would be equal to +0.5. This value would then be set equal to the value for the dyad on the Friendship dimension of behavior space.

Returning to the basic Social Field Theory formula, the \( W_{i + j, k} \) signifies that we are interested in the behavior of dyads on each of \( k \) or several dimensions of behavior space. The \( d_{i + j, l} \) means that we consider the difference in factor scores of the dyad on each of \( l \) separate dimensions of attribute space. The \( \alpha \) is merely a weighting parameter assigned to each of the factors according to its overall importance in the analysis. "Importance" here is defined as the amount of variance explained by the factor. For example, the first factor explains the largest percentage of total variance, the second slightly less, and so forth. The scalar \( \alpha \), then, permits us to weight each of the factor scores on each dimension according to its variance explained. The symbol \( \Sigma \) merely means that dyadic behavior in general is the consequence of the summed attribute distances for each dyad across all attribute dimensions.

The mathematical equation above linking dyadic behavior to attribute distance is a scalar, that is, it refers to the relationship between behavior and attribute similarity for only a single dyad. Since we are concerned with all dyads the equation has to be expressed in matrix notation:

\[
W_{i + j, l} = D_{m \times p} \cdot P_{p \times l}
\]
This means simply that we take the factor scores for all possible dyads on each factor of behavior space and set these equal to the summed weighted differences of all dyads across the various attribute dimensions. The matrix equation is shown in expanded form in Figure 5.

E. Evaluation of Social Field Theory

In many ways, Social Field Theory appears eminently suited to geographic research primarily because of its emphasis on location and distance and its ability to relate the two to behavior. Attributes of individuals define the major structural components of social space—or economic space as defined by Berry—and behaviors measure involvement and interaction among the social units comprising social space. Social units stand in definite relation to each other according to their association with the basic structure of social space. Distances between individuals, based on the degree of shared characteristics, can be calculated through Euclidean geometry and linked directly to the degree and direction of behavior between dyads.

Although the formal mathematical properties of Social Field Theory are embedded in linear algebra, every algebraic result can be turned into a geometric result\(^1\) which enables one to visualize the theory as shown in Figures 1 through 4.

\(^1\)Harvey, op. cit., p. 198.
Dyadic Factor Scores for Each Behavior Dimension

Dyad 1-2* 1-3 1-4 2-3 2-4 2-5 100-1 100-2 100-3 i-m

Dyadic Distances on p Dimensions of Attribute Space

Factor 1 1-2** 1-3 1-4 2-3 2-4 2-5 100-1 100-2 100-3 i-m
Factor 2 1-2** 1-3 1-4 2-3 2-4 2-5 100-1 100-2 100-3 i-m
Factor p 1-2** 1-3 1-4 2-3 2-4 2-5 100-1 100-2 100-3 i-m

\[
\alpha_1 + \alpha_2 + \ldots + \alpha_p
\]

*Value equal to the factor score for the dyad on the behavior dimension

**Difference resulting from the subtraction of one factor score from the other

***Weighting scalar equal to the amount of variance explained by the factor which is then multiplied by all the values for that factor

Figure 5. Expanded Matrix Form of the Social Field Theory Formula
Further, the model employs analytic techniques well known to geographers who use such multivariate models as factor analysis, dimensional analysis and regression analysis in the delineation of formal and functional regions.\textsuperscript{18}

However, Social Field Theory is not without its shortcomings, many of which are limitations inherent in all social science research. One of these weaknesses arises because of the use of the mathematical techniques of correlation, multiple regression and factor analysis which assume a linear relationship in the data. For example, implicit in the act of correlating years of education with mass media contact is the assumption that a given unit change in one will result in a similar unit change in the other. However, it may well be the case that an individual who has completed seven years of schooling in the Philippines---that is, six years of elementary school and one year of high school---may have disproportionately greater contact with the mass media than an individual who has completed only six years of elementary school. In other words, the amount of change in mass media contact between one person with five years of schooling compared with a person with six years of schooling is not as great as between a person with six years of education and someone with seven years. Such a disproportionate increase may result in

a curvilinear relationship between education and mass media
contact rather than a linear one. Since product moment
correlation assumes a linear relationship between two variables,
the resulting correlation may be restricted or even zero.

There is no simple solution to this problem especially
in the context of the Philippines where social science
research is still relatively underdeveloped and where few
benchmark studies are available for comparing actual with
expected results. One solution to the problem is to examine
the underlying distribution of each variable for normality
and extreme values. Where non-normality occurs, the data can
be transformed, as with logarithmic transformations, in order
to make the data conform more closely with a normal bell-
shaped curve of distributions.

However, data transformations are not without their
limitations. First, one has to justify the transformation on
theoretical grounds. Is the rationale merely to force the
data into a theoretical normal distribution so as to meet the
various mathematical assumptions and requirements of the
techniques of analysis? Such would appear to be a classic
example of the tail wagging the dog. Or, can such trans­
formations be justified on the grounds that most of the data
are normally distributed, and it is just a few cases which
unduly bias and distort the general relationships? Logically,
extreme values cannot be just eliminated from the analysis.
Perhaps a logarithmic transformation which preserves the
existing order among all the values but which reduces the extreme cases is warranted. However, data transformations of this sort mean that the researcher is just one step further removed from his original data and that working from analytic solutions back to the data is more difficult. In this research, as reported in Chapter V, some of the variables were transformed and some were not.

Another shortcoming of Social Field Theory is that the absolute quality of Euclidean space within which location and distance are measured fails to take into consideration relativistic notions about space. For example, Watson has clearly indicated that geography must view distance not merely in terms of absolute, Euclidean space, but rather in terms of cost, time, social interaction and so forth. Yet Social Field Theory posits that the straight line distance between individuals in attribute space acts as a force to determine dyadic interaction in behavior space. As such, it assumes social distance to be a general, universal force acting on each person's behavior in the same manner rather than a general force which is modified by character and personality traits peculiar to the individual. This assumption has come under special scrutiny in political science. Rummel, in fact,

has modified his original theory slightly in order to take into account the effect of unique characteristics of nations as modifiers of the more general forces believed to be operant in the international system.\textsuperscript{20}

In the study of small group behavior it should be argued that people are not automatons responding unconsciously to forces in their social world. Rather, they are individuals who attach particular significance and importance to some things and not to others, and no two individuals are alike in their views. Yet, because of culture and socialization, implicitly understood "rules of the game" exist which do tend to structure behavior and make it more uniform just as the rules of grammar structure language. It is these general, implicit rules which Social Field Theory attempts to uncover.

The ultimate decision on how to approach these issues which confront all of social science rests both with past research experience and with the goals of the investigation. Despite the fact that much of the socioeconomic, attitudinal and psychological data social scientists work with are at

best only rough approximations of reality and that the analytic techniques employed assume mathematical properties not found in such data, multivariate techniques have uncovered many significant and useful relationships that might have been overlooked had these techniques not been employed.

Furthermore, it has often been argued that a social scientist who uses mathematical models to study human behavior is likening his study to those conducted in the purely physical sciences where precision of measurement is possible. These arguments are not completely unfounded since social scientists often leave themselves open to such criticism. In employing Social Field Theory and the mathematics of linear algebra, it is not claimed that human behavior in the Philippines is completely predictable and subject to scientific laws. It is maintained, however, that behavior is not completely unpredictable or random. Although Rummel's model is basically deterministic in the sense that its ultimate purpose is the prediction of the nature and direction of one nation's behavior towards another, the view taken here is that the model is a stochastic tool for predicting behavior—that is, one based on the probability of certain occurrences taking place in the presence of various conditions. Furthermore, the model is viewed as a methodological tool to assist the investigation of a particular problem. There is nothing sacrosanct about the model itself; its utility is to be judged
solely on its contribution to the overall understanding of interpersonal relations in the Philippines.

III. Research Objectives, Hypotheses and Strategy

A. Objectives

As set forth in the preceding chapter, the objectives of the research are to investigate the general networks of interaction and communication among a female population in a rural Philippine barrio, and to relate these to the networks through which family planning information diffuses. Specifically, the research will attempt to determine the relationship between a multifaceted definition of social distance among women in the barrio social system and patterns of dyadic interaction using Social Field Theory as the model of behavior.

B. Hypotheses

It is hypothesized that interaction and face-to-face communication among women in a Philippine barrio are a function of the degree to which the women in the social system share similar social, economic, psychological and spatial attributes. The interrelationships among these attributes define the barrio social space in which individuals are located relative to each other. The extent to which they are located relatively close is a measure of the social distance separating them. In turn, the social distance between pairs
of women is, in Berry's words, a measure of the "interaction potential" between members of the dyad.\textsuperscript{21}

Further, it is hypothesized that certain specific measures of social distance have greater importance in some social situations than in others. That is, although individuals may differ greatly on one dimension of social space and thus not interact in some situations, their relative closeness on other dimensions entails interactions of a different nature. The goal of the research is to determine which differences are most often associated with particular types of interactions.

It is hypothesized that family planning information diffuses along specialized channels of communication and interaction, and when the characteristics of those involved in the spread of this type of information are identified, the task of introducing family planning information into similar social milieux will be facilitated.

C. Strategy

The research strategy consists of collecting a wide range of data pertaining to the social, economic, psychological and spatial characteristics of an entire female population between the ages of 20 and 65 in a rural Philippine barrio. In addition, information about the interaction and

\textsuperscript{21}Berry, 1968, \textit{op. cit.}
communication behavior of the women is obtained through interviews and personal observation.

Through multivariate techniques of product moment correlation and principal axis factor analysis, the major structural components of the social space of the barrio will be identified as will the major dimensions of behavior space. Dimensional analysis of the factor scores for the respondents on the dimensions of social space will provide the basic measures of social distance among the respondents. Through canonical analysis these and other measures of social distance will be correlated with interaction and communication behavior in order to determine the strength of the relationship between social distance and interaction and to identify which specific measures of social distance influence particular types of interactive behavior.

Finally, data collected on the actual spread of family planning information in the barrio will be analyzed in light of findings on generalized patterns of interpersonal communication and interaction.
CHAPTER III
THE STUDY LOCALE

I. The Island Setting

Approaching the island province of Marinduque by air from the northwest, the traveller's first glimpse of the island comes soon after crossing the coastline of Batangas Province in Southern Luzon, some 60 air miles south of Manila. In the distance lies Marinduque, which is nearly circular in shape (approximately 25 miles in diameter) and located almost equidistant from the mountainous island of Mindoro in the west, Batangas and Quezon Provinces to the north, and the Bundok peninsula to the east. Only the relatively shallow waters of Tayabas Bay and the Mompog Pass separate this volcanic island from the country's principal island of Luzon. Below the aircraft can be seen small groups of fishing bankas or boats harvesting the bountiful waters.

As the air traveller slowly nears the island, the cone of Mt. Malindig (Marlanga), an inactive volcano, towers above the southern portion of the island at an elevation of nearly 3800 feet. To the north the rugged interior of the island extends along a north-south axis, with spurs extending east and west to the water's edge. It was long expected that Marinduque's range of hills, which averages 2000 feet in
elevation, was highly mineralized, but not until the late 1960's were extensive copper ore deposits discovered in the municipality of Sta. Cruz in the northeast portion of the province and large-scale mining operations initiated.

As the aircraft begins its slow descent, the small tuff cone islands of Caspar, Melchor and Baltasar, known as the Three Kings and the site of an elaborate Christmas pageant, can be seen extending off the southwest flank of Mt. Malindig. These three islands in addition to four others off the northeast coast contribute an additional 14 square miles to the province's total land area of 681 square miles.

The approach to the island's small airport brings the aircraft just to the west of the province capital of Boac. The town is situated on the old delta of the Boac River which is the island's only major drainage artery. From the air, and later from the ground, the capital of this province appears as little more than a small town built in a bowl between two small hills. On one hill stands the slowly decaying Catholic Church, built by the Spanish in the late 1600's. The other hill comes alive each year on Good Friday as the crucifixion of Christ is reenacted on Calvary. Between the two the streets of the town are laid out in grid pattern around the central market.

A narrow coastal plain surrounds most of the island. Here and there small fishing communities dot the shoreline. For the most part, however, the small barrios where most of
Figure 6. The Philippine Islands
the population reside are completely cut off from view for a gently undulating carpet of lush green coconut palms extends from the very water's edge far into the valleys and even to the mountain tops. These palms, which are the source of the island's lucrative copra production, completely dominate the landscape. In addition to copra and until the beginning of large-scale copper mining, Marinduque's relatively poor economy was supported primarily by rice production and export, livestock raising and some small-scale mining of low grade iron ore and lead.

Because of the lack of extensive areas of level land and due to an unreliable supply of water, lowland wet rice agriculture is not extensively practiced. It tends to be confined to several small pockets, the largest of which is the area known as the Mansabang located on the northern fringe of the Boac River delta. Smaller patches of lowland wet rice agriculture dot the coastal plain surrounding the northern two-thirds of the island. With the exception of the Mansabang, most lowland paddy land is unirrigated, relying exclusively on small, unregulated streams for water. The 1960 agricultural census reported 1253 hectares of land under irrigated paddy production compared with 4953 with no irrigation.¹

Terraced wet rice agriculture is found nestled in the steep mountain valleys where water from small streams is generally available year round. In recent years the lack of control over the island's water resources has caused a growing rice deficit for the island as a whole. Consequently, rice has had to be imported from the more productive regions of Luzon and Mindoro to meet the demands of the island.

Dry, upland rice production is most common in the more extensive hilly interior regions, and it accounts for slightly more land under cultivation than wet rice production--6438 hectares and 6206 hectares respectively. Yields, however, are slightly smaller on the upland fields compared with the lowland paddies--12.9 cavans (44 kilos) per hectare and 14.8 cavans per hectare respectively.²

The dry eastern and southern portions of Marinduque are used almost exclusively for grazing land, although peanut production has long been a source of cash income. The southern portion of the island is dominated by Mt. Malindig where the only remaining area of primary forest can be found on the island, and on whose lower slopes graze herds of cattle and goats. Kaingin or slash and burn agriculture has long been practiced here. Although kaingin farming is outlawed in most areas of the Philippines, the law has never

²Tbid.
been rigidly enforced. Farmers near the mountains with small lowland landholdings are often forced to practice slash and burn agriculture in order to supplement the family's diet.

Marinduque, like many other areas of the Philippines, is subjected to violent climatic forces, most notably typhoons. Because of its location near the center of the archipelago, the island experiences at least the side effects of most storms that lash the northern third of the country. Wind and rain are usually experienced from typhoons that smash in from the south near the island of Samar and work their way up through the Visayas, or those that sweep in across the east coast of Quezon Province and cut a path of destruction across southern Luzon, including the greater Manila area. For a period of one month—between June and July, 1971—the island experienced an average of two typhoons a week. These storms, bringing more rain than wind, produced heavy local flooding. When the Boac River floods, as it inevitably does several times a year, the irrigation canals linking the river to the Mansabang become clogged with heavy boulders and sediment. Consequently, water is usually unavailable for agriculture when it is most needed at plowing and planting time. Thus, lowland wet rice agriculture tends to be a risky venture which is of marginal efficiency at best. Many farmers have moved to Mindoro to the west where conditions for rice agriculture are better and yields higher.
II. Selection of Study Site

There were no particular theoretical reasons for selecting the island of Marinduque as the province in which to conduct the research. The primary advantage of the location was that it was far enough removed from the rapid social and economic change characteristic of the central Luzon area that the traditional way of life found in large areas of the country still predominated. Yet Tagalog, the language studied by the investigator, was the primary language of communication. It was also the island on which a Filipina friend had lived and worked, and thus getting settled and initiating the research was less of a problem.

In choosing a particular barrio and a population for investigation several factors had to be taken into account. First, the size of the population of the barrio had to be relatively small since the focus of concern was the dyadic behavior of all women in a community rather than merely that of a sample of women. Because the number of dyads increases exponentially with arithmetic increases in population size—a population of 50 women produces 2500 dyads whereas an additional 50 respondents increases the total number by 7500—it was necessary to find a barrio where the potential respondent base was as small as possible.

Second, heterogeneity of life styles within a single barrio was a desirable characteristic because Social Field Theory is based largely on the effects of individual social,
economic and psychological differences on interpersonal behavior. A relatively homogeneous barrio in which most of the people shared similar life styles would have presented such slight individual variations as to make measurements of significant differences difficult. Consequently, any community where the population was engaged entirely in agricultural or fishing activities was avoided.

Past experience with formal family planning programs in the barrio had to be considered because one of the research objectives was to determine how family planning information spread via face-to-face contact. In order to identify these channels, an experiment was conducted in which the barrio women were lectured by a family planning team from town. A followup interview of the women at a later time was designed to uncover the actual pathways along which the information flowed. The results from the experiment would have had less meaning or would have been less clear if family planning teams had already been active in the barrio and the people become relatively desensitized to the subject.

The selection process was made somewhat easier because much of the eastern and southern portions of the island are virtually inaccessible for many months of the year. The requirement that the community have no recent, formal family planning experience further narrowed the choice of suitable study barrios to two of the island's six municipalities--Boac and Mogpog--where family planning clinics did not exist
and few motivational campaigns had been held in the rural areas. Of these two municipalities, Boac, the province capital, was the best suited because of its overall proximity to the main interisland transportation and communication facilities. Since it was the administrative capital of the province and the main population center, it had many more barrios to select from which came closest to meeting the desired characteristics described above. After visiting the barrios around Boac and discussing my research with various barrio officials, final selection was made of the barrio of Buliasnin as the study site.

III. Description of the Study Barrio

Buliasnin is situated some three miles north of the geographic center of Boac. The barrio encompasses an area of approximately 250 square hectares and extends nearly one and a half miles along its northwest-southeast axis. At its widest point it is nearly three quarters of a mile wide. A stream bed that serves as an irrigation ditch between the Boac River and the tubigan or rice paddies to the north, marks the northwestern-southeastern boundary of the barrio. The tubigan accounts for nearly two-thirds of the total land area of the barrio. As expected, the terrain is generally flat and elevated just a few feet above sea level. Yet the eastern-most section of the barrio rises rapidly into the foothills of the rugged interior range of hills.
Figure 7. Municipality of Boac, Marinduque
The boundary of Buliasnin located furthest from town is delineated by the shores of the Tayabas Bay. The tabing degat, as the area along the coast is known, extends for about half a mile and consists primarily of tidal swamp with scattered nipa, bamboo and coconut groves.

The shoestring settlement pattern of houses in Buliasnin is typical of most rural lowland Philippine communities, with houses huddled tightly together along the edge of a road bisecting the barrio. Buliasnin is fortunate to be located along one of the few all weather roads in the province. Although the road was originally designed as an alternative to the dangerous national highway which winds through the foothills from Boac to Mogpog in the northeast, money ran out or political administrations changed before the road was completed. As a result, the paved portion of Buliasnin's road ends abruptly in the middle of a grove of coconut palms just beyond the northeast boundary of the barrio. Consequently, Buliasnin has a dust free yet lightly trafficked thoroughfare.

There is little to distinguish one barrio from another as one travels out of town along the national highway. A more compact clustering of houses is the only indication that a barrio proper is being passed. About one and a half miles from town the alternative route to the national highway cuts off from the main road to the northwest. Turning here and continuing for about half a mile, through the barrio of
Tanza, the boundary of Buliasnin is finally reached at the juncture of the hard top road and a dirt road leading off to the west and the communities of Poras and Lupac. A recently renovated rice mill stands at the crossroads, and just beyond is the Tanza-Buliasnin boundary marker. Buliasnin is unique for this part of the municipality because of its "Welcome to Buliasnin" marker cast in concrete at the boundary. The sign was a gift to the barrio in 1970 from the Greenville Club, a barrio association of young people.

Compared with neighboring barrios which appear as amorphous settlements of unintegrated houses, the visitor to Buliasnin is at first struck by the neat and generally uniform appearance of the barrio. Each houselot is bordered by a split bamboo fence around which is planted a profusion of flowers and vegetables. As is often the case once the town is left behind, the air seems cleaner and fresher, and the overhanging coconut palms and fruit trees offer psychological if not actual physical relief from the blazing tropical sun.

Here and there along the edge of the road are woven buri mats covered with a thick layer of unhusked rice or palay set in the sun to dry before storage or milling. Every fifty yards or so for a distance of almost half a mile one finds the ubiquitous sari-sari store stocked with everything from cigarettes and packages of Tide to cans of sardines, kerosene and San Miguel beer. These neighborhood variety
stores are more than mere retail shops; they are the focus of much social activity during the day. From well before the sun rises until late in the evening hours, small groups of residents can be found sitting idly around discussing the day's events, grooming a prized fighting cock or just playing a game of checkers with old bottle caps. Because of its role as informal meeting place, the sari-sari store is often the point at which news from the outside world is first introduced into the barrio.

Further down the road the din of children's voices rises from the elementary school. For many years Buliasnin's children had to walk to school in a neighboring barrio because it was too small to warrant a school of its own. The times have changed and the barrio got its school which has grown from a three room nipa building to a six room school of cinder block and sheet metal roofing. It has also become an important locus of community activity. Upon graduation those children whose parents can afford to send them on for further education commute daily to town where the only public and parochial secondary schools in the municipality are located, or to the national trade school in Tanza.

Just opposite the entrance to the school is one of the barrio's two artesian wells, one of the few sources of pure and freely flowing water in the village. Like the sari-sari store, it acts as a magnet for young and old and serves as a convenient, informal meeting place where people
Figure 8. Barrio of Buliasnin
can stand around and talk while waiting for their water
tins to fill up or exchange gossip while bathing or washing
the clothes. Even those people with no particular business
at the well wander over from time to time during the day to
catch up on the happenings in the barrio or to speculate
on the likely winning number in the local numbers game.

A few yards further down the road is the newly con-
structed all-purpose pavement, a gift of the provincial office
of community development shortly before the last local
election. Used primarily by the barrio binata (young
bachelors) for a hot and fast game of basketball, it also
serves as dance floor for barrio dances and meeting place for
graduation ceremonies and barrio meetings. Its extensive
flat area, open to the direct rays of the sun, makes it an
ideal place for farmers to dry their palay. Often, several
different activities go on simultaneously, and occasionally
a basketball player runs across a farmer's mat and scatters
rice grains here and there. The offender is sharply rebuked
by the farmer, but the game goes on. The poor farmer has
to contend with not only basketball players but also with
the hordes of chickens and occasional pigs which are attracted
to the waiting feast. A supply of stones is kept close at
hand for chasing the interlopers away. Sometimes a barrio
mongrel makes a game of chasing the chickens away. He
usually ends up scattering more rice in the chase than the
chickens could possibly have eaten if left alone.
Beyond the basketball court, the houses become more scattered, and the thick tropical growth impinges upon the road. The dark coolness near the bridge over the irrigation canal is a source of comfort during hot days for those washing clothes in the canal, but it is a source of uneasiness after sunset. It is said that a momo or spirit lives under the bridge and wanders the area at night. Once the sun goes down, only the most foolhardy or those who have lost their senses through drinking too much of the highly intoxicating tuba dare venture near the bridge alone.

Some 50 yards beyond the bridge and supposedly beyond the range of the momo is another well-stocked sari-sari store, the last for many miles around. It does a brisk business catering to the needs of the people living in the more remote sections of the barrio. During the planting and harvesting seasons, it attracts the farm hands working in the rice paddies just down the road.

As if passing from twilight into the bright noonday sun, the traveler leaves behind the dark tropical vegetation and suddenly comes to the edge of a plain which stretches for several miles to the foothills in the distance. Depending on the time of day and season of the year, the tubigan presents a panorama of pastel colors, from the light and dark browns of the rice stubble and the newly plowed earth, the yellow greens of the new rice shoots, to the lush dark greens of the maturing plants and finally to the rich amber
hues of the ripening grain. For many of the barrio residents, the tubigan is just another place where hard work is required. For myself, it was a source of constantly changing beauty.

Except for small isolated settlements, few people live near the paddy fields. Most of the farmers and their laborers come from the main part of the barrio or from neighboring barrios. Contrasted with the sturdier looking houses of the area near the school and artesian well, the nipa houses near the tubigan give the appearance of being poorer than they actually are. Although neat in appearance, after a few years of wear, the nipa palm walls and roof begin to take on a slightly down-at-the-mouth look.

Turning off the national highway bypass which ends a mile further down the road, a dirt road wends its way past another small cluster of nipa houses, past more paddy land and back into the cool lushness of a bamboo thicket and coconut grove. A new sound greets the visitor, that of the pounding surf of the blue green waters of the Tayabas Bay. Huddled together on the coast are the houses of those families who gain most of their livelihood from the sea. Like the nipa huts surrounding the tubigan, the houses at the tabing dagat give the impression of being poor; many are, but all look worse as the result of constant weathering from rain and salt-laden winds. From the beach the eye is treated to another vista of natural beauty. In both directions
the inviting waters of the bay wash the dark, rough sands of the meandering coastline. From the water's edge, miles and miles of coconut palms extend to the very tops of the inland mountains. To the east in the distance can be seen the stony promontory above the protected safety of Balanacan harbor, the site of fierce aerial bombardment of the Japanese navy during the liberation of the Philippines in 1945. Directly to the north can be seen the volcanic cone of Mt. Banahao looming high above Laguna Province in southern Luzon. To the west, ships can often be sighted plying the Cape Verde Pass, with the mountains of Oriental Mindoro forming the backdrop.

Buliasnin has grown considerably in the last seventy years, from a small adjunct of the larger barrio of Tanza to a community in its own right with nearly 125 families and a total population of 660 people in 1971. As the barrio has grown, its older inhabitants have tended to cluster in the section closer to town, while newlyweds and new arrivals have built nearer the less densely settled areas of the tubigan and tabing dagat. Just as one finds more permanent and long established residents in the older portion of the barrio, so, too, is found greater diversity of occupational groups, better education and a generally higher standard of living. School teachers, administrators, government employees, business people and more prosperous farmers live side by side. Although nearly 60 percent of the heads of household
in the barrio were engaged in agricultural or fishing activities, the majority of those in non-agricultural or other primary occupations reside in this more prosperous area. Educational attainment tends to be higher; the majority of residents have, on the average, completed at least six years of elementary school, and many have gone on to the high school, trade school or even to the university. Material possessions are more numerous, houses better constructed, the diet is generally more nutritious, and the overall standard of living higher.

Moving away from the more densely settled portions of the barrio toward the paddy fields and seashore, one generally finds more recent arrivals to the community, more tenant farmers, coconut gatherers and fishermen whose lives are directly tied to the soil and the sea. Most people here have completed no more than six years of elementary school. Houses are primarily simple nipa huts consisting of only one or two rooms that are sparsely furnished, usually with little more than a table and a few straight-backed chairs. The diet tends to be a monotonous combination of fish, sweet potato tops and *gabi* (taro) roots or manioc substituting for rice when it is unavailable. The standard of living is generally lower than in the section closer to town, and cash is in noticeably short supply.

Despite the fact that administratively Buliasnin is a single barrio, it does consist of a series of small
neighborhoods, usually kin related and each with a character of its own. Although the variations are subtle, the effects on interpersonal relations are more marked as will be explained in a later chapter. However, despite the differences all the residents of the barrio are similar in their friendliness and openness, their industriousness, and, perhaps above all, their enormous capacity to enjoy life to its fullest.

At the outset it was mentioned that selection of the study site was not predicated on its representativeness of other areas in the Philippines. Given the tremendous fragmentation of the island chain, it is unlikely that any community or geographic region will be exactly like any other. However, in order to put subsequent observations on Filipino behavior into some general frame of reference, it might be useful to mention briefly the extent to which comparisons might be drawn between Buliasnin and other areas of the country.

Based on my relatively extensive travels throughout the Tagalog speaking regions of southern Luzon and Mindoro, it appears that the way of life found in Buliasnin is not atypical of coastal villages in general where residents are not dependent solely on one source of livelihood, such as rice agriculture, fishing or copra making, and where population densities are not so great as to have resulted in extreme land utilization. Although high rates of natural population increase have been declared a national problem,
many areas of the country, such as Marinduque, are underpopulated given the resource base available. As a result it is still possible today for families to live off the natural abundance of the land and water, by catching fish, shrimps and crabs from the streams, rivers and paddy fields, by collecting edible snails and greens from the paddies and irrigation canals and edible tubers, ferns and mushrooms from the forested areas, the coconut groves and the coastal and river swamps. Consequently, life itself is not threatened, and for an enterprising family, the diet can be quite varied and nutritious.

However, because few opportunities exist for employment in the nonagricultural sectors of the economy, the possibilities for improving one's own or one's children's quality of life in the long run are more restricted. Increased numbers of offspring can be provided for in terms of food, housing and clothing, although cash consuming extras, especially higher education, are beyond the means of most families.

This fine line between subsistence living and integration into a market economy still seems to be common in many portions of Luzon and the islands to the south. In their analysis of socioeconomic structure and change in the Philippines, Fuchs and Luna indicate that Marinduque, at an aggregate level, shares similar economic attributes with
many other provinces. Figure 9 indicates those provinces in the country having the same structure of urbanization and modernization as Marinduque's.

Wernstedt and Spencer have made similar observations, particularly about the region in the vicinity of the Sibuyan Sea in the center of the archipelago. Therefore, although this research is confined to a single lowland Filipino barrio, the general characteristics of the village are found replicated in many other areas of the country. Thus, the findings may have a generally wider applicability, especially to areas outside central Luzon.

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Figure 9. Provinces Similar to Marinduque on Urbanization and Modernization--1960.
CHAPTER IV
FIELD METHODOLOGY

In studying the various factors affecting interaction and communication in the barrio, the researcher is confronted with a task common to any student of behavior. Seldom can the practitioner of behavior explain directly the reasons for a given behavior in any given situation. Generally, the person performing the behavioral act is responding subconsciously to implicitly understood and accepted "rules of the game." These rules, which govern the behavior of members of the same cultural group, are acquired gradually during the period of individual socialization and are the result of a commonly shared cognitive orientation held by members of the same social system.

Foster has written:

A cognitive orientation provides the members of the society it characterizes with basic premises and sets of assumptions normally neither recognized nor questioned which structure and guide behavior... All normative behavior of the members of a group is a function of their particular way of looking at their total environment, their unconscious acceptance of the "rules of the game" implicit in their cognitive orientation.¹

Because the rules of behavior are neither explicitly recognized, questioned nor capable of articulation by the average person, direct means of studying them can seldom be employed. Therefore, this study approaches the question of identifying the determinants of interaction and communication behavior indirectly through interview and participant observation. The purpose of the present chapter is to explain how the data were collected.

I. Selection of Respondent Base

The study was confined to interaction and communication behavior among a population of Filipina women. This was done because the diffusion of family planning information was assumed to occur primarily among women rather than among men or even married couples.²

The female population was limited to that between the ages of 20 and 65. The lower age limit was selected because few women in Buliasnin married before their twentieth birthday. Since dalagas or single girls are expected by society to be both clean of body and pure of mind, in theory matters pertaining to sex and contraception are seldom discussed.

²Marshall found in a similar study in India that family planning tended to be more freely discussed among women than among men or married couples. John Fordyce Marshall, "Culture and Contraception: Response Determinants to a Family Planning Program in a North Indian Village," Ph.D. Dissertation (Anthropology), University of Hawaii, 1972.
among unmarried girls. Rarely would a dalaga admit to any knowledge about family planning nor would she be likely to tell us that she had discussed this with her friends.

The upper age limit of 65 was chosen on both pragmatic and theoretical grounds. The barrio capitana, a woman whose support as elected head of the community was needed in order to gain the confidence and assistance of the other women, had just turned 65. Originally the cut-off age was set at 60 because most people, once they reach this relatively advanced age, cease to be active and functioning members of any group other than the immediate family. The barrio capitana was an exception to this rule, and therefore the upper limit was raised to 65.

From a total female respondent base of 148 women, 123 respondents gave their continued assistance throughout the research. The remaining 25 women dropped out for a variety of reasons, mostly involving moves from the barrio or extended periods of absences during the course of the research.

II. Data Gathering Techniques

The data were gathered over a 14 month period, from January 1971 to February 1972, using a series of structured

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4Sylvia, my female assistant who had become well known and liked in the barrio, confirmed, through informal conversations with the younger girls in the community, that they knew very little about family planning.
yet essentially open-ended interview schedules. These were administered in Tagalog in my presence by Sylvia Regio and Peter Magturo. Sylvia, a twenty-six year old Filipina from the neighboring municipality of Sta. Cruz, had completed four years of teacher's college in Manila. Peter, a twenty-one year old, from Boac, had completed only four years of high school and several technical courses in Manila and at the National Vocational Training School in the province.

The data obtained through the formal interviews were supplemented by information and observations based on informal participation in every aspect of barrio life by my family, my two assistants and myself.

During the 14 months, five interview schedules were administered to all women comprising the base population. The length of the interviews averaged one hour and thirty minutes; the shortest lasting only a matter of minutes to the longest which took more than two hours to complete. All interviews were translated from English into Tagalog by my assistants and were pretested in neighboring barrios.

In all cases, the interview schedules served as a guide to data collection and as a method to ensure that, at a minimum, comparable basic data were obtained for all respondents. The schedules were not strictly adhered to, for if interesting points were raised during the interview, these were pursued more fully.
A. Measuring Attribute Space

The instrument for measuring attribute similarities and differences among the 123 respondents was designed according to the research conducted in rural sociology on the diffusion of innovations and specifically on that of Everett Rogers. Anthropological literature on lowland Filipino culture as well as personal experience gained by living in the barrio provided the cultural insight for modifying the Western ideas and concepts inherent in Rogers' work into culturally relevant issues and questions for Filipinos.

Since the number of attributes differentiating one individual from another is in theory infinite, selection of specific attributes to measure was made on the basis of those pertaining to interaction and communication. Rogers' questionnaire on the individual characteristics of peasant farmers involved in the adoption of agricultural innovations in Colombia provided the core of operationalized measures for determining attribute similarities and differences. Rogers attempted to measure such concepts as innovativeness, mass media exposure, urban contact, social awareness, leadership, empathy, achievement motivation and so forth.

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5 Rogers, 1969, op. cit.
However, whereas Rogers' research was designed to identify the individual attributes of farmers in the adoption of agricultural innovations, the focus of this study was not so much on the characteristics themselves as on the similarities or differences of characteristics between pairs of women as a force in determining interaction and communication. In order to measure basic attribute similarities, it was necessary to have some basis for comparing respondents, and Rogers' questionnaire served this purpose. It was useful because it did embody many of the concepts which past research had identified as important personal attributes in the word-of-mouth dissemination of information. It had the further advantage of having been designed, tested and effectively employed in a semi-literate peasant society. Methods of coding responses and analyzing the data had already been developed. Consequently, rather than create my own interview schedule, which would have consumed a great deal of additional time, Rogers' interview was employed as the core around which to frame specific questions compatible with Philippine culture.

The final attribute space interview evolved through close collaboration with Filipino scholars and underwent extensive pretesting and numerous rewritings before the final version was accepted. (See Appendix I for an English translation of the interview schedule.) The interview consisted of 87 items, divided into two parts, each administered
at different times. The 87 items were themselves part of a smaller number of general categories described below. It should be kept in mind that the central hypothesis of the study holds that individuals who share common attributes will interact and communicate more frequently in a positive way than will individuals who do not share these characteristics.

1. Innovativeness and Conformity to Group Norms

Research shows that individuals displaying different types of leadership behavior, such as opinion or innovation leadership, possess varying degrees of conformity to group norms. Katz\(^8\) and Rogers\(^9\) indicate that opinion leaders are generally more conformist to system norms, while innovators are more deviant. They define "norm" as the most frequently occurring pattern of overt behavior for the members of a

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\(^7\)The following discussion is not intended to be exhaustive since my purpose is not so much the individual characteristics of the respondents as measures of similarity and differences between pairs of respondents. A vast amount of literature has been written on the concepts described here --much more than can be reported or discussed in this thesis. Therefore, the concepts can only be introduced, and the reader is referred to the sources quoted for a more detailed discussion of the concepts and their measurement.


particular group or social system. The degree of conformity to group norms has been measured by averaging the innovativeness scores for the individuals in the group. This score is determined primarily according to the time at which an innovation is first adopted. The earlier the time of adoption, the more innovative the individual and, consequently, the more deviant his behavior.

Respondents in Buliasnin were asked to indicate the month and year they had first adopted 12 common household innovations, ranging from plastic water jugs to home vegetable gardens. The list of innovations was based on informal talks with friends in the barrio and with conversations with a home economist stationed in Boac.

2. Cosmopoliteness

Rogers defines "cosmopoliteness" as

. . . the degree to which an individual is oriented outside his social system. In general, it is expected that cosmopolite villagers will be leaders in the modernization process, and serve as links with the larger society. The cosmopolite is partially freed from the pressures of social control that demand conformity to traditional village norms. He has other reference groups in the market town or the city.10

As in Rogers' study, measures of cosmopoliteness consisted of the number of trips made by the respondent to towns of varying size and location on the island over a specified

10 Ibid., p. 52.
span of time, the number of trips made from Marinduque to other islands, urban visits and the length of residence in cities such as Manila.

3. Religious Activity

Since religion plays an important role in Filipino life, individual differences in involvement in the church and church-related activities could be expected to influence dyadic behavior. Religious activity was measured by the frequency of the respondent's attendance at church services in town and the number of times she offered prayers at the barrio chapel during a six month period.

4. Political Awareness

In past studies of personal influence, leaders compared with followers have shown a greater awareness of the facts essential to their functioning as an active and effective citizen. Most studies of personal influence which consider political awareness tend to view politics as a male dominated phenomenon. Despite the apparent lack of commitment of women in Southeast Asia to politics, they have long been a force in behind-the-scenes political movements.

Similarity of political awareness was measured by the respondent's knowledge of various past and present local and

national political leaders, issues and candidates for office in future elections.

5. Mass Media Contact

Rogers states that "exposure to the mass media [such as the printed word, radio, television and movies] can undoubtedly be an important variable in bringing about large-scale directed social change and modernization in less developed countries."\textsuperscript{12}

In order to measure mass media exposure, respondents were surveyed on their frequency of reading newspapers, magazines and comic books, of listening to the radio and of going to the movies during a specified period of time.

6. Change Agent Contact

A change agent is "a professional who influences innovation decisions in a direction deemed desirable by [an agency charged with the responsibility of introducing change into a social system]."\textsuperscript{13}

Contact with change agents was indexed by the number of times the respondent had talked to and initiated contact with school teachers, rural health teams, poblacion-based medical personnel, home economists and rural development cadre.

\textsuperscript{12}Rogers, 1969, op. cit., p. 97.

\textsuperscript{13}Ibid., p. 169.
7. Social Status

The work on interpersonal communication and influence suggests that a strong relationship exists between social status and interpersonal behavior. Status can be defined as the individual's relative position or rank in the prestige structure of the community. Status is neither an attribute inherent to the individual nor is it necessarily stable over time; instead, it is usually a quality ascribed to someone by someone else. However, Lynch demonstrates the difficulties involved in trying to determine status differences in a Filipino community.

Because of the problems involved in establishing an adequate objective measure of social status, respondents were asked to rank themselves in terms of their perceived status compared with others in the barrio. The rationale for asking for this type of information rested in the assumption that similarity of views on self esteem would have more effect on dyadic behavior than ascribed status, and the latter was considerably more difficult to measure.

The respondent's estimation of her own status was determined by means of the Cantrill self-anchoring scale in

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15 Lynch, 1959, op. cit.

which the respondent was shown a picture of a ladder with 10 rungs. She was instructed that the top rung represented individuals of highest status—defined in three different ways—and the bottom rung represented individuals of lowest status in the barrio. She was asked to select the rung she thought best characterized her own status compared with others.

8. **Standard of Living**

In agricultural societies such as the Philippines, where most people live on the fringe of a money economy, it is often very difficult to judge the standard of living of individuals using quantitative and objective measures. Cash income can seldom be employed as an indicator. An alternative measure would be the number and kind of material possessions a person has, such as household furnishings, luxury items, land and housetype. However, these are not perfect measures in peasant economies either because of what has been labeled the "limited good" and "leveling." The concept of the limited good holds that the good things in life are available only in limited quantities.17 If one person has a large amount of good, such as luck, material possessions, wealth, etc., it can be only at the expense of others who must have less.

17Foster, 1965, *op. cit.*
Since another person's success is culturally perceived to be at one's own expense, the successful individual attempts to stay at an equal level with his neighbors—the concept of leveling—by concealing his possessions and living below the level he can afford. As a result, individuals who are at a higher standard of living tend to put their wealth in such relative intangibles as education and travel rather than in the more visible trappings of success, such as material possessions. The few possessions they do acquire, however, are usually of better quality, but it is nearly impossible for the researcher to ascertain such variations in quality.

In order to compare individual respondents on their relative standard of living, two measures were employed. The first consisted merely of cataloguing a household's possessions, from items found around the house to the amount and kind of land owned or rented and the income from such land. Occupation of the head of household and the respondent's work for which she received remuneration were also considered. The second measure was strictly subjective and consisted of the joint evaluation of all the respondents by my field assistants and me after living in the barrio for many months. Respondents were ranked according to their estimated standard of living.

living and then were simply placed in one of three categories—high, medium or low.

9. Satisfaction with Present Life

Hadley Cantril's book on human concerns deals specifically with measuring the hopes and aspirations and the fears and concerns of various national groups around the world.\(^{19}\) The purpose of this investigation was to determine the effect of these psychological forces on national behavior.

The self-anchoring ladder technique, described above, provided a method of comparing individuals on the manner in which they perceived their present life situation in relation to their past life and their expectations for the future. Respondents were asked to evaluate their past, present and future life situations on a ten-rung ladder, the top representing the best possible life and the bottom the worst possible life. By subtracting the past rating from the present, an estimate of the respondent's perceived satisfaction with her present life was obtained.

10. Family Related Issues

One of the goals of the research was to determine how family planning information diffused along face-to-face

\(^{19}\)Cantril, op. cit.
channels in the barrio. It was hypothesized that, among other things, individuals sharing similar views about family size, husband-wife discussion of family issues, the ability to prevent pregnancy, and fertility limitation would be more likely to discuss these issues among themselves than would women not sharing similar attitudes.

Respondents were asked their views on a wide range of family related issues, from desired number of children, desired sex of the first born, the value of male children compared with female children, to attitudes concerning the ability to prevent pregnancy and the means for achieving this goal.

11. Educational Attainment

Similarity of educational background was determined by asking respondents the number of years of schooling they had completed.

12. Occupation

Variations in occupation of heads of households were noted as were different sources of income for the respondents.

13. Achievement Motivation

Although achievement motivation in cross cultural contexts has not been widely investigated, some evidence exists to support the idea that a social value, present in
varying degrees in different cultures, does stress the individual desire for personal excellence in order to attain a sense of personal accomplishment.\textsuperscript{20} In the literature on the diffusion of innovations, achievement motivation has been related primarily to occupational motivation.\textsuperscript{21} It has been hypothesized that individuals with high levels of occupational achievement motivation are more innovative in adopting new ideas and are generally more modern in their outlook.\textsuperscript{22}

Rogers and Neill developed a short sentence completion test for use in their study of modernization among Colombian peasants.\textsuperscript{23} For example, they posed such incomplete sentences as: What I need most is____; In order to live a better life on my farm, I should ____; I hope my eldest son____. Twelve statements such as these were read to the respondents who were asked to complete them.

14. Formal Organization Participation and Leadership

Participation and leadership in formal organizations of different types has been found to be positively associated with personal influence. Further, certain types


\textsuperscript{21}Rogers, 1969, op. cit., p. 54.

\textsuperscript{22}\textit{Ibid.}  \textsuperscript{23}\textit{Ibid.}
of leaders tend to hold organizational positions in which they can exercise their special skills and knowledge.Respondents were compared on their participation in and leadership of such local barrio organizations as the Rural Improvement Club, the 4-H and the P.T.A.

15. **Social Perceptiveness**

In the study of opinion and informal leadership, social perceptiveness was found to be an important variable in the interpersonal communication and interaction process. Social perceptiveness can be defined as the degree to which an individual acquires perceptions of the self, perceptions about others and begins to make assessments of the social situation as a result of interaction with others.

Generally, social perceptiveness has been measured by asking respondents to state and evaluate the group's opinions on familiar and relevant issues to the group. The focus of concern is less on the ability to state accurately the opinions of others as on the ability to articulate what are thought to be the opinions of others.

The respondents in Buliasnin were asked to cite the prevailing opinions in the barrio concerning such issues as

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family planning, child rearing and the general status of women.

16. **Empathetic Ability**

Lerner in his study of modernization in traditional societies views empathy as an important personality trait in the transition from traditional roles to more modern ones. He defines empathy as the ability of an individual to identify with other people's roles, especially with those more modern and of a higher social status than himself. It has been hypothesized that a person capable of projecting himself into the roles of others understands better the feelings and problems associated with these different roles and consequently takes them into account when dealing with these people.

Rogers views empathy as one consequence of communication with the world outside the village. Lack of empathy, he says, results from socialization in an isolated environment, such as a peasant village, in which the number of different roles present are more restricted. "The resulting lack of role-taking ability later leads to a psychological rejection of unfamiliar roles when these are encountered (as in the mass media or when a peasant travels to the city) and a

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26 Lerner, *op. cit.*
distrust of the people cast in these novel roles." The individual with low empathetic ability is therefore psychologically isolated from the types of information, communication and interaction that could in turn develop greater empathy in him.

Empathy has been operationalized as the respondent's ability to suggest solutions to hypothetical problems confronting individuals of different roles in the Philippines, such as a rural health nurse, the wife of the province governor, and the wife of the president of the Philippines.

17. Dogmatism

In his discussion of the open and closed mind, Rokeach differentiates between those individuals who are relatively open-minded and those who are close-minded with respect to their belief-disbelief systems about reality. Dogmatism, most often associated with the close-minded individual, is a personality variable governing receptivity to new beliefs about ideas, people and places. It influences the individual's ability to evaluate, on its own merit, information pertaining to each of these topics.

It has been hypothesized that opinion leaders are more open-minded and thus are better able to receive new

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27Rogers, 1969, op. cit., p. 53.

information from the mass media or other impersonal sources, evaluate it, and relay it to other group members. Conversely, highly dogmatic individuals who are dependent upon authority figures tend to view new ideas, particularly those emanating from unevaluated sources, as more threatening until the ideas have been validated by an accepted authority.

A 20-item test of dogmatism has been developed by Trodahl and Powell in which respondents are asked to indicate the strength of their agreement or disagreement with a number of dogmatic statements. These statements were modified to conform with barrio life and included such items as: (1) There is little chance to get ahead in life unless you can count on the help of an influential person; (2) A dutiful child tries to find a job where he can be near his parents even though he might have to lose a good job somewhere else.

B. Limitations of Instrument

From the outset of the research it became quite apparent that questions pertaining to certain of these categories, especially those involving attitudes and opinions, would be difficult to administer to a group of women unfamiliar with such surveys. However, Rogers' experience with

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these questions in rural Colombia suggested that, despite the limitations inherent in interviewing inexperienced respondents, worthwhile data for comparing individuals could be obtained.

In Buliasnin the respondents generally had little difficulty in answering the questions. In fact, their responses were quite varied and highly imaginative. The problem that did arise, however, especially with those questions referring to achievement motivation, empathy and dogmatism was interpreting and coding the responses so as to be able to compare respondents on the degree of similarity displayed by their response.

For example, one of the questions about empathetic ability asked, "If you were the wife of the Province Governor, what would you do to raise money for hospitals in your province?" Two general types of replies were obtained. The first, given by those respondents who were better educated, more sophisticated in terms of a wider range of personal experience and contacts outside the barrio, and who, in objective terms, might be considered more empathetic, said they would raise money by seeking sponsors and contributions from wealthy members of the province or they would organize charitable benefits, such as dances and raffles. The less well educated respondents, with less sophistication, said they would ask their husband, the hypothetical governor, to
contribute the money from the provincial treasury or even the "surplus from his own salary."

To the Western trained social scientist, including many Filipinos, the first response pattern conforms closest to what might be judged the empathetic response. It demonstrates the respondent's ability to project herself into the role of the wealthy and influential in Manila, especially the Filipino elite and the foreign community. This class of person projects this image through the society pages of the country's newspapers which are widely read, even in the provinces. The first pattern of response indicates that the respondent is sufficiently familiar with the role of the wife of the province governor or some other similar individual to indicate plausibly how she would respond or behave in such a situation.

However, the second response pattern, suggesting that the governor should contribute the money out of the provincial treasury or even the "surplus from his own salary" is equally plausible although certainly less in keeping with the image that such a person would hope to project, even in the news media.

In short, one response pattern appeared, on the surface, to display a greater sense of empathetic ability whereas the second response, in actuality, was probably closer to the way affairs are normally conducted than the first. Consequently, it was nearly impossible to get a panel of
Filipino judges to agree among themselves on how various responses should be coded. The result was that most of the attitudinal and projective type tests were thrown out.  

C. Measuring Physical and Relational Distance

It was assumed early in the thesis that social distance between individuals is a composite of many interacting factors whose effect must be considered in combination with each other rather than in isolation. The preceding section discussed how certain of these factors were measured. Two additional factors are considered here.

1. Physical Distance

The map on page 70 gives the location of all respondents' houses in the barrio. Physical proximity of each relative to all others was determined by the time required to walk from the respondent's house to all other houses in Buliasnin. The time was calculated not according to the straight-line route but the one most frequently taken by the residents themselves. This often necessitated hiking

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30The possibility of this particular type of problem was pointed out to me early in the field work stage. Dr. Gelia Castillo, a noted Filipina rural sociologist at the University of the Philippines College of Agriculture in Los Baños, warned me that from her long experience in social science research in the Philippines attitudinal or psychological questions would be very difficult to interpret. Although I did not heed her sage advice at the time, the final selection of variables for analysis--described in the following chapter--bear witness to the wisdom of her remarks.
along narrow and muddy rice paddies, through coconut groves, over log bridges and along stretches of sandy beach. A stopwatch was used to time a Filipino walking at "normal" speed. The time was recorded on a map of the main pathways between houses in the barrio, and these data were later transferred to a walking distance time chart similar to the charts of mileage-between-cities found in road maps of the United States.

2. Relational Distance

In order to determine the effect of kinship ties, either through blood or marriage, on interaction and communication, each respondent was asked to indicate the manner in which she was related to every other woman in the barrio. The relational distance between pairs of women could then be calculated using degree of relationship. Degree is merely the measure of closeness to one's nuclear family. For example, everyone included in one's nuclear family, this is, mother, father and siblings, belong to first degree relationships. Son's wife, husband's mother, mother's sister, sister's daughter would comprise second degree relationships. Husband's brother's wife or sister's son's wife would constitute third degree relationships, and so forth. The smaller the number of degree the closer the blood or marriage tie.

Because almost everyone in the barrio was related in some way or another, it was very difficult to reconstruct
the exact genealogical relationships between all women, especially those more distantly related. First and second degree relationships were obviously the easiest to identify and verify. They were also symmetrical in that when x cited y as her mother, y also cited x as her daughter. However, beyond second degree relatives, the exactness of the relationship was more difficult to measure and the amount of time and energy required to calculate the exact genealogical chart for all respondents was beyond the capabilities of the research. Consequently, all individuals cited as relatives beyond second degree relationships were placed in a single category with an average distance value of 5. When no relationship between two women was indicated, a distance value of 9 was assigned. The final matrix of relational distances reflected, then, the relative degree of blood or marriage closeness between any two respondents.

D. Measuring Interaction and Communication Behavior

Although much of the time in the barrio was spent merely observing patterns of interaction, it was impossible to observe all women equally in all social situations. Therefore, a series of questions on a wide range of interactive behavior was asked in order to obtain a base on which comparisons could be made of interpersonal behavior between all pairs of respondents. The questions asked for information about actual rather than hypothetical interaction.
Respondents were asked to name the women in the barrio with whom they interacted in each of 18 social situations, and, if possible, to indicate the intensity of interaction by ranking the names cited from "most frequently interacted with" to "least frequently interacted with."

The 18 questions referring to interaction included:

1) Who are the women in the barrio you see most frequently?

2) Who are your best friends in the barrio?

3) Among the names in the preceding list, who are your 10 best friends?31

4) Who are your companions in planting and harvesting rice?

5) Who are your work companions in such activities as copra making, nipa sewing, working at school?

6) Who are your companions in such activities as washing the clothes, bathing, marketing, church attendance, walking to the seashore, going to the movies, gathering nipa palms, attending barrio and school meetings?

7) If one of your children or some other member of your family is ill, to whom do you turn for assistance?

8) If you have a personal problem (including a family one), to whom do you turn for advice?

9) If you are going to be away from the house and have to leave the children behind, whom do you ask to watch them?

10) If you have to prepare a feast for such events as a wedding, baptism or some other special occasion, whom do you ask for help?

31 Many respondents were unable or unwilling to differentiate between "friend" and "nonfriend." They often said that all women in Buliasnin were their friends. We therefore
11) If you are going to be away for several days and no one will be at home, whom do you ask to watch the house?

12) From whom in the barrio do you borrow rice if you run short?

13) To whom do you lend your radio, money or some other object of value?

14) Who is the most reliable source of information in the barrio?

15) Who in the barrio is your godmother in baptism, confirmation and marriage?

16) Who in the barrio is your children's godparent in baptism, confirmation and marriage?

17) Who are your companions in picking kuto (head lice)?

18) With whom have you discussed family planning?

In addition to these 18 questions, two independent observations of interpersonal behavior were made. The first consisted of a five to seven day record of interaction during which the respondents were asked to give us the name of the women with whom they had interacted the day before and what the circumstances were. We discovered, however, that the respondents found this somewhat tedious on top of all the other demands made on their time. Consequently the quality of the data varied considerably from individual to individual and from day to day. Furthermore, the respondents were asked them to differentiate between those who were their friends and those who were their best friends.
selective in their reported contacts, stressing the more unusual meetings and occurrences in preference to the more commonplace ones.

The second set of independent observations consisted of the collective opinion of my two field assistants and myself concerning who were thought to be the best friends of each of the respondents. Our opinions were based on our observation and life in the barrio during the 14 months. Again, the quality of the data varies depending on how well the respondents were known and the extent to which they were seen in different social situations outside their homes.

E. Tracing the Flow of Family Planning Information

An experiment was conducted in order to compare general networks of interaction and communication with the specific, face-to-face network through which family planning information diffused.

In the month of August, some eight months after the research had been initiated and after the major interviews had been completed, a family planning team from Boac was asked to present a lecture and show films about family planning to the barrio women. Since the team was already involved in barrio visitations for this purpose, my request only hastened their arrival in Buliasnin. As mentioned earlier, no other formal program of this sort had previously been presented in the barrio.
Working through the usual barrio channels, that is, contacting the barrio capitana and the head teacher in the elementary school, the team scheduled a meeting with the mothers in the community and with other interested persons. Since the request for assistance had gone directly through the family planning team with whom personal and professional contacts had been established by the researcher, it is likely that no one in the barrio associated the meeting with my research.

A two hour lecture was given in the afternoon by three women doctors from Boac. Discussed were the rudiments of the reproductive system and specific methods of preventing conception. Information regarding places to go for further advice, counseling and contraceptives was also provided. The women were invited to return after dark with their families for several short movies on family planning. Since movies are rarely shown in the barrio, the meeting was well attended by husbands and wives as well as children.

A month later the respondents were interviewed on their understanding and knowledge of family planning and on the names of the women with whom they had discussed family planning since the lecture. In this way it was possible to trace the interpersonal networks through which the family planning

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32See Appendix II for the questions asked.
information passed. This could then be compared with the more general networks of communication and interaction in the barrio to see how the two were similar or different.

Because of the large volume of data collected in the field, no attempt was made to analyze it other than coding responses to the questions, transferring the data to key punch sheets, and compiling initial hand-tallies to check the completeness of the information. The formal analysis of the data was postponed until my return to Hawaii. The following section describes the statistical methods employed in the data analysis.
CHAPTER V
DATA ANALYSIS

Chapter II presented the Social Field Theory model and the associated mathematics, specifically linear algebra, as the theoretical framework wherein the relationship between dyadic similarity and interpersonal behavior could be tested. This section examines more closely the mechanics of data manipulation and the individual statistical techniques employed in the analysis.

I. Attribute Space

A. Selection of Variables

From the initial 87 questions pertaining to individual attributes, nearly 500 pieces of information for each of the 123 respondents were assembled and coded for punch cards. The first step in the data analysis consisted of recombining a number of separate items into composite variables. For example, the 12 questions pertaining to the time of adoption of various household innovations were reduced to a single innovativeness score. This was achieved by arraying the month and year of adoption from the earliest to the latest and calculating the mean and standard deviation for each innovation. A respondent's score for any given innovation was calculated using the Sten Scale,
and the composite innovativeness score was the sum of the Sten score across the 12 innovations. Similar methods were employed in deriving five additional composite scores. Table 1 lists these variables, their acronyms and the range of values for each.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acronym</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Innovation score</td>
<td>INNOSCOR</td>
<td>00-64</td>
</tr>
<tr>
<td>2. Local travel score</td>
<td>LOCTRVLS</td>
<td>03-2550</td>
</tr>
<tr>
<td>3. Political knowledge score</td>
<td>POLIKNOW</td>
<td>00-99</td>
</tr>
<tr>
<td>4. Mass media contact score</td>
<td>MASMEDSC</td>
<td>00-60</td>
</tr>
<tr>
<td>5. Change agent contact score</td>
<td>CHNGAGNT</td>
<td>00-158</td>
</tr>
<tr>
<td>6. Formal organization participation and leadership score</td>
<td>FORMORSC</td>
<td>00-23</td>
</tr>
</tbody>
</table>

To these composite indices were added 17 additional variables which are listed in Table 2.

The 23 variables selected for analysis are but a handful of the total number collected, most of which were not employed for a variety of reasons. First, on many items there was little variability among the respondents, particularly for such questions as religion, literacy and marital status. Second, where differences did occur, such as on status, income

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Table 2

Variables, Their Acronyms, Range and Units of Measurement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acronym</th>
<th>Range</th>
<th>Unit of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>AGE</td>
<td>20-65</td>
<td>years</td>
</tr>
<tr>
<td>2. Distance of place of birth from Buliasnin</td>
<td>DISBIRTH</td>
<td>00-5600</td>
<td>kilometers</td>
</tr>
<tr>
<td>3. Length of residence in barrio as % of age</td>
<td>LENRESID</td>
<td>001-100</td>
<td>percent</td>
</tr>
<tr>
<td>4. Connectivity of respondents in barrio as the average number of houses passed in order to reach all other houses</td>
<td>CONNECT</td>
<td>162-360</td>
<td>houses</td>
</tr>
<tr>
<td>5. Urban visits in past six months</td>
<td>URBVISIT</td>
<td>0-1</td>
<td>no/yes</td>
</tr>
<tr>
<td>6. Number of trips ever made to Manila</td>
<td>TRVLMANL</td>
<td>000-100</td>
<td>trips</td>
</tr>
<tr>
<td>7. Number of months ever lived in Manila</td>
<td>LIVMANIL</td>
<td>000-192</td>
<td>months</td>
</tr>
<tr>
<td>8. Degree of satisfaction with present life</td>
<td>SATISFAC</td>
<td>+ 9</td>
<td>difference between present and past ladder ratings</td>
</tr>
<tr>
<td>9. Approval of family planning</td>
<td>APPROVFP</td>
<td>0-1</td>
<td>no/yes</td>
</tr>
<tr>
<td>10. Number of years of education</td>
<td>YRSEDCUN</td>
<td>0-14</td>
<td>years</td>
</tr>
<tr>
<td>11. Discuss family planning with husband</td>
<td>DISCUSFP</td>
<td>0-1</td>
<td>no/yes</td>
</tr>
<tr>
<td>12. Discuss desired family size with husband</td>
<td>DISCUS#K</td>
<td>0-1</td>
<td>no/yes</td>
</tr>
<tr>
<td>13. Decided to use family planning techniques</td>
<td>TOUSEPP</td>
<td>0-1</td>
<td>no/yes</td>
</tr>
<tr>
<td>14. Number of family planning techniques known</td>
<td>#FPMKNOW</td>
<td>0-9</td>
<td># of techniques</td>
</tr>
<tr>
<td>15. Number of family planning techniques respondent knows how to use correctly</td>
<td>#FPMTOUS</td>
<td>0-9</td>
<td># of techniques</td>
</tr>
<tr>
<td>16. Number of family planning techniques ever tried</td>
<td>#FPMUSED</td>
<td>0-3</td>
<td># of techniques</td>
</tr>
<tr>
<td>17. Number of times respondent cited as source of good information</td>
<td>*GOODINF</td>
<td>0-80</td>
<td># of times cited</td>
</tr>
</tbody>
</table>
and standard of living, the amount of variation was so slight or subtle that the questions asked in the field were incapable of measuring the differences. Third, although the total respondent base was relatively large, the frequencies for various categories of responses were so low that the overall importance of the variable could not be determined. This was especially the case with those items pertaining to types of work engaged in by the respondents. The single largest work category was agricultural, although this was split between rice farming and copra making, two entirely different types of activity. Other categories included teachers, seamstresses, peddlers of various kinds of food, and weavers of nipa mats. Grouping respondents into more general categories tended to mask real differences. Consequently, most of these work items were eliminated from the analysis.

Most of the casualties among the individual items in the attribute space questionnaire consisted of those questions relating to sociological and psychological differences among the respondents. None of the items pertaining to achievement motivation, social perceptiveness, empathetic ability or dogmatism was included for reasons explained previously.
B. Problems of Distribution

As stated in the second chapter, Social Field Theory employs the mathematics of linear algebra and specifically the techniques of correlation, factor analysis and regression analysis as the model of interpersonal behavior. These commonly employed statistical methods, however, make a number of assumptions about the data on which they operate.

One of the assumptions concerns the underlying distribution of the variables. Ordinarily, when examining a sample drawn from a universe and from which inferences are to be made about the larger population, a multivariate normal distribution, or at least an approximation, of each variable against all other variables is required. Otherwise, tests of statistical significance are unreliable.\(^2\) However, since this study concerns a population of women rather than a sample, normalities of distribution are not required.

The heavily skewed nature of several of the variables, on the other hand, does mean that the overall relationships among them are affected. The presence of even one extreme outlying observations may significantly alter the correlation between two variables in a small population. In addition,

whenever a variable is measured in such a way that more than one observation can have the same value, as with dichotomous variables, the -1.00 to +1.00 range of the correlation coefficient may be restricted.\(^3\)

Convention has been to transform the data, as with a logarithmic transformation, in order to improve the normality of the frequency distribution. This is what was done in this study. Table 3 lists the variables employed in the study, indicates the degree and direction of skew, reports the logarithmic function used in transforming the distribution and reports any change in the skew of the transformed distribution.

The 12 variables skewed significantly at the .01 level were transformed by taking either the \(\log_{10}\) of the variable or \(1/2\log\frac{1+x}{1-x}\), depending on the extent of the peakedness.\(^4\) Of these 12 transformations, the skew in seven was reduced to below the .05 level of significance. Although the skew in 11 of the 23 variables remained statistically significant at the .05 level or higher, the statistical analyses were performed with the realization that the usual inferences would be invalid.

---

\(^3\)Ibid., pp. 216-217.

\(^4\)Ibid., pp. 280-286.
### Table 3
Distribution of Variables and Transformations Performed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Skew</th>
<th>Transformation Employed</th>
<th>New Mean</th>
<th>Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AGE</td>
<td>39.04</td>
<td>0.39</td>
<td>None</td>
<td>39.04</td>
<td>0.39</td>
</tr>
<tr>
<td>2. DISBIRTH</td>
<td>12.81</td>
<td>8.78**</td>
<td>1/2log(1+x)</td>
<td>0.63</td>
<td>1.39**</td>
</tr>
<tr>
<td>3. LENRESID</td>
<td>0.64</td>
<td>-0.39</td>
<td>None</td>
<td>0.64</td>
<td>-0.39</td>
</tr>
<tr>
<td>4. CONNECT</td>
<td>22.17</td>
<td>0.82**</td>
<td>log_{10}</td>
<td>1.38</td>
<td>0.42</td>
</tr>
<tr>
<td>5. INNOSCOR</td>
<td>16.19</td>
<td>1.27**</td>
<td>log_{10}</td>
<td>1.18</td>
<td>-0.88**</td>
</tr>
<tr>
<td>6. URBVISIT</td>
<td>0.21</td>
<td>1.40**</td>
<td>None</td>
<td>0.21</td>
<td>1.40**</td>
</tr>
<tr>
<td>7. TRVLMANL</td>
<td>7.40</td>
<td>3.46**</td>
<td>1/2log(1+x)</td>
<td>0.62</td>
<td>1.22**</td>
</tr>
<tr>
<td>8. LIVMANIL</td>
<td>7.96</td>
<td>5.10**</td>
<td>1/2log(1+x)</td>
<td>0.53</td>
<td>1.53**</td>
</tr>
<tr>
<td>9. LOCTRVLs</td>
<td>212.76</td>
<td>4.16**</td>
<td>1/2log(1+x)</td>
<td>2.05</td>
<td>0.06</td>
</tr>
<tr>
<td>10. POLIKNOW</td>
<td>0.42</td>
<td>0.15</td>
<td>None</td>
<td>0.42</td>
<td>0.15</td>
</tr>
<tr>
<td>11. MASMEDSC</td>
<td>15.84</td>
<td>1.19**</td>
<td>log_{10}</td>
<td>1.15</td>
<td>-0.37</td>
</tr>
<tr>
<td>12. CHNGAGNT</td>
<td>10.17</td>
<td>7.13**</td>
<td>1/2log(1+x)</td>
<td>0.93</td>
<td>-0.36</td>
</tr>
<tr>
<td>13. SATISFAC</td>
<td>0.19</td>
<td>-0.92**</td>
<td>None</td>
<td>0.19</td>
<td>-0.92**</td>
</tr>
<tr>
<td>14. APPROVFP</td>
<td>0.81</td>
<td>-1.59**</td>
<td>None</td>
<td>0.81</td>
<td>-1.59**</td>
</tr>
</tbody>
</table>
Table 3 (continued) Distribution of Variables and Transformations Performed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Skew</th>
<th>Transformation Employed</th>
<th>New Mean</th>
<th>Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. YRSEDUCN</td>
<td>6.21</td>
<td>0.96**</td>
<td>None</td>
<td>6.21</td>
<td>0.96**</td>
</tr>
<tr>
<td>16. FORMORSC</td>
<td>1.95</td>
<td>3.26**</td>
<td>(1/2\log \frac{1+x}{1-x})</td>
<td>0.45</td>
<td>1.73**</td>
</tr>
<tr>
<td>17. DISCUS#K</td>
<td>0.55</td>
<td>-0.21</td>
<td>None</td>
<td>0.55</td>
<td>-0.21</td>
</tr>
<tr>
<td>18. DISCUSFP</td>
<td>0.63</td>
<td>-0.52*</td>
<td>None</td>
<td>0.63</td>
<td>-0.52*</td>
</tr>
<tr>
<td>19. TOUSEFP</td>
<td>0.48</td>
<td>0.08</td>
<td>None</td>
<td>0.48</td>
<td>0.08</td>
</tr>
<tr>
<td>20. #FPMKNOW</td>
<td>4.18</td>
<td>0.05</td>
<td>None</td>
<td>4.18</td>
<td>0.05</td>
</tr>
<tr>
<td>21. #FPMTOUS</td>
<td>2.94</td>
<td>0.47*</td>
<td>(\log_{10})</td>
<td>0.64</td>
<td>-0.24</td>
</tr>
<tr>
<td>22. #FPMUSED</td>
<td>0.69</td>
<td>0.90**</td>
<td>(\log_{10})</td>
<td>0.41</td>
<td>0.55*</td>
</tr>
<tr>
<td>23. *GOODINF</td>
<td>3.65</td>
<td>4.01**</td>
<td>(1/2\log \frac{1+x}{1-x})</td>
<td>0.66</td>
<td>0.28</td>
</tr>
</tbody>
</table>

* Significant at .05 level
** Significant at .01 level
1. Effects of Mixed Scales

Examination of Table 2 reveals that the scale of the variables varies from interval to nominal. There is little consensus on the effect of such mixed scales on subsequent analyses, especially those involving multivariate techniques such as factor analysis. Rummel, however, argues that nominal or dichotomous variables can be used with variables measured on an interval scale, in which case they become similar to "dummy" variables in regression analysis. 5

C. Principal Axis Factor Analysis

The 12 transformed and 11 untransformed variables were then standardized which permits the comparison of data having different units of measurement, such as age, years of education and kilometers. 6

An introduction to the analytic technique of factor analysis and its relation to Social Field Theory has already been presented in Chapter II. For those unfamiliar with factor analysis, it might be helpful to review Figure 1 on page 37 and the discussion on pages 35 to 38. The purpose of the factor analysis is to uncover basic patterns of variation among the data using the intercorrelations among the variables as the focus of concern. Consequently, the 23

5 Ibid., pp. 224-225.
6 Ibid., pp. 290-291.
standardized variables were first correlated with each
other to form a vector space. Vectors that are statistically
interdependent will cluster together in this space, and each
cluster defines a particular pattern of regularity among the
variables. Rummel states:

What factor analysis does, then, is to determine
the minimum number of independent coordinate axes
necessary to plot (reproduce) the variation in
vectors in the space. Each such coordinate axis
is called a dimension. As many dimensions will be
needed to reflect the variation in vectors as there
are unrelated clusters of interdependent vectors
... In different words, factor analysis uncovers
the independent 'sources' of data variation. Be-
cause interdependencies may exist between data,
factor analysts are asking whether the same amount
of variation in the data can be represented equally
well by dimensions smaller in number than the columns
necessary to tabulate the data ... Dimensions disc­
closed by a factor analysis can be interpreted as
measures of the amount of ordered or patterned
variation in the data. The degree to which such
regularity or interdependency exists can be gauged
by the number and strength of the dimensions.7

Because the number of "independent sources of data
variation" is equal to the "rank" of the data matrix which
in turn is equal to (or one less than) the number of observa-
tions or variables, whichever is smaller, a factor analysis
resulting in as many factors as variables has hardly produced
much of a data reduction solution. That is, a factor analysis
of 23 variables that produces 23 or 22 factors is of little
value in identifying the major patterns of interrelationships.

7Ibid., pp. 15-16.
The principal axis technique, however, extracts the factors accounting for a decreasing proportion of total variance. Thus, the factoring process can be terminated when it is judged that trivial amounts of total variance are beginning to be explained. However, what are the criteria for judging what is trivial? Unfortunately, there are no simple rules of thumb, as Rummel indicates.\(^8\) One relatively simple guide that has gained wide popularity in social science research is that of limiting factors to those with eigenvalues greater than unity.\(^9\) Although the technique is neat and simple, it does have its shortcomings, especially when the total range of eigenvalues is relatively small. Consequently, in the analysis of attribute variables the eigenvalues for the resulting 20 factors were examined for the point at which the decrease was the greatest in proportion of total variance explained. This lay between the seventh and eighth factors, and thus factoring was stopped once the seventh factor was extracted.

One of the characteristics of principal axis factor analysis is that each successive factor accounts for a decreasing amount of total variance. The first factors generally have high loadings for most of the variables. The first factor is fitted to the data in such a way as to explain

\(^{8}\text{Ibid.}, pp. 354-365.\)

\(^{9}\text{Ibid.}, pp. 362-364.\)
the maximum amount of variance, and each subsequent factor is maximally fitted to the residual variance. As Rummel states:

This procedure often locates the first factor between independent clusters of interrelated variables. These clusters cannot be distinguished in terms of their loadings on the first factor. Therefore, in order to identify and separate these clusters, the factor matrix is rotated orthogonally by means of the "verimax" rotation technique which ensures that factors delineate statistically independent variation. The resulting seven orthogonal dimensions are the subject of discussion in Chapter VI.

The 123 respondents were assigned a factor score for each of the seven dimensions according to the degree of their involvement with each. The factor scores, then, became the basic unit of comparison for determining attribute similarity among the individuals comprising the population.

D. Measures of Social Distance and Dyadic Similarity

The similarity or dissimilarity between all respondents was calculated for each of the dimensions separately as well as for all seven factors simultaneously. To calculate differences on a single factor one score was merely subtracted from another; the smaller the remainder, the greater the attribute similarity between the two women. Alternatively,  

10Ibid., p. 373.
the closer two respondents were in social space, the smaller the social distance separating them. In the case of the seven factors considered simultaneously, the respondent's seven factor scores served as a set of coordinates locating that individual in seven dimensional space. Euclidean geometry provided the means for calculating the straight line distance between pairs of respondents.

The resulting eight 123 by 123 matrices of distances—seven for each separate factor and one for all factors considered at once—were collapsed to a two dimensional matrix in which the rows represented all possible pairs of dyads and the eight columns represented the dyadic differences on factor scores. The number of possible dyads—15006 dyads \((n^2 - n)\)—was divided in half since the distance between \(x\) and \(y\) was the same as between \(y\) and \(x\), except for a change in sign. Thus, a new 7503 by 8 matrix was created.

II. Interaction Space

Analysis of the interaction or behavior variables proceeded in essentially the same manner as the analysis of the attribute variables, although with slight modifications. Whereas the attribute space analysis consisted of factor analyzing 23 variables, calculating factor scores and then determining dyadic distances, the 20 interaction variables, described in Chapter IV, were dyadic at the outset since they described the behavior of one respondent towards another.
Thus, the 20 interaction variables became the columns and the 15006 dyads became the rows.

Contrasted with other dyadic analyses where behavior was measured by some objective criterion, such as commodity flows from one region to another,\textsuperscript{11} or voting behavior in the United Nations,\textsuperscript{12} and where such behavior was symmetrical, such was not the case with the measures of interaction among women in Buliasnin. Because respondents were asked to name the women with whom they interacted in each of 20 different situations, oftentimes the relationships were not reciprocated. For example, Mrs. X might indicate that Mrs. Y was a work companion, but Mrs. Y did not reciprocate. Thus the relationship was asymmetrical. Ideally, it would have been useful to have an objective measure of dyadic interaction in order to rule out most problems of symmetry, but beyond the two described earlier, this was not feasible with such a large population.

Respondents were asked to rank the relative importance of each of the women cited in the different situations. However, because so few women were mentioned in any given situation—an average of 24 per situation—the rankings seemed to provide little additional information. For

\textsuperscript{11}Berry, 1966, op. cit.

example, if a respondent indicated she interacted with only ten of a possible 122 women in the barrio, the fact that one of the ten ranked fourth in importance and another ranked sixth was of little consequence. Therefore, the interaction behaviors were finally coded 1 or 0 indicating merely the presence or absence of interaction in a given situation.

Because interaction did not occur between all 15006 dyads, the total number of dyads where interaction occurred in at least one of the 20 situations could be reduced to 2969. The decision to select for analysis only those dyads where interaction occurred indicates a slight departure from the Social Field Theory model as employed by Rummel and Berry. The focus is no longer on the potentials for interaction among a population of dyads but rather interaction that actually occurred. The attribute distances, it will be remembered, were hypothesized to be potentials for interaction. In theory, it is quite likely that the potential for interaction between two women might be high given the small amount of social distance separating them. However, interaction might not have occurred. Examination of these anomalies might have provided insight into the nature of interpersonal relations. However, because of the number of dyads involved, significantly more than in any previous dyadic study, this was not feasible. Consequently, the underlying reasons for actual interaction have been focused upon, rather than the reasons for the lack of interaction.
The 2969 dyads involving interaction were analyzed in the same manner as the attribute variables. A 20 by 20 correlation matrix of interactions was calculated, principal axis factor analysis performed, the factor matrix rotated orthogonally, six major dimensions of behavior extracted and factor scores calculated for each of the dyads on the six factors. Where factor scores were high and positive, interaction between the women comprising the dyad was equally high and positive. The substantive findings of this analysis are reported in Chapter VII.

III. Testing the Relationship Between Social Distance and Dyadic Behavior: Canonical Analysis

The final analytic operation performed was to test the statistical relationship between various measures of social, relational and physical distance and dyadic interaction. Had the problem been to establish the relationship between a single dependent variable and a set of independent variables (e.g., a single measure of social distance and several interaction situations or, conversely, a single measure of interaction and several measures of social distance), multiple regression would have been an appropriate tool of analysis. However, since the research is concerned with the relationship between a variety of measures of distance and a set of different interactions, multiple regression was not suitable. The statistical technique most appropriate for this situation
was canonical analysis which generalizes regression analysis to designs with more than one dependent variable.

Canonical analysis has not been widely employed in geography.\(^{13}\) Berry and Gauthier have both used the technique to study the interrelationships between spatial distribution of human activities and the characteristics of the physical environment. Berry investigated the interrelationship between the economic structure of regions of India and the flow of commodities between these regions.\(^{14}\) Gauthier studied the relationship between nodal accessibility and urban growth in the Sao Paulo region of Brazil.\(^ {15}\) Other studies employing the technique can be found in political science, and specifically in the work of Rummel and his colleagues referred to earlier.

Developed by Hotelling in the mid-1930's,\(^ {16}\) canonical analysis delineates the independent patterns of interrelationships between two sets of measurements made on the same

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\(^{13}\) As of the end of 1971 only nine studies were reported which used canonical analysis. See, Bryn Greer-Wooten, *A Bibliography of Statistical Applications in Geography*, Commission on College Geography, Technical Paper No. 9, Association of American Geographers (Washington, D.C., 1972), pp. 90-91.

\(^{14}\) Berry, 1966, *op. cit.*


subjects. Just as factor analysis separates distinct clusters of variables that vary together over a set of observations, canonical analysis finds clusters or patterns in the two sets of data by maximizing the correlation between linear combinations of variables. Each linear combination of variables is independent of the previously derived linear combinations, just as factors are independent of each other in factor analysis.17

In trying to determine the relationship between dyadic similarity of personal attributes and dyadic interactions, canonical analysis addresses itself to two related issues: first, it seeks to define the overall relationship between attribute similarity and interaction; second, given this relationship, it identifies the underlying patterns of relationships between specific combinations of attributes and behaviors.

It is appropriate to review briefly some of the basic properties of the canonical model.18 The algebraic formula for canonical analysis is:


18 The following discussion is based largely on Warren Phillips' paper, "Understanding Canonical Analysis," Department of Political Science, The Ohio State University (Columbus, Ohio, n.d.), mimeo.
\[
\alpha_1 Y_1 + \alpha_2 Y_2 + \alpha_3 Y_3 = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad (5.1)
\]
\[
\alpha^{*} Y_1 + \alpha^{*} Y_2 + \alpha^{*} Y_3 = \beta^{*} X_1 + \beta^{*} X_2 + \beta^{*} X_3 + \beta^{*} X_4 \quad (5.2)
\]
\[
\alpha^{**} Y_1 + \alpha^{**} Y_2 + \alpha^{**} Y_3 = \beta^{**} X_1 + \beta^{**} X_2 + \beta^{**} X_3 + \beta^{**} X_4 \quad (5.3)
\]

where the \( \alpha \) and \( \beta \) are somewhat analogous to regression coefficients in regression analysis weighting the \( X \) and \( Y \) variables in the two sets of data. The asterisks indicate that the coefficients assume different values in the three equations.

The statistic is an iterative procedure which maximizes the correlation within each equation (5.1-5.3) by various combinations of weighted pairs of \( X \) and \( Y \) variables. Equation 5.1 referred to as a **canonical variate**, delineates the combination of variables with the strongest interrelationships in the two sets of data; the second variate, 5.2, delineates the next strongest pattern of relationships that is uncorrelated with the first; the third variate, 5.3, identifies the pattern of relationships in the next linear combination of variables that is independent of the first and second.

Compared with regression analysis where a single solution is found because only one dependent variable is employed, canonical analysis finds a **set** of solutions or variates which are as numerous as there are independent patterns of relationships in the two matrices. As a rule, there are as many canonical variates as variables in the smaller of the two
sets of data. Each variate is a linear combination of all variables on one side of the equation.

An analogous situation exists in stepwise multiple regression. As the name implies, at each step of the analysis new variables are entered into the equation. In regressing a single dependent variable on several independent variables, the first step identifies the independent variable having the highest correlation with the dependent variable. The multiple coefficient of correlation (R) measures the strength of the relationship between the dependent and independent variables. The coefficient is the weight or measure of importance assigned to the independent variable in the equation. As additional variables are added, accounting for proportionally smaller amounts of residual variation, new multiple correlation coefficients are calculated.

In canonical analysis the first canonical variate (5.1 above) maximizes the canonical correlation between the sets of variables. However, in contrast to the stepwise regression model, each subsequent step linearly recombines both sets of variables in order to find the new combination which maximizes the remaining variance. This procedure is continued until the side with the least number of variables has been exhausted.

Several statistics are provided in the analysis for testing the statistical significance of the relationships. The Chi square test indicates the significance of the canonical correlation associated with each linear combination of variables comprising a canonical variate.\textsuperscript{20}

The second statistic is the trace correlation. It reflects the overall goodness of fit between the two sets of variables; that is, it measures the amount of variance in one set that is explained or accounted for by the variance in the other set. The higher the trace correlation, the greater the statistical overlap between the two spaces.

It is unimportant mathematically whether the attribute variables or the behavior variables are considered as the dependent variables, as must be the case in multiple regression analysis. Geometrically, the canonical analysis measures the extent to which individuals occupy the same relative positions in the behavior space as they do in the attribute space.

With this section, the presentation of the methodological aspects of the study comes to a close. The remainder of the thesis concerns a description and discussion of the substantive findings of the research, beginning first with the structure

\textsuperscript{20}The Chi square test is built into the canonical analysis computer program. For an explanation of how the Chi square is obtained, see Cooley and Lohnes, \textit{op. cit.}, p. 37.
of social space in the barrio, the nature of dyadic interaction, the relationship between various distance measures and interaction, and finally a comparison of networks of interaction with the network of communication through which family planning information diffuses.
CHAPTER VI

THE STRUCTURAL COMPONENTS OF SOCIAL SPACE IN THE BARRIO

It has been hypothesized that the closer two individuals are in social space, the more likely they are to interact in a positive manner. The present chapter sets out to define the basic structural components of social space on the barrio in order to assign a relative location to each of the respondents.

I. Factor Analysis of Attribute Variables

Table 4 summarizes the principal findings of the factor analysis of the 23 variables which were selected to describe attribute differences among the 123 respondents in Buliasnin. Seven rotated factors were extracted which account for 69.5 percent of the total variance among the variables. Of these seven, the first three account for nearly two-thirds of the total variance explained.

A. Propensity to Practice Family Planning Dimension

The first factor explained the largest percentage of total variance—17.5 percent. The variables loading most highly concern issues relevant to family planning. It has been labeled the Propensity to Practice Family Planning because it includes such variables as (1) #FPMUSED (0.851) (the number of family planning methods ever used or tried),
### Table 4

**Principal Axis Factor Analysis of Attribute Space Variables**

<table>
<thead>
<tr>
<th>Rotated Factor Matrix</th>
<th>Factor Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Total Variance</td>
<td></td>
<td>17.5</td>
<td>13.6</td>
<td>10.3</td>
<td>8.4</td>
<td>8.2</td>
<td>5.9</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Variable Name</strong></td>
<td><strong>Communality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISCUS#K</td>
<td>.648</td>
<td>0.612</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISCUSFP</td>
<td>.684</td>
<td>0.798</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOUSEFP</td>
<td>.718</td>
<td>0.828</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#FPMKNOW</td>
<td>.789</td>
<td>0.751</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#FPMTOUS</td>
<td>.779</td>
<td>0.755</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#FPMUSED</td>
<td>.732</td>
<td>0.851</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INNOSCOR</td>
<td>.664</td>
<td>0.514</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.521</td>
</tr>
<tr>
<td>LOCTRVSRC</td>
<td>.535</td>
<td>0.704</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLIKNOW</td>
<td>.554</td>
<td>0.519</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.322)</td>
</tr>
<tr>
<td>NAMEDSC</td>
<td>.590</td>
<td>0.586</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.363)</td>
</tr>
<tr>
<td>YRSEDCN</td>
<td>.769</td>
<td>0.735</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.431)</td>
</tr>
<tr>
<td>FORMORSC</td>
<td>.556</td>
<td>0.572</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.376)</td>
</tr>
<tr>
<td>URBVISIT</td>
<td>.666</td>
<td></td>
<td>(0.380)</td>
<td>0.655</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRVLMNIA</td>
<td>.780</td>
<td></td>
<td>(0.345)</td>
<td>0.736</td>
<td></td>
<td></td>
<td></td>
<td>(0.342)</td>
</tr>
<tr>
<td>LIMMNLA</td>
<td>.773</td>
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**Notes:** Communality values are in parentheses.
and (2) TOUSEFP (0.828) (the expressed intention of employing fertility limiting devices at some time in the future).

Other variables with high loadings include (1) DICUSFP (0.798) (husband-wife discussion of family planning issues), (2) #FPMTOUS (0.755) (knowledge of how to use different contraceptive techniques), (3) #FPMKNOW (0.751) (the number of family planning methods cited), and (4) DISCUS#K (0.612) (husband-wife discussion of desired family size).

The figures in parentheses in Table 4 are included because they indicate some pattern of association with the dimension even though they usually load most highly on a different factor. Any variable with a factor loading of between ±0.300 and ±0.499 is placed in brackets. On the Propensity to Practice Family Planning dimension, age is inversely related to the dimension whereas approval of family planning is positively associated. Perhaps the reason age does not load more highly is that women at either end of the age spectrum were generally not highly motivated to practice family planning. Older respondents having passed menopause, simply were not interested. Younger married women, between the ages of 20 and 30, had not completed their families, and when asked what they planned to do once they had their desired number of children, indicated they thought it inappropriate to even consider family planning so long as additional children were desired.
Although the younger women claimed that they had not given much thought to family planning, they tended to be better informed about methods of fertility limitation than were the older women. On the other hand, they were less well informed as a whole than those women in their middle to late thirties and early forties who had been married longer and had had many more pregnancies.¹

Approval of family planning does not load as highly on the dimension as might be intuitively thought primarily because most respondents, regardless of their actual knowledge or personal intentions concerning the practice of family planning, approved of the general idea of limiting pregnancies, at least for others if not for themselves. Nearly 98 out of a total of 123 respondents in all age brackets (80.3 percent) expressed their approval of the practice of family planning.

Of particular interest here are, perhaps, not so much the variables actually loading on the dimension as those that are conspicuous by their absence, most notably the

variables loading on factors two, three and five. The fact that the Propensity to Practice Family Planning is orthogonal or uncorrelated with such variables as innovativeness, mass media contact, urban visits, travel to and residence in Manila, years of education, formal organization membership, change agent contact and the like suggests some revealing insights into family planning in the Philippines, at least as viewed from one rural barrio.

Generally, studies which examine the factors involved in the development of the so-called modern personality stress the idea that receptivity to new ideas and the propensity to put these innovations into practice are in some way linked to changes in the individual's social, economic and psychological character.² The object of modernization is to induce a fundamental and directed change in these characteristics. That is, it is the process of becoming more modern wherein individuals change or are transformed from a traditional way of life to one that is more complex, technologically advanced, and rapidly changing. Theoretically, the individual most resistant to change tends to be tied to the narrow confines of his traditional village world and tends to have more restricted horizons and opportunities.

The various indices which most researchers have found to be both the antecedents as well as the end product of

individual modernization are primarily those variables which cluster around factors two, three and five. Yet, in this study these indices are statistically independent of the variables comprising the Propensity to Practice Family Planning. Two conclusions might be drawn. First, either the Propensity to Practice Family Planning is really not such an innovative concept in the barrio, or, second, if it is, then the acceptance of the innovation is independent of those variables defining the so-called "modern" individual.

From personal observation in Buliasnin, the first conclusion would seem to be closer to the mark, namely that family planning or the practice of fertility limitation is not new but rather that the motivation and practice have long been present. For reasons that will be more fully elaborated in a later chapter, the only new aspects of family planning appear to be its name and its improved methods of contraception.

If the concept of fertility limitation is indeed old and well established in the barrio, it stands to reason that Propensity to Practice Family Planning dimension would be independent of individual indices of modernization. It also seems likely that the national family planning program in the Philippines might achieve greater success if less effort and resources were spent on trying to motivate people already motivated to practicing family planning. Instead, greater emphasis might be placed on providing better family
planning facilities and more acceptable methods of contra-
ception for those who want them.

B. Extra-Barrio Orientation Dimension

Factor two, accounting for 13.6 percent of the total variance in the data, has a number of variables loading highly on it that suggest an Extra-Barrio Orientation, or as Rogers calls it "cosmopoliteness," which has been defined on page 87.

This Extra-Barrio Orientation is both the result of and the concrete manifestation of those variables correlating most highly with the factor, such as (1) YRSEDUON (0.735) (education), (2) LOCTRVS (0.704) (local travel score), (3) MASMEDSC (0.586) (mass media contact score), (4) FORMORSC (0.572) (membership and leadership in formal barrio organ­izations), (5) POLIKNOW (0.519) (political knowledge), and (6) INNOSCOR (0.514) (innovativeness). In addition there is a lesser pattern of association between the factor and the quantity and quality of knowledge of different contra­ceptive techniques. This seems to indicate that the variables with high loadings on factor two may contribute to a greater awareness and understanding of contraception, although they are in no way absolutely essential. The slight correlation with factor two of urban visits, in general, and of trips to Manila, specifically, implies that the breakaway from the narrow confines of barrio life is not totally dependent upon moving to a major urban center. Although Manila is a primate
city in the fullest sense of the word—that is, its population is nearly nine times larger than the second biggest city, Cebu, and approximately thirteen times larger than the next three cities, Davao, Basilan and Iloilo, the national capital is not the only pole of change or modernization. The fact that universities and other schools of higher education are located throughout the archipelago assures that cities other than Manila will play an important role in the initiation of change in the country. Finally, the slight tendency for the Extra-Barrio Orientation dimension to be inversely associated with age reflects the fact that greater opportunities are open today to the young to sever their ties with barrio life.

These results do not differ markedly from those found in Rogers' comparison of eight factor analysis studies of individual modernization. He found three basic dimensions common to all eight studies. The first he labeled an "external communication ability" because the indices loading highly generally reflected communication with the world beyond the immediate village environment. The strong relationship between education and the dimension suggests that the individual has greater access to and can make better use of the

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various mass media, most notably the printed media. An individual's access to more and varied information is reflected in the higher level of awareness and knowledge of political events and people. Further, the external orientation of the dimension manifests itself in greater geographic mobility, with respect to both the local setting and more distant urban centers. This increased contact with new and different worlds, Rogers claims promotes greater innovativeness in the home and the desire to acquire the artifacts of a higher standard of living.

The points at which Rogers' findings diverge from those of this study are several and may be a function of different populations. Rogers' work deals almost entirely with males whereas this thesis concerns females. He found that external communication ability is highly correlated with the number of trips made to urban centers. The present study finds this relationship to be considerably weaker. More will be said about this in the discussion of factor three.

Second, he found that external communication ability tends to be highly associated with social status. Although a specific measure of social status is absent in the present study for reasons explained previously, examination of the factor scores for the 123 respondents on the dimension suggests that the slight variations in social status found at the barrio level are randomly distributed across individuals with high factor scores on this dimension. For
example, most of the elementary school teachers in Buliasnin, who might intuitively be thought to be of higher status than their barriomates, do have high factor scores, yet several do not. A number of women, who might be objectively judged to be of somewhat lower status than the rest of their fellow residents, also have high factor scores, although the majority do not. In short, little consistency of association exists between the Extra-Barrio Orientation (external communication ability as Rogers refers to it) and what appear to be objective measures of social status.

The third area of disagreement between the present study and those reviewed by Rogers concerns the formal organization participation variable. Rogers found that membership and leadership in formal village organizations did not load highly on the external communication ability dimension. Rather, it combined with the opinion leadership and change agent contact variables to form what he labeled an "innovative leadership orientation" dimension. In other words, opinion leaders in the studies reviewed by Rogers tended to be participating members or leaders in local formal organizations, and by virtue of such membership, they were brought into greater contact with agents of change from outside the community. The ideas encountered in these situations were then translated into greater innovative behavior, and were passed

5Ibid., p. 332.
along to the rest of the community because of their role as opinion leaders. This is what Katz and others have referred to as the "two step flow of information."6

In contrast, membership and leadership in formal organizations in Buliasnia were found to load highest, although not exclusively, on the Extra-Barrio Orientation dimension rather than on the factor representing innovative leadership--factor five. Interestingly, although innovativeness itself loads highly on factor two, it also loads equally high on factor five. Stated differently, Rogers found that innovativeness and organizational membership clustered together on a single dimension, whereas this study finds it split almost equally across two dimensions.

The difference between Rogers' findings on innovativeness and this study's findings points to what may be a unique feature of barrio life in the Philippines. As a general category of women, respondents exhibiting a high degree of Extra-Barrio Orientation, though better educated but not set off by a higher social status, are innovative because they have contacts and experiences outside the confines of the barrio. It is because of their trips to more distant places and their wider ranging experiences, partly the result of their greater mass media contact, that they are introduced to change and innovative thinking. Yet, as a rule, these

6Katz, op. cit., pp. 61-78.
women are not what could be considered opinion leaders in the sense that they are frequently cited as sources of good information nor are they in contact with the normal range of change agents found in the rural areas. This dichotomy suggests that the Extra-Barrio Orientation is not itself a sufficient condition for personal influence in the barrio. Rather than integrating them into the social structure, if anything, it tends to isolate these individuals further from their barriomates. Although they exhibit the trappings of social integration, as seen in their participation in and leadership of local organizations, they do not appear to wield the greatest amount of personal influence on others in the community.

C. Urban Contact Dimension

Factor three explains 10.3 percent of the total variance among the 23 variables and has been labeled the Urban Contact dimension. The variables loading most highly are (1) URBVISIT (0.655) (the presence or absence of urban visits in the past year), (2) TRVLMNLA (0.736) (number of trips ever made to Manila), and (3) LIVMNLA (0.864) (the total number of months ever lived in Manila). Associated to a lesser extent are years of education, mass media contact, and husband-wife discussion of desired family size.

For those familiar with the literature on modernization, the fact that urban contact is independent of Extra-Barrio
Orientation (factor two) and the Information Broker dimension (factor five) would appear to be counterintuitive. That is, most studies of the process of individual modernization stress that contact with urban centers and the development of the modern personality are intricately entwined. 7

Rogers' summary paradigm, reproduced in Figure 10 and based on a study of five Colombian villages, relates the socioeconomic antecedents and the indicators of modernization with those variables that reflect the degree of individual contact with urban centers. He finds that trips to cities, mass media exposure, change agent contact and residence outside the village are the result of such socioeconomic variables as social status, opinion leadership, standard of living and farm size. In turn, these variables give rise to the indicators of modernization, such as political knowledge-ability, achievement motivation, empathy, innovativeness, and so forth.

However, in the study of female respondents in Buliasnin, it has been shown that Urban Contact does not appear to play as central a role in the process of individual modernization, and appears to be, quite to the contrary, independent of many of the indices of modernization.

Figure 10. Paradigm of Correlates of Urban Trips
One of the reasons for this apparent paradox is suggested by Hauser and Schnore in their study of urbanization. Hauser argues that the process of urbanization in developing nations differs from that found in the industrial world. Contrasted with the growth of cities in the West which occurred slowly over a long period of time and which was the result of economic development and the pull of populations into the cities from the underdeveloped rural areas, cities in the "Third World" can attribute their growth to the push of population from troubled and insecure rural areas to the relative safety of the cities. The push is also the result of rapid rates of population growth.

Under such conditions of growth, which Hauser refers to as "agglutination" or "the compressing into physical proximity of what remain essentially discrete population groupings," large population size, as is characteristic of cities, does not entail nor reflect economic development nor the development of an "urban outlook." More often than not, the cities of Asia are composed of rural or folk ghettos which preserve the social structure and way of life of the rural areas from which the migrants come.

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8 Hauser and Schnore, op. cit.


10 Ibid., p. 39.
Hollnsteiner expands this idea in her discussion of the development of social class enclaves in the metropolitan Manila area. She notes a particularly distressing trend in that city towards the development of social class ghettos, "each focused on its own needs and oblivious to those of others." The wealthy bedroom communities of Makati, such as Bel Air, Forbes Park and Magallanes Village, are cut off and fortified against undesirable outsiders by barrier gates, high walls topped with broken glass, and patrolling security guards. Residents contribute to the maintenance of the security of the community and are concerned that it remain the ideal neighborhood.

The lower class neighborhoods, too, display the same type of segregation and outlook. Hollnsteiner writes:

Here, too, the people display a sense of community but on a narrower street-to-street basis. This solidarity emerges in patterns of neighborhood lending and borrowing, in contributions to the family of a deceased member, in mutual surveillance of one another's children, the joint celebration of the fiesta, and in block rosaries, dances and excursions. The young men of the community appoint themselves the local security guards. Jealously protecting their neighborhood from marauding outsiders, they challenge suspicious strangers who venture onto their turf, especially at night.

For these various reasons, then, Urban Contact does not necessarily produce an urban outlook nor bring with it basic

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12 Ibid.
and fundamental personality changes. Quite to the contrary, the data and other evidence suggest that it may reinforce traditional beliefs and practices.

D. Length of Residence Dimension

Factor four, accounting for slightly more than 8 percent of the variance, has been labeled the Length of Residence dimension primarily because of the high loading of the LENRESID variable (0.873) (length of residence as a percent of age). DISBIRTH (distance of place of birth from Buliasnin) also loads highly, but in a negative direction (-0.845).

Of particular interest is the inverse relationship between length of residence and distance of place of birth. The slight tendency for age to be associated with length of residence suggests that younger women who have spent proportionally less time in the barrio were born further away. This suggests that young men are marrying women from more distant parts of the country. Support for this can be found in the increased mobility of the young especially as they go out in search of better economic opportunity.

E. Information Broker Dimension

The fifth factor, accounting for 8.2 percent of the variance, is composed of such variables as (1) *GOODINF (0.675) (number of times the respondent was cited as a source of good information), (2) CHNGAGNT (0.572) (change agent
contact), (3) AGE (0.565) and (4) INNOSCOR (0.521) (innovation score). Variables loading to a lesser extent include: membership in and leadership of local organizations, level of political awareness, and number of trips ever made to Manila.

Taken together, these variables suggest the notion of Information Broker or intermediary between formal agents of change from outside the community and members of the barrio as a whole. A composite profile of such an individual suggests that she is middle-aged, that is, in her late thirties and forties, she comes into relatively frequent contact with such agents of change as teachers, rural development cadre and public health teams, she is innovative in the home, and she is considered by other women in the barrio as a source of good and reliable information. In addition, she belongs to one or more barrio organizations, such as the Parent Teacher Association or the Rural Improvement Club, although she is probably not an elected officer. She is relatively well informed on political issues and personalities, and she travels occasionally to Manila, although she is not considered the highly Extra-Barrio Oriented type of person.

These characteristics are similar to those attributed by Rogers to opinion leaders--those individuals who possess "the ability to influence others' opinions consistently in a desired way."13 I am somewhat hesitant to ascribe such a role

to these women in the barrio for two reasons. First, no
data are available to suggest the nature of the information
for which they are considered a good source. Initially the
question referring to the source of information attempted
to define specific categories of information for which a
woman might be approached, such as that pertaining to the
home or family, or information about occurrences in the
barrio or elsewhere. It was soon discovered, however, that
precise categories could not be defined that would have wide
enough applicability to the population as a whole. There­
fore, the question was worded so as to permit the respondent
to define in her own way the type of information referred to.
It is only by examining the responses themselves that in­
ferences can be made about the type of information perceived
to be important. The sociometric analysis of behaviors,
discussed in the following chapter, further argues against
labeling the factor opinion leadership.

The second reason for interpreting the factor as an
Information Broker dimension rather than opinion leadership
stems from the implication that the latter plays an active
role in the exchange of information and opinions. Although
Rogers acknowledges the distinction between the active versus
passive role of opinion leaders,14 personal experience in the
barrio as well as general literature on interpersonal behavior

14Ibid., p. 223, fn. 8.
in the Philippines suggest that women cast in the role of information brokers are considerably more passive than active. In fact, because of the strong cultural propensity of Filipinos to avoid direct confrontation of issues and the direct expression of personal opinions, and to rely on indirect approaches to interpersonal interaction, it is questionable that such readily identifiable types as opinion leaders exist in the barrio. To be sure, individuals do serve as leaders of organizations and informal groups, and someone is always willing to make his opinions known. Yet the effect of these individuals on influencing the opinions of others "consistently in a desired way" is open to serious question. Filipinos in general are distrustful of leaders and others who claim to speak for the majority.

If the situation exists wherein the open expression of ideas, opinions and community leadership is culturally avoided and distrusted when present, in what manner do these individuals act as information brokers, especially in informal day-to-day situations? The answer to this question is not readily apparent. In recalling my experiences in Buliasnin and in trying to identify the characteristics and behaviors of those women who appeared to be most respected by others and who had the greatest effect on the behavior of

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others, it seems that these information brokers exhibited several important qualities. They tended to embody most closely the ideals of Philippine behavior. They tended to stress what Lynch calls "smooth interpersonal relations." They were generally non-meddlesome in the affairs of others, and they seldom engaged in gossip. They were generally liked and possessed a high degree of pakikisama—the ability to get along with others. They were industrious around the home and in ways approved by society as a whole. Although industrious, they were not rapacious nor too eager to "get ahead" of their barriomates. Their influence was felt primarily through their good works, behavior, and their willingness to be of assistance whenever called upon by others. However, it was a passive influence they exerted rather than an active one commonly attributed to opinion leaders.

F. Geographic Accessibility Dimension

Factor six is essentially a geographic dimension on which the connectivity variable—CONNECT—loads most highly (-0.866). It reflects the overall accessibility of a respondent's location in the geographic milieu of the barrio. Accessibility is defined here as the average number

17 Rogers cites Homan's finding that "leaders are more conformist to salient group norms than are nonleaders." Rogers, 1969, op. cit., p. 220.

18 Lynch, op. cit.
of houses between the respondent and all others in the barrio: the fewer the number of houses, the more accessible the respondent's location.

Three other variables are also associated to a lesser extent with the dimension. These include husband-wife discussion of desired family size, number of times the respondent was cited as a source of good information, and approval of the idea of family planning. An interesting pattern emerges in which women who are more inaccessible—that is, living on the physical fringes of the barrio, are less frequently cited as reliable or good sources of information, are less likely to approve of family planning, and generally have not discussed with their husbands the number of children they want.

It was suggested in Chapter III that although Buliasnin is a single administrative unit, it is composed of a series of small neighborhoods, each with a character of its own which in turn affects general patterns of interaction in the community. The most easily recognizable of these subareas are (1) the main portion of the barrio nearest town where the majority of the residents live, and (2) that area near the tubigan and tabing dagat where fewer people live in scattered settlements. Socio-economically, the residents of the larger and more densely populated area of the barrio have lived in Buliasnin longer, tend to be better educated and thus display greater employment diversity, and appear to
have a generally higher standard of living. By contrast, most of the residents near the rice fields and seashore are younger, more recently married with younger children, tend to be newer arrivals in the barrio, are more closely tied to the land as tenant farmers, copra makers, or gain their livelihood from the sea. As a whole, their level of affluence is well below that of the other group.

Although there are exceptions to these generalizations in both areas, there is some evidence to support the claim that the residents of each area perceive their area as being somehow different from other areas in the barrio. More importantly, analysis of interaction data indicates that these differences in perception are translated into patterns of interaction between the residents of each area.

Using the technique of semantic differential, a sample of women, drawn from several areas of the barrio was asked to evaluate six a priori defined subareas of the barrio in terms of 26 pairs of polar adjectives. Factor analysis of the polar scales indicated that two relatively well-defined perceptual areas existed in the minds of the respondents. These were (1) the area south of the irrigation canal bridge (that is, the most populous portion of the barrio), and (2) the general area to the north surrounding the rice paddies and the coastal area.

In terms of the effect of these perceived differences on patterns of interaction between residents of the two areas, it was found that, with few exceptions, on fiesta day families from one area rarely visited families from the other. Baptisms, birthdays or other special occasions were usually attended by immediate neighbors or by visitors from outside the barrio rather than from other areas of the community. With regard to barrio affairs, such as dances, barrio and school meetings which were always held in or near the school grounds, families from the more remote sections seldom attended. The general problem of fragmentation of the barrio was well understood by the head teacher at the elementary school who frequently made great attempts to involve these more inaccessible families in the mainstream of barrio life.

G. Satisfaction with Present Life Dimension

The seventh and final factor, accounting for 5.4 percent of the variance, involves primarily the variable SATISFAC (0.837) (satisfaction with one's present life compared with that five years previously). Also, APPROVFP (approval of family planning) loads relatively highly on the dimension (0.540).

The relationship between satisfaction and approval of family planning appears to be primarily an artifact of the orthogonal rotation of the factor matrix. As pointed out earlier, because approval of family planning is so widely
accepted in the barrio, it does not cluster with any particular set of variables. Consequently, it is not until the seventh factor is reached that the variable is able to account for any appreciable amount of residual variance. In essence, the last factor becomes a miscellaneous category composed of variables not belonging elsewhere.

The seven factors described in the preceding pages constitute the primary dimensions of social space in the barrio, and they account for nearly 70 percent of the individual social differences among the 123 respondents. In order to calculate the social distance between pairs of respondents, the difference in their factor scores was calculated for each of the seven factors, and for the seven factors at once—that is, the location of each respondent in seven dimensional space. To these eight measures of social distance were added (1) the physical distance measure, that is, walking time between houses, and, (2) the relational distance, measured in terms of closeness of blood or marriage ties, between pairs of respondents.

The following chapter discusses patterns of dyadic interaction in the barrio, and the major dimensions of behavior space.
CHAPTER VII

THE STRUCTURE OF INTERACTION SPACE IN THE BARRIO

The general topic of interpersonal behavior in the Philippines has been extensively studied in the anthropological and sociological literature on lowland Philippine culture, and the cultural and psychological bases of such behavior are fairly well understood. Yet no study before this one has attempted to examine sociometrically the range of dyadic interactions occurring among a target population of individuals.

As mentioned in Chapter V, the dyadic interrelationships among the 123 female respondents were examined across 20 different social situations, ranging from the casual, the social to the more formal and ritualistic, as in compadre ties. Selecting only those dyads where interaction occurred in at least one of the 20 situations, 2969 dyads were obtained for analysis. Principal axis factor analysis was performed on the data. Table 5 presents a summary of the findings.

I. Factor Analysis of Interaction Variables

The rotated factor matrix extracted six factors with an eigenvalue of 1.0 or greater which together accounted for

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Table 5
Principal Axis Factor Analysis of Twenty Interaction Variables

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53.4 percent of the total variance in the data. The amount of inter- and intra-item variance explained is low compared with many studies using factor analysis. This can be explained, in part, by the small amount of variance contained in the variables themselves since they are measured on a 0 or 1 scale. Except for variables #14 and 15, the communalities are low which indicates that the total variance of most variables is not entirely included in the factors. Consequently, the six factors must be viewed as rough approximations of the underlying patterns of interaction in the barrio with much still to be explained about such behavior.

Table 5 shows that the first two dimensions alone account for more than 50 percent of the total variance explained by the six factors. They also involve 13 of the original 20 interaction variables. This suggests that despite the potentially large number of separate social situations in which dyadic interaction can occur, basically only two dimensions emerge around which the majority of the interaction situations cluster.

A. Social Interaction Dimension

Factor one, accounting for 14.6 percent of the total variance, is comprised of the following variables: (1) FREQSEE (0.618) (women most frequently seen); (2) ACTCOMP (0.626) (women with whom marketing, laundering, and social
activities in general are conducted); (3) COOKFREN (0.541) (women who are asked to help prepare a feast for some special occasion, such as a baptism or a birthday); (4) BOROFREN (women from whom rice is borrowed if necessary); (5) LENDFREN (0.588) (women to whom something of value is loaned); (6) INFORFREN (0.624) (women who are considered a good source of information); (7) OBSERVFREN (0.449) (women with whom my field assistants observed the respondent interacting during the 14 months of research); (8) FPFREN (.0440) (women with whom the respondent discussed family planning information); and to a lesser extent (9) PROBFREN (0.342) (women with whom the respondent discusses personal problems).

These variables suggest dyadic interaction of a social nature where reciprocal behavior is involved. The emphasis appears to be on undertaking a variety of joint activities rather than on a strictly one-way exchange of advice or assistance. However, the interactions consist of more than merely a social element, for a strongly defined component of mutual trust and confidence is also present. This is evidenced by the high factor loadings for those variables defining the lending or borrowing of objects of value, the belief that the person cited is a good and reliable source of information, and by the fact that the respondent tends to discuss personal problems with the woman cited.

The emphasis on social interaction and the mutual exchange of goods and services is but one example of what
Foster calls the tangible evidence that a dyadic contract has been formed.² It is the constant exchange of goods and services between individuals that comprises reciprocal obligations and that ties one individual to another in the society. Specific examples of these exchanges can be found in nearly all the ethnographic literature on the Philippines.³

It should be remembered that the dyadic interactions here are informal and static. They exist only at the pleasure and mutual self-interest of the individuals involved at a specific point in time. They are subject to change at the will of the parties involved and continue to exist only so long as reciprocal exchanges continue. If, for some reason, one or both parties to the implicitly understood agreement fails to fulfill her part of the informal bargain, the dyadic contract is broken and remains dormant until a new exchange commences.

The extent to which fluidity is an element of these dyadic contracts, especially in a small barrio such as Buliasnin, is open to question. There were certainly major shifts in personal loyalties and patterns of interaction during my stay in the barrio, particularly during the election

²Foster, 1961, op. cit.

³See, for example, Henry T. Lewis, Ilocano Rice Farmers: A Comparative Study of Two Barrios (Honolulu, Hawaii, 1971); F. Landa Jocano, The Traditional World of Malitbog (Manila, 1969).
campaign for national as well as local offices. However, most of these shifts appeared to be temporary, with the status quo ante bellum restored once the election had passed. Because the research was cross-sectional in the sense that patterns of interaction were examined over a relatively short period of time, no attempt was made to assess how these patterns changed with the passage of time. The strength and permanence of the dyadic tie can only be inferred from the factor scores for the dyads on the dimension. The higher the positive score, the greater the number of separate interaction situations involved. In other words, because interaction was indicated merely by the presence or absence of such behavior, a high positive factor score indicates the involvement of several separate interaction situations.

B. Assistance Seeking Dimension

Factor two can be distinguished from the first primarily on the basis of the orientation of the activity involved and the extent to which it reflects a mutual undertaking. It has been labeled the Assistance Seeking dimension, primarily because of the variables most highly associated with it. They include: (1) SICKFREN (0.578) (women to whom the respondent turns for advice or assistance if someone in the family is ill); (2) CHILDWACH (0.772) (women who are asked to watch the children if the respondent has to leave them unattended); (3) HOUSWACH (0.742) (women who are asked
to keep an eye on the house if the respondent and her family are to be away for any length of time); (4) KUTOFREN (0.481) companions in picking *kuto* or head lice); (5) INTERACT (0.461) (women with whom the respondent reported interaction over a five to seven day period of time); and as in the case of the first dimension (6) PROBFREN (0.385 (women with whom the respondent discusses personal problems). These six variables together account for 12.4 percent of the total variance.

As contrasted with the first factor where interaction was primarily social with a mutual undertaking of the activity involved, the second dimension consists essentially of those situations in which a one-way exchange of assistance of some type is sought, generally in matters pertaining to the home. There appears to be less of an element of the purely social and more one of utilitarianism. Although a degree of trust and confidence is exhibited in some of the variables, it differs from the first in approximately the same way that trust in a close friend differs from trust in one's parents or siblings. In the latter, trust is primarily inherent in the role and usually remains unaltered unless circumstances demonstrate the unworthiness of the individual. Faith and confidence in one's social companions, on the other hand, is not inherent but rather becomes established over a long period of time by behavioral acts demonstrating the worthiness of the individual.
The different orientation of these two dimensions as well as the nature of the trust implied by each give a clue to the nature of the relationship between the individuals comprising the dyad. Further discussion of this relationship will be deferred until the following chapter.

C. Emotional Bond of Friendship Dimension

Factor three, explaining 9.7 percent of the total variance, has been labeled the Emotional Bond of Friendship dimension. It presents an interesting contrast to the first two factors. Only two interaction variables load highly, so highly in fact that they are almost completely independent of all other social situations. The two variables are: (1) BEST FREN (0.968) (women identified by the respondent as friends); and (2) IOBEST (0.959) (those women designated as the respondent's 10 best friends).

The dichotomy between friends and social companions or sources of assistance would appear to be counterintuitive, at least in Western terms where one's friends are ordinarily those people with whom one shares common interests, experiences and background, and with whom a strong emotional bond exists. To be sure, the range of friends and degree of closeness is great, from work companions, mere acquaintances who are termed friends, to those few individuals who are especially close and around whom much of social life revolves. Thus, in a Western sense, friends can be hierarchically ordered by the degree of emotional attachment and commitment, interaction and affection exhibited.
Degree of emotional attachment and commitment can often be inferred from the amount and type of interaction occurring between two people. Hollnsteiner seems to imply that the same sort of inference can be made in the Philippines when she writes:

... friendship and the feeling of closeness and confidence implied is one of the basic features of the alliance system. It is interwoven into the other relationships; indeed, it is the integrating feature which holds the system together. For example, in contrast to affectively distant kin, the favorite relative is actually incorporated into one's segment or alliance group, as evidenced by a high frequency of interaction not evident in relation to other, less favored consanguine kin who are only potential members of one's segment... Furthermore, a friend would not be worthy of the term if he did not foster camaraderie in innumerable ways, all of which require reciprocal demonstrations of loyalty and support.4

In short, Hollnsteiner suggests that the term "friend" implies a higher frequency of interaction and reciprocal exchanges of loyalty and support than is the case with people not considered friends. Yet, this study points to quite the contrary conclusion—namely, friendship or the emotional bond between individuals appears to be independent of dyadic interaction of any type.

This can be seen more clearly by examining the factor scores for the 2969 dyads on the first three dimensions. Of the 2969 dyads, 597 had factor scores of +1.0 or higher

on the Emotional Bond of Friendship dimension; in other words, their scores were one standard deviation or more from the mean. The probability of a factor score lying one standard deviation from the mean is .1587, two standard deviations from the mean is .0228, and three standard deviations is .0013. Thus, the higher the factor score, the less likely it could have occurred by chance alone.

Of the 597 cases with high factor scores on the friendship dimension, only 224 (37 percent) also had similarly high scores on the first or second factors. These come closest to conforming to Western notions of friends, and may have been what Hollnsteiner was referring to. Of these 224 dyads, 141 involved significant interaction on the Social Interaction dimension and 83 on the Assistance Seeking dimension. Where dyads had similarly high factor scores on the first and/or second dimensions as well as the third, the women involved were objectively defined by myself and field assistants as having the appearance of being very close friends. These women were most frequently observed together in the barrio, going to town, visiting, or just sitting around sharing a pitcher of tuba. In these cases there was an obvious and strong emotional bond between the women involved as well as a strong interactive component to the relationship.

More importantly, however, is the fact that in 63 percent of the dyads with high factor scores for the friendship
dimension, no other significant dyadic interaction occurred. Put another way, nearly two-thirds of the women designated as significant friends were interacted with in no other way by the respondent.

Part of the explanation for this paradox may involve semantics. Hollnsteiner does not define or give the Tagalog equivalent for "friend" as she employs it. Or, possibly she is applying the Western implied meaning to a pattern of observed behavior in the Philippines.

However, the Tagalog word kaibigan, meaning friend, contains the root ibig which connotes a sense of love or strong emotional attachment. In contrast, the word kasama, meaning companion, has as its root sama, meaning literally "together" with no emotional overtones. When the women of Buliasnin were asked to name the women with whom they interacted in various situations, they were asked, "Sino ang kasama mo?" (Who are your companions?) in going to the market, in preparing a feast, in picking kuto? The question asked is not, as in English, "Who are your friends?" (Sino ang kaibigan mo?) in these various activities.

Conceptually, then, Filipinos distinguish between individuals with whom they interact in a variety of situations,

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5 I am indebted to my Tagalog teacher, Miss Belen Ongteco, for pointing out this obvious yet fundamental difference in the meaning of "friend" and "companion."
and those with whom they attribute an emotional bond of affection. Objectively, we can say that those women with whom the respondent most frequently interacts exhibit the qualities of what we would call "friends." Yet the Filipino conceptually distinguished between the two.

Perhaps there is another answer to the paradox. It may be that Filipinos arrange their networks of relationships and interactions in a series of concentric circles. The innermost circle consists of the individual's immediate kinsmen, the members of his nuclear family. The second ring is made up of more distant relatives by both blood and marriage. Kasama or social companions in various activities comprise the third ring. Finally, the outer ring is made up of those individuals designated "friend" or kaibigan. They form a category of people who can be trusted and relied upon in extraordinary time of need when other closer relations are not available, yet they do not fall within the circle of relatives or social companions.6

D. Work Interaction Dimension

Factor four, explaining 6.3 percent of the total variance, involves two variables: (1) PLANTFREN (0.751)

(women interacted with in planting and harvesting palay),
(2) WORKFREN (0.740) (women interacted with in other work-related situations, such as copra making, the collecting and weaving of nipa for roofs and walls, baking and selling sweet cakes, or teaching in the school system). These work relations constitute a fourth category of dyadic interaction quite distinct from others.

Comparisons of the factor scores for the Work Interaction dimension with the first three factors reveals that:
(1) 42 percent (123 cases) of the dyads with high factor scores on the work dimension also interacted highly on the Social Interaction and Assistance Seeking dimensions (24 percent (72 cases) interacted on the Social Interaction factor, 10 percent (30 cases) interacted on the Assistance Seeking factor, and 8 percent (21 cases) interacted on both factors); (2) 58 percent (176 cases) of all the dyads with high factor scores on the dimension interacted in no other way, although 31 cases did have high factor scores on the Emotional Bond of Friendship dimension.

What accounts for the fact that, in nearly six cases out of ten, women who interact in a variety of work situations do not also interact in social situations? The answer may be found in the changing nature of work relations in general in the Philippines. Traditionally, kinsmen and neighbors would be called upon when assistance was needed in plowing fields, planting or harvesting the rice, when a roof needed
repair, or when the house had to be moved from one location to another. The nature of the dyadic contract and of interpersonal relations in general provided for such assistance through reciprocal obligations and exchanges of goods and services. Inherent in the call for assistance was the moral obligation, backed up by social sanctions, for the recipient to repay his utang na loob or debt of obligation to those who came to his aid. In a sense, the recipient could never free himself, nor would he want to, of his debt of obligation to his benefactors, and he could be called upon at any time to repay those who helped him. The failure to answer such a call constituted a serious breach of social conduct and branded the offender walang hiya (he who is without shame and one who does not honor his moral obligations to others).

Although this bayanihan spirit (mutual cooperation and assistance) has played a traditionally important role in lowland Filipino culture, the system of mutual obligations has become onerous for the individuals involved. This is especially true in situations involving persons outside one's circle of close kin. In these relations, a steady erosion

of the system of reciprocal labor exchanges has occurred in this circle of relations in favor of contractual labor whereby services rendered are paid for primarily in cash. Once the specific task has been completed, the contract is fulfilled, and there are no lingering moral obligations between the contractants. The lack of lingering moral commitments does not mean, however, that contractual labor is devoid of these obligations. They are present but arise not so much out of the nature of the labor exchange itself as in the selection of the person with whom one contracts for services. For example, a farmer needing assistance in plowing and harrowing his fields will not offer the job to just anyone. Because of the farmer's obligations to his kinsmen as well as to nonkinsmen with whom he has built up utang na loob, preference will be given to these people over nonrelatives or individuals to whom he is not indebted. Yet the contractual arrangement offers the farmer greater selectivity in hiring and frees him from the lingering obligations involved in reciprocal labor exchanges.

Takehashi found in his study of a barrio in central Luzon that mutual labor exchanges had, for the most part, given way to contractual labor practices. Although the

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8Hollnsteiner, 1970, op. cit.

9Akira Takehashi, Land and Peasants in Central Luzon (Honolulu, Hawaii, 1969), p. 120.
practice of reciprocal labor exchange is still found widespread throughout the country, it is gradually being replaced by the contractual system. Perhaps the reason can be found in greater farm affluence resulting from the adoption of the so-called miracle rice strains. Perhaps it is the consequence of greater labor specialization.

In Buliasnin many examples of this shift could be found, but none were as pronounced as in the all-important area of farm labor. In the past, the planting and harvesting of palay served both a social and utilitarian function. It was a time when friends and neighbors joined together to share the backbreaking work. It was a time of great gaiety, especially during the harvest, and for the young binatas and dalagas, it was one of the few opportunities for courtship and socializing.

However, as the Philippines progress from a subsistence agricultural economy to a cash economy, the bayanihan spirit of reciprocal labor exchange, with its social implications, is giving way to other labor practices for a variety of reasons. First, reciprocal labor is too expensive in terms of food and drink which must be supplied the workers as well as the moral and labor obligations imposed on the recipient. Second, since the amount of agricultural land owned or farmed by an individual family is small, the harvest
is similarly small. Reciprocal labor usually entails the use of large amounts of labor. It is the experience of farmers in Buliasnin that ten people working a small piece of land will cause greater grain loss than if only two people harvest the same area. Contractual labor tends to permit better control of the quality of work performed.

In the place of the reciprocal labor exchanges, the farmers in Buliasnin employ contract labor for two pesos a day plus a light snack. A slight variation of the contract labor system originating on the island of Mindoro to the west of Marinduque is a system known as cam-cam labor. An individual is contracted to plant a piece of land at the prevailing wage rate. The worker, however, declines payment in lieu of a guarantee permitting him to harvest the land he plants. The resulting harvest is then divided one-fifth for the worker and four-fifths for the farmer.

The cam-cam system has the built-in social welfare function of providing the opportunity to secure a portion of the harvest to people in the community without land. Aside from the superb flavor of newly harvested rice, it means that in times of spiraling rice prices in the marketplace (the price of bigas—cleaned, husked rice, of average quality increased from 1.50 pesos a ganta (approximately five pounds) to 3.50 pesos a ganta during the 14 months of research on Marinduque), it is considerably more to the individual's advantage to obtain a cavan (about 97 pounds) or
so of unhusked palay through the cam-cam system than to earn two pesos a day. Although cash is generally in short supply in the barrio, small amounts of it could usually be obtained when needed, usually by selling fallen coconuts, raising vegetables which are peddled in the community, or by catching and selling fish from the sea, the streams, or the rice paddies. In general, it was far easier to obtain small amounts of cash when emergencies arose than it was to obtain good quality rice. In addition, large families could pool their labor, plant larger areas, and thereby obtain a considerably larger share of the harvest.

The advantages of the cam-cam system to the farmer are several. Because the individual who plants the land also shares in its harvest, greater care is usually taken in planting and harvesting, which in turn increases the total yield. Also, although the farmer's first obligations are to his needy relatives, because he has so many relatives and a comparatively small piece of land to farm, he can be more selective of those who will work for him. Not only can he select his relatives, he can also hire those individuals who are more industrious and reliable than others. Such selectivity was not possible under the old system.

The gradual shift from mutual labor exchanges to contractual labor has resulted in individuals being thrown together in work situations who might not interact socially. Since work companions no longer tend to be family members nor
neighbors involved in reciprocal labor exchanges but rather are selected by the farmers, work relations in the fields have become more impersonal and seldom are maintained socially.

E. Ritual Interaction Dimensions

Factors five and six, accounting for 5.2 and 5.1 percent of the variance respectively, concern ritual relationships between dyads. Factor five consists exclusively of the GODMOTHR variable (0.783) (women who are the respondent's godmother), and factor six consists of the COMPADRE variable (0.947) (those men and women in the barrio who act as godparents for the respondent's children and among whom compadre ties have been formed). Both have been labeled the Ritual Interaction dimensions. Of the two, the compadre dimension is most important in understanding interpersonal relations among women, and it will be the only one discussed.

The institution of compadrazgo or coparenthood is an important strand in the fabric of Philippine social structure and of interpersonal relations in general. The compadre system is a custom which stems from the Catholic tradition of parents designating a third party to act as the spiritual sponsor and custodian of their child in the church and which has been strengthened by a distinctly Spanish flavor.\(^\text{10}\) The system in the Philippines has been enlarged

\(^{10}\text{Phelan, op. cit.}\)
to include an important secular element which reflects the central role of the family in lowland Filipino culture. As widely noted in the literature on the Philippines, the basic units or building blocks of social organization are the nuclear family, which includes the father, mother and children, and the bilateral extended family which embraces all relatives of the father and the mother. The importance and strength of the family is suggested in the following passage:

The Filipino family extends personal involvement and responsibility to all members. An offense against one member of the family is conceived of as a threat to the whole family. An unlawful or immoral act committed by one family member brings discredit to every family member, the family cherishes and protects the transgressor as a family member, even though the misdeed is not condoned, and any remark by a nonrelative reflecting upon the behavior of the wayward member is considered a serious offense against the entire family. 11

The concept of familial solidarity is extended to non-kin through the bridge of ritual kinship known as compadrazgo. The social structure of godparents "opens the umbrella of intimate connection to close friends or sought-after acquaintances." 12

Particularly among social equals, the bonds between the godparents and the parents of the child are more important

and enduring than between the godparents and the godchild. When a person is asked to become the godparent of a child, an invitation is being extend him to become a ritual member of the child's family. It is a great compliment for the recipient of such an honor and signifies the existence of a strong bond of affection between the parents and the prospective godparent.

There is another side to compadre relations that arises primarily among social and economic unequals. Because of the expectation that kinsmen will look out for the well-being and welfare of another kinsman, by establishing ritual kinship with a person of higher status than oneself, parents take out a form of insurance policy for their child. It is expected that the godparent will assist the child in finding suitable employment when the time comes, or will assist the child in obtaining an education. Although mutual obligations exist between the godparent, godchild, and parents of the child, these have less of an emotional base than do compadre ties between social equals.

The data gathered on interpersonal relations in Buliasnin suggest the need for a reexamination of the nature and function of compadre ties in the Philippines. For example, factor scores for the 2969 dyads on factor six indicate that compadre ties between the respondent or her husband and other individuals in the barrio were very strong in 110 cases. Of these, 49 cases (45 percent) involved a
high degree of interaction on one or more of the first four interaction factors (six dyads had high interaction on the Social Interaction dimension, one on the Assistance Seeking dimension, two on the Emotional Bond of Friendship dimension, and sixteen on the Work Interaction dimension; twenty-four cases also had high levels of interaction on different combinations of the first four factors). These 49 cases constitute evidence in support of the claim that, among equals, compadre ties are the formalization of bonds of closeness and friendship.

Remaining unexplained, however, are the 61 cases (55 percent) where compadre ties were strong but where no other interaction or indication of emotional bond was manifest. The reasons for this paradox can only be conjectural since specific questions relating to the criteria for the formation of compadre ties were not asked. The first explanation stems from the fact that the compadre tie mentioned by the respondent might have referred to one between her husband and another family rather than between herself and the family. Since respondents were merely asked to name those families in the barrio with whom she or her husband had compadre links, it is not possible to determine which of the two was primarily responsible for the formation of the tie. Although in theory each spouse honors the obligations of the other, the compadre relationship is primarily dyadic, rather than between more than two people. Because so many compadre dyads apparently involve no other forms of interaction, it
may be concluded that it is the husbands of the respondents who are compadres and thus close in affection than the respondents themselves.

A second possible explanation for the lack of interaction between compadre dyads concerns the effect of status differences on interaction. As mentioned earlier, status differences within barrios in the Philippines are not pronounced, although subtle differences can be detected. Of the 61 compadre dyads where no other interaction occurred, 15 included teachers, who, as a general category, may be considered at the top of the barrio social ladder. However, since the teachers do generally interact across a wide range of social situations with other women who might otherwise be considered their social inferiors, the status difference argument does not appear to be valid. In only a handful of the remaining dyads can slight status differences be detected—differences in the sense that the husbands hold permanent blue collar jobs or are more successful and prosperous farmers than the other men in the barrio. However, it would be misleading to attach too much significance to these differences, particularly since adequate measures of what constitute status do not exist and since these differences do not seem to affect other social relationships.

Finally, it is possible that the compadre relationship is the result of idiosyncratic considerations. An old family tie, for example, which ceases to have meaning in
day-to-day affairs may be honored through this ritual relationship. An outstanding utang na loob may also be honored in a similar manner. Again, further research is required to provide answers to this question.

The fact remains that for whatever reasons, in the majority of compadre relationships, significant interaction along other dimensions is absent and does not conform to the theoretical expectations described in the literature. Consequently, the presence or absence of ritual kinship ties appear to have little relevance to the understanding of underlying patterns of interaction in the barrio.

These six factors define the basic structural components of the behavior space. The task remaining is to link up behavior space with attribute space through canonical analysis in order to determine how well the various distance measures account for the different patterns of dyadic interaction.
CHAPTER VIII

THE INTERRELATIONSHIPS BETWEEN DYADIC SIMILARITIES
AND PATTERNS OF INTERACTION

It will be recalled that the central hypothesis to be tested by this research was that the degree and direction of interaction and communication between pairs of individuals in the target population are a function of their relative location in social space and the resultant intervening distance separating them. In theory, then, where social distance between members of dyads is small, frequent and positive interaction is expected to occur.

In order to test this hypothesis, canonical analysis was performed on the matrix of similarity measures and on the matrix of indicators of dyadic interaction.

I. Results of Canonical Analysis

Two tests were conducted using canonical analysis. The first considered three distance measures—a single measure of social distance based on the individuals' location in seven dimensional attribute space, a measure of relational closeness and a measure of physical proximity—and the six interaction dimensions identified in Chapter VII. The second analysis examined six separate measures of social distance, physical proximity and relational closeness and the same six interaction dimensions.
A. First Canonical Analysis

The canonical analysis of the first set of three distance measures and six interaction variables produced a trace correlation of .30. When squared and multiplied by 100, this figure indicates that only 9 percent of the variance in the matrix of distances is accounted for by the variation in the matrix of dyadic interactions. Statistically, this means that the hypothesized relationship between social distance and dyadic interaction is very weak, although it does seem to indicate that some relationship exists. Possible explanations for the unexpectedly low relationship will be discussed in the concluding chapter.

Table 6 reports the correlation between the original variables—that is, dyadic differences for the three distance measures and the dyadic factor scores on the six interaction factors—and the variate scores. The columns represent canonical variates which are somewhat analogous to factors in factor analysis. The rows represent the original variables.

All three canonical variates have canonical correlations that are statistically significant at the .001 level using a Chi square test of significance. However, the statistical significance should not be confused with practical significance. Statistical significance merely means that "certain sample differences would not occur very frequently by chance if there were no differences whatsoever in the population."
Table 6
Canonical Loading Matrix for Three Difference Variables and Six Interaction Variables

<table>
<thead>
<tr>
<th>Interaction Variables</th>
<th>H-SQR</th>
<th>Canonical Variates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. Social Interaction</td>
<td>0.676</td>
<td>0.751</td>
</tr>
<tr>
<td>2. Assistance Seeking</td>
<td>0.731</td>
<td>0.504</td>
</tr>
<tr>
<td>3. Emotional Bond of Friendship</td>
<td>0.435</td>
<td>0.367</td>
</tr>
<tr>
<td>4. Work Interaction</td>
<td>0.551</td>
<td>-0.155</td>
</tr>
<tr>
<td>5. Godmother</td>
<td>0.486</td>
<td>-0.096</td>
</tr>
<tr>
<td>6. Compadre</td>
<td>0.120</td>
<td>0.119</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Difference Variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total Social Difference</td>
<td>1.000</td>
<td>0.171</td>
<td>0.974</td>
</tr>
<tr>
<td>2. Relational Distance</td>
<td>1.000</td>
<td>-0.769</td>
<td>-0.191</td>
</tr>
<tr>
<td>3. Physical Distance</td>
<td>1.000</td>
<td>-0.689</td>
<td>-0.046</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Canonically Correlation</th>
<th>Chi Square</th>
<th>Degrees of freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.481**</td>
<td>876.5</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>0.133**</td>
<td>98.3</td>
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</tr>
<tr>
<td></td>
<td>0.123**</td>
<td>45.8</td>
<td>4</td>
</tr>
</tbody>
</table>

**Significant at the .001 level
It tells us nothing about the magnitude or importance of these differences."¹ Because of the large number of cases involved in the analysis—2969 dyads—the tests of significance are of little consequence. The size of the correlation is more important, and in the case of the three variates, the correlations are low.

The canonical variates, therefore, must be viewed as suggesting the presence of certain underlying patterns of relationships in the data rather than conclusive evidence of their existence. In the first variate, the underlined scores indicate a relatively strong pattern of interrelationships between Social Interaction and Assistance Seeking, on the one hand, and Relational Closeness and Physical Proximity, on the other. In other words, in nearly one quarter of the dyads investigated, social interaction and situations of assistance seeking were more influenced by the fact that two women were closely related and/or were neighbors than by sharing basic social, economic or psychological attributes.

The second variate, which has a much lower canonical correlation than the first, implies that respondents most dissimilar in their social attributes were more likely to stand in a godmother-godchild relationship to each other and were likely to interact more in work situations. The fact that godmothers differ from their godchildren in social characteristics may be a function of generational differences.

The association between social dissimilarity and work interaction supports the earlier observation that changing patterns of work relations in the rural Philippines are bringing together individuals with little in common who would not otherwise interact in social situations.

The third canonical variate, with a correlation of .123, further refines the relationship between relational closeness and physical proximity on the one hand, and assistance seeking situations on the other. As a rule, women requiring assistance in watching the children or in keeping an eye on the house in their absence, turn to close relatives for help, no matter how far away they live in the barrio. "Far" is relative and may involve a person living no more than three or four houses away rather than several kilometers. Contrasted with the first variate which indicated that social interaction and assistance seeking in general occurs between close neighbors and relatives, the third variate specifies a particular relationship within this general category, namely between close relatives and interaction pertaining to home-related problems. Although general settlement patterns in Buliasnin as well as most of the Philippines find relatives living near each other, non-kinsmen, or those who are not bound closely together by blood or marriage, are also neighbors. The first variate implies that interaction in general is more intense among neighbors, be they kinsmen or not, whereas the third specifies
that kinsmen are preferred over nonkinsmen in those situations where assistance is sought in matters relating to the home and family.

B. Second Canonical Analysis

A second canonical analysis was conducted using the separate measures of social differences across the six attribute space factors,\(^2\) in addition to the relational and physical distance measures. These eight variables were canonically correlated with the six interaction dimensions. The trace correlation measuring the joint variance accounted for in both data matrices dropped to .21. This, again, indicated the lack of a strong linear relationship between dyadic similarities and interaction.

Table 7 reports the results of the analysis. Of the six canonical correlations, only three were statistically significant, two at the .001 level and one at the .05 level. However, in every case but the first, the correlation was so low that practical significance of the interrelationships is very weak. As in the case of the first canonical analysis, the only relationships displaying any appreciable degree of association are between closeness of blood or marriage ties and physical proximity and social interaction and assistance seeking.

\(^2\)Six rather than seven measures of differences were employed because the seventh which measured satisfaction with present life was an uninterpretable residual factor and was consequently dropped from the analysis.
Table 7
Canonical Loading Matrix for Eight Difference Measures and Six Interaction Variables

<table>
<thead>
<tr>
<th>Difference Measure</th>
<th>H-SQR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Propensity to Practice</td>
<td>0.530</td>
<td>-0.055</td>
<td>0.122</td>
<td>-0.105</td>
<td>0.243</td>
<td>-0.111</td>
<td>-0.655</td>
</tr>
<tr>
<td>Family Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Extra-Barrio Orientation</td>
<td>0.856</td>
<td>-0.081</td>
<td>0.318</td>
<td>-0.697</td>
<td>0.402</td>
<td>0.308</td>
<td>-0.079</td>
</tr>
<tr>
<td>3. Urban Contact</td>
<td>0.557</td>
<td>0.039</td>
<td>-0.102</td>
<td>-0.108</td>
<td>0.164</td>
<td>-0.616</td>
<td>-0.356</td>
</tr>
<tr>
<td>4. Length of Residence</td>
<td>0.632</td>
<td>0.076</td>
<td>-0.156</td>
<td>-0.234</td>
<td>0.082</td>
<td>-0.665</td>
<td>0.054</td>
</tr>
<tr>
<td>5. Information Broker</td>
<td>0.460</td>
<td>-0.064</td>
<td>-0.029</td>
<td>-0.084</td>
<td>0.412</td>
<td>-0.057</td>
<td>0.523</td>
</tr>
<tr>
<td>6. Geographic Accessibility</td>
<td>0.856</td>
<td>0.052</td>
<td>-0.075</td>
<td>0.587</td>
<td>0.691</td>
<td>0.152</td>
<td>-0.054</td>
</tr>
<tr>
<td>7. Relational Distance</td>
<td>1.000</td>
<td>-0.772</td>
<td>-0.613</td>
<td>-0.129</td>
<td>0.050</td>
<td>0.092</td>
<td>-0.040</td>
</tr>
<tr>
<td>8. Physical Distance</td>
<td>0.998</td>
<td>-0.694</td>
<td>0.618</td>
<td>0.275</td>
<td>-0.080</td>
<td>-0.149</td>
<td>0.174</td>
</tr>
</tbody>
</table>

Interaction Variables

<table>
<thead>
<tr>
<th>Interaction Variables</th>
<th>1.000</th>
<th>0.747</th>
<th>-0.312</th>
<th>0.324</th>
<th>-0.215</th>
<th>0.263</th>
<th>-0.352</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Social Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Assistance Seeking</td>
<td>1.000</td>
<td>0.511</td>
<td>0.627</td>
<td>0.173</td>
<td>0.418</td>
<td>-0.090</td>
<td>0.364</td>
</tr>
<tr>
<td>3. Emotional Bond of Friendship</td>
<td>1.000</td>
<td>0.379</td>
<td>-0.170</td>
<td>-0.859</td>
<td>-0.076</td>
<td>0.088</td>
<td>0.276</td>
</tr>
<tr>
<td>4. Work Interaction</td>
<td>1.000</td>
<td>-0.122</td>
<td>-0.416</td>
<td>0.103</td>
<td>0.653</td>
<td>0.567</td>
<td>0.229</td>
</tr>
<tr>
<td>5. Godmother</td>
<td>1.000</td>
<td>-0.084</td>
<td>0.484</td>
<td>-0.309</td>
<td>0.169</td>
<td>0.460</td>
<td>-0.650</td>
</tr>
<tr>
<td>6. Compadre</td>
<td>1.000</td>
<td>0.124</td>
<td>-0.270</td>
<td>-0.145</td>
<td>0.563</td>
<td>-0.617</td>
<td>-0.438</td>
</tr>
</tbody>
</table>

Canonical Correlation: .479** ; .131** ; .081* ; .060 ; .034 ; .030
Chi Square: 858.1 ; 87.8 ; 36.3 ; 16.9 ; 6.1 ; 3.7
Degree of Freedom: 48 ; 35 ; 24 ; 15 ; 8 ; 3

* Significant at the .05 level  ** Significant at the .001 level
The analysis of the data to this point has been solely in terms of the study population as a whole. Examination of the networks of interaction for two individuals will make the relationship between social differences, kinship and physical proximity clearer.

Figure 11 shows enlarged portions of different areas of the barrio. The three sets of lines found on each depict a different pattern of interaction between the two selected women and other women in the community. The kinship ties between the two individuals and other women are indicated by the cross hatchings of the houses. The degree of attribute similarity between the two and each of the other women is indicated by the numbers appearing next to the houses. The smaller the value, the greater the degree of shared attributes. Finally, the scale of the maps is approximate, with the walking time between houses indicated in the small circles next to the road.

Examination of both maps clearly indicates that most social interaction and assistance seeking occur primarily within the respondents' immediate neighborhood. Social interaction, where companionship and reciprocal behavior in a variety of social situations predominates, is almost entirely confined to those individuals living in closest proximity to the respondents, whether they are related or not and regardless of the degree of social differences between them.
Figure 11. Networks of Interaction for Two Respondents
On the other hand, assistance seeking relationships, usually in the context of home related matters, tend to occur between women more closely related by blood or marriage. In some cases, as seen in the first map, the women the respondent interacts with in these situations tend to be immediate neighbors, reflecting the tendency in the Philippines for relatives to live near each other. In other cases, as seen in the second map, assistance seeking does occur over relatively greater distances. The distances involved may be a function of the location of the relative's house, that is, may reflect the general availability of house lots at the time of building, land ownership, etc. However, despite the reasons for the greater distances involved, in assistance seeking situations, there is a tendency for two individuals to be more closely related if the interaction occurs over greater physical distance.

It is interesting to note that in both maps expressions of friendship tend to occur between the subjects and women who live further away. In most cases the women designated as friends are neither immediate neighbors, close kin nor are they any more or less similar in attributes. In addition, with but one exception in both maps, these emotional bonds of friendship are directed at women with whom the subject interacts in no other situation. Where lines of friendship do extend to women with whom various other forms of interaction occur, we have what might be termed a "best
friend" relationship. These few, highly valued and trusted individuals constitute the most important bonds for the women concerned.

The maps present pictorially the ordering of interpersonal relations discussed in the previous chapter. For example, three of the most important general patterns of interaction occurring in the barrio involve essentially different sets of people. Assistance seeking tends to be confined primarily to close relatives, be they neighbors or not. Social interaction involving companionship in a variety of activities usually occurs among physically proximate neighbors. Friendship designations are made of those women believed to be valuable in some other way, probably in the sense that they can be called upon if assistance were not available from relatives or social companions.

Thus, it can be hypothesized that networks of interaction in the barrio vary according to the function of the interaction, and the function in turn influences the relative weight assigned to kinship and physical proximity in the selection of interaction partners. On the other hand, the statistical analyses of the data strongly suggest that little linear relationship exists between measures of attribute similarity and dyadic interaction. This does not mean, however, that a relationship is completely lacking, only that it may not be a linear one.
Based on the examination of patterns of interaction, what can be said concerning communication in the barrio? In order to determine the relationship between interaction and communication, an experiment was conducted using the diffusion of family planning information as the subject of concern. This experiment is reported in the following chapter.
CHAPTER IX

INTERPERSONAL COMMUNICATION AND THE DIFFUSION
OF FAMILY PLANNING INFORMATION

As set forth in the statement of objectives of the research, the ultimate purpose in studying networks of interaction in the barrio was to achieve a better understanding of the networks of informal, face-to-face communication, using the diffusion of family planning information as the focus of interest. It was anticipated that a better understanding of the factors affecting interaction would illuminate the processes of informal communication and would facilitate the introduction of innovations such as family planning into the barrio system.

In order to establish the relationship between general patterns of interaction and the actual communication of family planning information, an experiment was conducted. Family planning information was formally introduced into the barrio by a team of family planning workers from outside the community, enabling the diffusion process to be traced by a followup interview. Before examining the results of the experiment, the general state of family planning knowledge, attitudes and practices among the respondents in Buliasnin will be reviewed. These base-line data were obtained from interviews conducted several months prior to the actual experiment.
I. State of Family Planning in Buliasnin

The main highlights of the state of family planning in the barrio are summarized below.

Table 8 reports the percentage of women citing different types of contraceptives and the percentage who know how to use the techniques. Comparing the number of contraceptive techniques cited with age and education of the

Table 8
Knowledge of Birth Control Techniques

<table>
<thead>
<tr>
<th>Device</th>
<th>Have Knowledge of</th>
<th>Know How to Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number % of total</td>
<td>Number % of those</td>
</tr>
<tr>
<td></td>
<td>population</td>
<td>citing</td>
</tr>
<tr>
<td>Pill</td>
<td>101 82.8</td>
<td>28 26.5</td>
</tr>
<tr>
<td>IUD</td>
<td>40 32.8</td>
<td>28 70.0</td>
</tr>
<tr>
<td>Condom</td>
<td>39 32.0</td>
<td>37 92.2</td>
</tr>
<tr>
<td>Rhythm</td>
<td>28 23.0</td>
<td>21 73.9</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>27 22.1</td>
<td>27 100.0</td>
</tr>
<tr>
<td>Abstinence</td>
<td>44 39.3</td>
<td>44 100.0</td>
</tr>
<tr>
<td>Traditional*</td>
<td>97 77.9</td>
<td>97 100.0</td>
</tr>
</tbody>
</table>

(N=122)

*Includes the use of folk medicine, such as roots and herbs

of the respondents, younger women cited, on the average, more techniques than older women: women between the ages of 20 and 29 cited an average of 2.7 techniques; women aged 30 to 39 cited 2.2 techniques; and women 40 years or older cited only 1.5 contraceptive methods. Respondents with less than six years of elementary school education were familiar with an average of only one to two contraceptives; those with
some high school education could name between three and four methods; respondents having completed high school or even higher education cited an average of five contraceptive methods.

Table 9 summarizes the responses concerning the sources of first information about various fertility limiting methods. Face-to-face sources are divided into informal and formal ones. Informal sources include barriomates, relatives and village midwives; formal sources consist of doctors, interns, family planning clinics and the school. The data indicate that informal, face-to-face sources are most important in the first knowledge of most contraceptives, although this again is age specific. Women 40 years or older cited informal sources on an average of 75 times out of 100,

<table>
<thead>
<tr>
<th>Method</th>
<th>Times cited</th>
<th>Face-to-face</th>
<th>Mass Media</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Informal</td>
<td>Formal</td>
<td></td>
</tr>
<tr>
<td>Pill</td>
<td>101</td>
<td>66.4%</td>
<td>24.3%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Traditional</td>
<td>97</td>
<td>99.0</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Condom</td>
<td>39</td>
<td>62.5</td>
<td>25.0</td>
<td>7.5</td>
</tr>
<tr>
<td>IUD</td>
<td>40</td>
<td>32.5</td>
<td>52.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Rhythm</td>
<td>28</td>
<td>31.3</td>
<td>50.0</td>
<td>15.6</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>27</td>
<td>58.6</td>
<td>34.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>40.0</td>
<td>50.0</td>
<td>10.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>342</td>
<td>66.4</td>
<td>25.1</td>
<td>7.1</td>
</tr>
</tbody>
</table>
whereas women between the ages of 20 and 40 referred to them 42 times out of 100. For the younger group of respondents, especially those between the ages of 30 and 39, formal, face-to-face sources, such as doctors and family planning clinics, were cited on an average of 43 times out of 100 compared with only 14 times out of 100 for the older group. The only group of respondents referring to the mass media as a first source of family planning information were women between the ages of 20 and 29.

When asked if they had discussed with their husbands the total number of children they wanted, 59.4 percent of the respondents said they had, and 40.6 percent said they had not. Those women who had discussed desired family size had completed an average of 6.1 years of school; contrasted with only 4.8 years of school for those who had not. In addition, the former were nearly ten years younger than the latter (an average of 36.4 and 45.4 years respectively).

Nearly two-thirds of the respondents claimed to have discussed family planning with their husbands; they were able to state his opinions on the subject (the accuracy of these stated opinions was later verified by separate family planning interviews with the husbands). The women claiming to have discussed the subject were younger and better educated than those who had not (an average age of 36.7 years and 6.1 years of schooling for the former compared with 45.6 years of age and 4.7 years of schooling for the latter).
Only 32.0 percent of the respondents indicated they thought it was within their ability to prevent pregnancy, whereas 68.0 said they thought it was not. The average age of those answering in the affirmative was 33.5 years compared with 41.7 years for those responding in the negative. Those who said they had the ability to prevent pregnancy had been married an average of 15.9 years and had 6.9 years of schooling. Respondents who said they did not have the ability to prevent pregnancy had been married an average of 20.8 years and had completed an average of only 5.4 years of school.

Table 10 summarizes preferred family size for the population of respondents. Generally, women between the ages of 20 and 29 wanted an average of 1.3 more children.

Table 10
Summary Data on Preferred Family Size

<table>
<thead>
<tr>
<th></th>
<th>Women who want</th>
<th>God's will determines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More</td>
<td>No More</td>
</tr>
<tr>
<td>TOTAL (N=112)</td>
<td>49</td>
<td>17</td>
</tr>
<tr>
<td>Percent</td>
<td>42.2%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Preferred completed family size</td>
<td>3.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Average number of children now born</td>
<td>2.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Average age</td>
<td>37.2</td>
<td>33.5</td>
</tr>
<tr>
<td>Percent within child bearing age</td>
<td>63.3</td>
<td>88.2</td>
</tr>
</tbody>
</table>
than they already had; those between 30 and 39 were evenly divided between wanting more, no more and fewer children; the 40 to 49 year age group wanted an average of 2.8 fewer children than they already had; and the women 50 years and older indicated they wanted an average of 2.1 more children than already born.

As mentioned earlier, 80.3 percent of the respondents approved of the idea of trying to limit fertility for others if not for themselves, and only 19.7 said they did not. Similarly, 20.8 percent said family planning was a violation of the Will of God. Those who said it was not had an average age of 35.8 years and 6.5 years of schooling compared with 49.5 years of age and 4.1 years of schooling for women who said family planning was a sin.

In terms of the actual practice of pregnancy control, only 10.3 percent of the married respondents had used such contraceptive techniques as the IUD, the pill and modern methods of rhythm. However, if folk techniques, such as boiled roots and herbs, periodic and sometimes sustained abstinence and coitus interruptus are included, the percentage of those using birth control techniques jumps to 45.8 percent.

The information above indicates that the general level of knowledge about family planning is relatively high among women in Buliasnin and that attitudes are generally positive. Although slightly more than one woman in ten has ever tried
modern contraceptive techniques, more than one half the population of married women claims to have used some method of preventing pregnancy. Thus, the desire and attempt to limit unwanted pregnancies is relatively widespread among the women in this one barrio although the effectiveness rate is low.

II. Results of the Family Planning Experiment

For the purposes of identifying the networks of communication through which family planning information passes in the barrio, the data concerning the sources of first knowledge about family planning methods, reported in Table 9, is of greatest relevance. It shows that in most cases, informal, face-to-face sources, such as barriomates, relatives and midwives, are most frequently cited as the source of first information. The frequency to which such sources are referred indicates that family planning is discussed to some extent among barrio women. The question to be examined here is, are the networks of interpersonal communication of family planning information the same as generalized networks of interaction in the barrio or do they differ?

In order to compare networks of interaction with those found in the diffusion of family planning information, an experiment was conducted in which family planning information was introduced into the barrio system and its dispersal
traced by means of a followup interview of all the women, whether they were directly exposed or not.

One month after a family planning team from Boac had presented a formal lecture on different aspects of fertility limitation, an interview concerning issues relevant to family planning was administered to the 123 respondents (see Appendix II for the questions asked). Among other things, respondents were asked to name the women in the barrio with whom they had discussed family planning both before and after the lecture. The names of some of the individuals with whom family planning had been discussed were undoubtedly overlooked. One of the reasons for interviewing a month after the lecture was to minimize this possibility. However, it was felt that a minimum of one month had to elapse before the information could diffuse to the point that its pathways could be identified.

The interviews revealed two distinct networks of communication operating in the transmission of family planning information. The first involved the discussion of family planning between women related by blood or marriage, whereas the second involved discussion among a combination of kinsmen and nonkinsmen, but primarily among women living near each other.

In the case of women related by blood or marriage, family planning was discussed primarily between close kin,
most especially between mother and daughter, sister and sister, and mother-in-law and daughter-in-law. This discussion tended to occur shortly after the lecture—that is, in the days and first few weeks after the formal presentation—and it tended to be quite personal and direct. It was dyadic in that only two women were involved. A strong element of persuasion was involved, usually on the part of the older of the two attempting to influence the opinions and behavior of the younger. In one instance, the influence exerted was in a negative direction with the older woman insisting that fertility control is unsafe and immoral. Her influence was so strong on her daughters and daughters-in-law that despite their strong desire to prevent further pregnancies they refused to seek additional family planning assistance.

However, in many more cases, the influence of the older member of the dyad was more in the nature of encouragement of the younger to adopt fertility limiting practices or at least to seek further information and assistance from the newly reopened family planning clinic in town. In several instances, the influence was more neutral and evaluative of the lecture and of birth control procedures in general. Although instances of negative attitudes could be found, on the whole, the response to the lecture and the feelings conveyed were positive.
The network of communication, in this case, generally paralleled the networks of interaction in assistance seeking situations. The previously reported analysis revealed that these networks were primarily influenced by relational distance where help was sought in home related problems from close relatives regardless of their physical proximity to the respondent.

The second network of communication uncovered by the followup interview involved the discussion of family planning issues among physically close neighbors, whether kinsmen or not. However, compared with the first communication network, the second operated at two distinctly different time periods and consisted of entirely different content matter. One time period immediately followed the lecture. Respondents indicated that they had casually discussed the lecture with their companions on the way home after the meeting, usually in small groups of two to four individuals. In most cases these companions were the same women with whom the respondent interacted in most social situations. In some cases, the women were merely residents of the same general area of the barrio rather than usual social companions. On the night of the lecture, they happened to walk home together.

For whatever reason the women happened to walk home together after the lecture, the conversation that occurred tended to be similar. It consisted primarily of a rehash of the lecture, jokes and lewd comments about the
presentation, or gossip and speculation about other women in the barrio thought to be practicing family planning. The conversation was kept light and very impersonal, with no direct reference made to any of the women in the immediate group. No attempt was made to influence directly the opinions or attitudes of the others in one way or another. Indirectly, however, attitudes were expressed in the form of jokes and gossip. Yet, contrasted with the direct discussion between close kin, the conversation between friends and neighbors was less characterized by an exertion of personal influence on the part of one member of the dyad.

The network of communication in this second pattern generally parallels the networks of interaction occurring in social situations which were found to be influenced primarily by physical proximity and relational distance. Yet, the degree of directed personal influence was much less in these situations than between close relatives.

The second occasion when family planning was discussed among close neighbors was less tied to the period immediately following the lecture. Rather, it is more a reflection of the normal course of daily interaction in the barrio, such as small groups chatting at the sari-sari store, at the well while washing, or merely "over the back fence." The groups involved tended to be fairly large, usually consisting of five or more women and were composed of immediate neighbors. As with the discussion which
occurred among women returning home after the lecture, the conversation remained very impersonal. Personal references to experiences with family planning were almost never made. Specific mention of women in the barrio thought to be employing birth control was done in the absence of these individuals. The unfortunate consequence was that experienced women in family planning matters were never included in the discussions, and thus others could not benefit from their experiences. The individual successes and failures with family planning were never discussed personally. Therefore, most women were merely left to speculate and gossip, primarily about the imagined problems and complications involved in the use of modern contraceptive techniques.

Several conclusions can be drawn from these findings. First, directed personal influence and particularly persuasive arguments in favor of family planning were confined almost exclusively to dyads composed of close relatives. In situations involving larger groups of neighbors and/or kinsmen, evidence of direct personal influence was absent. Instead, comments and observations were kept highly impersonal, and personal feelings were expressed through indirect methods, such as jokes and gossip.

If the expression of direct personal influence is confined exclusively to dyads whose members are closely related, this would suggest that motivational and
information campaigns concerning family planning be directed at a broad spectrum of age groups in the barrio rather than solely at the most sexually active age group.

That this is not now the case was brought out in the manner in which the family planning lecture was announced to the women in Buliasnin. The family planning team in Boac with whom arrangements for the lecture had been made approached the barrio through normal channels of authority—that is, the barrio capitana. She was informed of the team's desire to present a lecture to the barrio women. The capitana agreed and then requested the head teacher at the elementary school to send a note home with the students informing the mothers of the lecture. As a result, only those women with children in school or those older women living with their children and grandchildren were directly informed of the meeting. Although other women learned about it indirectly from others, they were not specifically invited. It was not until after the lecture and preparations were being made for the showing of the movies later in the evening that the word reached most of the women about the presentation. Because of the influence exerted by some older women on their daughters and on their sons' wives, their exclusion from these informational and motivational campaigns was a serious omission.

Another conclusion to be drawn from the experiment is that although family planning is the topic of some discussion
in the barrio, and despite the fact that this discussion tends to parallel networks of social interaction and assistance seeking, there appear to be no readily identifiable family planning opinion leaders among the barrio women. This is not in keeping with Palmore's findings on Malaysia.¹ In Buliasnin mothers and mothers-in-law do attempt to influence their daughters or sons' wives in one direction or another, but their direct influence apparently is confined to their closest relatives. In larger groups outside the immediate family, opinion leaders such as are found to be important in the diffusion of other innovations are for the most part absent.

The reason for this is partly due to the very sensitive and personal nature of the innovation involved. Compared with other innovations which might consist of changes in household practices, buying patterns or farm improvements, family planning concerns problems of human sexuality. In a society where many women are reluctant to submit to an internal medical examination by a female doctor, or where midwives must deliver babies from mothers whose genitalia are concealed from the eyes of both the midwife and the husband, it is not unusual to find that

most women are extremely reluctant to place themselves in potentially embarrassing social situations, such as discussing their experiences with family planning.

What conclusions can be drawn about the role of interpersonal communication in the spread of family planning information in the rural Philippines? When the study was conceived, it was assumed that informal channels of communication operating in the barrio were important in the spread of family planning information, and that once these channels were identified, they could be more effectively employed to facilitate the spread of birth control knowledge and practice.

However, the experiment reveals that like networks of interaction, interpersonal communication involves networks that differ according to the individuals involved and the content matter. For example, discussion of personal or sensitive issues, such as family planning, is most likely to occur between close relatives. However, as compared with assistance seeking interaction which can be initiated by either member of the dyad, the personal discussion of family planning tends to be initiated by the older member of the dyad. Seldom do daughters discuss such problems with their mothers. It is usually the other way around.

The experiment has also shown that the spread of family planning information does not proceed along specialized channels of communication primarily because of the absence
of opinion leaders in the barrio. When discussion does occur, it tends to parallel normal patterns of interaction, and these have been shown to be more responsive to factors of relational distance and physical proximity than to social differences. Although it is unlikely that in these general situations a woman with first-hand experience with family planning will stand up and give witness to her own experiences, it has been found that the broad issues of fertility control are discussed in informal gatherings. Because in six cases out of ten a contraceptive was first heard about in informal, face-to-face encounters with others, it appears that these channels will continue to play an important role in the dissemination of family planning ideas.

However, there is a need to improve the quality of the information passed and discussed. Experience in the barrio has too often demonstrated that only the "horror" stories and the bad rumors concerning the adverse effects of modern methods of contraception are discussed. Improved public information and education campaigns focusing on establishing a rudimentary understanding of human reproduction and the use and effects of various contraceptive techniques would contribute substantially to a better quality of information spread in such informal groups.

Beyond these immediate barrio implications is the obvious need to improve and augment external sources of
family planning assistance and information. Because rural women are reluctant to turn to their barriomates for advice about personal problems, and specifically problems pertaining to sex and contraception, more reliable and accessible external sources of assistance seem to be desirable. Part of the solution to this problem has been implemented with the creation of family planning clinics throughout the country and with improved training of rural health teams. The Rockefeller Foundation and UNESCO have sponsored hilot training programs in the expectation that these important, yet heretofore under-utilized, individuals will be effective motivators and stimuli for spreading the information about family planning and for recruiting more adopters.

Because of the barrio woman's inclination to seek outside advice and assistance on family planning matters, greater use might be made of mobile family planning teams that would periodically visit rural barrios. The rural health teams come immediately to mind, but they are charged with caring for the general health of residents of a wide geographic area, and thus are able to visit any given community only a few times a year. Furthermore, these visits are usually completely taken up with general and more pressing health matters.

The hilot s represent a vast reservoir of potential. The position of respect which they command in the barrios
they service as well as their close association with all mothers suggest that they have a far greater role to play, not only in the effective spread of family planning information, but in the widespread acceptance of birth control.

While it is true that family planning opinion leaders are generally absent within the barrio, there is evidence to the effect that individuals outside the barrio system do exert considerable influence on the opinions of the respondents. These individuals include close relatives living in more distant barrios on the island or even on different islands. They include members of rural health teams and, most recently, the hilots or untrained individuals who are being trained and paid to motivate women to accept family planning.

A more difficult influence to measure directly is the growing mass media campaign to make Filipinos aware of the need, from a national standpoint, to practice family planning. The creation of public and private family planning clinics throughout the countryside is the first step in making these facilities accessible to large numbers of Filipinos—yet, it is only a first step. Most family planning clinics are understaffed and consequently devote only a minimum of time and attention to each patient. All too often the family planning workers are motivated primarily by the financial returns in their work rather than by a commitment
to the cause of family planning or to the human needs of their patients. The range of contraceptives available by the government and private foundations is so small that women experiencing adverse effects with one contraceptive seldom have other products or variations of the same product to choose from. Discomfort and concern with the side effects often results in the discontinuation of the contraceptive use. Usually the woman soon becomes pregnant, and the family planning cause has lost another, initially highly motivated customer.
CHAPTER X
SUMMARY, DISCUSSION AND CONCLUSIONS

I. Summary

At the outset, the thesis was cast as an examination of the networks of interaction and communication among a group of rural women in a Philippine barrio. The purpose of the study was to identify the effect of social space and social distance—defined as a melange of spatial, social, economic and psychological factors—on the growth and mechanism of these networks.

In order to evaluate and relate the various components of social space to patterns of interaction, a model of interpersonal behavior, called Social Field Theory, was applied to the study of interaction behavior in a small community in the Philippines. The central hypothesis tested was that interaction and communication between any two individuals in a social system reflect the extent to which they share similar attributes. Interaction and communication are thus hypothesized to be the reflection of an overlap of life spaces at this point in time and of the social distance separating individuals.

The concept of social space and social distance as employed in this thesis represent an on-going attempt in certain schools of geography to enlarge the discipline's
traditional concern with the effects of physical and economic space on spatial behavior and form. The concepts of space and distance have been expanded to include the effect of social, economic and psychological similarities and differences and ways of life on the manner in which groups live and interact. Groups are hypothesized to consist of a number of individuals who share similar basic characteristics—that is, they share a similar social space wherein the social distance between members of that group is relatively small compared with that separating members of the group and non-members. The degree to which different groups interact, on the other hand, is conceived to be a function of the extent to which their social spaces overlap.

Applying the social space theory to a small barrio social system, it was hypothesized that the barrio could be viewed as a social space made up of a number of smaller social spaces, each defined by the different life spaces of the individuals included in the social system. These individual life spaces were hypothesized to be the result of a variety of social, economic, psychological and spatial attributes. Interaction and thus communication among the individuals in the social system were hypothesized to be a function of the extent to which life spaces overlapped, that is, where the social distance between individuals was small.
Analysis of the data on individual attributes and on dyadic interaction revealed that social distance, in general, is a poor predictor of patterns of interaction and communication. It was found, however, that two of the separate components of social space—kinship ties and geographic proximity—were of primary importance in determining who interacted with whom in social situations and in assistance seeking situations. Sharing of social, economic or psychological attributes was of relatively little consequence in the creation and maintenance of most networks of interaction and communication.

In terms of the original hypotheses set forth in Chapter II, it can be concluded that:

1) Interaction and communication between two people in a Philippine barrio are influenced less by shared backgrounds, values and attitudes than by kinship ties and geographic proximity;

2) Kinship appears to be the critical determinant in most social interaction and assistance seeking. However, in social situations involving a mutual involvement in a variety of activities, kin who are most physically proximate, regardless of the closeness of the blood or marriage tie, are favored. This reflects the fact that kinsmen tend to live near each other. In assistance seeking situations, on the other hand, the closeness of the kinship bond appears to be most important rather than physical proximity, for
individuals appear to seek assistance from close relatives no matter how far they live rather than from just any immediate neighbor;

3) Communication, and specifically communication of family planning information tends to parallel the two major patterns of social interaction in the barrio. Discussion meant to influence or persuade generally occurs between very close relatives and usually involves women of different ages, as between a mother and daughter rather than between women of the same age. Where family planning is discussed more casually and superficially, i.e., where the element of persuasion is absent, communication parallels general patterns of social interaction as between neighbors whether related or not.

In conclusion, the study indicates that despite variation in life spaces of barrio women, these differences are apparently not manifest in barrio networks of interaction and communication. It would have to be concluded that kinship and physical proximity alone of all the factors investigated, are the primary determinants of these networks.

II. Discussion--The Model Versus Reality

A number of possible explanations can be offered to account for the apparent lack of relationship between social distance and interaction in the barrio. These include (1)
the manner in which social space and distance were defined, (2) methodological considerations inherent in the model employed, and (3) a variety of cultural and situational factors.

A. Definition of Social Space

The study barrio has been conceived of as a social space in which individuals can be located on the basis of their shared attributes. As stated earlier, the closer two individuals in social space, that is, the smaller the intervening social distance between them, the greater likelihood of interaction occurring.

One possible explanation for the lack of observed relationship between social distance and dyadic interaction may be due to the failure to adequately identify the most important components of the barrio social space. In other words, the wrong variables may have been selected to define the space.

There is no adequate reply to this point. The research was conducted on the basis of previous work, not in the measurement of social space but rather on the factors that have been found to affect interaction and communication in similar situations. Past research indicated that such factors as cosmopoliteness, mass media and change agent contact, innovativeness, empathy, and the like were important in understanding the process of interaction and
communication. These and many more variables were, therefore, the focus of the data collection and were the framework around which a particular definition of social space and distance was derived.

Yet, it may well be that the variables measured were not relevant to the definition of social space in a Philippine barrio, or perhaps they were only partial determinants. Other variables may have been required to satisfactorily define the concept. As stated in Chapter IV, many variables for which data were collected were not employed in the analysis. Perhaps they and others unconsidered would have provided a better description of social space.

There are few suggestions that can be made at this time concerning what variables might have been more useful in defining such a space. For one thing, there is inadequate basic information on interpersonal relations in the Philippines to indicate which variables might be of greater significance. This type of information will probably be provided by ethnographic, sociological and social psychological studies on the various aspects of Philippine culture. All that can be said now with any degree of certainty is that the variables employed here in defining the dimensions of social space appear to have little direct influence on the determination of dyadic interaction.
B. Methodological Considerations

There are a number of methodological considerations which may have weakened the expected relationship between social distance and interaction.

First, compared with the studies by Rummel and Berry, this one investigates actual networks of interaction rather than potential ones. Had potentials for interaction been examined, 15006 dyads would have been employed, of which only 2969 involved interaction on at least one of the six dimensions of interaction space. In other words, for 80 percent of the total number of dyads no interaction at all was reported. It can be hypothesized that the reason for the lack of interaction was because the social distance between the members of most of the potential dyads was too large.

However, for a variety of practical reasons, this study confined its analysis to those dyads where interaction actually occurred. Thus, real differences which might have been significant in the larger sample but because of the smaller number of dyads used were reduced in importance may have been masked by such a decision. In other words, the range on the social distance values for the 2969 dyads may have been smaller than that found in the total 15006 dyads and this would have depressed the overall importance of the social distance measures on interaction in the smaller number of cases studied.
Aside from the possible effects of examining only those dyads where interaction occurred were a number of problems involved in the actual analysis of the data. As explained in Chapters II and IV, the mathematical basis of Social Field Theory is linear algebra, and specifically the techniques of correlation, factor analysis and canonical analysis. Due to the fact that certain mathematical properties were not found in the data employed in this study, the analytic techniques may themselves have depressed the results. For this reason, it might have been useful to have employed alternative methods of data analysis. A series of nonmetric techniques were in fact attempted, but the computer programs are not yet well developed nor understood to be of widespread utility to the researcher.¹ However, had alternative data analysis techniques been explored because of the characteristics of the data, better results might have been obtained. Although this is strictly conjectural, it might be kept in mind by other researchers employing Social Field Theory with data similar to that used here.

C. Cultural and Situation Factors

Methodological considerations aside, the apparent lack of relationship between social distance and interaction may be attributable more to cultural and situational factors than to any major shortcomings in the theory or the analytic techniques.

The study did reveal that there was wide variation in social background, life style and values among the women comprising the study group, that is, social distance between respondents was fairly large. The study also revealed that interaction did not occur between all possible pairs of women but rather was confined to less than 20 per cent of the dyads. This means that each respondent interacted with certain other women in the barrio but not all other women.

The statistical analysis indicated that where interaction occurred, it was not because of any similarity in life space or shared attributes. Why might this have been the case? In retrospect, several factors appear to contribute to this lack of relationship. These include (1) the central role of the family in Philippine culture, (2) the type of social organization typically found in Philippine barrios, (3) barrio settlement patterns and the primary means of subsistence, and (4) the range of interaction opportunities open to the barrio resident.
It was mentioned in Chapter I that the basic unit of lowland Philippine social structure and organization is the family, primarily the nuclear family but also all kinsmen related both by blood and marriage. Since family ties are so crucial in the way which the individual orders his social relationships, it is not altogether surprising to find most patterns of interaction revolving around relatives. This was especially true in those interaction situations involving the giving and receiving of assistance in terms of home related problems.

Second, a common characteristic of many barrios in the Philippines, particularly the smaller ones, is that most people are related in one way or another. Because of historical factors, land ownership or tenancy practices, a number of different families came to make the barrio their home. Over the years these families have intermarried so that today kinship bonds interconnect most families. Generally, however, more immediate family members tend to congregate in the same general area while more distant relatives live further away in their own little enclaves of close kin.

In terms of networks of social interaction, canonical analysis indicated that kinship and physical proximity were the primary determinants of these networks. The relative importance of the two factors--kinship and proximity--cannot be easily determined. For example, does social interaction
occur primarily among relatives or is physical distance such a constraint on these activities that interaction occurs primarily among close neighbors who merely happen to be neighbors?

Settlement patterns and the forms of economic livelihood of the barrio may also influence how interaction networks evolve. Buliasnin is a barrio of average size. Some 660 people live in an area of approximately two square kilometers. Houses, especially in the section closest to town, tend to be crowded together and constructed with bamboo and nipa which precludes much privacy, even inside. Cramped living quarters often mean that much family life and general socializing occur outdoors. For these reasons, exclusiveness of behavior is difficult to achieve and maintain. Physical factors alone make interaction and intermingling with other people in the barrio inevitable.

In addition to the physical characteristics of the barrio which discourage exclusiveness is the fact that agriculture and similar pursuits represent such a large aspect of the economic life of the barrio. As in any agricultural community, interdependence among the social units tends to be quite high. Individual families are not totally self-sufficient. Rather, they must rely on their fellow barriomates to a certain extent for a variety of goods and services. These factors contribute to a high cultural value being placed on what Lynch calls "smooth interpersonal
relations" with everyone. Open conflict tends to be avoided at all costs since when it does occur, it quickly engulfs the whole community because of the familial ties between most individuals, the links of interdependency as well as the physical proximity of all residents.

This is not to argue that conflict does not occur in the barrio. However, open discord is usually confined to circles of closely related family members. Siblings or parents and children do quarrel and sometimes quite vociferously about a variety of issues, from each other's children to disputes and claims to money and land. However, because the conflict is confined to the immediate family, it does not generally spill over into the rest of the community.

More jarring to the social system, on the other hand, are the interfamilial conflicts which arise periodically. These usually concern long-standing feuds over the rights to a particular piece of land. When these conflicts came to the surface, most commonly after a long drinking bout, one family usually decides to goad the other into a fight. Insults are exchanged, rocks thrown and even bolos or machetes are drawn and rattled. However, like fire in the dry cogon grass, such outbursts tend to burn themselves out

\[2\] Lynch, op. cit.
quickly, and although the cause of the animosity is not removed, the conflict is contained by the quick inter­vention of a third party, such as a neighbor or an elected barrio official.

Finally, the range of interaction opportunities available to the individual has to be taken into consider­ation in determining how networks of interaction are established. For the purpose of this research, only those interactions occurring within the confines of the barrio and exclusively involving barrio residents were investigated. Since much interaction occurred between residents of Buliasnin and those of other communities, this condition was highly restrictive and artificial. Although these extra-barrio contacts were not investigated in depth, it was apparent that many did not involve relatives. This suggests that some sort of social distance may have played a more central role in determining these ties than was the case in the barrio.

It can be argued, on the other hand, that even if the geographical limits of the study had been expanded, these extra-barrio networks would have been relatively unimportant since the majority of day-to-day interactions are confined to the barrio proper primarily because of limited individual spatial mobility. The barrio dweller's normal range of daily contacts is generally limited to that area that can
be reached on foot, and thus the degree of selectivity in choosing interaction partners tends to be quite restricted. Physical proximity, then, can be expected to contribute substantially to the way such networks are established and maintained in a barrio such as Buliasnin.

In conclusion there appear to be a number of methodological and cultural factors that may account for the lack of relationship between social distance and interaction. What has yet to be reexamined is the model itself, assumptions made by it about interpersonal behavior and the appropriateness of it to certain types of geographic phenomena.

D. The Theory and the Model Reexamined

At first, Social Field Theory seems to be an ideal model for testing Karlsson's thesis that a realistic diffusion model is one that takes into account the effect of both physical and social distance on contact frequency, interaction and thus on patterns of communication within a given population. The model is grounded in mathematical theory, and important concepts have been operationalized in such a way as to permit testing of the major axioms. However, implicit in Karlsson's argument, in the Social Field Theory model, and assumed throughout this thesis is the idea that contact frequency, interaction and communication are synonymous or at least are closely and directly
related. Yet, these research findings suggest that this assumption may be invalid.

The assumption that interaction and communication are synonymous may be the result of a peculiar trait of Western culture. In many Western cultures where contact frequency and interaction are high among people, communication between those same people also tends to occur. In short, frequency of contact and interaction (both relatively easy to measure) have been employed as surrogates of interpersonal communication which is much less easy to measure.

In the Philippines, this assumption may be fallacious. The study reveals that networks of interpersonal communication cannot be explained solely by the frequency of contact or of interaction. The reasons for this can only be conjectural since a tremendous lacuna exists in our knowledge of this area of Filipino behavior. It does seem, however, that the cultural value attached by lowland Filipinos to self-esteem and shame and the tremendous psychological fear of putting oneself or others into potentially embarrassing situations greatly frustrates the open expression of one's ideas and feelings to others, even one's closest relatives. Filipino friends in Hawaii have mentioned that if they have a personal problem, they are reluctant to discuss it with anyone, including their parents or their spouse.

Whereas in the West we tend to think of interpersonal communication occurring on a one-to-one basis, in the
Philippines such a one-to-one situation would be threatening and potentially embarrassing. Oftentimes, the result is that the Filipino rarely expresses directly his own feelings or ideas to others. Communication becomes indirect, by innuendo and euphemism. Criticism of another individual is seldom direct, but takes the form of gossip, joking and teasing. For these and other reasons yet uncovered it may be wrong to assume that contact and interaction among Filipinos is synonymous with communication, at least of the type essential to the diffusion of family planning information.

However, even had a direct relationship been established between networks of interaction and networks of interpersonal communication, the subject matter selected to substantiate this relationship, i.e., the diffusion of family planning information, was, with the benefit of perfect hindsight, singularly ill-suited to this task.

At the time the research was proposed, it was anticipated that the diffusion of family planning would exhibit certain basic attributes common to all innovations and that it would be discussed fairly freely and extensively in the barrio, if not among all residents then at least among some. It was assumed that women with successful experiences with modern methods of birth control would discuss their experiences with other women who would then become sufficiently interested or motivated to try birth control themselves.
Similarly, it was thought that women with unfavorable experiences would tend to discuss these with other women. In short, it was expected that family planning could be treated like any other innovation, the diffusion of which could be traced via networks of communication within a population.

Responses to certain questions early in the research indicated that the general subjects of birth control and family planning were discussed to a limited extent among the barrio women. However, when the networks of communication of family planning information were uncovered, there appeared to be little consistency or regularity in the pattern of discussion that occurred. Women identified as one-time adopters of modern methods of contraception apparently never discussed their experiences with others in the barrio. They were almost never referred to by others as a source of good information about family planning. They did not appear to have been influenced by any other women in the barrio to try birth control. In short, the types of information and networks of interpersonal communication shown to be important in the dissemination of information about other innovations, in the evaluation of the innovation and in the decision to adopt or not were not present in the case of family planning.

For a variety of reasons from the very sensitive and personal nature of the innovation, the Filipino's proclivity
to avoid discussion of personal and embarrassing subjects, to the fact that adoption of the innovation was not as visually apparent as in, say, the adoption of miracle rice, family planning turned out to be a poor innovation to select as an example of information diffusion.

Various attempts were made throughout the course of the research to informally examine the diffusion of other types of information, from an accidental shooting in a neighboring barrio, a serious bus accident and a drowning in town, to the reported landing of a boatload of aswang (witches or people with superhuman powers) at a coastal barrio a few kilometers from Buliasnin.

Most of the information diffused in a predictable manner. First news of the incident was brought to the barrio by people returning from town or by tricycle drivers (a motorcycle with side car which can accommodate several passengers) on their run between the barrio and town. From the point of infusion, be it the sari-sari store or a particular individual's house, the news passed from neighbor to neighbor in a series of waves. Houses with no immediate neighbors or groups of houses separated from the rest of the barrio, such as near the seashore, were generally the last to hear about the news (with the exception of the news of the aswangs which moved first along the coast and then to the interior of the barrio), and often they heard nothing. However, the information diffused in a predictable manner.
This was only partially true for the diffusion of family planning information after the formal lecture in August. At one level, diffusion of information and discussion tended to occur informally among relatives and neighbors. Comments were impersonal, superficial and generally consisted of idle chatter and gossip about the rumored effects of birth control and about women believed to be using contraceptives. At this level information appeared to diffuse along the same networks as some of the more news-worthy happenings in town and the neighboring barrios.

At a second level family planning tended to be discussed with the view of persuading another person to adopt family planning or to seek additional information on birth control. Such discussion, as already indicated, occurred among close relatives and involved women of different ages.

A third level of discussion, found in the diffusion of other innovations, is the evaluative discussion in which individuals with first-hand experience share their knowledge with others who in turn evaluate the information and innovation just prior to making a decision whether to adopt or not.

The research was successful in identifying the networks through which the first two types of information and discussion passed. However, it could not identify the third and most important network. Chapter IX suggested one reason
why this third network was not identified—namely because it did not exist in the barrio. It was found that most women were reluctant to discuss their personal experiences with any one in the barrio. Apparently, they did discuss family planning with people outside the barrio and were strongly influenced by such individuals. However, within the barrio discussion of this sort did not occur.

In conclusion, it seems that the choice of the diffusion of family planning information as a test of the relationship between interaction and communication was a poor one. Greater use of other innovations or different types of information might have been more useful for determining this link.

Finally, a question needs to be raised about the appropriateness of the attempt to apply the social distance concept to the barrio social system. There appear to be limits to the level at which social distance may affect networks of interaction and communication. For example, the concept may be very useful in determining the likelihood of two or more individuals coming into contact with each other. People who share common interests, backgrounds, values and ways of life are more likely to cross paths frequently in similar situations than are people with little in common. However, after contact has been established, factors other than social distance probably influence the
amount of interaction and communication that results between two people.

It was anticipated that social distance would help explain how and why particular people in the barrio came together, interacted and communicated and why other people did not. Yet, implicit in the hypothesis that social distance affects interaction is the idea that the individual can be selective of those with whom he interacts. For a number of reasons mentioned above, barrio residents are not free to select their interaction partners. They are constrained by kinship, by physical distance and by mutual dependence in an essentially agrarian society.

However, once these constraints have been taken into account, actual interaction is probably the consequence of a variety of idiosyncratic and unique factors peculiar to each member of the social system, and it is unlikely that any two individuals will view with equal importance the same factors. Thus, while social distance and Social Field Theory may be useful in identifying the members of a group in terms of particular shared attributes, within the group itself prediction of interaction and communication is difficult.

Our model has been very useful in sorting out a variety of complex relationships. However, it is apparent that there is still much we do not know nor understand about social space, social distance and their effect on
interpersonal behavior and the spatial aspects of such behavior in non-Western cultures. The present research is but one attempt to delve more deeply into the determinants of spatial systems of interaction and communication. It has examined the small scale generating mechanisms of one type of interpersonal behavior in the Philippines. New insights have been gained into the social structure of a rural barrio, into the way a single group organizes its networks of interaction and communication, and into the interrelationship between spatial form and temporal process.

We must now build on these insights and probe more deeply into the more subtle and less easily measured elements in the social system that affect interaction and communication of various sorts. Once we have answered some of the basic questions raised by this research, perhaps, once again we will be able to test them, just as earlier theories were tested here, using models and similar devices. These models, too, will undoubtedly fall short of their mark, but each faltering step brings us that much closer to understanding the factors involved in human behavior.
APPENDIX A
ATTRIBUTE SPACE INTERVIEW SCHEDULE

1. Have you participated in the "Supplementary Feeding Program"?
   No  Yes
   a) When did you first participate? _____
   b) Are you still participating? No  Yes

2. Do you have (__________)?
   No
   When did you  Are you still
   1st obtain using it?
   this?

A.
   _a. plastic ware
   _b. plastic water jar
   _c. plastic curtains
   _d. metal chairs with
       plastic seats
   _e. plastic rack for
       drying dishes
   _f. plastic scraper
   _g. plastic strainer
   _h. pit privy
   _i. water seal toilet
   _j. portable radio
   _k. laminated pictures
       and frames
   _l. home garden
   How many?
   _m. refrigerator or
       cooler
   _n. bicycle
   _o. motorcycle
   _p. horse drawn cart
   _q. auto or jeep
   _r. clock
   _s. wrist watch
   _t. pressure kerosene lamp
u. sewing machine
v. flashlight
w. water pump (hand)
x. farm animals

1) what kind and how many?

3. In the last six months, have you traveled to (_____)?

<table>
<thead>
<tr>
<th>Place</th>
<th>No</th>
<th>Yes</th>
<th>How often?</th>
</tr>
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<tbody>
<tr>
<td>a. Boac</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Mogpog</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>c. Sta. Cruz</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>d. Gasan</td>
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</table>

4. In the last year, have you left Marinduque?

No_____ Yes____

a) Where? For what reason?
1
2
3

b) How frequently?

5. Have you ever gone to Manila?

No_____ Yes____

a) How often? 

b) For what reason

6. Where were you born?

Buliasnin_____ Name of other place ____

a) During your life, have you ever lived outside of Buliasnin for more than 2 consecutive weeks?
No_____ Yes____

a) Where?

b) For how long?

7. Have you ever thought of moving from Buliasnin?

No_____ Yes____

a) Where would you like to go?

b) Why?
8. Have you received any letters in the last 6 months?

   No  Yes
   a) How many?
   b) From whom?
   c) From where?
   d) Did you read it yourself or did someone read it to you?
      Self  Someone else

9. Have you written any letters in the last 6 months?

   No  Yes
   a) How many?
   b) Where does the recipient live?
   c) Did you write the letter or did someone else write it?
      Self  Someone else

10. Do you ever go to church in Boac?

    No  Yes
    a) How often?

11. Do you ever go to the barrio chapel to pray?

    No  Yes
    a) How often?

12. What is the name of the Municipal Councilor for Buliasnin?

    Don't know  Knows

13. What is the name of the Province Governor?

    Don't know  Knows

14. What is the name of Marinduque's Congressman?

    Don't know  Knows

15. Do you read any newspapers?

    No  Yes
    a) Which ones?
       1
       2
       3
    How often?
237

b) Do you read the newspaper or does someone read it to you?
   Self  Someone else

c) How do you obtain the newspaper?
   a) Buy it  b) Other
   1) Where?

16. Do you read any magazines?
   No  Yes
   a) Which ones?
       1
       2
       3
   b) Do you read the magazine or does someone read it to you?
       Self  Someone else

17. Do you read comics?
   No  Yes
   a) How often?
   b) Where do you read them?
   c) Do you think that what you read in comics reflects reality?
      No  Yes  Sometimes
      1) Why?

18. Do you listen to the radio?
   No  Yes
   a) How many hours a day?
   b) What programs?
   c) Where do you listen?

19. Have you gone to the movies in the last 6 months?
   No  Yes
   a) Where
   b) How often?
   c) Do you think what you see in the movies reflects reality?
      No  Yes  Sometimes
      1) Why?

20. Which do you think is a more reliable source of information?
   1. Newspaper  or  Radio  or Same
   2. Newspaper  or  People in barrio  or Same
   3. Radio  or  People in barrio  or Same
21. (IF #15, 16, and 17 ARE NO) Are you able to read?
   No____  Yes____

22. Have you talked with a school teacher about family or home matters in the last year?
   No____  Yes____
   a) How often?
   b) Who initiated the conversation?
      Teacher____  Respondent____
      1) Where did you go to find this person?

23. Have you talked with someone from a rural health team about health or family matters in the last year?
   No____  Yes____
   a) How often?
   b) Who initiated the conversation?
      RHT____  Respondent____
      1) Where did you go to find this person?

24. Have you consulted a private doctor or nurse about health or family matters in the last year?
   No____  Yes____
   a) How often?
   b) Who initiated the conversation?
      Dr or N____  Respondent____
      1) Where did you go to find this person?

25. Have you talked with a home economist about home matters in the last year?
   No____  Yes____
   a) How often?
   b) Who initiated the conversation?
      HE____  Respondent____
      1) Where did you go to find this person?
26. Have you talked with anyone from the PACD about home or family matters in the last year?

   
   No      Yes
   a) How often? 
   b) Who initiated the conversation? PACD Respondent
   1) Where did you go to find this person?

27. Does anyone in the barrio consult you about home or family problems?

   
   No      Yes
   a) How often? 

(HAND THE RESPONDENT THE CARD SHOWING THE LADDER. POINT TO THE TOP OF THE LADDER [number 9] EACH TIME YOU MENTION IT AND MOVE TO THE BOTTOM [rung number 0]. WHILE YOU ASK THE QUESTION, MOVE YOUR FINGER RAPIDLY UP AND DOWN THE LADDER.)

28. At the top of the ladder is the woman in Buliasnin who has the ability to get other women to do things for her because she is respected. At the bottom of the ladder is the woman who can get no one to do anything for her because she is not respected.

   Show me the rung on which you think you stand.

   Rung number ______

29. At the top of the ladder is the woman in Buliasnin who has the highest social status. At the bottom is the woman who has the lowest.

   Show me the rung on which you think you stand.

   Rung number ______

30. At the top of the ladder is the woman in Buliasnin whose opinion is always sought by other women in the barrio. At the bottom is the woman who is never consulted by others.

   Show me the rung on which you think you stand.

   Rung number ______
31. At the top of the ladder stands the wealthiest family in the barrio. At the bottom stands the poorest.

Show me the rung on which you think your family stands now.

Rung number ____

Show me the rung on which you think your family stood 5 years ago.

Rung number ____

Show me the rung on which you think your family will stand 5 years from now.

Rung number ____

32. (If the respondent is of child bearing age and married)

1. How many more children would you like?  
   a) How many boys?  
   b) How many girls?  

2. How many children would you like all together (total)?  
   a) How many boys?  
   b) How many girls?  

3. How many living children do you now have?  
   a) How many boys?  
   b) How many girls?  

(If the respondent is past child bearing age and married)

1. How many children would you want all together if you could start all over again?  
   a) How many boys?  
   b) How many girls?  

2. How many living children do you have now?  
   a) How many boys?  
   b) How many girls?  

(If the respondent is between 20-30 and not married)

1. If you get married, how many children would you like to have?  
   a) How many boys?  
   b) How many girls?  

(IF THE RESPONDENT IS OVER 30 AND NOT MARRIED)

1. In your opinion, what is the ideal number of children a family should have? ________________

33. Do you think it is within your power to prevent pregnancy?
   No______ Yes______
   a) How? ____________________________________

34. Do you approve or disapprove of trying to prevent pregnancy?
   Disapprove______ Approve______
   Why? ____________________________________

35. Whose opinion should be followed in the decision of whether to prevent pregnancy or not?
   Yourself?____ Husband?____ Parents?____ Someone else?____

36. Do you agree or disagree that parents should expect support in their old age from their children?
   Disagree______ Agree______
   a) A little______ b) On the whole______ c) Completely______

37. Which sex do parents generally prefer their first child to be?
   Doesn't matter____ Boy____ Girl____
   1) Why________________

38. Do you know of any methods used by married couples to prevent pregnancy?
   No______ Yes______
   a) What methods do you know? (PROBE) Do you know any more?
   b) (FOR EACH METHOD KNOWN, ASK) Where did you first hear about this method?
   c) Have you ever tried this method?
<table>
<thead>
<tr>
<th>Name</th>
<th>Knows</th>
<th>Source of 1st Knowledge</th>
<th>Used?</th>
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<td>Other:</td>
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<td>Specify</td>
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</tbody>
</table>

39. What is the highest grade of school you completed?
   Grade _____

40. Where do you bathe?
   Not at home_____ At home____
   a) What is your shower stall made of?  

41. What type of cooking fuel do you use?  

PART 2

42. (IF SINGLE, LIVING ALONE/WITH PARENTS, WIDOWED, GO TO #43)

(IF MARRIED AND HUSBAND LIVING)

What is your husband's occupation?  

(IF FARMER, COPRA MAKER, TUBA MAKER OR FISHERMAN)

a) which of the following takes most of his time?
   1) Farming_____
   2) Copra making_____  
   3) Fishing_____
   4) Other ____

b) Does he work for himself or someone else?
   For himself_____ For someone else _____
43. Do you work either at home or somewhere else for which you are paid either in cash or in kind?

At home _____ Someplace else _____ No _____

a) Aside from your housework, do you have any other work for which you are paid?

No _____ Yes _____

a) What is your work?

b) What percentage of your income is used to buy food for your family? __

44. What is the purpose of the Constitutional Convention?

Don't know _____ Knows _____

45. What are the names of Marinduque's two delegates to the Constitutional Convention?

Don't know _____ Knows 1 _____ Knows 2 _____

46. What is the name of the man who was President of the Philippines before Marcos?

Don't know _____ Knows _____

a) When is the next Presidential election?

Don't know _____ Knows _____

b) What offices are up for reelection in the next local election? __________

The following are a list of incomplete sentences taken from other women. Please complete them with your own opinion.

47. What I need most is . . . . . . . . . . . . . .

48. My greatest hopes for one of my children are. . . .

49. What my house needs most is . . . . . . . .

50. If I had electricity in my house, I would . . . .

51. A person with a lot of money should . . . . . .
52. If I lost an important part of my body in an accident, I could.

53. A person without enough land should.

54. In order to improve the life of my family, I should.

55. To be successful in life today, a person

56. In the next ten years, I plan to

57. The role of women is

58. Advancement in a person's work depends on.

59. What is the occupation of your oldest child?
   a) When he or she was young, what did you hope he or she would become?

60. After grade 5 or 6, is it necessary for children to go to school any longer?
   No   Yes
   a) Why?

61. Have you ever been a member of the Rural Improvement Club?
   No   Yes
   a) Have you ever held office?
      No   Yes
      a) What office?
      b) How long?

62. Have you ever been a member of the PTA?
   No   Yes
   a) Have you ever held office?
      No   Yes
      a) What office?
      b) How long?
   b) Are you a member now?
      No   Yes

63. Have you ever been a member of the Greenville Club?
   No   Yes
   a) Have you ever held office?
      No   Yes
      a) What office?
      b) How long?
   b) Are you a member now?
      No   Yes
64. Have you ever been a member of the 4-H Club?
   No_____ Yes____
   a) Have you ever held office?
      No_____ Yes____
      a) What office?_________________________
      b) How long?_________________________
   b) Are you a member now?
      No_____ Yes____

65. What do women in the barrio think about trying to limit the number of children they have?

66. What do women here think the ideal number of children is?

67. What do women in the barrio think about men who leave their wife and children at home while they go out with the boys?

68. What do women here think should be done about children who do not show proper respect for their elders?

69. What do women here think about the last election?

70. What do women in the barrio think about mothers who prefer to go to a doctor to have their baby rather than calling in a hilot?

71. What do women here think about women who use modern techniques to prevent pregnancy?

72. What do women in the barrio think about the education that their children are getting?

73. Do you, your husband or your parents own any land?
   No_____ Yes____
   a) Where?
   b) What type of land?_________________________
      Coconut__ Rice__ Other____
      a) How many trees?_________________________
      a) How many cavans are planted?__________

74. Do you, your husband or your parents rent any land?
   No_____ Yes____
   a) Whose land is it?_________________________
   b) Where does he live?_________________________
c) What type of land?  
Rice_____ Other_____  

a) How many cavans do you plant?  

75. Do you, your husband or your parents use any land which is neither owned nor rented?

No_____ Yes_____  
a) What type of land?  
Residential_____ Rice_____ Other____

a) How many cavans are planted?  

77. Do you own the land your house is built on?

No_____ Yes_____  
a) How much is the rent?  
Yes_____ a) How did you obtain it?  

78. If you were a Rural Health Team nurse, what would you do to improve health conditions in the barrio?

79. If you were the director of a Puericulture Center, what program would you initiate to eliminate childhood diseases?

80. If you were the wife of the Province Governor, what would you do to raise money for hospitals in your province?

81. If you were the wife of the President of the Philippines, what would you do to improve the condition of women in the country?

Please indicate whether you agree or disagree with the following statements.

82. There is little chance to get ahead in life unless you can count on the help of an influential person.

Agree_____ Disagree_____  

83. People's ideas change so often that you can never believe what they are saying.

Agree_____ Disagree_____
84. A dutiful child tries to find a job where he can be near his parents though he might have to lose a good job somewhere else.

Agree_____ Disagree_____  

85. The government's most important task after running the country is making educational facilities available to all.

Agree_____ Disagree_____  

86. To make plans for the future is a sad endeavor because these plans never work out anyway.

Agree_____ Disagree_____  

87. I feel that no one ever agrees with what I am saying.

Agree_____ Disagree_____
APPENDIX B

FAMILY PLANNING FOLLOWUP INTERVIEW

1. How many children do you have:
   a) living____________________
   b) dead____________________
   c) adopted:__________________
   d) miscarriages_______________
   e) step-children_______________

2. (IF LESS THAN 3)

   Did you plan to have ______ children, or is it the will of God?
   
   Will of God _____ Planned____

   Do you plan to have any more?
   
   No_____ Yes____
   a) Why?________________________

   (IF THREE OR MORE)

   Did you plan to have ______ children?
   
   No_____ Yes____
   Why?________________________

3. Before you had your first child, how many children did you want?________________________

4. (FOR RESPONDENTS PAST CHILD-BEARING AGE)

   If you could start all over again, how many children would you like to have?________________________

   (FOR RESPONDENTS OF CHILD-BEARING AGE)

   How many more children would you like?________________________

5. How many years have you been married (TOTAL NUMBER OF YEARS TO ALL HUSBANDS)?________________________
6. Have you ever discussed with your husband the number of children you would like?

No ________ Yes ________

a) Why? ________ a) When? (e.g., when 1st married, after the birth of last child, etc.)

b) Whose idea was it to discuss this, yours or your husband's?
   Respondent's _____ Husband's _____

7. Have you ever discussed family planning or ways of preventing pregnancy with your husband?

No ________ Yes ________


b) Whose idea was it to discuss this, yours or your husband's?
   Respondent's _____ Husband's _____

8. What is the opinion of your husband concerning family planning? ________________________________

9. Have you both decided to try or to use family planning yourselves?

No ________ Yes ________

a) Why? ________ a) What method will you try? ________________________________

10. Have you visited the family planning clinic at the Puericulture Center in Boac?

No ________ Yes ________

a) Why? ________

11. Do you believe you have the ability to prevent yourself from becoming pregnant?

No ________ Yes ________


b) Is this method really possible? ________________________________

12. Would you be embarrassed if other people in the barrio saw you go or knew you went to the family planning clinic?

No ________ Yes ________

Why? ________
13. What is your opinion about other families practicing family planning? ________________

14. Do you approve or disapprove of family planning for yourself?
   Approve_____ Disapprove_____ a) Why?______________________________

15. With whom in this barrio have you discussed family planning or ways of preventing pregnancy?
   Name          Relationship  Who initiated?
   ____________________________
   ____________________________

16. Did you attend the family planning lecture in August?
   No_____ Yes_____ a) Why?________________________

17. Since the family planning lecture in August, have you discussed family planning with anyone, here or elsewhere?
   No____ Relationship  Where discussed  Who initiated?
   Yes____
   Name
   ____________________________
   ____________________________

18. With whom did you first discuss family planning after the lecture?
   Husband?_____ Other?____
   Name          Relationship  Who initiated?
   ____________________________
   ____________________________
a) What specifically did you discuss?________________________
19. Do you want more information about family planning?
   
   No______  Yes______
   
   a) Why?______  a) What kind of information?
   
   b) Do you have the opportunity
to get more information?
   No______  Yes______
   a) Why?______

20. To whom would you go to ask more information about
family planning if you wanted it?____________________

21. Which woman in Buliasnin do you consider to be best informed about family planning?____________________

22. Specifically, has anyone recently asked you about
family planning?_________________________________

23. In general, would you say you are more or less likely
to be asked about family planning, birth control or
other similar matters?
   Less______  More______
   a) Why?______________________________________

24. How much do people in the barrio talk about family planning?_________________________________

25. Do you know of any methods used by married couples
for preventing pregnancy?

   No______

   Yes______

   a) Which ones?  Do you know how to use?  Have you tried?
   (explain briefly)
      __________  No______  Yes______  No______  Yes______
      __________  No______  Yes______  No______  Yes______


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