# THE STRUCTURE AND FUNCTIONS OF INTERNAL COMMUNICATION IN THREE RELIGIOUS COMMUNITIES

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ABSTRACT

THE STRUCTURE AND FUNCTIONS OF INTERNAL
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The present thesis is a comparative analysis of the structure and functions of the internal communication of three communities of women religious.

The goals were to investigate the ways the communication network of organizations which had undergone relatively great change differed from the communication network of an organization which had undergone relatively little change, and to compare the relative number of communication contacts devoted to five selected functions.

The present study was made under the open systems approach. This adoption meant that the organizations were viewed as dynamic, and that all parts of the organization: government, roles and communication patterns, were ever interacting with external forces and each other. The communication network was viewed as a system to be mapped without reference to formal or informal channels or expectancies.

The research design used was a field survey. The criterion variable, innovativeness, was operationalized as the amount of change in government, personnel policy, and dress regulations. Data were gathered by a questionnaire, a Personal Contact Checklist, and several days of observation of each organization.

Of the nine hypotheses tested, two were supported, four partly supported, two not supported, and one not testable. Integration of the network and innovativeness of the organization, as these were operationalized, had a negative relationship. After re-examining this relationship, it seems to be a result of the inclusion within the innovating process of new apostolates which required members to set up separate residences. The communimatrices indicated a distinct difference between the least and the most innovative organization: the least failed to separate into segments, whereas the other two broke into such groups.

The biggest differences in the rankings of functions were in "to innovate" and "to instruct." The least innovative ranked "to innovate" low; the other two organizations ranked it first. The least innovative ranked "to instruct" high; the other two ranked it low.

Other findings were: a larger pecentage of polymorphic opinion leaders (in more than one area) were found in the least innovative organization; satisfaction was higher in the most innovative organization, although the variance in degrees of satisfaction was greater in the least innovative organization; there was a higher uncertainty level in the most innovative organization, but the least uncertainty was found in the middle organization. In reporting overt conflict, the organizations seemed to indicate that this variable rises as the organization moves through some adaptations, but then begins to lessen. A curvilinear relationship was found also between innovativeness and written communication.

Theoretically, the several findings of curvilinear relationships among variables tend to suggest that the linear relationships between communication and other variables treated in this present thesis need re-study.

# THE STRUCTURE AND FUNCTIONS OF INTERNAL COMMUNICATION IN THREE RELIGIOUS COMMUNITIES

By

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Be Glory to the Only God

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CHAPTER I

INTRODUCTION AND THEORETICAL BACKGROUND

The present thesis is a comparative study of three organizations which presently are involved in the complex task of rediscovering their goals and redefining the means by which these goals can be attained.

The organizations are involved in this task because they are substructures or subsystems of a larger organization, the Roman Catholic Church. This Church, since the meeting of the hierarchy, Vatican Council II (1962-1965), is undergoing self-study and renewal affecting every facet of its organization.

The three subsystems of the Roman Catholic Church which are the subjects of the present thesis are communities of women religious in the United States.

Recently communities of religious have been objects of social inquiries, many such studies having been undertaken by members of these religious communities. Perhaps the broadest study to date was the National Sister Survey in 1967 (<u>Preliminary</u>) which reached 139,000 of the

181,421 women religious in the United States at that time. Sponsored by the Confraternity of Major Superiors of Women Religious, this sociological study was able to reach nearly every religious community of women in the United States which was engaged in an active apostolate.*

Most studies of communities of religious have concentrated on only <u>one</u> organization; thus this research has the same deficiency common generally to studies of formal or complex organizations. For example, in 1968 a sociological study of the Brothers of the Christian Schools was made (Ammentorp, 1968). Another study looked at cohesion and the type of leadership experienced by groups within one religious congregation (Lafferty, 1970). The results of this study showed evidence that groups with the highest score on the Likert cohesion scale were characterized by a greater percentage of members participating in group decision-making.

When one seeks <u>communication</u> research in religious congregations, one finds it subsumed generally into a larger study (i.e., <u>Preliminary</u>, 1967; Coons, 1970; Ammentorp, 1968). Such a study often asked for the members' perceptions of: communication between various age groups within the congregation, or external communication with students, parents of students, fellow workers in the school or hospital, etc., or channels of

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*As opposed to the "contemplative" orders of nuns.

communication between the members of the congregation and the central government of that congregation.

## Objectives

An organization may be analyzed on at least three different levels: (1) the systems level, that is the organization as a whole or as one unit or subject; (2) the subsystems level, that is the various groups which make up the organization; (3) the intrapersonal level, that is one which deals with the attitudes, aptitudes, roles, etc., of the individuals who are members of the organization.

The present thesis is a comparative analysis of the structure and functions of the internal communication systems of three communities of women religious. Therefore, throughout most of the comparisons, the organizations are viewed at the systems level of analysis, that is as a total organization. Only when the subsystems or small groups within each of the three organizations shed light on the total organization is the subsystems level employed in the present thesis. The intrapersonal level of analysis is used even less frequently, most noticeably in looking at the age, occupation, and adoption rate for a specific innovation within each of the three organizations.

The goals specifically were: first, to investigate the difference between the structure of the communication network of organizations which had undergone relatively greater change and the structure of the communication network of an organization which had undergone relatively little change. Secondly, to compare the relative number of communication contacts within more innovative organizations and the less innovative devoted to five selected functions. The five selected functions were: to inform, to instruct, to influence, to integrate, and to innovate.

How is the communication network structured in organizations which have undergone rapid change? Which have resisted change? When the two types of organizations (innovative and non-innovative) are compared, what differences in communication structure and functions are found? What functions does communication perform within these organizations? What amount of communication contact takes place among women religious? What is the level of satisfaction? The amount of conflict expressed? These are a few of the many important questions which one might raise in order to explore the processes of internal communication and change within religious communities.

In the following pages a few key terms will be defined; next, some of the literature which contributed to the various theories of complex organizations will be reviewed briefly; and then the hypotheses and the rationale of these hypotheses will be presented.

## Definitions

Before the hypotheses and findings of the present study are discussed, several concepts will be clarified as these are used in the present thesis.

An organization is ". . . a social system containing a set of two or more interrelated groups having a common status and control hierarchy and collective identity, devoted primarily to attainment of specific goals by a program of activity" (Indik, 1968a, p. 5).

Peter M. Blau and W. Richard Scott distinguished between a "social organization" which emerges when men live together, and "formal organization" which is deliberately established for a certain purpose. The present thesis is dealing with the latter meaning--with a deliberately established, coordinated number of groups who are united by a common goal and collective identity.

"In turn, a group is a social system containing a set of two or more individuals who have some systematic interaction relationship to each other and who have some common basis for their association with each other" (Indik, 1968a, p. 5).

Thus an organization is composed of a number of groups.

System is used interchangeably with organization in the present study and indicates a special kind of system, that is a social system. Talcott Parsons (1951, pp. 5-6) has the most highly developed explanation of social system to date and explained this term as:

> Reduced to simplest possible terms, then, a social system consists in a plurality of individual actors interacting with each other in a situation which has at least a physical or environmental aspect, actors who are motivated in terms of a tendency to the "optimization of gratification" and whose relation to their situations, including each other, is defined and mediated in terms of a system of culturally structured and shared symbols.

Communication "is a process involving the transfer of matter-energy that carries symbolic information" (Berlo, 1969, p. 3). Communication has been considered, or at least mentioned, in nearly all theories of organization from Chester Barnard's (1938) statements about the process, through the proponents of the cybernetic theory of organizations, such as Mervyn Cadwallader. Cadwallader notes: "From the point of view of cybernetics, any large scale formal social organization is a communication network" (Cadwallader, 1968, p. 438).

The two major concepts dealt with in the present thesis are internal communication structure and the functions of communication internal to the system.

> The structure of anything consists of the relatively stable interrelationships among its parts; moreover, the term, "part" itself implies a certain degree of stability. Since a social-system is composed of interrelated acts of people, its structure must be sought in some degree of regularity or recurrence in these acts [italics added] (H. M. Johnson, 1960, p. 48).

The present thesis discusses structure as pertaining to the communication among the members of the organization (internal communication); a synonym is communication network. The communication network "describes the way in which information is transferred between elements (individuals and sub-groups)" (Rubenstein, 1953, p. 78). The communication structure describes not only the patterns of communication contacts among members in the social system, but also the pattern of communication contacts that occur between sub-groups of members. However the communication structure is basically derived from the most fundamental interpersonal communication relationships--those which exist at the dyadic level.

Rather than relationships illustrated by an organization chart, those of hierarchy or management, structure in the present context refers to patterns of interaction and communication. However this is not to deny the close relationship between the two uses of "structure." As Scott (1964, p. 502) said: "Investigators have long noted the close-relation between the structuring of communication and the power or authority structure."

Function is, as adopted from the biological sciences, a vital organ or organic process which contributes to the maintenance of the organism or system. Or according to Robert K. Merton (1957, p. 51) and in the language of social systems: "Functions are those observed consequences which make for the adaptation or adjustment of a given system . . ."

Functions are, therefore, observable, objective consequences, not subjective dispositions such as aims, motives, or purposes of individuals within the organization. The types of functions studied in the present thesis are discussed later in the present chapter under "Hypotheses and Their Rationale."

## Review of Pertinent Literature

It is appropriate at this point to consider the several viewpoints which have affected growth toward a theory of the complex organization.

"We are born in organizations, educated by organizations, and most of us spend much of our lives working for organizations." Thus one sociologist (Etzioni, 1964; p. 1) explained a phenomena which is characteristic of contemporary society. Since organizations are so visible, the plethora of books, journal articles, and popular appeal publications is not surprising.

As there are many types and sizes of organizations, also there are a variety of ways of looking at organizations. Victor A. Thompson (1969, p. 61) claimed that:

> What is most obviously lacking in present day organization theory is a unifying model of this particular universe--a model to define the important problems, to provide methods and standards for their solution, and to illustrate good scientific practice. Without such a model the field is individualistic, chaotic, and nonadditive.

What is available in the literature is a multiplicity of points of view from which organizational phenomena have been examined. Several authors have attempted syntheses of these viewpoints or of several viewpoints, depending upon their objectives. Nicos P. Mouzelis' Ph.D. thesis was such a synthesis (see also Carzo and Yanouzas, 1967; March and Simon, 1958; and Katz and Kahn, 1966). In general the various syntheses seem to agree that three broad approaches to the study of complex organization have been influential in developments toward a theory of complex organizations. These three are: classical, scientific management, and the human relations school (see Figure 1).

## Classical School

*Focus*.--Marx, Weber, and Michels were the three main representatives of the classical school. They, from a very wide perspective, tried to assess the impact of large-scale bureaucracy on the power structure of society. Their writings, especially Max Weber's, "have become the basis of subsequent theories of bureaucracy" (Mouzelis, 1968, p. 2). Marx used the concept of bureaucracy in the limited context of state administration. Therefore his ideas on bureaucracy can be understood only in the general framework of his theory of class conflict, the crisis of capitalism and the advent of communism.

Michel's famous "iron law of oligarchy" stated that modern, large scale organizations, by their very

Theories of Organization*

| Classical | Scientific Management |
|---|---|
| (continuum) | |
| emphasis on: impact of organization on political structure of society | emphasis on: practical problems of efficiency |
| unit of analysis: large-scale organization | unit of analysis: individual |
| reps: Marx, Weber, Michels | reps: Taylor, Fayal |
| Merton emphasis on dysfunctions | introduction of behavioral sciences |
| **Post-Weberian** | **Human Relations School** |
| emphasis on organizational level | emphasis on: individual as member of a social group |
| reps: Gouldner, Selznick, Blau, Lipset, Trow, Coleman | reps: Mayo, Warner, Chapple, Arensberg, Whyte, Homans, Sayles |

"Organization" Theory

(certain convergence of bureaucratic and managerial lines)
reps: Simon, March, Cyert

Recent Theoretical Trends

broadening of scope
focus on structure of organization as a whole
problems of organizational power and conflict

Social Systems Approach

rep: Parsons

Figure 1. Main theories of organizations.

*Obtained by summarizing Mouzelis (1968).

structure, were necessarily oligarchic. He concluded, therefore, that big organizations tended to develop a bureaucratic structure which ruled out the possibility of internal democracy.

The theme underlying the whole of Weber's work was that the historic movement of complex organizations was toward increasing rationalization. He spoke of a tension between charisma, representing the creative, spontaneous forces of society, and the routine.

R. Carzo and J. N. Yanouzas (1967, p. 40) summarized the classical or traditional school in saying:

> The common elements of traditional theory are specialization and departmentalization, unity of command, span of supervision and allocation of authority. For maximum efficiency traditional theory specifies that work be broken down into specialized tasks.

<u>Communication in the classical school</u>.--Writers in the classical school seldom dealt with communication explicitly. An exception was Chester Barnard who offered a set of propositions to "emphasize the primacy of the 'systems of communication'" in stressing its role as the repository for the "lines of authority." Barnard's (1938, pp. 175-81) propositions exhibited "controlling factors in the character of the communication system of objective authority":

> . . . channels of communication should be definitely known.
> . . . objective authority requires a definite formal channel of communication to every member of an organization.

> . . . the line of communication must be direct or short as possible.
> . . . the complete line of communication should usually be used.
> . . . every communication must be authenticated.

Therefore in the classical approach the communication network structure was seen as vertical, from superior to subordinate. The function of communication was almost entirely "to get the job done most efficiently": the <u>to instruct</u> function in the present thesis. Since the purpose of the legal bureaucracy model was to cover every possible future event, <u>innovation</u> was not considered a communication function, especially upward communication originating with a subordinate. The personal needs of the members of the organization were not considered a part of the model; therefore the <u>integrative</u> and <u>influence</u> functions did not have a role in this model.

<u>Criticism of the classical school</u>.--After his comprehensive analysis of the classical school, Mouzelis (1968, p. 33) stated:

> The classical writings on bureaucracy constitute a coherent body of thought with a well-defined pattern of development, a pattern which reflects the changing character of the problems posed by the increasing spread of large-scale organisations in modern societies
> . . . . . . . . . . . . . . . . . . . . . . . . . . . .
> . . . it is clear that most of the literature on bureaucracy examines mainly the managerial subsystems of an organisation. It is also clear that such distinctions must be kept in mind in order to broaden the scope of organisational studies and in order to promote comparative research on similarities and systematic differences between subsystems of various organisational types (p. 43).

He continued by explaining that Weber's construct was meant to be an analytical tool contributing directly to the explanation and interpretation of a social phenomena. But in spite of such claims, "Weber does not consider the ideal type as a theoretical model, that is as a set of interconnected hypotheses which can be validated or rejected by empirical research" (p. 45).

Chadwick Haberstroh (1965, p. 1201) developed the same reasoning when he stated that:

> The traditional views of organizations reduce virtually all problems of interpersonal relations to questions of authority. In order to deal with these problems, behavioral scientists since Max Weber have tried to resolve the notion of authority into simpler concepts that would be adequate to explain the complexity of organized social behavior (e.g., Bennis, 1959).

Summary.--The classical or traditional school created an ideal type of the complex organization, usually called "bureaucracy," which rested on formality. The organization had a definite purpose, clearly defined jobs, written rules and an established chain of command. "Theoretically, the traditional model leaves nothing undefined, imprecise, or ambiguous" (Carzo and Yanouzas, 1967, p. 107). The traditional model is not a micro-analysis of the internal structure of an organization, nor does it "seem adequate for empirical and detailed investigation of the concrete organisation. It . . . cannot be a substitute for theory and model building in the social sciences" (Mouzelis, 1968, p. 48). Its contribution lies rather in what W. Delaney (1968, p. 458) called its influence upon later sociologists: "Max Weber's theory of bureaucratic structure and efficiency has been at once the chief source of inspiration for organizational research by contemporary American sociologists and their primary object of criticism.

## Scientific Management

*Focus*.--Frederick W. Taylor headed the second school of organizational thought. Taylor was not so much interested in the organizational problems of society, as was the classical school, but rather he concentrated on the practical problem of efficiency. H. A. Simon (1957) has explained that because Taylor and most of his followers were engineers, they approached the organization from a mechanistic frame of reference. Systematically they analyzed the situation, using the individual worker as the main unit of analysis.

*Communication in scientific management*.--As in the classical school, Taylorism prescribed that the flow of information be limited to the chain of command or authority. This school accepted the status quo unreservedly; therefore innovative communication was considered a dysfunction, rather than a function.

Criticism of scientific management.--The scientific management school is criticized today for its too-narrow or partial approach. Developments in the knowledge of formal organizations point to this method as trying to solve problems which required a more inclusive conceptual framework than the isolated individual worker as a unit of analysis.

> Finally, the way by which Taylorism tries to cope with the problem of morale and productivity (i.e., exclusively by economic reward and punishment), illustrated well the lack of sociological insight in its approach. . . . It conceived the worker as an isolated individual, outside his social context, thus neglecting the most relevant variables of the problem (informal organisation, conflict of interests, etc.) (Mouzelis, 1968, p. 86).

## Human Relations School

Focus.--The label, human relations, has referred to several approaches over the last few decades. The human relations school can be thought of as " . . . a highly diversified and changing movement of thought, covering under its umbrella writers with very different views on organisation" (Mouzelis, 1968, p. 98). Most authorities agree that this school began with the Hawthorne studies. Recently, the term has been used in reference to some of the studies which tried to examine empirically human behavior in the organization. Most of these studies had industrial settings.

Since the 1940's several common characteristics have developed in the human relations school. As the classical school concentrated on the structure of the organization, the human relations school focused on the impact of this structure of the organization on the individual. This approach emphasized horizontal communication and decentralized patterns of authority or management. It focused on the codes of behavior and customs and on the mores and shared beliefs of the members of the organization. A leader in the human relations school, Elton Mayo stated: "The desire to stand well with one's fellows, the so-called human instinct of association, easily outweighs the merely individual interest and logical reasoning upon which so many spurious principles of management are based (as quoted by Carzo and Yanouzas, 1967, p. 107).

<u>Communication in the human relations school</u>.--The decentralized government called for by the human relations school required a more complicated communication network. The goal was a communication network structure that would make possible optimum participation by all members. Thus there were fewer restrictions on communications than in the classical model; the differences between superiors and subordinates were de-emphasized; but the relationships among subordinates were emphasized. The network was conceptualized as up, down, and lateral. Communication, while still including the production function, dealt mostly with the <u>integration</u> and <u>persuasion</u> functions,

especially through the small groups within the total organization. The need for innovative communication to originate at all levels of the organization was recognized.

Criticism of the human relations school. The human relations school is criticized most often for its neglect of the formal and over-emphasis of the informal. Mouzelis (1968, p. 119) stated the contribution of this school:

> They not only revolutionised the classical theory of management by breaking through its formalistic approach and opening up the whole problem area of human behaviour in the firm; they also filled a great gap in the study of bureaucracy, in being the first to show by what precise mechanisms social phenomena on the societal and organisational level are linked with concrete behaviour on the group and the individual level.

## Two Contemporary Schools

Two schools which have built upon but attempted to improve the earlier theories are the post-Weberian and the "Organization" theory schools.

The post-Weberian school.--This school, while still examining the problems of bureaucracy made known by Weber, has shifted the analysis to the organizational level. In doing so, the scientists have concentrated on empirical studies, the case study being the one most often used. Representatives of this approach include Gouldner, Selznick, Blau, Lipset, Trow, and Coleman. No longer is bureaucracy seen as a static and rigid structure, "but as a going concern, as a system of continual tension and change between the formal and informal" (Mouzelis, 1968, p. 60).

<u>The "Organization" theory school</u>.--This approach came about as a reaction to the shortcomings of the two extreme views: classical with its emphasis on the influence of bureaucracy on the whole of society; and management theory with its emphasis on the influence of bureaucracy on the individual as an isolated unit of analysis. March and Simon (1958) attempted to integrate the earlier writings in their publication. However Mouzelis (1969, p. 137) pointed out that:

> But this integration stops on the level of the individual decision-maker. When one moves from the individual level to the consideration of the organisation as a whole, the integrative character of the theory disappears.

## The Open Systems Approach

<u>Focus</u>.--The basic tenet of the systems approach is the interdependence of the elements, or in the case of organization, the interdependence of the roles or subsystems of the organization. Thus this approach viewed the organization as a dynamic, ever-changing system composed of recurring processes or patterned sequences of events. This dynamic view distinguished the systems approach from the other schools described above, which viewed an organization as a static entity or "closed

system," where variables in the organization were viewed individually, or one or two at a time, without consideration of the influence of external forces or the environment upon the organization.

The most developed systems approach is that of Parsons (1951). He, more than anyone else, has provided the conceptual tools by delineating the various subsystems in a society and their functions. He explained the systems approach as a "relational scheme."

> The scheme, that is, relative to the units of action and interaction, is a relational scheme. It analyzes structure and processes of the systems built up by the relations of such units to their situation, including other units. It is not as much concerned with the internal structure of the units except so far as this directly bears on the relational system (p. 4).

The current popularity of the systems approach to formal organizations is an attempt at a broader definition of the complex organization than was provided by the older methods.

> The structure of an organization is usually thought of in terms of an organization chart and a set of position descriptions. These are formally imposed and are, therefore, recognized as design features. A scientific discussion of organizations, however, requires a broader definition, namely, the entire complex of institutions (habits of thought) that governs the behavior of the organization conceived of as a collectivity of human beings (Haberstroh, 1965, p. 1201).

Daniel Katz and Robert L. Kahn (1966, p. 452), in adopting the systems approach, admitted however, that "open-system theory is not a theory at all." The bases for their statement are that a theory deals with cause and effect, specific hypotheses and tests of hypotheses.

However open-systems theory does none of these things. These two authors, therefore, prefer to think of "open-systems" as:

> . . . an approach and a conceptual language for understanding and describing many kinds and levels of phenomena. It is used to describe and explain the behavior of living organisms and combinations of organisms, but it is applicable to any dynamic, recurring process, any patterned sequence of events (p. 452).

Mouzelis (1968, p. 131) compared the human relations school and the open-systems approach and stated that the human relations school hardly allowed for any change in the system; whereas the open-systems approach considered the organization as a "learning system which has the capacity to rearrange its internal structure and elicit new self-controlled behaviour in its attempt to adapt to a changing environment."

Communication in the open-systems approach.--In addition to the advantage gained through the open-systems' explicit treatment of change, the second advantage of the approach is its emphasis on information processing and decision centers, two important concepts in communication research.

F. Kenneth Berrien (1968, p. 20), writing in the systems tradition, treated communication, first in terms of the entire organization and then specifically in relation to the subsystems of the organization.

"In a social system, the members of smaller subunits communicate with and influence each other to a greater extent than the units communicate with and influence their superiors."

The communication network in this approach, therefore, was seen as a complex association of subsystems. Because of the need for a degree of stability within the suprasystem or formal organization, the function of the government or management was to provide or make possible functional connectedness of the parts or subsystems (<u>integration function</u> of the present thesis). However, this connectedness had to be carefully balanced by enough separation if the desired degree of equilibrium or stability was to be reached. Under the systems approach, communication could be downward, upward, and laterally, whatever best fit the specific need. All five functions of communication were operative, the amounts of each determined by the environment in which the organization was placed. Horizontal communication ordinarily furnished the self-image or <u>integrative</u> function for the individual and increased or decreased the efficiency of the <u>instructive</u> and <u>persuasive</u> communications. <u>Innovative</u> communication originated at any level and was directed to the person(s) who could make the change; thus it was multi-directional.

<u>Criticism of open-systems approach</u>.--The systems approach has been criticized for its lack of attention to

the power-structure in an organization. Mouzelis (1968, p. 137) pointed out that when one considered the whole organization as a network of decision centers or as an information processing system, "It is very difficult to account for its culture, for its status system, and for all those organisational features traditionally treated under the informal organisation label."

But to the credit of the systems approach: "It is dynamic" in that it is concerned with the behavior of objects as this behavior changes over time. "It is pragmatic in that it is concerned with how a task or function can be or is performed" (Haberstroh, 1965, p. 1172).

## Summary

This section has reviewed briefly six approaches to the study of complex organizations: the three traditional ones: classical, scientific management and the human relations school; two later or contemporary schools: the post-Weberian and the "Organization" theory; and finally the open-systems approach. Included in the discussion of each approach to complex organizations was its treatment of communication in organizations. The first five views of an organization, or all but the systems approach, were criticized because they viewed the organization as a static entity. On the contrary, systems approach considered an organization as a dynamic or ever-changing entity.

## Theory and the Present Thesis

Before Vatican Council II (see page 1 and Chapter II), which furnished the immediate catalysis to the self-study currently in progress in religious communities, all organizations in the present study reflected the Weberian traditional organization model. For example, the government was centralized in one person, the Mother General. In addition, the "present social order is viewed as sacred, eternal and inviolable" (Weber as quoted by Blau and Scott, 1962, p. 30). A paragraph from one of the Constitutions written in the 1930's demonstrated this viewpoint:

> The Mother Superior, in order to govern [the Monastery] well and religiously, will always be extremely careful that the Rule, the Constitutions and the Regulations be exactly observed by herself and the other nuns, particularly that no relaxation, in that which concerns the Institute creeps in, and that delinquents be promptly and discreetly warned and corrected.

The traditional religious community emphasized vertical communication. The members were to relate any problems and difficulties to the Mother Superior and were warned not to "communicate to other members the ill-feeling they had toward the Superior or any other nuns." This regulation echoed Barnard's (1938) propositions in stressing the role of the communication system as the repository for the "lines of authority."

As the religious communities implemented their self-studies, they often worked toward a decentralized government. The influence of the human relations school was felt in the concern for the individual member, and in the emphasis on horizontal communication: house dialogues, a day or weekend meeting to discuss matters of government, apostolate, or regulations of the organization. However members of the religious community spoke of the new emphasis on horizontal communication as growing from the "new theology." To quote one author (Neal, 1969, p. 8):

> The themes of post-Vatican theology are rich in ideas about communication with others, about the transiency of the now, about the limitation of our present knowledge but the potential of future knowledge and about the need of social reform. The new theology invites a great openness to listening to others, learning from them, discovering the creative dimension in their response to us . . .

After reviewing the various approaches to the study of complex organizations, the investigator chose to view the religious community from the systems model. There were two main reasons for this choice: one, the systems approach dealt directly with <u>adaptation</u> of the organization. As Cadwallader (1968, p. 438) said

> . . . Large-scale formal organizations are treated as open problem-solving systems, studied with a variety of theoretical problem-solving models, i.e., as learning and innovating systems.

As indicated in the introduction and explained in Chapter II, the three organizations under study were involved in rediscovering their goals and redefining the the means by which these goals could be attained.

Basically this self-study resulted in the organizations' moving on a continuum from a closed to an open or more open system. If one is studying an on-going process within an organization, in the case of the present thesis, communication and adaptation, then one must adopt a model which takes the dynamic element into account. Rather than an organization as a static entity, the view of the first five approaches above, the organization is conceived of as an emerging system:

> The emergent system displays structure and processes which are different from, but related to, the structure and processes of the original subsystems. Interaction among forces of the subsystems and environment goes on continually. As a result, the structure and the way that processes are performed are in a continual state of flux (Carzo and Yanouzas, 1967, p. 247).

The second reason was that the systems approach gave a central place to communication. It is through communication or exchange of information among members and between the organization and its external environment that the adaptation required for survival comes about. As Parsons (1964, p. 33) said: "It may be presumed that disruption of the communication system of a society [social system] is ultimately just as dangerous as disruption of its system of order. . . ."

Therefore, after viewing the three organizations under study from the systems approach, the present thesis concentrated on the structure and functions of the internal communication network. Adopting this approach influenced the choice of variables by which to study the organizations and the types of relationships expressed in the hypotheses.

The hypotheses express a relationship between or among variables rather than a causality; they express an interrelation among subsystems or components.

The total communication system becomes the highest-level analytical unit. This system is composed of various subsystems such as chains, cliques, and dyads. To view the communication system from an additional perspective, the present thesis looked at the opinion leaders, those persons who were sought after most often for their viewpoint on a specified topic.

The systems orientation required an interaction, rather than a linear or unidirectional approach to the study of the communication system. As Schwartz (1970) explained:

> The conceptual shift (from machine theory to more inclusive theory of organization communication) calls for approaching an organizational study population without initial regard for the formally designed or prescribed network. Instead, the membership of the organization is envisioned as an identifiable social system in which exists a relatively stable network of interpersonal linkages through which flows information affecting the goal-oriented productivity and maintenance of the system and its sub-systems. . . .

The attempt, therefore, was made in the present study to obtain a record of <u>all</u> message transactions between <u>all</u> members of the organizations, regardless of content-type, in order to describe all the dyadic linkages making up the fabric of the organization's total communication structure. The word, "attempt," was used in the previous statement because practical limitations on data-collections were expected. The goal became that of producing a best-approximation of the extant communication structures of the three organizations.

Finally, the functions of communication in each organization were ranked on the relative number of communication contacts which the particular system devoted to the specified function. The ranking was an attempt to express the interaction among the possible functions, i.e., the increase in the total number of contacts devoted to one function and the simultaneous decrease of the total number of contacts devoted to another function as environmental and/or organizational factors infringed upon the communication system and it upon the other factors.

In summary, while several approaches to formal organizations seemed to describe one or other of the religious communities in the present thesis (i.e., classical school or the human relations school), the open systems approach was the only one which seemed to allow a comparison among three organizations, each of which was at a different point on the centralized-decentralized government continuum. In addition the systems approach gave a prominent place to adaptation and communication. Therefore, the systems approach was adopted for the present thesis. This adoption called for an emphasis on the structure and functions of communication. Under structure, the requirement was to look at the complete, extant network; under functions, the interrelationships among the various functions and the influence of organizational and external forces upon the functions and structure of communication, and the effect, in turn, which functions and structure had on the organization.

## Hypotheses and Rationale

The present study focused on the variations in the internal communication network structure and functions present in three matched formal organizations. Each of the three organizations was at a different stage in moving from a more centralized, rigid governmental structure, to a more decentralized, less rigid governmental structure.

Blau (1960, p. 178) has stated that there are two basic types of social facts which refer to the attitudes of social collectives (in the present study, complex organizations). First, there are common values and norms; and second, there are "networks of social relations in which the social positions of individuals and subgroups become differentiated." These "networks of social relations" Eugene Jacobson and S. E. Seashore (1951, p. 29) called "the communication structure of the organization."

### Structure

The concept, structure, implies elements which remain unchanged over a sufficiently long period of time to be described, and which influence or constrain important aspects of the organization's total behavior (Haberstroh, 1965, p. 1171). Or one can consider structure as composed of patterns. Dorsey (1957, p. 311) stated that for purposes of generalization and prediction, the patterns of communication must be considered. " . . . Most communication . . . is exchanged between persons grouped in relatively stable collectivities."

Katz and Kahn (1966, p. 17) also developed the concept of structure or patterns of communication:

> All social systems, including organizations, consist of the patterned activities of a number of individuals. Moreover, these patterned activities are complementary or interdependent with respect to some common output or outcome; they are repeated, relatively enduring, and bounded in space and time. If the activity pattern occurs only once or at unpredictable intervals, we could not speak of an organization.

Yet, these same two authors cautioned that a human organization lacks structure in the anatomical sense as we use the word in biology, for example:

> The communication network of a social organization bears only a distant and figurative resemblance to physical structures, such as the circulatory and nervous systems, by which the subparts of a biological organism are integrated. . . . The constancies of the mutual influence among the subparts of a social system are fewer and less perfect than among the parts of a biological system (p. 31).
>
> . . . Yet it has structure; it is not a formless aggregate of interacting individuals engaged in creation of some random combination of events. . . . The fact that the organizational structure is created and maintained only as the members of the organization interact in an ordered way suggests a high degree of openness, a persistent and inherent vulnerability to forces in the organizational environment. It suggests

> also a continuing necessity to maintain the organizational structure against such forces or to adapt it to them (p. 454, italics added).

If the environment of the organization treated in the present study is examined, as Katz and Kahn suggested above, one finds strong forces toward innovation. As will be explained in Chapter II, the Roman Catholic Church of which the organizations under study are subsystems, is undergoing an all-encompassing self-study. In addition, the American society today, in which these organizations are also imbeded, is calling for change.

## Structure Hypotheses

As explained earlier in the present chapter under "Objectives," an organization may be examined on three levels of analysis. The principal analysis in the present study is at the organizational level (social systems). However a paucity of studies on communication structure and amount of innovation of the system exists in the literature. A second analytical problem is that most studies examined only one organization, while the present thesis investigated three similar entities. Consequently, the alternatives were to turn to studies at either of the other two levels of analysis, subsystems and intrapersonal, and to extrapolate the findings where these seemed to hold across levels, and to use closely related studies dealing with only one organization.

Reindl (1970, p. 106) discussed the general relationship between integration of the internal communication network and change in one organization over time.

> The degree of communication integration in an organization . . . is closely associated with the uninterrupted flow of information. For that reason, communication integration is also related to various concepts . . . such as change, effectiveness, and creativity.

Communication integration is defined as the degree to which all members of an organization relate to each other through the exchange of information with symbolic content. A simple index of this variable at the social systems level is the proportion of mutually chosen pairs to the total number of possible pairs (see Proctor and Loomis, 1951; Kerlinger, 1966). Reindl (1970, p. 107) stated the proposition: "The degree of internal integration of the [organization] communication network is positively related to the rate of change implementation in the organization."

Yet communication integration has received relatively little attention as a major variable. Exceptions who have shown an interest in communication integration are Wirth (1948), Deutsch (1953), and Shils (1962). However these three were concerned with the variable in society, a larger social system than is dealt with in the present study.

A better source for the present thesis is Lytton L. Guimaraes' (1970, p. 68) studies of the integration of the communication network of four rural social systems of Brazil. He stated that the degree of the organization's communication integration needed special attention.

> The notion that the diverse parts of a communication system normally cohere in some determinate fashion may prove useful in different contexts. It may help to explain, for instance, how members of a social system (of which that communication system is a part) accept, reject, or modify innovations which are diffused from other systems. Administrators and change agents may, for example, be guided by the concept in their effort toward introducing innovations into "less developed systems."

He continued: "The degree to which interpersonal contacts permeate a social system, or the extent of a system's *communication integration* is likely to bear some relation to its value and normative systems" (italics in original).

It is appropriate at this point to mention research findings from the diffusion of innovations literature. D. P. Yadav (1967, p. 11) stated that of the approximately 900 diffusion studies content-analyzed in 1967 in the Diffusion Documents Center at Michigan State University, slightly more than 4 per cent inquired into the relationship of interpersonal interaction with innovativeness. However most of these studies are at the intrapersonal level; they look at the innovativeness of individuals. The present thesis looks at innovativeness of an organization. The extrapolation seems justified, for as Calwallader (1968, p. 438) said:

> By common convention we are used to thinking in terms of individual human beings as inventing or innovating, but not of social groups. But it is valid to talk about innovations produced by a social organization taken as a whole, and this is not to deny the fact of individual innovation.

In general, the diffusion of innovation literature, both at the systems and at the intrapersonal levels of analysis, showed that the most integrated villages tended to be those with relatively highly modernizing features. The relatively less integrated villages, on the other hand, were more traditional in their way of life. Two specific examples at the systems level of analysis were A. V. Lakshmana Rao's (1966) study of two Indian villages and Yadav's (1967) comparison of a modern and a traditional village in India. Rao (1966, p. 58) found that in the developed village "contacts are spread over a wider area," whereas in the traditional village "communication is limited to specific groups." He continued (p. 58) in his report: "In the developed village people talk freely among themselves irrespective of socioeconomic differences, while in the traditional village there is a communication gap between the elite and the 'ordinary people.'"

Yadav concluded also that the modern village had a relatively more integrated information-seeking network than the traditional village.

Perhaps the best known innovation study done in the United States was James S. Coleman, Elihu Katz, and

Herbert Menzel's investigation (1966) of the diffusion of a new drug among physicians. Although again this study was at the intrapersonal level primarily, nevertheless the conclusion of the study: that doctors who were more integrated into their medical communities tended to adopt the drug relatively earlier than their colleagues, seemed to speak to the present study. More recently, on the systems level, Richard K. Allen (1970, p. 108) found that innovative schools had a higher degree of sociometric communication integration than non-innovative schools.

The concept, integration of the network, gives the quantity of "connectiveness" within the organization. Another dimension of the communication network structure is the "how" or patterns of this connectiveness. This view of communication structure was a major dimension in the Jacobson and Seashore study (1951, p. 29): "The communication structure is seen as existing in the patterns of actual contact among subgroups that are established by the inter-individual contacts."

The Jacobson and Seashore study, followed by Weiss (1956), established the methodology for deriving a number of measures which served to describe the network. These researchers called the "linking" points or coordinators, "liaisons."

This concept of liaison was similar to Walton's (1963, p. 46) "magnetic centers," or "centrals," that is, individuals who occupy positions which tend to draw messages to them. The converse persons were the "peripherals" or individuals farther removed from the communication magnetic center. Other studies (Weiss, 1956; Schwartz, 1968; MacDonald, 1970; and Amend, 1971) used the term <u>isolate</u>.

Beal and others (1967, p. 25) concluded that "a relatively small number of persons could account for a major proportion of the membership linkages in a community."

The "connectiveness" or <u>liaisonness</u> of a social system was analyzed by Schwartz (1968), MacDonald (1970), and Amend (1971) through the use of sociometric measures and analysis. The studies previous to Amend (1971, p. 73) considered <u>liaisonness</u> as a dichotomous variable. However Amend suggested that "liaisonness is a continuous variable," and that different individuals may possess "more" or "less" of the liaison characteristic.

The conclusions from this discussion resulted in hypotheses one and two:

H 1.0: The more innovative organization will have a more integrated communication network.

H 2.0: The more innovative organization will have greater liaisonness in its communication network.

## <u>Function Hypotheses</u>

The second major focus of the present study was on the functions of internal communication. Theorists and researchers in complex organizations repeatedly spoke of functions or effects of communication, often in relation to the objectives of the particular organization. For example, Johnson (1960, pp. 52-53) mentioned the four functional problems of an organization. He said these were developed first by Robert F. Bales and later discussed by Parsons, Bales and Shils (1953).

"Broadly speaking, every social system must solve four functional problems (1) pattern maintenance and tension management; (2) adaptation; (3) goal attainment; and (4) integration."

Although function was mentioned in a number of studies and often given prominence, yet there was no agreement on explication of the concept. Figure 2 lists functional categories as given by twelve authors. The list was developed by categorizing the functions of each author under a large division. The failure of many studies to present the operationalizations of the variables made this process difficult and subjective. Consequently, for example, one did not know if "job instructions" as used by Katz and Kahn meant the same or something different from "task" as used by Redding.

Without agreement at this point in time on the categorization of functions in complex organizations and the explication of this construct, Merton's (1957, p. 51) definition, quoted earlier in the present study, was chosen. "Functions are those observed consequences

| Author(s) | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Katz and Kahn** | **job instructions** | **organizational proceedings and practices job rationale organizational goal** | | **indoctrination of employees: social-emotional** | |
| **Redding** | **task** | maintenance | | **human** | |
| **Haberstroh** | **control (prevent dysfunction)** | | | | |
| **Berlo** | **production** | maintenance | | | **innovation** |
| **Thayer** | **instruct** | **inform** | influence | **integrate** | |
| **Barnard** | **effectiveness** | **efficiency** | | | |
| **Wickesberg** | **problem-solving instructions** | **information transmission** | **approval** | **scuttlebut** | |
| **Ackoff** | **inform** | **instruct** | **motivate** | | |
| **Parsons** | **production** | **maintenance** | | **management support** | **adaptation** |
| Johnson(H) | goal attainment | pattern maintenance and tension management | | integration | adaptation |
| Etzioni | instrumental information | | | expressive-values, norms | |
| | cognitive orientation | | | | |
| Maslow and Argyris | | | | self-actualization | |

Figure 2. Functional categories as given by twelve authors.

which make for the adaptation or adjustment of a given system . . ." If functions "make for the adaptation or adjustment of a given system," then the guideline, in the absence of an established, recognized theory of functions of communication in organizations, can only be to relate the functions of the internal communication to the objectives of the organization.

"A religious system has for its primary purpose the relating of man to the transcendent" (Neal, 1965). Religious communities usually do not produce material goods, or if they do so, this is not their primary function. (Their categorization as non-profit organizations by the government established that fact.) Because the objective of the organization is to support, encourage and sustain the members in order for them to carry out some type of service to others, this support of members is the "product." Yet this objective sounds very similar to the maintenance function in the organization literature. Therefore, the maintenance and production functions, as these have been used in earlier studies, become indistinguishable. These two major categories thus did <u>not</u> seem workable in the context of religious organizations.

In classifying organizations, Etzioni (1961) placed religious organizations under the "normative," those in which rules and standards are a major source of control over most of the lower participants whose orientation to the organization is characterized by high commitment. From this statement, one concludes that holding the loyalty of the members to the organization through persuasion would be a major function.

Measuring the composite functions, as given in Figure 1, against the objectives of the three communities of women religious, the decision was reached that the most heuristic divisions for the functions of internal communication in communities of women religious were five: to inform, to instruct, to influence, to integrate, and to innovate.

Carzo and Yanouzas (1967) discussed the changing of organizational objectives in response to the influence of the external environment and the influence of members of the organization for whom the objectives secure personal values. In the theoretical stance of the systems approach, a difference in the relative number of communication contacts devoted to each of the five functions of internal communication was predicted for the three organizations.

H 3.0: The functions of the internal communication of the organizations will vary with the organization's innovativeness.

H 3.1: The ranking of the relative number of communication contacts devoted primarily to each function in the most innovative organization on the adaptation continuum will be as follows:

to inform>to innovate>to influence>to integrate>to instruct

H 3.2: The ranking of the relative number of communication contacts devoted primarily to each function in the middle organization on the adaptation continuum will be as follows:

to inform>to influence>to innovate>to instruct>to integrate

H 3.3: The ranking of the relative number of communication contacts devoted primarily to each function in the least innovative organization on the adaptation continuum will be as follows:

to inform>to instruct>to integrate>to influence>to innovate

### Other Hypotheses

Diffusion research has developed the construct, *opinion leadership*. This construct is a relational one; that is the distinctiveness of leaders does not rest on their attributes as such, but on the relationship between their attributes and those of the rest of the group in which they hold membership. Merton (1957, p. 414) dealt with the types of opinion leadership by distinguishing monomorphic and polymorphic leaders. A monomorphic leader is sought for advice on one or a relatively few topics, whereas a polymorphic leader is sought for information and advice about a variety of topics. In more highly developed countries or societies there seems to be generally little overlapping in topics among opinion leaders. For example, L. Vaughn Blankenship (1964) reported that influentials were distributed with respect to their specialized areas in a highly industrialized community, whereas influentials in a less industrialized community were not so specialized.

Elihu Katz and Paul F. Lazarsfeld (1955, p. 334) studied opinion leadership in several areas, such as marketing and public affairs, and reported little support for polymorphic opinion leadership. However, Alan Marcus and Raymond Bauer (1964) tried to show that Katz and Lazarsfeld's finding of only small amounts of polymorphic opinion leadership was due to an incorrect probability formula used on the data concerning two area leaders. Marcus and Bauer (p. 631) reported "a small but consistent occurrence of leadership in any two areas that is greater than chance."

Because in the organizations under investigation in the present thesis the more innovative organization by definition has members who are employed in more diversified works and thereby considered "experts" in specific areas, the more innovative organization was expected to have more monomorphic opinion leadership. In contrast, the members of the less innovative organization were expected to rely more on status hierarchy (length of time in organization, authority); or the less innovative organization was expected to be more polymorphic in opinion leadership.

H 4.0: The more innovative organization will have more monomorphic opinion leaders.

The mechanism of decentralization is a widely used approach to changing organizations. In discussing this method, Leavitt (1965, p. 1147) stated that:

> Decentralization can also be thought of as a mechanism for opening organizations to further change by increasing local autonomy. Thus, within limits, decentralized units may further change themselves through the use of any one of the many alternatives available.

Accompanying the decentralization in government which is part of the innovating by the organizations under study, these institutions also removed the restrictions on the informal communication of the members. Reindl (1970, p. 90) included in his propositions relative to change: "The degree to which restrictions are imposed on the spontaneous informal communication channels of an organization, is negatively related to the rate of organizational change."

In other words, as the organization removed the restrictions on communication, the informal channels were activated and new ideas spread more rapidly through the organization. Although Reindl is speaking of <u>one</u> organization <u>over time</u>, his statement was transferred to the present thesis to become:

> H 5.0: The rate of adoption of any given innovation will be faster in the organization which has adopted more innovations.

Rensis Likert (1964, p. 16), in discussing and comparing the four systems of management at the systems level of analysis, postulated that as an organization moved from an authoritarian operation to a participative one, the satisfaction with membership in the organization, supervision, and one's own achievements increased among the members. The writer of the present thesis questioned this linear relationship. What about the members who feel their opinions are not heard, or if heard not accepted? Also intervening in the organizations under study was the idealization of unquestioning obedience to religious superiors by many, especially the senior members of the organization.

Finally, in discussing the concept, satisfaction of the members of the organizations, one must take into account that by definition the more innovative organization will be more heterophilous, that is the members will differ more in certain attributes, such as beliefs, values, education, social status, etc. This followed Rogers (in press) "Interpersonal diffusion is characterized by a greater degree of homophily in traditional than in modern systems."

The conclusion drawn from the above discussion:

H 6.0: There is a wider variance on the perceived satisfaction-dissatisfaction continuum in the more innovative organization.

Before organizations, such as the three religious communities treated in this study, began making adaptations, they were under strict and specific rules and regulations. Now that these earlier rules and regulations have been either suspended or replaced by general principles, the individual members of the religious community who lived for years under more rigid structure may feel insecure in even minor decision-making. In addition, as changes were introduced and members given options, psychological variables began to play a larger role in the individual members' decisions. This made for a decrease in uniformity and an increase in uncertainty among the members.

Once again, by definition, "innovativeness" meant change in governmental structure. The organizations which changed the governmental structure usually did so at election time. This change in governmental structure and/or personnel followed Reindl's (1970, p. 119) proposition: "In organizational life, replacement of decision-makers in the system is one noticeable feature that raises uncertainty among the organization's members, due to an alteration of the probabilities of predicting the consequent events."

The governmental structure changes, the greater heterophily in the more innovative organization (discussed under hypothesis 6.0), and the more rapid rate of adoption of any given innovation (discussed under hypothesis 5.0) will contribute to greater uncertainty among the members of the more innovative organization.

H 7.0: The more innovative organization will have a higher uncertainty level among its members.

Studies examining the variable, conflict, have shown that delegation of authority and joint decision-making, coupled with a difference in goals and/or a difference in perceptions of reality, were sources of conflict. P. Selznick (1949, p. 54) claimed that a delegation of authority brought about: (1) an increased training in specialized competences (intended outcome); (2) an increased bifurcation of interests among the various subunits in the organization; (3) this bifurcation leads to an increased conflict among the organization subunits (unintended outcome).

In hypotheses 5.0, the decentralization of the government of the three organizations under study was discussed in its relation to the rate of adoption of any given innovation. This decentralization was by definition one of the operationalizations of the innovativeness of the organizations.

The second ingredient for conflict, the presence of differences in goals and/or differences in perceptions of reality, was concluded from the 1967 study of women religious (Neal, 1969, p. 21). The survey reported a polarization in religious communities between sisters "holding a Post-Vatican belief orientation affirming the holiness of human efforts to transform the world in justice," and sisters "holding a Pre-Vatican belief orientation affirming the goodness of withdrawal from involvement in a world defined as evil." The survey then concluded that "The percentage of sisters" holding the two views "is directly related to how each order responded to the pressures to change initiated by the Council."

From this discussion the prediction was that members of the more innovative community will perceive more overt conflict within their community than will the members of the less innovative community. The concept is expressed or overt conflict, not the comparative presence or absence of potential conflict within the organization. The decentralization of government and the removal of restrictions on informal communication served as catalysts to the externalization of the conflict.

> H 8.0: The more innovative organization will have greater perceived overt conflict among its members.

By definition, "innovative" in the present study included the entrance into new and varied works by members of the organization. This adoption of a more varied apostolate brought about the need for individuals to live in locations convenient to the new apostolate, rather than in a "central" house with all or nearly all other members of their organization. Secondly, it meant that members were on different work schedules. Thus to rely on oral transmission of information became more and more risky as the organization adopted various innovations. In attempting to assure that the message reached the designated receivers, the members began to use written communication rather than oral communication. In addition, as the discussion relative to hypothesis number two showed, the more innovative organization will have a more liaisonness in its network.

The concept of change or innovation in reference to the organizations in the present study was considered as a move from a highly centralized governmental structure to a more decentralized governmental structure. By definition, again, as the organization adopted a decentralized government it spread the responsibility for the organization among the members. To coordinate the decentralized government required that more communications reached more members. The decentralization opened communication channels making them multi-directional and increased the uncertainty level of the members (hypothesis 7.0) and the perceived overt conflict (hypothesis 8.0). Written communication became the most parsimonious method to reach the greater number with fewer distortions.

> H 9.0: The more innovative organization will have more written communication within its structure.

## Summary

The present thesis is a comparative study of three organizations which presently are involved in the complex task of rediscovering their goals and redefining the means by which these goals can be attained. These three organizations are communities of women religious in the United States. Specifically the present study investigated the differences between the structure of the communication network of organizations which had undergone relatively greater change and the structure of the communication network of an organization which had undergone relatively little change. Secondly, it compared the relative number of communication contacts within the more innovative organizations to those in the less innovative organization devoted to five selected functions: to inform, to instruct, to influence, to integrate, and to innovate.

Literature on the classical, scientific management, human relations, and two contemporary schools, and the open systems approach to the study of formal organizations was reviewed. The open systems approach was chosen for the present thesis because it allows for comparison of three organizations which are at different points on a continuum of government, and it deals with communication and adaptation specifically.

The nine hypotheses discussed were:

H 1.0: The more innovative organization will have a more integrated communication network.

H 2.0: The more innovative organization will have greater liaisonness in its communication network.

H 3.0: The functions of the internal communication of the organizations will vary with the organization's innovativeness.

H 3.1.: The ranking of the relative number of communication contacts devoted primarily to each function in the most innovative organization on the adaptation continuum will be as follows:

to inform>to innovate>to influence>to integrate>to instruct

H 3.2: The ranking of the relative number of communication contacts devoted primarily to each function in the middle organization on the adaptation continuum will be as follows:

to inform>to influence>to innovate>to instruct>to integrate

H 3.3: The ranking of the relative number of communication contacts devoted primarily to each function in the least innovative organization on the adaptation continuum will be as follows:

to inform>to instruct>to integrate>to influence>to innovate

H 4.0: The more innovative organization will have more monomorphic opinion leaders.

H 5.0: The rate of adoption of any given innovation will be faster in the organization which has adopted more innovations.

H 6.0: There is a wider variance on the perceived satisfaction-dissatisfaction continuum in the more innovative organization.

H 7.0: The more innovative organization will have a higher uncertainty level among its members.

H 8.0: The more innovative organization will have greater perceived overt conflict among its members.

H 9.0: The more innovative organization will have more written communication within its structure.

# CHAPTER II

# THE ORGANIZATIONS UNDER STUDY

The sites of the present study, communities of women religious, have been chosen only rarely by social scientists. As late as 1961, Amitai Etzioni (1961, p. 41) remarked that "There are no sociological studies of convents."

While not under sociological scrutiny, religious communities or convents have attracted the layman's curiosity and kept him mystified as to their purpose and inner-functionings. From novels set in a priory of the sixteenth century (Charques, 1960), through accounts of women who left the convent (Baldwin, 1950; Hulme, 1956), to a television comedy of the late 1960's, "The Flying Nun," the reports of "life in the convent" rate as caricatures by many women who actually inhabit these convents.

## History of Religious Life

Religious life is rooted in the key Biblical texts which record the calling and formation of the apostles of

Jesus Christ (see for example Matt. 19, 16ff). It has a long history whose origins lie in a way of life entailing separation from the world; solitude; prayers in unison; cloistral observances, such as silence; the monastic habit; common poverty; obedience and a dependence, extending to the smallest details, on an over-present superior, the abbot of the monastery (Renovationis Causam, 1969, p. 121).

In the early years of the Christian community, some men and women dedicated themselves to God in a special manner. Holy women, deaconnesses and virgins are mentioned in the "Acts of the Apostles." By the third and fourth centuries after Christ, the root of the idea of religious life began to produce significant results in solitary and community hermitages in Egypt and Syria. Then in the sixth century, when the old Roman world was in the process of transition from an urban to a rural community, the Rule of St. Benedict became the pattern for monastic life. It was not until the thirteenth century that the Mendicant Orders (religious communities, for examples, the Franciscans and the Dominicans whose members were freer than monks for works of the active ministry) "began to change some of the established aspects of religious life. Religious women, however, continued to live in the monastic manner" (Foy, 1971, p. 526).

Three hundred years later, in the sixteenth century, when the Protestant Reformation had struck the

Christian world and the Mendicant Orders had lost much of their vitality and flexibility, the founding of the Jesuits and Barnabites brought about a significant change in the manner of living religious life. These groups introduced a "flexibility of program and an adaptability to every need exceeding anything that yet had appeared in the religious life" (Shehan, 1959, p. 2). Yet, the Jesuits were not a religious order, "no canonist at that time would ever have regarded it [The Jesuit Company] as such" (Huyghe, 1965, p. 7).

At the same time that Ignatius Loyola was founding the Jesuits, Angela Merici brought together a company of women for the purpose of reforming society through the family and the family through its womenfolk. Her daughters, the first Ursulines, were to stay in the world. She rejected enclosure, the habit, life in common and public vows. But her plan was opposed violently by the traditionalists among both the clergy and the laity. Saint Angela's Community, after a brief but tremendously successful "active" life, was forced to adopt the cloister with all that it implied (Meyers, 1965, p. 10). Finally in 1633 the Sisters of Charity became the first community of women under simple vows to win approval from Rome.

With the breakthrough from enclosure to active apostolates having been accomplished, religious communities of women dedicated to the service of others and living outside the cloister multiplied. In the eighteenth century many religious women from European communities followed the immigrants to the United States as teachers and nurses. Ludwig Hertling (1957, p. 545), in discussing religious life in the nineteenth century, goes so far as to state that:

> Perhaps the most conspicuous feature of ecclesiastical life . . . is the extraordinary progress of the religious life. In this, the nineteenth century, is to be compared only with the thirteenth, the age of the mendicant Orders.

In the United States the strength of the concept of religious life was felt by this time:

> . . . It was recognized that European religious Congregations could not continue to supply the rapidly growing needs of the Church in the United States. Under the tutelage of farseeing bishops and priests, native Communities came into existence in rapid succession, so that today there are in the United States some four hundred Motherhouses of native Communities or of Congregations who still maintain international ties, but who, to all intents and purposes, regard America as their homeland. Most of the American-founded Communities came into being for a specific need, mainly education; but they extended their services to social and charitable works as demands arose (Meyers, 1965, pp. 14-15).

The missionary spirit continued in the United States until after World War I. For the immigrant, life centered around the parish, home, and school. This same style of life was reflected in communities of women religious whose members continued a comparatively simple, uncomplicated mode of existence.

World War I brought the United States out of its isolationism and into the world's problems. Schools felt the impact as higher standards of education were required and the high school diploma became the goal to replace the eighth-grade certificate. The change in the schools meant the teachers, sisters in the Catholic school system, must now have the baccalaureate degree. The time between 1920 and 1940 witnessed the push for more education for sisters.

The coming of World War II highlighted the shortage of sisters as superiors were pressured to place sisters in the apostolate before their socialization into the religious community was completed. The anxiety continued through World War II. Then in 1950 the First International Congress of Religious was called in Rome. There " . . . delegates were told that the shortage of vocations was not a cause but rather an effect of individual Communities clinging to antiquated customs, traditions that had long lost relevance and meaning to present-day thinking . . ." (Meyers, 1965, p. 45).

The 1950's witnessed a series of national congresses of major superiors. These resulted in religious communities which previously had operated separately, unaware of what other similar communities were doing or how they were solving their problems, working together on their mutual problems.

Thus in 1965 when Vatican Council II mandated all religious communities to make a self-study for the purposes of renewal and adaptation, the various organizations of women religious in the United States either already were beginning such a process or were ready for self-study psychologically.

William A. Hinnebusch (1970, p. 76) has summarized the evolution of religious life over the centuries as: from the complete liberty of the hermit to the first community, monasticism constantly progressed toward ever greater control over the monk. Since the thirteenth century, however, the individual religious has gained greater freedom and mobility at the expense of the community.

## The Three Religious Communities of the Present Study

The organizations selected for the present study are three congregations of women religious in the United States whose primary apostolate is teaching. The organizations were selected because they had similar traditions and histories, but each was at a different stage in the adaptation process currently in progress in most religious communities as a result of Vatican Council II.

Several variables were considered important in selecting the particular communities to study. The investigator wished to be familiar with the specific groups in order to be less obtrusive while living with the members to observe their life. Second, it was important that the three organizations have the same apostolic endeavors; teaching communities were chosen.

Autonomous organizations were chosen rather than those communities which were subsystems with the headquarters of the organization in Europe, or those which had a regional or provincial structure and thus another level of government intervening between the general superior and the individual members. The membership of the three organizations needed to be fairly similar in number and the numbers needed to be small enough that one investigator could handle the study in a reasonable amount of time. Finally the geographical area served by each community needed to be about the same size. The governmental districts of the Roman Catholic Church were used in determining the geographical area. All three communities served basically in one or two dioceses (governmental divisions of the Roman Catholic Church).

To give a fuller picture of the three organizations, some historical and demographical facts will be listed and then observations gathered during the investigator's visit to each organization will be told.

## Histories of the Three Organizations

The three communities of women began in the Midwest of the United States in the mid-nineteenth century, the time mentioned above when the United States sent to Europe for religious women to establish houses in this country.

Communities One and Two.--These two organizations trace their beginnings to the same motherhouse and the date, 1845. The site was and is rural, but within an hour's drive of a large Midwestern city. The sisters taught the children of nearby farmers and then in 1896 opened a "select day school" in the city.

In 1910, eighteen sisters from this Motherhouse established an independent convent and academy in the city and a year later moved into their present Motherhouse. This group with their Motherhouse in the city limits of a large Midwestern city will be indicated as Community One in the present study. In mid-1971 they number 72 members, the median age is 50 years and they teach in six parish schools, operate a high school with an enrollment of 750 girls at the site of the Motherhouse, an elementary school near the city limits, and are in charge of the catechetical programs in five parishes. Some of the sisters also conduct free adult education courses for the poor "to enable participants to merit a high school equivalency certificate" on Sunday afternoons. Approximately thirty-five adults may be under this program at any one time.

The sisters who considered themselves members of the original, rural Motherhouse continued to operate the day school in the city. This group is called Community Two in the present study. At the time of the present study, Community Two had 80 members with a median age of 38. They served in three parish schools, a high school in the city, and a boarding high school and a junior college on the Motherhouse grounds.

Community Three.--Community Three began in 1858 in another Midwestern city about 100 miles from the site of the original Motherhouse of Communities One and Two. Then in 1895 a group of sisters from this Motherhouse went about 700 miles west to establish an independent convent. In 1971, Community Three numbered 99 members with a median age of 45. They served in nine parish schools, and owned and operated a boarding school for the mentally retarded. Until May, 1971, the Community also operated a boarding academy for high school girls on the Motherhouse grounds. The Motherhouse for Community Three was also in a rural area, but within an hour's drive of a large Midwestern city.

Figure 3 shows the growth and decline membership patterns of the three communities. Of particular interest are the similarities in the patterns. Community Three reached its largest membership in 1963 and since that year has been shrinking steadily. Community One and Community Two both peaked in 1966, three years later, and have been declining since that time.

## Observations of the Three Organizations

Community One.--I arrived at Community One on a Saturday afternoon about 2:00. A girl, who looked as if

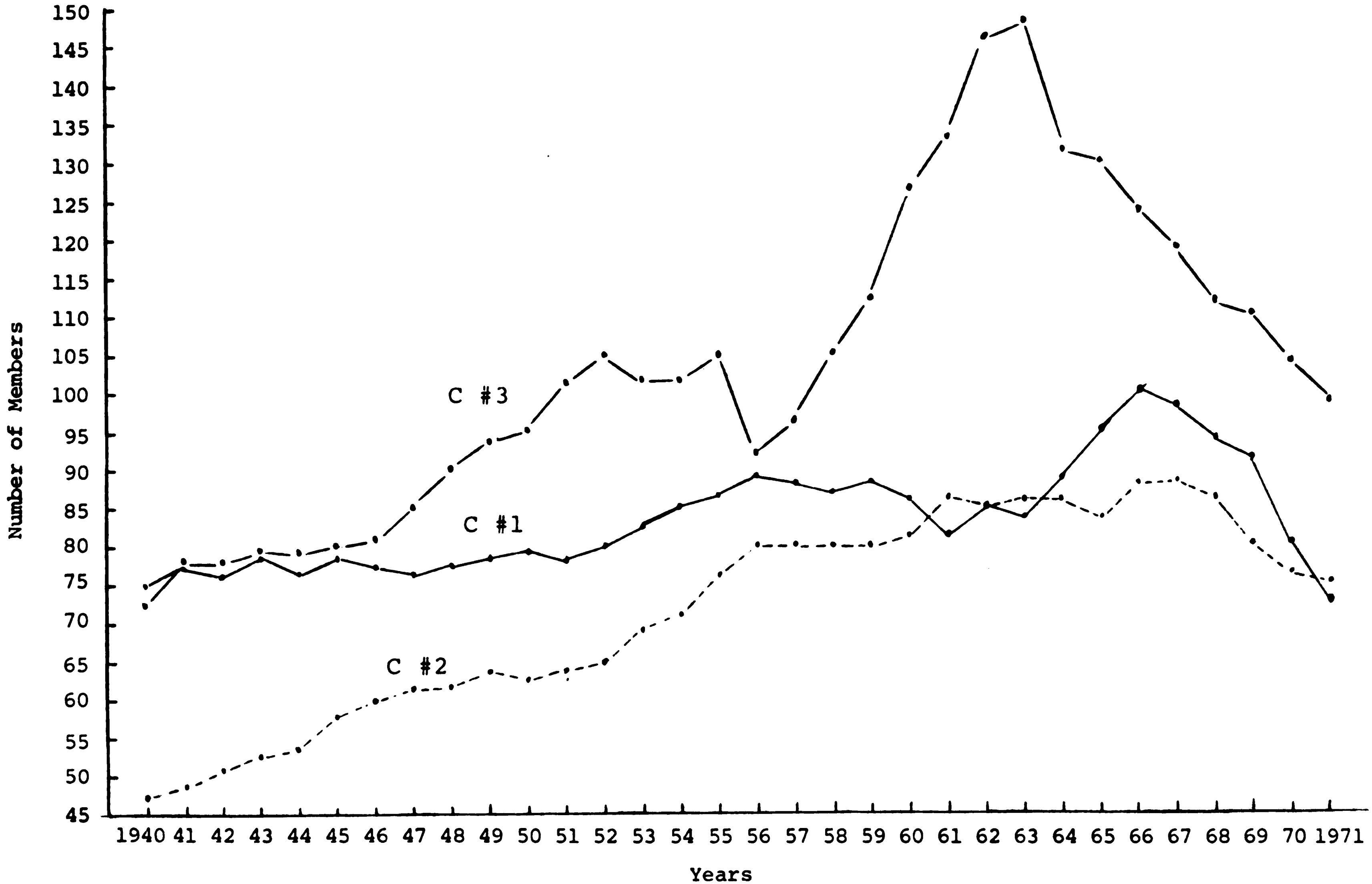


Figure 3. Growth and decline in membership patterns of three communities, 1940 to 1971.

she were a student at the high school, answered my ring and ushered me into the parlor. The room's structure and decor were out of a "turn of the century" mansion: marble fireplace with large mirror, high back chairs and tall, tall doors which reached nearly to the 20-foot ceiling. I later learned that indeed this section of the Motherhouse was formerly a drawing room of the home of a well-to-do citizen. This old home and the next one on the block were both purchased and later the middle section of the present Motherhouse was built to connect the two original houses. A third story was also added. Now the whole edifice appears to be one large building.

The silence was so much there that afternoon that it captured my attention. A clock chimed twice for 2:00. I thought it must be the "grandfather" clock I had seen in the tile floored hall when I entered the building. I remembered seeing also a white statue of the foundress of the order which was directly facing the outside door. On either side of the statue were large oil portraits of the foundress of this particular Motherhouse and her assistant.

The Mother Superior, a middle-aged woman in a black, mid-calf length habit and black veil with white trim greeted me. We took a closet-size elevator to the second floor and the room I would occupy while visiting Community One.

This room and two others were behind the chapel and probably were at one time classrooms, as a blackboard still covered most of one wall. Mother explained that many of the sisters were at meetings, Saturday college classes, visiting the hospital, or attending a golden wedding anniversary celebration. She seemed to be able to account for each one.

Down the hall from my room was a large area which had been converted into a "recreation room." The place was equipped with the type of items one finds for people who are confined or lead a sedentary life. There were a TV, stereo, card tables, a variety of parlor games, books, magazines, and newspapers. Chairs and sofas were arranged for small group interaction. The place seemed strange with no one in it! Since this recreation room was so close to my bedroom, I noticed repeatedly in my three-days visit that the room was used rarely. The exception was on Sunday evening at 5:00.

At that time a bell, similar to a door bell, rang and sisters assembled <u>very promptly</u>. Some played cards, others brought sewing, knitting, embrodiery, others talked or moved from group to group making conversation. One sister had made fudge and passed the plate for all to help themselves. Several of the senior sisters were solicitous about me and what "I would like to do." I chose to talk with a couple of the groups, feeling this gave me a better opportunity to view the whole picture.

At exactly 5:30, the bell rang again and everyone <u>promptly</u> walked downstairs to chapel to pray Vespers (evening prayer). This service took about ten minutes and consisted of the chanting (reciting an indefinite number of syllables on one tone) of Psalms and other prayers. The chanters took turns with verses, those sitting on either side of the church alternating.

The sisters' day began also with chanting prayers called Lauds. I was told that "everyone agreed to a bell in the morning one-half hour before Mass" (official public worship). On most weekdays, this bell rang at 5:30 a.m., Lauds began at 5:55, followed by Mass at 6:00.

The life of the community revolved around these daily periods of prayer and worship, the major prayer being the Mass, the minor the Office (Lauds and Vespers in the morning and evening, respectively). These periods of worshipping their God and the specific work or apostolate are the primary ends or functions of the organization.

The life of these women religious combined two extremes. During periods of worship, recreation, and meals, there was the "togetherness" of approximately fifty people uniformly observing rituals and customs. Immediately following these meetings, there was often the absolute aloneness as members scattered. The largeness of the old structure with its long halls of small, private bedrooms, plus work areas on the upper floors and the large chapel and parlors on the first floor, emphasized these two extremes. When the community was not assembled, one wondered where everyone was, what she was doing.

These quiet periods actually were filled with teaching and other work during the week and preparing classes and studying at other times.

At the first meal, the Mother Superior introduced me to the sisters and said that during my visit I would eat each meal at a different table in order to meet more of the sisters. This was her decision, not something for which I asked.

The dining room was considered cloistered, that is only religious were allowed to eat there. When we entered the room for each meal, the sisters stood behind their chairs and waited until the Mother Superior prayed. The room was very plain, six or eight tables were lined up, each seating about eight sisters. These tables were not covered with a cloth, rather a linen napkin serving as an individual cloth was placed on the table first and then the plate and utensils put on top of it. A few of the older sisters still observed the custom of pinning the other end of this napkin to the waist of their habits. This custom probably began as an attempt to keep the religious habit unsoiled.

The food, in serving dishes, was on side tables and each one helped herself. After the meal each sister took her dishes to another area of the dining room where pans were provided for washing the dishes. She then returned to her place, removed the linen napkin from the table and wrapped her silverware in it. The sisters explained that places at table were decided each month by drawing numbers. They seemed to consider this a way to mix age-groups.

On weekday mornings silence was observed at breakfast and sisters took turns reading to the assembled group. This reading might be from the biography of a saint, a commentary on religious life, or some reading of a spiritual nature. The reading was continuous, a new day beginning where the previous day stopped.

Because many of the sisters who lived at the Motherhouse of Community One taught in schools several miles away, they left immediately after breakfast for these schools. The teachers at the high school attached to the Motherhouse went to that building. This left the Mother Superior, her assistant, the treasurer and the retired sisters in the Motherhouse proper. However, except for the Mother Superior, the officers of the organization had part-time positions which took them out of the Motherhouse for at least a brief period each day. Throughout the day at least one of the retired sisters could be found praying in chapel.

After the evening meal most of the sisters gathered before one of the two TV's to hear a national newscast. Then a four-some of bridge occupied several, two were sewing and two working on a school project. By 9:00 the halls were quiet and the TV black.

Bulletin boards with notices for the sisters were in the dining room and in the second-floor hall near the Mother Superior's office. During my stay, the dining room board contained notices of a small-group prayer meeting, a reminder to put screens in the windows (it was early spring) and a faded weekly schedule of prayer and meal times. The second floor board included my letter concerning arrival time, meeting with the sisters, etc.; announcement of a play by an amateur group in the city on which sisters signed their names if they wished to attend; and the announcement of a meeting on "Planning for Retirement."

All arrangements during my visit were handled by Mother Superior. She decided for Sunday morning that one of the sisters would drive me to their house of formation which was several miles away at the city limits. (I had asked to see this location.) She also decided that two of the older sisters should go along for the "outing" and then Mother Assistant went along with them.

Once a week the members of Community One assembled at the Motherhouse for community discussions and self-study. At this time the sisters living in the four places away from the Motherhouse came for afternoon liturgy and supper; the meeting followed at 7:00. It was at this time that I presented my materials and the members answered the questionnaire and checklist. The sisters appeared to seat themselves by age groups generally and a few who were blood sisters chose to sit together. The younger sisters tended to discuss certain questions among themselves, at which I walked to the group and asked if there were questions. Only after I announced that Mother Superior had said they were free to leave after finishing the materials did anyone hand in her finished forms.

The contrast in Community One was between the Motherhouse as I have explained above and two smaller houses on the property which were being used as bedrooms by younger members of the community. Psychedelic posters and personally decorated rooms in these houses replaced the formality and sparseness of the Motherhouse.

Through conversations with several sisters and with the administrators of Community One, I gained several impressions, sometimes contradictory ones. Questions to council members on specifics concerning the community usually brought forth, "Ask Mother."

One sister in her late forties or early fifties said she felt that the sisters who "were way-out" had left the community. She talked fondly about former superiors and the senior members of the community and expressed concern about "returning to the fundamentals."

Upholding a different view was a sister in her early forties. She expressed concern because the community was in a "tense state." She felt sisters had left the community in recent years because "they felt no hope." However she praised the present Mother Superior, saying that her first term in office witnessed great growth in the community. Today this sister felt that because Mother had been criticized severely for many of her early decisions and blamed for problems over which she had no control that Mother had now become reluctant to speak out.

> Mother communicated too much in her first term and now in the second term she has resorted to putting notices on the bulletin board. Just last week she put up a notice that Sister _____ was having an operation. Gosh, she's a member of this community, I don't think we should know about her operation through the bulletin board (in conversation).

This sister said she was no longer a member of the legislative body of the community because she "had spoken out." "Everyone in Chapter (legislative body) is the level-headed kind."

Community One made some adaptations in 1967. At that time this community received from Rome a change of its juridical nature. That is, whereas it was formerly considered an independent Monastery, it became a centralized Congregation. This change meant three things. The legislative body consisted of delegates elected by all members of the community, rather than of all members of the community, and that members of the General Council (administrative branch) would no longer be assigned specific duties. Second, the nature of the vows was changed from solemn to simple; and third, the cloister or enclosure was made less strict and confining. Immediately preceding these changes, the religious habit was simplified. This was a mandatory innovation for all members of the community. Then in 1968 the option was given to shorten the habit from floor to mid-calf length.

One member of the community expressed the opinion that the change in government in 1967 was really in name only. Basically this change in government or in juridical status meant that the General Superior no longer reserved all authority for herself and made all decisions. However three days of living in Community One furnished a number of examples of direct rule by the Mother Superior. She was the local superior of the Motherhouse as well as the General Superior of the community. This meant that she handled the day-to-day business as well as long-range plans. The Superior spoke at some length about the problem of sisters going out and not telling her where they were going. Mother Superior sat in the first position at table, she made announcements at meals, she received all the mail coming into the Motherhouse. In particular, in conversations she repeatedly expressed concern about the sisters and her responsibility for them.

Drawing from my acquaintance with approximately twenty-five communities of women religious, I considered Community One a rather typical example of most religious communities as they were two or five or ten years ago. As the adaptation process has evolved in each community, the uniformity and some customs have been dropped or suspended.

As the religious community renewed and adapted, it moved from a closed society to an open society. Kilian

McDonnell (1970, pp. 16-17) said that formerly when one entered religious life, he joined "a social class, a caste, which has its own patterns of life and expectations." "Now," McDonnel continues,

> . . . both the priesthood and the religious life have become open societies. . . .
>
> In an open society there is a greater degree of permissiveness. There is a pattern of life, but there is a greater flexibility within this pattern. More attention is paid to personality needs and self-determination.

<u>Community Two</u>.--As I moved from Community One to Community Two, I felt that I had skipped several steps in the evolutionary process and found myself immediately in the "open society." The life in Community One, described above, could be a recent chapter in the history of Community Two and Community Three. Yet one experienced a minor "culture shock" in going from one to the other.

When a sub-culture or class of people becomes more "open," its surrounding environment begins to penetrate. Thus in the evolutionary process of the religious communities in the present study, I recognized more and more the replacement of customs and rules unique to religious life by the way of life of people in Midwest, USA. Life became more informal. For example, the nun-teacher ate lunch with lay members of the faculty rather than returning to the convent to eat with the sisters. And, the liturgy was celebrated at various hours of the day to best fit into the work schedule. It may be in the morning; it may be immediately preceding the evening meal. The most obvious change to the "outsider" was the change in wearing apparel. The sister dressed as any other American woman her age: professionally for the classroom; in slacks and sneakers for the picnic.

In Community Two, I spent only one day in a specific location or convent. My initial stop was a new high school. The convent resembled a modern, suburban home, but was much larger. It blended in with the surrounding houses. The most obvious evidence to me that life in Community Two was different from life in Community One was my difficulty in meeting with the members to give them the questionnaire. At the first location, I met most of the house immediately after supper; the others I "captured" as they returned from school board meetings, evening classes, etc. By midnight I had succeeded with all but two out of twenty. The problem was not one of cooperation, but of the impossibility of a time convenient to everyone.

The second day I traveled to the Motherhouse, located in a farming area about one hour's drive from a large Midwestern city. A boarding high school for girls and a junior college also are located on the grounds. A laywoman secretary answered the door and showed me to the parlor. This room was less auspicious than Community One's, but also had stiff, overstuffed chairs and pictures with wide gold frames on the wall.

The Superior General came very quickly and showed me to the guest room. She wore a skirt and white blouse and a short veil. She was leaving "for the city" and would not return before I left, but assured me that her assistant could answer all my questions. That was the last I saw of the Superior General.

At the Motherhouse of Community Two, life was not so flexible as at the high school, but neither was it so structured as at Community One. Three local superiors or coordinators had been elected or appointed for three different groups living in the Motherhouse. The superior of the retired sisters served as my hostess during my stay.

The day began at 6:45 a.m. with Lauds, followed by 7:00 Mass. No bells were rung. However many of the sisters attend services either at the schools where they teach or elsewhere at different times of the day. The dining room was arranged less formally than Community One's and sisters sat wherever they chose, except for one table of elderly sisters.

With most of the sisters teaching, the Motherhouse was quiet during the day other than for the voices of the high school girls. High school classrooms and the administrative offices of the religious community were on the same floor. The Superior General had a part-time secretary, a sister, who was able to answer many of my needs. The council member who was appointed to answer my questions was most helpful.

Vespers were said at 5:00 p.m., but only the retired sisters and a couple of younger sisters were present. After supper the majority of the group assembled in the "Community Room" to answer my questionnaire. The group were relaxed, cooperative and very conscientious in answering the questions. Cokes and pretzels were served afterwards, and then a small group watched a "special" on TV. Others disappeared, presumably to their rooms.

I also visited two other convents of Community Two, each about one hour's driving distance from the Motherhouse. Both were modern structures; thirteen sisters lived in one and eight in the other. Conversations centered around the elementary schools in which most of the sisters taught, and at one convent about a recent home liturgy and dinner to which the sisters had invited their own parents. Sisters dressed in various ways from the floor-length habit to a cotton dress and no veil.

Community Three.--There were more similarities than contrasts between Community Two and Community Three. Community Three's Motherhouse was also in the country about one hour's drive from a large Midwestern city. This community had recently completed a new two-story wing to be used as an infirmary; therefore I stayed in an unoccupied room there. The structure was similar to a contemporary nursing or extended care facility.

When I arrived, the sister who answered the door took me to the president's office. The president was a middle-aged woman dressed in a navy-blue suit and short veil.

The schedule for prayers varied from day to day; however most of these variations seemed to be because the priest who was serving as chaplain desired such a schedule. The sisters did substitute small-group discussions for the Office (prayer of the Church) at various times.

As I moved from Community One to Community Two, to Community Three, I noticed an increase in the amount of diversity in daily schedules, dress, types of work, etc., within the communities. Uniformity was still the rule in Community One. In Community Two there was greater variety. However in Community Three, I met sisters at either end of the continuum and in the middle. For example, there was a conservative group teaching in a small town about 20-minutes driving distance from the Motherhouse. One of these sisters wore the floor-length habit; the others were in below-the-knee black dresses and veil. At another meeting, a sister in her twenties arrived in slacks. At the Motherhouse, the retired sisters lived a daily schedule very similar to Community One. At the other end, members of Community Three lived alone in an apartment, taught in a state university, and returned to the community once or twice a year for a visit.

On the evening of my arrival at Community Three, I witnessed the carrying out of a custom which had remained through all the adaptations. A sister in her seventies was celebrating her feast or name day. The other members of the house had contributed some little item: ball point pen, paperback book, supplies for her crafts work, and these things were wrapped and put on a serving tray. The community gathered around the celebrant as she opened her "gifts." Then ice cream was served to all present.

Of the three communities in the present thesis, Community Three had lost the most members. From 1965 to 1971, fifty-two sisters left this group. Yet, there did not seem to be a great deal of worrying about the future of the community, at least not that one could gather from conversations with the sisters. Rather, the members seemed to accept as inevitable the decrease in members. I would characterize this community (Three) as one whose members are very independent, and make little of government or authority. There is a community spirit, but the individuals make their own plans and act accordingly.

# CHAPTER III

# THE RESEARCH PROCEDURES

In Chapter III a discussion of the limitations of previous research; a description of the selection of the organizations for the present study; the operationalization of the concepts and techniques of sociometric measurement; the development and pretest of the instruments; a review of the data collection; and an explanation of the various methods of data-analyzing used in this present study of three religious communities will be presented.

## Limitations of Previous Research

Research in complex organizations has two prominent flaws: (1) it often is done in only one organization, and (2) nearly all such research has taken place in work organizations.

Mouzelis (1968, p. 68), however, considered the first point above in a positive manner. He said that at least one-case studies give more than a mere impressionistic insight. His suggestion was:

> By strategically choosing a few cases (say 2 to 5), it is possible to combine intensity of study with

> comparative variations of significant variables. Indeed it is not necessary to study an unmanageable number of organizations in order to identify some of the important conditions under which a certain hypothesis, formulated within the context of a one-case intensive study, is valid. By intensive study of one or two cases and by appropriately choosing a few others for a less intensive treatment, one may avoid the disadvantages of both the survey and the one-case study.

By gathering some information on eight similar organizations and studying more intensely three of these, the present thesis followed Mouzelis' suggestion stated above. In so doing, it hoped to avoid the disadvantages attached to the one-case study and to the survey. By studying organizations other than profit-making ones or work organizations, the present thesis hoped to counteract the second bias.

## Selection of the Organizations

The existence of more than 500 congregations, orders and communities of women religious in the United States with a total membership of approximately 160,000 in 1970 (Foy, 1971) made selecting a sufficient random sample of these organizations a practical impossibility for one investigator. Therefore, consideration of a subcategory of the major type of organization, "religious institutes of women," was necessary. Institutes of women religious can be divided broadly into the contemplative and the apostolic. The apostolic groups in turn can be subdivided into those who engage primarily in teaching, in nursing, or in social work. The consideration of the variable, apostolate, followed Katz and Kahn's (1966, p. 56) rationale for choosing an organization: "Organized groups differ in type of tasks they perform and a key determinant of characteristic organizational norms is the type of activity in which the organization is involved."

More women religious in the United States are engaged in teaching than in any other apostolate.

The above method of restricting resulted in choosing three congregations whose primary apostolate was teaching. The three had similar traditions and histories, an important variable since until very recently (early 1960's) religious communities were very tradition-minded. The investigator also wished the organizations to have two additional attributes: to be autonomous American communities rather than ones with headquarters in Europe, and to be institutes which had only one level of government, that of the central government, rather than a provincial or regional structure between the central government and the members.

Eight such communities of women religious, in the same tradition as the investigator's own religious community, were listed in The Official Catholic Directory, 1970. All were in the Midwest. The investigator wrote to the secretary of each institute asking for a copy of the latest Constitutions or documents under which the congregation was functioning at that time. All furnished some written materials except for Community One in the present study, which had no such document.

From the eight initial communities, three were chosen because in each: there were between 70 and 100 members, a size that seemed within the ability of one investigator to handle; the majority of the members taught in secondary and elementary schools in only one or two dioceses (governmental divisions of the Roman Catholic Church). However each of the communities was at a different stage in the adaptation process currently in progress in most religious communities. Therefore one community was chosen because the written documents and/or conversations indicated that it was beginning the adaptation process; the second because it had made more adaptations, and the third because it had been undergoing adaptations for the longest period of the eight initial organizations.

A letter asking permission to study the community was sent to the general superiors of the communities on either end of the continuum of adaptation, and arrangements made to visit with the third. Personal references from the investigator's religious community and professional references from the investigator's academic adviser were included in the letter.

The superior of the community that had made the fewest adaptations answered:

> The sisters do not wish to take part in this section [answering the questionnaire] of your project. This decision was arrived at after several of the

> groups met to discuss it. We are sorry if this is an inconvenience to you and do hope that it will not delay the completion of your dissertation, but it is the sisters' wish not to participate (private correspondence).

A second request sent special delivery with a self-addressed, special delivery stamped envelope enclosed resulted in another refusal.

> After thoroughly considering your proposed dissertation, we have decided that it is not opportune for us to participate in the study.
>
> . . . . . . . . . . . . . . . . . . . . . . . . . . .
>
> Much as I am disposed to cooperate in surveys and theses, at this time we shall not be participating in your survey (private correspondence).

The superior of the community which had made the most adaptations, Community Three in the present thesis, wrote:

> We will be most happy to have you visit us and examine our Communication Network. In fact I am looking forward to it very much as it seems one of the points which we need to concentrate on to build community.
>
> . . . . . . . . . . . . . . . . . . . . . . . . . . .
>
> I don't need any references for you. I am wholly in agreement with the study and believe much good can come from it (private correspondence).

At this time arrangements were made by telephone to visit the superior of the organization which became Community One of the present study, as it appeared to be the one most similar to the community which had refused to participate. At the initial visits to Community One and Community Two, arrangements were made as to the date of the investigator's arrival and the type of cooperation she would need. The Mother Superior of Community One gave her permission immediately; the General Superior and two councilors of Community Two met with the investigator and the three vocally consented to the study. During the visits and in the letter to the president of Community Three, the investigator requested that the superiors notify the members of the organizations of the study and the dates of the investigator's visit. (During her stay with the communities, the investigator saw written notifications from the superiors to the members concerning the study on bulletin boards in the various houses of all three organizations.)

## Data Collection

One of the basic problems of the researcher who seeks to map the communication network of an on-going organization is that he is dealing with social structure and with relations among individuals. James S. Coleman (1958, p. 28) treated the problem, making the point that throughout the history of the use of survey research methods the individual had remained the unit of analysis.

> No matter how complex the analysis, how numerous the correlations, the studies focused on individuals as separate and independent units. The very techniques mirrored this well: samples were random, never including (except by accident) two persons who were friends; interviews were with one individual, as an atomistic entity, and responses were coded onto separate IBM cards, one for each person. . . . As a result, the kinds of substantive problems on which each research focused tended to be problems of "aggregate psychology," that is, <u>within</u>-individual problems, and never problems concerned with relations between people.

Coleman then explained that part of the solution to the relational analysis problem was to "ask relational questions." For example, ask a person to whom he talks, then ask those people named with whom they talk. If both parties in a dyad agree that there was contact, this <u>relationship</u> furnishes a data point.

In addition to asking the relational questions, during the actual analysis of the data a respondent must be seen as part of some larger structure in which he finds himself; the individual must <u>not</u> be treated independently.

To handle the "relational type" questions at the data gathering stage means the incorporation of sociometric-type data into survey research. Kerlinger (1966, p. 562) described sociometry as:

> . . . a simple, economical, and naturalistic method of observation and data collection. Whenever such human actions as choosing, influencing, dominating, and communicating in group situations are involed, sociometric methods can usually be used. Sociometry also has the virtue of considerable flexibility. It is defined broadly, it can be adapted to a wide variety of research. Its quantification possibilities, too, are rewarding.

An investigation of "who talks to whom" utilizes the branch of sociometry known as <u>communimetrics</u>, "the study of the extant communication structure of formal organizations" (Schwartz, 1968, p. 161).

## <u>Review of Various Methods</u>

How do the various methods of data gathering compare in enabling the researcher to uncover the communication network structure of an organization? Research using sociometric type data and reported in various professional journals showed a concentration of such work in the 1950's. It was most probably some of this work which Coleman (1958, p. 28) was referring to when he stated: "Very recently, this focus on the individual has shown signs of changing, with a shift to groups as the units of analysis, or to networks of relations among individuals."

A. H. Rubenstein (1953) trained observers and had them enter an organization at random times to observe the communication activity for a short period of time, make notations as unobtrusively as possible and then leave. The problems with this method lay in the impossibility of observing all communication simultaneously, the obtrusiveness of the observers, and the lack of knowledge as to what constituted a sufficient length of time to sample legitimately the communication of an organization. The advantages were randomization and less obtrusiveness than when the communicants themselves were involved in reporting their interactions.

There has been also a repeated usage of the rumor tracing or ECCO methodology in organizations. In 1950, Back, Festinger and Hymovitch, *et al.*, used both "post rumor interviews" and "participant observation." Their methods were to interview all or a sample of the members of a social system at some point in time after a given rumor had been circulating. They asked such questions as: Had the subject heard the rumor? From whom? To whom did he tell it? When did he hear the rumor? Where did he hear the rumor? They reported a serious difficulty with this method in that the subjects repeatedly were unable to report from whom they had heard the rumors and to whom they had told the rumors.

Their second method, the "participant observation" consisted of selecting a small number of members at different levels of the hierarchy of an organization and having them act as co-operating observers. The observers were told the exact content of the rumor. Then a series of rumors were planted at various levels of the organization and the co-operating observers recorded the transmission of these planted items as thoroughly as possible. They recorded: when the rumor was passed to them, the content as it was given to them, and they tried to question their informer as to the remote links of the rumor. These observers were not to pass on the rumor. The results of the study were checked with a group interview of the total organization membership. After four months and nine separate rumor transplants the conclusions were: the co-operators had accounted for 78 per cent of the persons who reported having heard any rumor, some rumors had spread considerably, others not at all.

The researchers reported the difficulties of the "participant observers" method as: bias in the sampling of the communications gathered--all communications were not gathered; the artificial limiting of the communication process--do not know how regulation that co-operators could not transmit the rumor restricted its flow; the reluctance of the organization to allow rumors to be implanted.

Keith Davis (1953b) spoke of the ECCO analysis, "ECCO" standing for: Episodic Communication Channels in Organizations. This method focused on a particular unit or piece of information and followed it through time, space, and other dimensions. The basic approach was to ask each organization member how he first received the specific information being traced through the network. The advantages of this method were that it "has a dynamic quality because it portrays a sequence of communications about an event . . ." (p. 306); it permitted an easy and simple questionnaire instead of expensive interviewing, it was simple and adaptable, and "as far as could be determined the method has negligible effect upon the phenomena being studied" (p. 308).

The limitations included the difficulty in trying to secure information from each individual in large organizations, say those with 1,000 or more members "as respondents would often not know their communicator's name" (p. 308). The unsuitableness of this method for uncovering the structure of a communication network is that it is content-related; it focuses on one isolated message. Therefore one has no way of knowing if other messages take different routes or which messages follow the same routes. It seemed to focus then on the "flow" of a message, rather than on the "structure" of the network. Stanley Milgram's (1967) "Small-World" studies and Robert L. Shotland's (1969) communication study of Michigan State University can be considered variations of the ECCO analysis.

Thomas Burns (1954) attempted to study the communication of executives in an organization by using a self-recording technique. The subjects were to record all face-to-face conversations, letters, memorandums, telephone conversations, and some forms of non-verbal communication and drawings. The initiator and the type of communication by pre-set categories, and the time, manner, and location of the communication were noted over a twenty-five working day period.

"So far as could be adduced by observation at the time of the self-reporting, by subsequent discussion and by the internal evidence, conditions of careful recording were observed punctiliously, except in one instance" (p. 77). (The "internal evidence" consisted of checking the same episode as recorded by two or more self-recorders.)

Charles Goetsinger and Milton Valentine (1962) had forty subjects, university academic employees of various ranks, keep a five-day tally of their communication activities on a form provided by the investigators. Previous to the beginning of their study, the authors had pre-tested this self-reporting method by having twelve individuals report on the activities of the forty subjects for a two-day period. The observers' reports were then compared to the five-day self-report averages and no significant difference was found.

Richard V. Farace and Clyde D. J. Morris (1970) used the communication diary method in their study of a residential college within a large university. A small number of respondents objected to this method as an invasion of privacy. Obtrusiveness was one major weakness of this method: respondents may tire of maintaining the logs for extended periods, and the act of record-keeping may affect communication, depending upon the setting and the communication content. An additional problem was how to decide if the sample was adequate: how long a time, how many individuals, etc.

The most complete explanation of the use of sociometric data to construct the communication network was found in the work of Jacobson, Seashore, and Weiss. Jacobson and Seashore (1951) reported on a data-gathering instrument in which they asked respondents to write in the names of those persons with whom they worked most closely. The respondent then described his <u>relationship</u> with each of the persons named in terms of (a) frequency of contact,

(b) subject matter or content characteristic of such contacts, (c) degree to which contact was required by work or was voluntary, and (d) the importance of the contact to the respondent in his work.

> From this kind of data it is possible to derive a number of measures which serve to describe the organization in terms of the patterns of contact (communication). These measures may apply to individuals, to pairs of individuals, to sets of individuals, or to the organization as a whole (p. 35).

The authors explained their interest in the communication network as follows:

> This network of relationships we have been calling the communication structure of the organization. The communication structure is seen as existing in the patterns of actual contacts which occur among individuals in the organization and in the patterns of contact among sub-groups that are established by inter-individual contacts. The relationships implied in such patterns of contact may be different from the relationships specified by the formal organization and they are susceptible to measurement without reference to the formal charts. At the same time, the structure emerging from this analysis of the communication network may be the product of formally imposed hierarchy to the degree that the formal relationships are expressed in the actual inter-individual communication.

Summary

The discussion of the studies pertinent to communication structure in a formal organization in the past twenty years has indicated use of such techniques as: trained observers to record communication between various members of an organization at random times, rumor tracing or ECCO analysis, either through "participant observation" or "post-rumor interviews"; the self-recording or diary or communication log technique; and the answering of a structured questionnaire in which frequency, subject matter, if contact required or voluntary, and importance were recorded. The investigations and comparison of the various data-gathering methods showed that the Jacobson-Seashore, Weiss method offered the most sophisticated means of gathering the data to map the communication network of an organization.

### Methodology of the Present Thesis

Three data-collection methods were employed in the present thesis: Personal Contact Checklist, questionnaire, and observation.

Before constructing the data-gathering instruments, the investigator sought information on the communication within a religious community. As an input to the communication content of the internal communication network of religious communities, the investigator asked members of four communities (different organizations from those used as subjects in the present study) to answer several questions: (1) What do you communicate about (in face-to-face talking, over the telephone, and in letters) with members of your religious community? (2) What subjects are discussed in messages (letters, memos, assemblies, visits) from those holding offices within your community? (3) How does a suggestion get into the system, or in other words, if you have a suggestion on a Community matter, what do you do with it? (4) What are some topics which you think other members of your community discuss among themselves? The answers from the sixteen sisters to these four questions were analyzed first by subject matter of communication and then semantically, that is by noting the words used in messages from the Community government: "directives," "instructed," "recommended"; words used in informal conversations: "told me," "had an argument," "tried to talk her into . . ."

Pretest.--The questionnaire and checklist were pretested twice on members of the investigator's own religious community, which was very similar to the organizations under study. After the first pretest with thirteen respondents, changes were made before administration of the second pretest to nineteen different respondents. The questionnaire went through six drafts as the investigator worked to word the questions as directly and completely as possible, yet to ask only the necessary questions to gain the desired information to test the hypotheses.

In addition to the pretests immediately previous to the present study, the investigator (Jacob, 1971) conducted a pilot study using the Personal Contact Checklist in August, 1970. For the pilot study, the Chapter or legislative body of a congregation of women religious was chosen. The purpose was to identify the out-of-session communication network structure of the

Chapter, to look at the in-session participation, and to relate the in-chapter and out-of-chapter communication practices of the delegates.

Administration of instruments.--The checklist and questionnaire were self-completed forms requiring a total of from twenty to fifty minutes of time. Before the questionnaire and checklist were given to the respondents, the investigator introduced herself as a fellow religious and a doctoral candidate in communication, and explained the study briefly. Transparencies were used during this explanation. Since the checklist furnished the information for tracing the communication structure, it was necessary for each respondent to sign her name on it. In hopes of relieving any fears of identification which would have biased the answers, the investigator explained that the names would be replaced by numbers, the numbers only would be used in the final analysis, and the map of the communication network would consist of a N by N matrix with checks in appropriate blocks to indicate reciprocated contacts. A transparency of a sample matrix was shown to large groups; a paper copy of the same matrix to smaller groups and individuals during the explanation. The places for the respondent to sign her name were on a separate sheet of directions for the checklist and on the bottom of the sheet for the questionnaire. In addition, assurance was given that no one in the respondent's community would ever see the completed questionnaire and checklist.

Two sisters in Community One approached the investigator to be reassured that the information with identification attached would not be seen by anyone in their community. No such fear was expressed to the investigator by any respondents in the other two groups. All respondents signed their names.

Since Community One regularly met as a whole once each week, arrangements were made to have the members answer the questionnaire and checklist at that meeting. All but four of the sixty-four respondents in Community One attended the meeting. Questionnaires and checklists were either given to these members or left with the superior for them. All four were received later by mail.

In Community Two and Community Three, meetings were planned at the various residences of the members. However several members were unable to attend the meetings. Some of these asked the investigator for forms and the investigator then explained the process to them individually or in groups of two's or three's. Again at several locations, forms were left for the absent members.

The third category of respondents in Community Two and Community Three consisted of members living alone at locations too far to attend the various meetings or for the investigator to visit. A two-page mimeographed letter explaining the study, and similar to the presentation made by the investigator at the meetings with members, was sent with the questionnaire and contact list and a stamped, self-addressed envelope. In Community Two, six such letters were sent; five completed forms were returned. In Community Three, twelve letters were sent; ten completed forms were returned.

The total universe of participants in the study was as follows. In Community One, 64 of the 72 members were respondents. Of the other 8, 1 was on "leave of absence" and the other 7 were unable to participate because of old-age or illness. In Community Two, 69 of the 80 members were respondents. Of the other 11, 5 were unable because of old-age or illness, and 6 refused. In Community Three, 86 of the 99 members were respondents. Of the other 13, 4 were unable, 1 was on "leave of absence," 1 was working in South America, and 7 refused.

Those on "leave of absence" or incapacitated in each community were not considered part of the present study population. Therefore, the percentages of members from each organization participating in the present study were: Community One, 64 out of 64 (100 per cent); Community Two, 69 of 75 (92.0 per cent); and Community Three, 86 out of 93 (92.4 per cent).

The Personal Contact Checklist.--The checklist was a modification of the instrument originally used by Jacobson and Seashore (1951) and later by Schwartz (1968) and MacDonald (1970). Jacobson and Seashore used for "frequency of contact": "several times daily, daily, two or three times weekly, several times monthly, several times per year." Schwartz used for "frequency of contact": "several times daily, about once per day, two or three times per week, about once per week." MacDonald used categories: "more than once a day, once a day, once or twice a week, less often." The present study's frequency categories were: "several times a day, once a day, one or two times per week, one or two times per month, less than once a month, not at all during the past year." Both Jacobson and Seashore (1951) and MacDonald (1970) asked the respondent to indicate the content or subject matter of the contact. However MacDonald (1970, p. 115) concluded "that there is a single large network, of which subsets are activated for different content-functional matters." Because the present thesis was looking for the extant communication network, subject matter or content was not treated in the Personal Contact Checklist.

Another modification made in the instrument in the present thesis was the giving of a complete list of the members of her community to each respondent. Earlier studies asked the respondent to write in the names of those persons with whom he worked most closely. The investigator believed the complete list of eligible persons would aid the respondent in recalling her "average" communication with other members of the organization. A space was provided to check the proper frequency. No limit was set to the number of choices, which meant that the potential range was from 0 to N-1 members of the organization (see Appendix A).

The superior of each community was asked to furnish the list of members of the organization with the names in the order which would be most familiar to the members of the particular community. Community Two and Community Three produced typed copies with the sisters listed by their place of residence. Community Two began with the General Superior; Community Three with the members in the infirmary. Community One sent a ditto copy dated February, 1970, with the names of members who had left the community since that time crossed out. This list began with the Mother Superior and her councillors. A chronological listing beginning with the oldest members of the community followed.

Unfortunately two of the organizations, Community Two and Community Three, each omitted the name of one member from the list. The omission in Community Three was discovered after the first meeting and the missing name written in before others were given the checklist. As a result, twelve members of Community Three were missing the name of one member of their organization. In Community Two, the omission was not discovered until after the data-gathering was completed. Both members who were omitted were living alone as the only members of their communities at their respective universities.

Incomplete Personal Contact Checklists were not recognizable unless completely blank. In Community One, one respondent checked only her own name, and one failed to answer the checklist. In Community Two, a respondent who was living away from the community failed to check her contacts but added a note saying she did not "think I can answer this questionnaire [checklist] being away from the community all year." One of the oldest members of Community Three told the investigator she was unable to complete the checklist.

Taking the above respondents into consideration, the total participation in the Personal Contact Checklist phase of the present study equalled 91.9 per cent of the possible participants. The detailed analysis was as follows:

Three Communities Combined:

total universe = 251 persons

possible participation = 232 persons

those refusing = 19 or 8.1 per cent

total actual participation = 213 or 91.9 per cent

Community One:

total membership = 72

possible participation = 64 persons

those refusing or unusable lists = 2 or 3.2 per cent

total actual participation = 62 or 96.8 per cent

Community Two:

total membership = 80

possible participation = 75 persons

refusals = 8 or 10.5 per cent

total actual participation = 67 or 89.5 per cent

Community Three:

total membership = 99

possible participation = 93

those refusing or unable = 9 or 9.6 per cent

total actual participation = 84 or 90.4 per cent

The questionnaire.--The forty-eight item questionnaire dealt with the variables: functions of the internal communication, overt conflict, satisfaction, uncertainty, opinion leadership, rate of adoption and media of communication, and demographics, such as occupation, age, number of years in the community, and education (see Appendix A). Most of the questions were multiple choice, although three questions asked for the names of opinion leaders, one, a brief description of the local government, and five, a ranking of the amounts of the types of communication the respondent believed were in her particular organization.

The total memberships and the percentage of participation through the questionnaire in the study and then in the three communities were as follows:

total universe = 251 (all members of the three communities)

total unable to participate = 19 or 7.5 per cent

possible participation = 232

those refusing = 13 or 5.7 per cent

total actual participation = 219 or 94.3 per cent

Community One:

total membership = 72

those unable to participate = 8 or 11.1 per cent

possible participants = 64

refusals = 0

total actual participation = 64 or 100 per cent

Community Two:

total membership = 80

those unable to participate = 5 or 6.2 per cent

possible participants = 75

refusals = 6 or 8 per cent

total actual participation = 69 or 92.0 per cent

Community Three:

total membership = 99

those unable to participate = 6 or 6.0 per cent

possible participants = 93

refusals = 7 or 7.6 per cent

total actual participation = 86 or 92.4 per cent

In addition to counting the actual participants, it is necessary to check for incomplete data received. On the questionnaires, the three communities rated as follows: Community One and Community Three each had 62 per cent of its questionnaires completely answered; Community Two rated 73 per cent. All questionnaires were used and missing data coded as a blank. The figures show that although Community Two had a much higher percentage of refusals than Community One (8 per cent vs. 0 per cent), Community Two had a lower percentage of incomplete questionnaires by those who agreed to participate in the study. One can only speculate on the reasons for the higher percentage of incomplete questionnaires in Community One; the higher median age may account for at least part of the difference.

Appendix B shows a breakdown of all variables taken from the questionnaire and the percentage of blanks for each variable or question. There seemed to be a trend toward more and more blanks near the end of the questionnaire. This may indicate simply that the respondents quit before finishing, or it could mean these questions were more difficult to answer or offensive to some respondents. The questions with the most blanks were the second and third choices in the three opinion leadership categories.

This finding would seem to indicate that respondents did not know two or three persons to name in each category.

<u>Special conditions</u>.--Several environmental conditions needed to be kept in mind during the data collection. These included: (1) Community Two had undergone a study by a management consultant firm six months before the present study, and the findings were released one week before the present study gathered data from the same population; (2) traditionally it was considered "community spirit" to preserve the "good name" of the organization by <u>not</u> admitting any shortcomings or problems in the community and particularly not discussing these with outsiders. The investigator's being a woman religious herself helped lessen the reluctance in this area; and (3) there had been a tradition of distrust of the social sciences prevalent in communities of religious which began to break down only in the 1950's, but which is still present today. Therefore, it was imperative that fear-arousal be kept at a minimum.

<u>Observation</u>.--Research in organizations has been criticized for the "one-shot" approach, that of briefly contacting the organization through questionnaires answered by members of the organization. On this topic, Webb, <u>et al</u>. (1966, pp. 174-75) asserted:

> . . . the usual procedural question asked is: Which of the several available data-collection methods will be best for my research problem? We suggest the

> alternative question: Which set of methods will be best?--with "best" defined as a series which provides data to test the most significant threats to a comparison with a reasonable expenditure of resources.

Patchen (1963, pp. 51-52) lent support to Webb: "It seems likely that the excellent work done on control structure with questionnaire data can be extended more rapidly if other types of data--such as direct observation or analysis of documents--are used to supplement the perceptual data obtained from the questionnaire."

Following the above reasoning, the investigator "lived-in" each of the organizations for several days. The time was spent living the daily schedule of the members, visiting as many of the convents as possible, talking informally with various members, interviewing the superior and/or her assistant, and studying a history of each organization. The impressions gained from this experience were related in Chapter II.

## Operationalization of Variables

The operationalization of a variable or an operational definition of a variable is one that tells "what to do and what to observe in order to bring the thing defined or its (invariant) effects within the range of one's experience" (Rapoport, 1953, p. 29).

By use of responses which described the respondent's perceptions of the organization and by use of a Contact Checklist which indicated the respondent's perception of her communication with others, the present study compared the three organizations. Nine hypotheses and three corollaries were examined in the present study. Four of the hypotheses made use of Likert-type scales exclusively, and one hypothesis used Likert-type scales partially to operationalize variables (Likert, 1932; Selltiz, 1967, pp. 377-80). The operationalizations used by the other hypotheses will be discussed under the individual variables below.

The Likert-type items asked a respondent to react to a series of statements, five choice-points were provided for each item. These points followed Likert's pattern: "strongly agree, agree, undecided, disagree, strongly disagree," except for the substitution of "neither agree nor disagree" for his term, "undecided," which some respondents may consider as reflecting negatively upon them. Another set of items: never, seldom, sometimes, frequently, very frequently, was used with those questions for which this wording better fit the context. To decide if items contributing to an index did measure the same concept, iter-item correlations were calculated.

The key variables in the present study were:

1. criterion variable--innovativeness
2. communication structure variables
    a. integrativeness of organization
    b. liaisonness
        1. six types of roles
        2. of organization

3. communication function variables

    a. to inform

    b. to instruct

    c. to influence

    d. to integrate

    e. to innovate

4. other variables

    a. opinion leadership

    b. rate of adoption

    c. satisfaction

    d. uncertainty

    e. conflict

    f. media of communication

The written documents of the organizations and personal interviews furnished the data for measuring the criterion variable. Analysis of the Personal Contact Checklist produced a measurement of the communication structure variables and the questionnaire was the source of data for the functions and other variables (copies in the Appendix).

### Criterion Variable: Innovativeness

Innovativeness.--Innovativeness is the degree to which one unit is relatively earlier than another unit in adopting ideas, practices and/or inventions which are new to that unit. This relative concept was used to predesignate each of the three organizations in the present study. To make the designations, the written documents provided by the communities were studied for statements on three practices: the type of government, the personnel policy, and the religious habit. The actual practices of the particular organization on these three points were observed by the investigator during her stay on location.

The initial question was: When did each community begin to make adaptations? Community Three began around 1963-64; Community Two introduced adaptations in 1964 and had an experimental Constitutions approved in 1967; Community One made an abortive attempt in 1966-67, stopped the process, and began again in 1970. Thus there was six or seven years difference in the dates when adaptation began in the three communities.

Indications of innovation in government consisted of: delegating authority to the various houses of the organization rather than retaining all authority by the central government; and replacing the title, "Mother" with "President." A specific example of delegation of authority was election of the local superior or coordinator by members of the particular local house; whereas appointment of all superiors by the General Superior was considered non-adaptation.

Indications of innovation in personnel policy consisted in replacing the practice of the General

Superior appointing a member to a certain work, by the individual sister's applying for a position and/or signing her own contract.

Adaptations in dress consisted of changing the rule that all must wear a religious habit or uniform to allowing each sister to choose to wear the official religious habit or to wear contemporary dress.

Since Community One did not have an experimental Constitutions or directives in written form, information was gathered through personal interviews. This information and the documents of Community Two and Community Three showed the practices as illustrated in Table 1.

As Table 1 indicates, Community Two was closer to Community Three than to Community One. This relationship was the result of the actual situation and the difficulty in finding "matched" organizations. The observations on the innovativeness of the three organizations were discussed in Chapter II.

### Communication Structure Variables

As explained on page 29 of the present thesis, the communication structure included all types of message transactions. These data were obtained by the question, "Whom do you communicate with in this organization?" The procedure followed the open systems approach in not first regarding the prescribed networks.

TABLE 1.--The Practices of Government, Personnel Policy, and Habit in the Three Organizations

| Innovation | Communities<br>One (least innovative) | <br>Two | <br>Three (most innovative) |
|---|---|---|---|
| Government | highly centralized | decentralized | decentralized |
| title for superior | "Mother" | "Sister" | "President" |
| local government | all local government appointed | appointed and elected local government | more elected than appointed local government |
| Personnel Policy | mutal agreement of supeior and sister | sisters apply | sisters apply |
| Habit | required to wear habit | choice of three types of clothing | choice of three types of clothing |

> The generic communication structure would provide a record of all message transactions between all members of the organization, regardless of content-type or historic frequency, in order to describe all dyadic linkages making up the fabric of the organization's total extant communication structure . . . (Schwartz, 1970, p. 6).

Integrativeness.--Integrativeness is the extent to which interpersonal contacts permeate a social system. The integration score of each organization is the concept Kerlinger called "cohesiveness." The score is operationalized as: "the proportion of mutual choices to the total number of possible pairs" (Kerlinger, 1966, p. 559). The formula is:

$$\text{integrativeness} = \frac{\Sigma \text{ of mutual choices}}{\dfrac{\#\text{ of possible choices X }\#\text{ of subjects in matrix}}{2}}$$

Liaisonness.--Liaisonness of the network is related to the previous concept, integrativeness, but whereas integrativeness looks at the network as a whole and is measured by one score for the organization, liaisonness is measured by decomposing the network into its structural components.

Following are the constitutive definitions of the six types of liaison roles as the terms have been used by Jacobson and Seashore (1951), Weiss (1956), Schwartz (1968), MacDonald (1970) and somewhat modified by Amend (1971) to facilitate consideration as a continuous variable.

The _isolate_ is the individual who is a member of the organization, but has no communication contact with other members of his work group or organization.

The _group member_ has contact with his immediate group, but may have no more than one contact outside of his own group, except with liaison persons, and must have a majority of his contacts within his own group.

The _bridge_ is a single contact outside the immediate work group, and is a contact with a person other than a liaison person. The _bridge person_ may or may not have other contacts within his own primary group.

The _liaison individual_ does not have a majority of contacts in any one group, but has contacts with members of two or more groups. These contacts may be with other liaison persons only where those persons are themselves members of groups. If there is a _liaison set_ its members qualify as a group for this purpose.

The _liaison group member_ is a member of a communication group with a majority of his contacts, not including contacts with other liaison persons, within the group. The liaison person must have at least two contacts outside his group, not counting other liaison persons. An exception occurs if he has contact with two or more liaison persons outside his group.

The _liaison set_ consists of respondents who have half or more of their contacts with other _liaison persons_, at least two of whom must be members of more than one group, i.e., liaison individuals.

The operationalization of these six degrees of liaisonness follows that of Amend (1971, p. 77).

Each isolate was assigned a value of "0" since the definition of the type states that no contact is made. Each group member was assigned a contact value of "1"; each bridge person was assigned a value of "2"; each liaison individual a "3"; each liaison group member a "4"; and each liaison set member a "5."

The respondents were classified into one of these six categories through the Weiss' methodology (1956, pp. 88-108). Based on the reciprocated contacts, each individual was assigned a numerical index value of liaisonness. The sum of respondents in the three organizations were compared to test the hypothesis.

## Communication Function Variables

The functions of the internal communication of the organizations were operationalized as the respondents' perceptions of the relative amount of the specific type of communication in the organization indicated by their answers to questions 15, 16, 21, 23, 27, 35, 39, 40, 41, 42, and 43 on the questionnaire (see Appendix A). Questions 15, 16, 21, 23 27, and 35 used Likert-type scales, and questions 40 to 43, inclusive, asked the respondent to rank the five types of communication according to the relative number of contacts for each function she perceived in her community. The five functions were: to inform, to instruct, to influence, to integrate, and to innovate.

To inform.--Those communication acts which informed were ones serving primarily to supply needed data about the environment or about the member. This function primarily included "something I should know about." The answers to the two following questions operationalized the function, to inform.

15. Much information about Community affairs is made available to the members of our Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

39. __A. Business or official information: Some examples might be: a financial report of the Community, closing of an elementary school, or repairs at the Motherhouse, or statistics, such as number of members, etc.
(This statement was to be ranked 0 through 5 according to the relative number of contacts primarily of type described.)

Responses to the two questions were summed into one score. The higher the score, the greater the amount of communication which is perceived by the respondent as devoted to informing the members.

To instruct.--Communication acts which instructed were ones perceived primarily as telling the respondent what to do, how to do something, what behavior to engage in. The answers to the following two questions operationalized the function, to instruct.

32. On the whole, there is much communication in our Community which gives specific directives on how to do things. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __ strongly agree

40. __B. Directives or instructions which all sisters are to follow: Some examples might be: policy on dress, or certain prayers and penitential practices, or procedures for voting, or daily schedules. (This statement was to be ranked 0 through 5 according to the relative number of contacts primarily of type described.)

Responses to the two questions were summed into one score. The higher the score, the greater the amount of communication which is perceived by the respondent as devoted to instructing the members.

To influence.--The to influence category included acts perceived primarily as attempting to move the participants toward a predetermined position, attempts to make an impact upon another's thoughts and/or actions. The answers to the three following questions operationalized the function, to influence.

23. How often do the members receive suggestions and/or recommendations from the Community Government?

__never __seldom __sometimes __frequently __very frequently

27. How often do sisters make suggestions and recommendations to other sisters?

__never __seldom __sometimes __frequently __very frequently

41. __C. <u>Suggestions</u> or recommendations: Some examples might be: to attend a community event, or to take a certain attitude on Community issues, or on spiritual life, or to volunteer for a committee or position with the Community, or to attend a concert or lecture.
(This statement was to be ranked 0 through 5 according to the relative member of contacts primarily of type described.)

Responses to the three questions were summed into one score. The higher the score, the greater the amount of communication which is perceived by the respondent as devoted to making suggestions.

<u>To integrate</u>.--Integrative communication acts were those perceived primarily as for mutual support, to reaffirm the participants in terms of their respective identities. This category included small-talk, expression of feelings rather than primarily facts. The answers to the following two questions operationalized the function, to integrate.

16. Considering both the official communication (written and oral) and the informal communication among members of your Community: There is much communication to help sisters feel that others are interested in them. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

42. __D. Human interest, small talk, or things which have happened to various sisters: Some examples might be: "The following sisters received honors during the past month . . ." or "Our sick sisters. . . ."
(This statement was to be ranked 0 through 5 according to the relative member of contacts primarily of type described.)

Responses to the two questions were summed into one score. The higher the score, the larger the amount of communication devoted to integration as perceived by the respondent.

To innovate.--Innovative acts were those perceived primarily as exploring new ways of doing things, new ideas, or as attempts to solicit new ideas from the organization members. The answers to the following three questions operationalized the function, to innovate.

21. How often do you talk about new and different ways for the Community to do things?

__very frequently __frequently __sometimes __seldom __never

22. Group, local community, and/or total Community discussions for the purpose of coming up with new ways of doing things are encouraged by the Community. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

43. __E. Inquiries for the sisters' ideas or opinions: Some examples might be: solicitations for sisters' proposals for Chapter, or "What do you mean by 'life styles' for religious? By 'Community'? How shall we prepare for the apostolate of 1980? These questions will be explored at a meeting on May 5 . . ." or "Do you think our

> Community should have a vocation director? Please send your ideas . . ."
> (This statement was to be ranked 0 through 5 according to relative number of contacts primarily of type described.)

Responses to the three questions were summed into one score. The higher the score the greater the amount of communication the respondent perceived as innovative.

The five categories of functions discussed above were not mutually exclusive in terms of any one communication act. Rather, the measurement is made upon the overall impression of the above categories; the emphasis is upon the primary function of the communication and the impression of the members concerning the relative amounts of the various types of communication within their organization.

## Other Variables

Six variables which are closely related to communication in organizations were operationalized also in the present thesis. They were: opinion leadership, rate of adoption, satisfaction, uncertainty, conflict, and media of communication.

*Opinion leadership*.--Opinion leaders are those members of the organization who have the ability informally to influence other individuals' attitudes or behavior in a desired way with relative frequency (Rogers, 1962).

In the present study opinion leaders are members of the system who were selected by their peers in questions 36, 37, or 38 on the questionnaire. This is called sociometric opinion leadership. Three areas of competence were tested: question 36 asked for the person(s) whose opinion would be asked about a new idea on prayer; question 37 asked about Community government; and question 38 about apostolate. The basic question:

> If you wanted an opinion about a new idea on (one of three areas), which member(s) of your Community would you ask? (Write the name(s) in the blanks. Religious and family names, please.)

Three blanks were given for each question. These three areas were chosen because of their relevance to the contemporary religious community and as three areas which were mutually exclusive and required different types of information or background.

Opnion leadership is considered generally a continuous variable, that is there are not some members who have opinion leadership and other who have none. Rather it appears to be a quality which is possessed in varying degrees. Thus investigators have set an arbitrary division and considered all those above the cut-off point as opinion leaders. Hershfield (1968) used a minimum of four nominations; Kerr (1970, p. 84) used "nominated to each category by ten members of the association. . . ." Rogers and Van Es (1964) chose the 10 per cent who ranked the highest. Since the three organizations under study have different total memberships, a fixed percentage of the respondents had to nominate a person in one category for her to be considered an opinion leader. The deciding line was set at 10 per cent. For Community One, 10 per cent meant at least seven nominations; for Community Two, at least seven nominations; and for Community Three, nine nominations.

Rate of adoption.--The new idea, wearing contemporary dress rather than a uniform or habit, was used in the present study to measure the comparative time required for an individual innovation to penetrate and spread through the systems. Measurement was made from the date the decision was made by the organization to accept the innovation.

The following two questions operationalized rate of adoption:

9. Check the one statement which is true for you: Are you presently wearing:

   __(1) the traditional habit
   __(2) a modified habit
   __(3) contemporary clothes (secular dress) with veil
   __(4) contemporary clothes (secular dress) without veil

   [If you checked number (1), go to question (11).]

10. If you checked number (2), (3), or (4), when did you begin wearing the type of clothing you checked?

    ____________________
    (month) (year)

In the first question, number (1) was considered non-adoption of the innovation. The other choices were considered more innovative in succession. Only those respondents who had made an adoption (answered 2, 3, or 4) were to answer the next question which asked for the date of adoption. The cumulative percentage of members over time was obtained for each Community.

Satisfaction.--Satisfaction means the filling of a person's desire for something. In the present study satisfaction-dissatisfaction is considered a continuous variable. The issue upon which satisfaction was measured was "your Community's efforts in renewal." One question asked about the respondent's own satisfaction; the other her perception of the satisfaction among members of her Community.

The following two questions operationalized satisfaction:

29. In general, how satisfied do you feel with your Community's efforts in renewal?

    ___(a) greatly dissatisfied
    ___(b) somewhat dissatisfied
    ___(c) haven't thought much about it
    ___(d) mostly satisfied
    ___(e) highly satisfied

33. What do you think is the level of satisfaction among the members of your Community with regard to the Community's efforts in renewal: (check one line only).

__high dissatisfaction
__dissatisfaction to moderate satisfaction
__some dissatisfaction to moderately high satisfaction
__high satisfaction

The responses were scored with (1) for "greatly dissatisfied" and "high dissatisfaction" to a (5) for "highly satisfied," and a (4) "high satisfaction." "Haven't thought much about it" in the first question was scored as a (3).

After an inter-item correlation was calculated and found significant, the responses to the two items were summed into one score. The wider the variance of the score, the wider the variance of the members on the perceived satisfaction-dissatisfaction continuum.

Uncertainty.--By the variable, uncertainty, is meant low predictability on what is expected of her (respondent). The six following questions operationalized uncertainty.

14. I feel I usually know what to expect of other members of our Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

19. There is uncertainty in our Community about what is expected of a sister today. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

25. Our sisters feel uncertain about the continuation of the Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

28. I feel I know what other members of my Community expect of me. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

30. There is concern in our Community over such questions as: "How does a Sister fit into today's world?" Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

31. It is more difficult to decide what is expected of a Sister in our Community today, than it was ten years ago. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

After inter-item correlations were calculated, responses to these items were summed into one score. The higher the score, the higher the uncertaintly level in the community.

Conflict.--In measuring conflict, the present study dealt only with overt conflict, that which was expressed rather than that only felt by members of the organization. Overt conflict consisted of differences in opinions, ideas or values actually expressed either in speech, writing, or actions by members of the organization. The perception of the members of overt conflict in the organization was operationalized by the following six questions.

12. Within the Community differences are expressed more today than ten years ago. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

13. How often do other sisters express ideas or opinions to you which conflict with your ideas?

__never __seldom __sometimes __frequently __very frequently

18. How often do sisters express differences in ideas or opinions to each other?

__never __seldom __sometimes __frequently __very frequently

20. How often are different opinions concerning obedience and authority expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

24. In conversations with sisters, how often do you find yourself expressing ideas which differ from what the others have expressed?

__very frequently __frequently __sometimes __seldom __never

26. How often are different opinions concerning liturgy expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

35. How often are different opinions concerning apostolic priorities expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

After inter-item correlations were calculated, responses to these items were summed into one score. The higher the score, the greater the perceived overt conflict among the members.

Media of communication.--The media of communication within the organizations meant the perceptions of the members as indicated in question 11 below:

> Check the one phrase which most clearly describes the way you receive messages from the Community:
>
> __(1) all or nearly all written messages
> __(2) more written than oral
> __(3) about one-half written and one-half oral
> __(4) more oral than written
> __(5) all or nearly all oral messages

The higher the score the more respondents perceived the messages as oral rather than written.

## Data Analysis

The raw data from the checklist and the questionnaire were treated initially as separate entities. Throughout the analysis, except in the inter-item correlations, the responses from each of the three communities were considered separately. Relationship data was gathered through the checklist. The study of this type of data requires that one choose the subjects who are members of a dyad, not members by random choice. Therefore, to describe the communication structure of an organization, one must conduct a census of the members, rather than use random sampling.

Review of Various Methods

Up to this time the abundance of data gathered in order to study relationships or the structure of the communication network has created a major technical problem; no mathematical models into which the descriptive structural concepts could be translated were available. As Weiss and Jacobson (1955, p. 661) observed:

> The use of sociometry to determine the overall structure of a complex organization probably owes its rarity to an absence of both structural concepts and of efficient methods for the manipulation of large masses of sociometric data.

Three approaches have been discussed in the literature in relation to analyzing communication structures. These were: (1) charts or diagrams, such as sociograms; (2) matrix algebra (e.g., Festinger, 1949); and (3) graph theory (e.g., Harary, Norman, and Cartwright, 1965). Each of these approaches, although not necessarily mutually exclusive, has its advantages and its limitations.

Sociogram.--A sociogram is a representational device used to illustrate certain types of relations between pairs of individuals in a social system. However, these diagrams become confusing to the reader if a large number of individuals are included in the group or organization to be analyzed. In addition, and more importantly, certain graphic representations may be rather misleading, since there are no specified standard rules for the construction of sociograms.

Matrix algebra.--The second approach, matrix algebra was delineated by Elaine Forsythe and Leo Katz (1946) in the form of a sociometric matrix or simply socio-matrix. Subjects were listed in a matrix of N by N dimensions corresponding to the N persons in the particular organization. A check was placed in the contacter's row in the column of her contactees. Although this method presented a clear picture of the results, it was not built on specific rules or a mathematical formula. Therefore, many judgments were left to the subjective decision of the manipulator. Secondly, the method was very time consuming and error-prone. However, this method has been used more extensively than the other three methods. Weiss (1956) published the most complete description of the sociometric matrix method. Even this method has been followed only a few times, however, four to be exact, as far as the present writer has been able to ascertain: Schwartz (1968), MacDonald (1970), Jacob (1970), and Amend (1971), since Weiss' publication.

Graph theory.--Graph theory, although offering some advantages, has been discounted as a possible method of analysis. Lytton L. Guimaraes (1970, p. 54) in reviewing the various methods, stated:

> When compared to merely representational devices or descriptive techniques such as sociograms or sociomatrices, digraphs contain many more mathematical properties, and therefore offer considerably greater possibilities for mathematical treatment of structural data, such as the communication structure of social systems. Nevertheless, some authors believe (e.g., Berge, Coleman) that the operations yet available in this branch of mathematics are rather weak. The whole approach, they contend, needs to be further developed in order that it may be usefully applied in several different domains of social and behavior research. One of its obvious limitations (as that of the sociogram) has to do with the number of elements in the system under consideration. The larger the N, or sample size, the more complex the representation of its structural relations.

## Another Method of Analysis

In addition to the three approaches found in the literature, William D. Richards, Jr. (1970) has developed a new method and the computerized applications of this method. In introducing his methodology, Richards explained:

> It is the author's belief that the use of any of the methods described [Festinger, Jacobson, Seashore and Weiss] failed because they were not conceptually suited for the analysis of large or complex organizations. The fact that some of them apparently worked for small simple organizations is unfortunate; for this has encouraged further attempts to apply them to larger systems, where they inevitably fail (p. 5).

Basically Richards' method rests on the components of the network as defined by Weiss (1956). These are: group, member of group, liaison agent, bridge agent, and isolate. The goals of Richards' network analysis are to identify these components.

The analysis consists of three parts: (1) ordering the communication matrix so that the people who talk to each other are near each other in the matrix; (2)

identifying the liaisons; and (3) separating the small groups within the organization. The method is first to assign each person a unique subject number. This enables the investigator to draw up a number list of contacters with their contactees. The <u>means</u> of these lists are then obtained and compared. If two contacters have similar means, they probably are in the same group. Since most large organizations are made up of more than one smaller group, it is necessary to obtain "weighted means" in order to place a contacter in the proper group. When the weighted means for each contacter in the sample are compared, and this list of means is rank ordered, people with similar distributions are placed near each other. In large organizations this ordering process may need to be repeated several times. If this is done, convergence will result. If the data are then put in the form of a binary matrix, the non-zero entries will be clustered about the major diagonal.

> The solution obtained on convergence might not be the best possible solution. This is because no proof of the unique best solution has to this date been formulated. . . . The present author feels that such a search, while not irrelevant, should not be considered essential to the creation of a workable method of analysis. In trial applications of this method it was found that it was not necessary to continue the iterative process of ordering the matrix until absolute convergence was reached. This is because the separating methods were sensitive enough to be able to discriminate between liaison agents and others without absolute convergence. For this reason, an "almost absolute" criterion is suggested (p. 13).

The advantage of Richards' methodology is that the computer, by use of the weighted means of each contacter, provides the researcher with a matrix, thus eliminating hours of manual labor. However, the investigator must decide the number of iterations of the matrix he wishes the computer to make. Finally, the investigator must make the final decision as to which iteration explains the communication network most satisfactorily and then interpret the findings.

### Analysis of Checklist in the Present Thesis

In the present thesis, each respondent was given a number and this contacter number was punched into a computer card with the number of the contactee followed by a code for the frequency of contact: 5 = "several times a day"; 4 = "once a day"; 3 = "one or two times per week"; 2 = "one or two times per month"; 1 = "less than once a month." If more than one category were checked, the answer was considered void and no contact was recorded. These contact computer cards were formed into a raw data deck and used for "Program Netbuild."[1] This program gave a listing of all contacts by contacter, then a list indicating how many persons to whom each respondent said she talked.

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[1]All programs used for the checklist analysis were the work of Richards (1971).

Next the program gave a list of the reciprocated contacts for each person in the organization. From this point, all analyses were done on reciprocated contacts only. "Reciprocated" means that not only must a person nominate or name another as a contact, but that the other person must agree by naming the first person as a communication contact also. The perceived frequency of the contact was handled by weighting the scores. Thus if one respondent said the contact occurred "several times a day" (5), and the other gave "once a day" (4), the (5) would have more influence on the position of the contact in the matrix than the (4) would have.

One of the variables affecting a process is time. When the researcher examines communication within an organization as a process, what time span should he consider? Since the network has been judged stable enough to be studied, but communication is a process, this communication network has a pattern. What slice of time is best for capturing this pattern? Very little work has been done on the variable, time. The computer program used in the present study enabled the investigator to slice time into four varying periods: "several times a day"; "once a day" or more often; at least once a week; at least once a month.

The category, "less than once a month," was dropped because it seemed very ambiguous; some respondents left blanks beside other members' names, others seemed to check nearly everybody as "less than once a month." Therefore, it was judged that this category would not facilitate the separation of the organization into its communication groups.

To cope with the variable, time, in this manner, the computer program, "Network," was run on four combinations of frequencies for each of the three communities. These were: "several times a day" only (5); "several times a day" (5) and "once a day" (4); "several times a day" (5), "once a day" (4) and "one or two times per week" (3); and "several times a day" (5), "once a day" (4), "one or two times per week" (3), and "one or two times per month" (2).

First, the program squared each of the matrices showing different frequencies through a subroutine, "Squarm." This subroutine gave the means of the two-step contacts for each respondent. Second, the program ranked each person according to the mean of her contactees. The computer then printed the total number of changed ranks and the sum differences of these ranks each time it reranked all respondents (see Appendix C). The results were printed as a binary matrix with code numbers for the respondents placed at the top and left margins of the matrix (see Appendix D).

The purpose of the process through consecutive iterations was to converge the <u>means</u> and thus place next or near to each other those persons who communicated with each other. Previously this step was done by the investigator re-arranging the members by what "looked" to be a good arrangement, attempting to arrange the "X's," entries which indicated a reciprocated contact, close to the diagonal and the blank squares away from the diagonal. The same process was done by the computer ranking the members according to the weighted means of their contacts.

However it was found that the computer process did not consist of a simple converging (recognized by a reduction in the sum of the rank differences). On the second iteration the sum rank difference reduced to one-eighth or one-tenth of the original. However, after several additional iterations, the difference would begin to increase again. Therefore, one could not select simply the last iteration as the "right answer" (see Appendix C). Instead, in order to select the most workable solution, the investigator made a list of the number of persons who changed rank and the sum of the rank differences for those iterations with the smallest rank differences and the largest number of persons changing rank. The number of persons who changed rank was divided into the sum of the rank differences and the square root of this quotient calculated to determine the iteration at which the matrix was most convergent. This matrix was then studied and the segments or groups (those who communicated more often with each other than with other persons) were identified.

Weiss' (1956, pp. 99-108) method for identifying liaisons, group members, and isolates was then employed.

Although both the Weiss and Jacobson (1955) and the Schwartz (1968) studies began with a semi-ordered listing of the respondents based on the organization charts for the contact matrix, the present study in using Richards' method (1971) was based on random listing. Actually the members were initially placed in the order on the membership lists given to the investigator by the general superiors. This arrangement was used to facilitate the coding.

The first step in the analysis was to note any contacts outside the subdivision of the organization, the segment. The members with such contacts were listed down the left column of a "reduction" matrix and their contactees along the top-most row of the matrix, and the number of such contacts was determined for each person. Weiss (1956, p. 91) noted that: "The person having the highest total obviously is a liaison person, and he is deleted from the matrix."

Each person having a contact with the removed liaison person now had a row (and column) total of one less than originally. This process was continued until the only persons remaining in the "reduction" matrix were those with one or no contacts outside their own segment. The reduced segments were then studied to determine if further decomposition could be made. If so, the process of reducing each segment further and separately was continued and additional liaison or bridge persons discovered. The steps were continued until respondents were grouped in isolated segments.

After the members were categorized into some degree of liaisonness, Amend's (1971, pp. 76-78) procedures were followed to obtain an index score for each community. Contact scores for each respondent were determined by first identifying each person in one of the categories of liaisonness and then adding her contacter's score by noting in which category each of her contactees had been listed. Therefore, if a contacter spoke to three group members, her score was three (see Appendix E). If she spoke to two group members and a liaison individual, her total liaisonness index score was five. Using this method of scoring, the investigator assigned a numerical value to each respondent which represented her total score on the liaisonness index.

In order to convert the liaisonness indices of the respondents from the three organizations into one score for that particular community, a statistic was needed that would indicate how much scores differed in relation to how much they could differ. This need was the result of the different N's in the three communities: Community One = 62; Community Two = 68; Community Three = 84. The mean, range, and standard deviation of each organization's members' liaisonness indices were computed. This mean difference was divided by the average standard deviation of successive pairs of the three organizations.

## Summary

The analysis of data on the relationships between and among members of a complex organization has suffered up to the present time from an absence of both structural concepts and of efficient methods for the manipulation of large masses of sociometric data.

The preceding brief description of data analysis summarized three approaches found in the literature: charts or diagrams, such as sociograms; matrix algebra; and graph theory. A more lengthy description was then given of Richards' computerization of sociometric data, which was used in the present thesis. This analysis was followed by Amend's (1971) method for finding the degree of liaisonness within an organization. A range-free statistic, necessitated by the different N's, was used to compare the three communities.

## Questionnaire Analysis

The raw data from the questionnaire were punched into computer cards, one card for each respondent. Frequency counts were made on all variables on the 3600 computer in the University Computer Center at Michigan State University. Other statistical tests were then used as appropriate. During the coding of the raw data, the negatively worded items were reflected. This reflection facilitated scale construction procedures and resulted in all inter-item correlations being in the "true" direction.

The first use of the raw data decks was to obtain descriptive statistics on each of the three communities. These statistics consisted of a frequency count, mean, and range on all of the fifty-eight variables measured by the questionnaire. After this print-out was inspected for possible errors or omissions, inter-item Parson produce moment zero-order correlation coefficients were calculated on the specific questions designed to measure a particular concept. Unanswered items had been coded as a "blank," and the computer program accounted for missing data.[1] The inter-item correlations then were inspected to determine whether any item contributing to an index scale correlated poorly or negatively with other contributing items. These correlations were made first on the three communities combined and then on each community separately. The correlations were compared to a given index (Guilford, 1954). To be significantly different from zero at the .05 level required a correlation of .138 or above for the communities combined; .250 (Community One); .232 (Community Two); and .217 (Community Three).

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[1]MDSTAT, a Michigan State University Agricultural Experiment Station program written for the CDC 3600 and 6500 computers. The program is on file at the university Computer Laboratory library.

Each of the five functions: to inform, to instruct, to influence, to integrate, and to innovate was measured by a question that asked for a ranking and one or two other Likert-type questions as explained.

To inform.--The obtained inter-item correlation for the two-item To Inform scale was as follows: numbers 15 and 39, r = .08 (all three communities combined); .06 (One); -.05 (Two); .05 (Three). The correlation was not significantly different from zero at the .05 level in any of the four tests. Based on the result of this analysis, the To Inform items were treated as two variables.

TABLE 2.--Inter-item correlations for the index of the to inform function.

| Item | All Three | | One | | Two | | Three | |
|---|---|---|---|---|---|---|---|---|
| | 15 | 39 | 15 | 39 | 15 | 39 | 15 | 39 |
| 15 | x | | x | | x | | x | |
| 39 | .08 | x | .06 | x | -.05 | x | .05 | |

Note: n ranges from 49 to 187.

To instruct.--The obtained inter-item correlations for the three-item To Instruct scale were as follows: items 32, 34, r = .01 (all three); -.14 (One); -.10 (Two); -.02 (Three); items 32, 40, r = .23 (Combined); .15 (One); .23 (Two); .06 (Three); items 34, 40, r = .32 (Combined); .17 (One); .12 (Two); .29 (Three). As a result of the analysis, since the correlations of item 34 were either negative or not significantly different from zero at the .05 level in seven out of eight tests, only items 32 and 40 were used for the To Instruct scale.

TABLE 3.--Inter-item correlations for the index of the to instruct function.

| Item | All Three | | | One | | | Two | | | Three | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 32 | 34 | 40 | 32 | 34 | 40 | 32 | 34 | 40 | 32 | 34 | 40 |
| 32 | x | | | x | | | x | | | x | | |
| 34 | .01 | x | | -.14 | | | -.10 | | | -.02 | | |
| 40 | .23 | .32 | x | .15 | .17 | x | .23 | .12 | x | .06 | .20 | x |

Note: n ranges from 50 to 208.

To influence.--The obtained inter-item correlations for the three-item To Influence scale were as follows: items 23, 27, r = .19 (Combined); .32 (One); .08 (Two); .21 (Three); items 23, 41, r = .12 (Combined); .05 (One); .07 (Two); .08 (Three); items 27, 41, r = .10 (Combined); .13 (One); .17 (Two); -.14 (Three). Since the correlations of item 41 were either not significantly different from zero at the .05 level or negative in all eight correlations, only items 23 and 27 were used for the To Influence scale.

To integrate.--The obtained inter-item correlations for the two-item To Integrate scale were as follows: items 16, 42, r = .24 (Combined); .19 (One); .31 (Two); .27

TABLE 4.--Inter-item correlations for the index of the to influence function.

| Item | All Three | | | One | | | Two | | | Three | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 23 | 27 | 41 | 23 | 27 | 41 | 23 | 27 | 41 | 23 | 27 | 41 |
| 23 | x | | | x | | | x | | | x | | |
| 27 | .19 | x | | .32 | x | | .08 | x | | .21 | x | |
| 41 | .12 | .10 | x | .05 | .13 | x | .07 | .17 | x | .08 | -.14 | x |

Note: n ranges from 51 to 208.

(Three). Since the correlations were significantly different from zero at the .05 level for all tests, except for Community One, the two items were used for the To Integrate scale.

TABLE 5.--Inter-item correlations for the index of the to integrate function.

| Item | All Three | | One | | Two | | Three | |
|---|---|---|---|---|---|---|---|---|
| | 16 | 42 | 16 | 42 | 16 | 42 | 16 | 42 |
| 16 | x | | x | | x | | x | |
| 42 | .24 | x | .19 | x | .31 | x | .27 | x |

Note: n ranges from 50 to 190.

<u>To innovate</u>.--The obtained inter-item correlations for the three-item To Innovate scale were: items 21, 22, r = .02 (Combined); -.13 (One); .23 (Two); .11 (Three); items 21, 43, r = -.01 (Combined); -.02 (One); -.10 (Two);

.13 (Three); items 22, 43, r = .24 (Combined); .25 (One); .23 (Two); .10 (Three). Since seven of the eight correlations containing item 21 were either negative or not significant, only items 22 and 43 were used for the To Innovate scale.

TABLE 6.--Inter-item correlations for the index of the to innovate function.

| Item | All Three | | | One | | | Two | | | Three | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 21 | 22 | 43 | 21 | 22 | 43 | 21 | 22 | 43 | 21 | 22 | 43 |
| 21 | x | | | x | | | x | | | x | | |
| 22 | .02 | | | -.13 | | | .23 | | | .11 | | |
| 43 | -.01 | .24 | x | -.02 | .25 | x | -.10 | .23 | x | .13 | .10 | x |

Note: n ranges from 49 to 212.

Three other variables were measured by multiple items on the questionnaire, and therefore, required inter-item correlations to be calculated. These were: satisfaction, uncertainty, and overt conflict.

Satisfaction.--The obtained inter-item correlations for the two-item Satisfaction scale were as follows: 29, 33, r = .55 (Combined); .55 (One and Two); .52 (Three). Since the correlations were significantly different from zero at the .05 level in all four cases, the two items were used for the Satisfaction scale.

TABLE 7.--Inter-item correlations for the index of satisfaction.

| Item | All Three | | One | | Two | | Three | |
|---|---|---|---|---|---|---|---|---|
| | 29 | 33 | 29 | 33 | 29 | 33 | 29 | 33 |
| 29 | x | | x | | x | | x | |
| 33 | .55 | x | .55 | x | .55 | x | .52 | x |

Note: n ranges from 60 to 209.

Uncertainty.--The obtained inter-item correlation matrix for the six-item Uncertainty scale is presented in Table 8. All items were retained to measure the Uncertainty variable.

Overt conflict.--The inter-item correlation matrix for the seven item overt conflict scale is presented in Table 9. All items were retained to measure the Overt Conflict variable.

## Tests of Significance

Before one can evaluate the hypotheses in this present study, he must first adopt a position toward applying the tests of statistical significance to the data.

Ordinarily one of the assumptions of tests of significance is randomness. The present study violated this assumption of randomness because: (1) the particular organizations were chosen because of the interest of the

TABLE 8.--Inter-item correlations for the index of uncertainty.

| Item | All Three | | | | | | One | | | | | | Two | | | | | | Three | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 14 | 19 | 25 | 28 | 30 | 31 | 14 | 19 | 25 | 28 | 30 | 31 | 14 | 19 | 25 | 28 | 30 | 31 | 14 | 19 | 25 | 28 | 30 | 31 |
| 14 | x | | | | | | x | | | | | | x | | | | | | x | | | | | |
| 19 | .11 | x | | | | | .13 | x | | | | | .12 | x | | | | | .05 | x | | | | |
| 25 | .14 | .37 | x | | | | .17 | .45 | x | | | | .11 | .38 | x | | | | -.16 | .28 | x | | | |
| 28 | .18 | .27 | .24 | x | | | .18 | .35 | .36 | x | | | .24 | .05 | .10 | x | | | .10 | .36 | .20 | x | | |
| 30 | .19 | .22 | .28 | .06 | x | | .07 | .16 | .22 | .08 | x | | .27 | .37 | .27 | -.02 | x | | .08 | .02 | .04 | .07 | x | |
| 31 | .06 | .20 | .15 | .00 | .11 | x | -.26 | .04 | .27 | -.24 | .05 | x | .24 | .33 | .16 | .20 | .19 | x | .10 | .24 | -.01 | .04 | .05 | x |

Note: n ranges from 58 to 211.

TABLE 9.--Inter-item correlations for the index of overt conflict.

| | All Three | | | | | | | | One | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 12 | 13 | 18 | 20 | 24 | 26 | 35 | Item | 12 | 13 | 18 | 20 | 24 | 26 | 35 |
| 12 | x | | | | | | | 12 | x | | | | | | |
| 13 | .27 | x | | | | | | 13 | .36 | x | | | | | |
| 18 | .34 | .23 | x | | | | | 18 | .25 | .21 | x | | | | |
| 20 | .02 | .13 | .23 | x | | | | 20 | .01 | .18 | .07 | x | | | |
| 24 | .16 | .45 | .23 | .22 | x | | | 24 | .20 | .53 | .22 | .13 | x | | |
| 26 | .09 | .13 | .29 | .33 | .08 | x | | 26 | .20 | .29 | .55 | .36 | .22 | x | |
| 35 | .09 | .06 | .34 | .09 | .14 | .25 | x | 35 | .04 | .14 | .59 | .23 | .21 | .52 | x |

| | Two | | | | | | | | Three | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 12 | 13 | 18 | 20 | 24 | 26 | 35 | Item | 12 | 13 | 18 | 20 | 24 | 26 | 35 |
| 12 | x | | | | | | | 12 | x | | | | | | |
| 13 | .05 | x | | | | | | 13 | .34 | x | | | | | |
| 18 | .38 | -.00 | x | | | | | 18 | .40 | .40 | x | | | | |
| 20 | .15 | -.09 | .18 | | | | | 20 | .04 | .20 | .41 | x | | | |
| 24 | -.04 | .37 | .17 | .20 | x | | | 24 | .30 | .44 | .27 | .25 | x | | |
| 26 | .15 | -.00 | .26 | .34 | .03 | x | | 26 | -.01 | .05 | .14 | .26 | .02 | x | |
| 35 | .34 | .10 | .23 | .01 | .22 | .45 | x | 35 | -.07 | .02 | .23 | .20 | .12 | -.03 | x |

Note: n ranges from 57 to 213.

researcher, her familiarity with them, and their availability and accessibility; (2) the data were gathered from the population, not from a random sample of that population.

MacDonald (1970, pp. 50-53) summarized the three major viewpoints on the matter of using inferential statistics on data which violate the assumption of randomization. The first position is that since the use of inferential statistics rests on an assumption of samples that are somehow random, that is one condition of their use that cannot be violated.

A second position is that one <u>may</u> use such statistics to describe the significance of an observed difference between two categories that exhaust the population on some variable, regardless of the sample base, apparently on the basis that something is better than nothing, or that such statistical use avoids subjective judgment. The third position is that one may apply inferential statistics for generalization only if one first generates a large set of randomly drawn observations, among which the one of current interest is a special case.

How have others working with communication structure in organizations handled the problem? Jacobson and Seashore (1951) and Weiss (1956) took the first position above. Their studies violate the assumption of randomness in the same manner as the present study.

They, therefore, reported their data as percentages and frequencies not amenable to much further statistical manipulation.

Schwartz (1968, p. 17) seemed to follow the second position, but commented:

> Statistical tests of differences in this section and in the hypothesis testing section are applied in a heuristic sense to attempt to provide an approximation of potential parameters. Two problems plague the application of statistical tests to the data of this study: (1) the study population from which the samples were taken is not randomly drawn and the generalizability of the findings must depend on future comparative studies to determine the representativeness of the population . . .

MacDonald (1970, p. 58) also settled for position one, stating that:

> In summary under the conditions of the present study the assessment of meaning to differences . . . cannot rest on t-test or other statistical tests of difference to which significance levels are ascribed. A difference may be described in terms of percentage or relative frequency on some characteristic, or by means and standard deviations of index scores. Whether the difference is "significant" cannot be defended on statistical grounds.

The difference between the present study and those above was that the present study investigated three organizations rather than only one. Accordingly, the present study would seem to be a step in the direction suggested by Lipset, Trow, and Coleman (1956, p. 483) dealing with the question of significance:

> Further studies upon different organizations will constitute more reliable confirmation, for they test the hypotheses in a different population, which a chi [square tests] used on this data could never do. . . . Even if all assumptions for such tests are

> fulfilled, the population to which the result is generalized is not the population from which the sample was drawn.

In summary, from the above discussion, the conclusion for the present study is that the assessment of meaning to differences cannot rest on statistical test results to which significance levels are ascribed. Therefore, differences will be described in terms of relative frequency on some characteristic. The statement, "hypothesis is supported," will be used if the differences are in the direction predicted.

The present study is one step forward from using only one organization for study in that through the comparison of the three organizations, it can give more reliable confirmation, as suggested by Lipset, Trow, and Coleman.*

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*For further discussion and examples of each position see: Morrison and Henkel (1969), first position; Winch and Campbell (1969), second position; and Gold (1969).

## CHAPTER IV

## FINDINGS

The present chapter relates the results obtained from data gathered in three organizations of women religious. These three organizations are described through characteristics of their members, and the tests of the hypotheses are discussed.

### Characteristics of the Members of the Organizations

Demographic data from the 219 participants of the present study population can be utilized to characterize each of the three religious communities. These data are presented as descriptive parameters of the study population because the universe of women religious in the United States is represented. The value of the data is in describing certain characteristics of the three organizations and their populations, in comparing and contrasting the three, and for later use as comparative statistics for other empirical case studies conducted in similar, or dissimilar, organizations. Finally, the systems approach requires that one consider the various environmental factors, be these internal or external to the organization. As Edgar H. Schein (1965, p. 3) said: "Almost any questions one may raise about the determinants of human behavior within organizations have to be viewed from the perspective of the entire social system."

A summary of four personal variables of individuals in the three organizations is presented in Figures 4 through 7.

### Age

Comparison of the age of the three communities showed that Community One and Community Three both had a median age of approximately forty-five years, while Community Two was younger, approximately thirty-five years. Before the organizations were selected for study, the General Superior of each community was asked the median age of her organization. Community One reported 50 years; Community Two, 38 years; and Community Three, 45 years. The two data points for each community (that received from the General Superior and that received from the individual sisters) appeared to agree. The mode and range of the three groups gave additional information. The three organizations were quite similar in range of age. Community One ranged from 21 years to 90 years; Community Two ranged from 20 years to 80 years; Community Three had the widest range, from 19 to 90 years. However, the concentration of members (mode) showed a dissimilarity. In Community One, 1 our of 4 or 25 per cent of the members were in the age bracket from 61-70 years. In Community Two, a little more than 1 out of 4 or 29 per cent were in the bracket between 21-30 years. In Community Three almost 1 out of 4 or 23 per cent were between the ages of 41-50. These modes substantiated the impression gained by the investigator during her visits with Community One and Community Two; she noticed how many more young women there seemed to be in Community Two. The statistics showed the 21-30 group to be the largest in Community Two. This major difference between Community One and Community Two needs to be considered when comparing the communities on other variables (see Figure 5).

To summarize the age of the members of the three communities, Community One (predesignated the least innovative) had the oldest membership; Community Two (middle organization) had the youngest, with Community Three (designated the most innovative) falling between the other two organizations.

## Years in the Community

The number of years that members had been in the organization added to the information about the communities (see Figure 5). Since some categories on this variable contained fifteen rather than ten years, as with the age variable, the measures of central tendency for the three communities converged. Thus the medians of years in the organization for Community One and Community Two were approximately twenty-three years; for Community Three approximately forty years. When this information is compared to the age of members, it seems to indicate that women entered Community Two at an earlier age than women entered Community One. In Community One and Community Three nearly 4 out of 10 had held membership between 31 and 50 years, while in Community Two, nearly 3 out of 10 had held membership between 6 and 15 years. The percentage of members in Community Three who had held membership for more than fifty years was considerably higher than for the other two communities. Approximately 17 per cent of Community Three was in that category, versus 6.45 per cent for Community One, and 1.49 per cent for Community Two. Thus Community Three had the highest median for years in the organization, although it ranked between Community One and Community Two on the median age level.

## Education Level

Women religious in the United States today probably have amassed more credits and accumulated more hours in the student role than any other group of women in history. This high education level was reflected in all three communities, as over 40 per cent of the membership of each held a master's degree or its equivalent (see Figure 6); almost half (49 per cent) of the members of

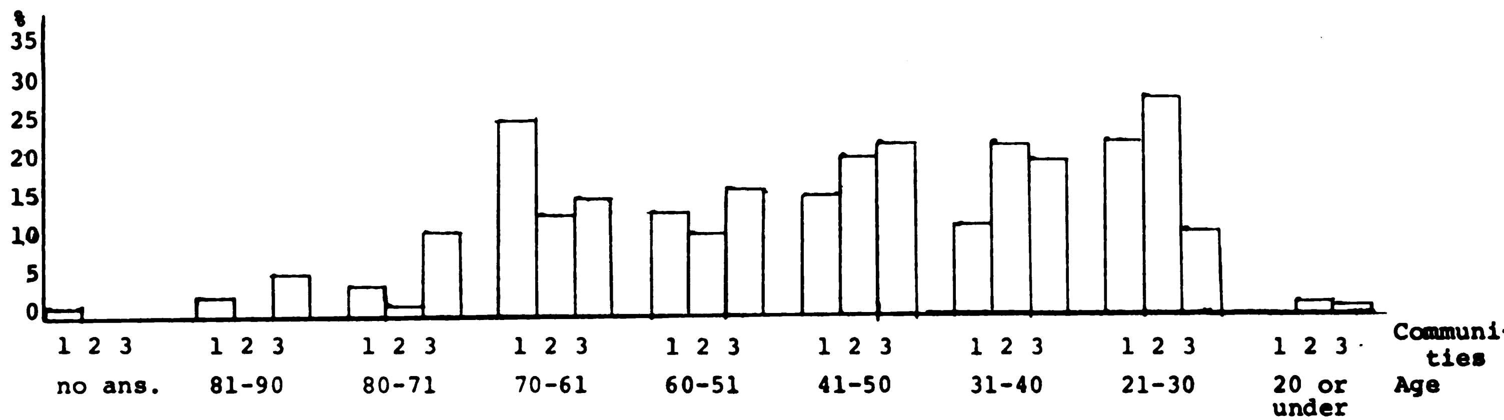


Figure 4. Percentage of members in each age category.

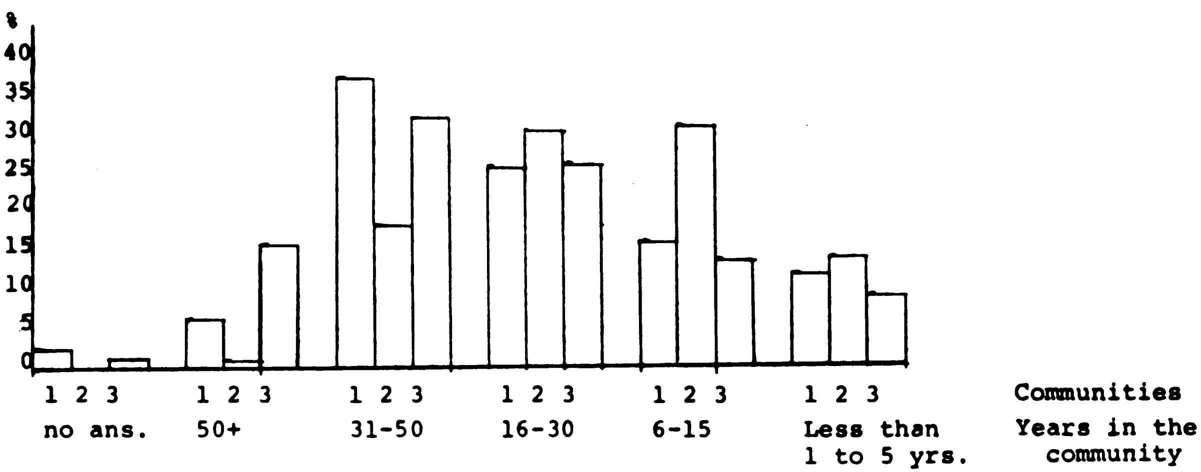


Figure 5. Percentage of members according to years in the organization.

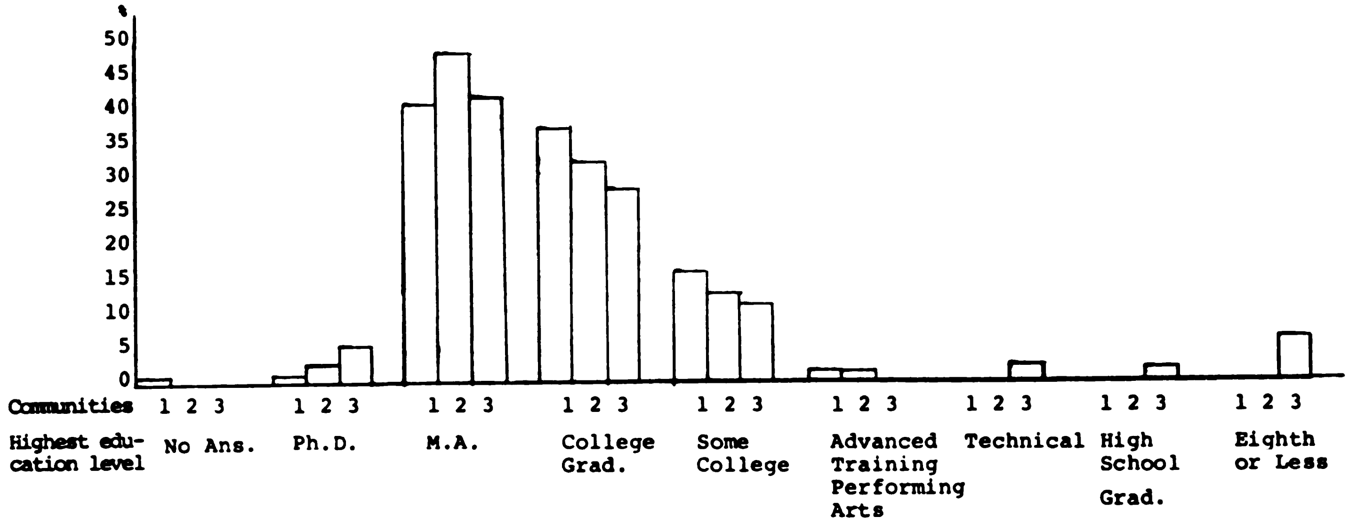


Figure 6. Highest education level reached by members of the organizations.

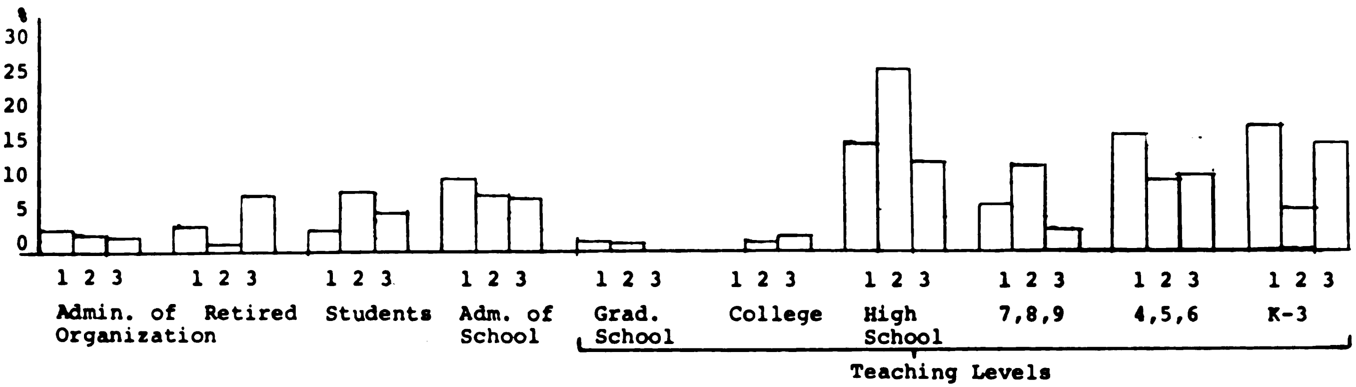


Figure 7. Percentage of members in various jobs.

Community Two held that degree. In Community One, another nearly 40 per cent had been graduated from college; in Community Two, 33 1/3 per cent and in Community Three, approximately 30 per cent. All three communities had members with Ph.D.'s: 1.59 per cent in Community One; 2.90 per cent in Community Two; and 5.81 per cent in Community Three. These statistics showed that more than 80 per cent of the members of all three communities had been graduated from college. Community Three had the widest range on the level of education variable; nearly 6 per cent of the members stopped school at or before grade eight, while at the other end of the continuum, another nearly 6 per cent held the Ph.D. In Community One and Community Two, all members had had at least some college. Thus all three communities consisted of members with high education levels; over 80 per cent had at least the B.A. degree. Community Three had the greatest variance on education, from less than grade eight through the Ph.D.

## Jobs

Job descriptions were divided into teaching by various grades, administration of schools, administration of the community, students (preparing for a job) and retired (from job). The great majority of the members of all three communities were teachers in grades kindergarten through grade twelve (see Figure 7). In all three communities, two respondents each gave "administration of the community" as their principal work. Community Two had the highest percentage of students: 4 or 5.79 per cent of the membership were undergraduates and 2 or 2.89 per cent of the membership were graduate students. Community One had no undergraduates; 2 or 3.12 per cent of the membership was in graduate school. Community Three had 5.80 per cent of the membership in the student capacity: 3 or 3.48 per cent as undergraduates and 2 or 2.32 per cent as graduates. At the other end of the employment picture, 3 or 4.68 per cent of the membership of Community One said they were retired; 1 or 1.45 per cent of Community Two; and 7 or 8.13 per cent of Community Three.

## Tests of Hypotheses

The present study focused on the variations in the internal communication network structure and functions present in three matched formal organizations. Each of the three organizations was at a different stage in moving from a more centralized, rigid governmental structure, to a more decentralized, less rigid governmental structure. The findings dealing with the tests of the hypotheses are presented in the same order as these were given in Chapter I, first those dealing with the network structure, second those dealing with the functions of internal communication, and last other related variables.

As explained in Chapter III, the present thesis concluded that the assessment of meaning to differences among the three organizations on a specific variable could not rest on statistical test results to which significance levels had been ascribed. Therefore, differences are described in terms of relative frequency on some characteristic. The statement, "hypothesis is supported," is used if the difference is in the direction predicted.

## Communication Structure Hypotheses

The first major emphasis of the present thesis concerned the structure of the communication network. The point of interest was: "Who talks to whom" and "How often?" These questions were conceptualized as integration and liaisonness of the networks.

Integration.--Integration of a communication system is the degree to which its subsystems and individual units (persons) are interconnected. Kerlinger (1966, p. 559) called the concept, "cohesiveness." The formula used to test for integrativeness was:

$$I = \frac{\Sigma \text{ of mutual choices}}{\frac{\#\text{ of possible choices} \times \#\text{ of respondents in matrix}}{2}}$$

The hypothesis read:

H 1.0: The more innovative organization will have a more integrated communication network.

Community One (the predesignated least innovative community) had an integration index of .5473 or approximately 55 per cent integration. The 62 participants reported a total of 3,078 contacts. The range was from 7 to 71, and the average, 49.6. Of the total contacts, 2,070 or approximately 67 per cent were reciprocated. The reciprocated contacts had a range from 6 to 57, and an average of 33.4.

The 67 respondents in Community Two reported a total of 2,463 contacts at the four frequencies used. The range was from 6 to 72 and the average, 36.2. Of these reported contacts, 1,800 or 73 per cent were reciprocated. The reciprocated contacts had a range from 0 to 52 and an average of 26.8. Community Two (the predesignated community in the middle on the adaptation continuum) had an integration index of .4070 or approximately 41 per cent integration.

The 84 respondents of Community Three reported a total of 2,470 communication contacts at the four frequencies used. The range was from one to 88 and the average, 29.4. Of these reported contacts, 1,586 or 65 per cent were reciprocated. The reciprocated contacts had a range from 0 to 59, and an average of 18.8 (see Table 10).

Other studies, in making sociometric analyses, reported fewer average contacts. Schwartz (1968, pp. 91-93) showed an average span of seven contacts; Weiss and Jacobson (1955, p. 663) reported an average of about twelve contacts per respondent. MacDonald's thesis

TABLE 10.--Descriptive statistics of communication contacts.

| Community | N | Total Contacts | | | | Reciprocated Contacts | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | Range | Mean | SD | Number | Percentage of Total | Mean | Range | SD |
| One | 62 | 3,078 | 7-71* | 49.6 | 16.2 | 2,070 | 67 | 33.4 | 6-57 | 11.2 |
| Two | 67 | 2,643 | 6-72 | 36.2 | 16.1 | 1,800 | 73 | 26.8 | 0-52 | 12.2 |
| Three | 84 | 2,470 | 1-88 | 29.4 | 19.9 | 1,586 | 65 | 18.8 | 0-59 | 13.1 |

*Maximum value of the range is larger than the participant number for each community because "total contacts" included those with members of the organization who were unable to or refused to participate in the study.

(1970, p. 69) resulted in seventeen contacts per person. Comparisons are difficult to make, however, for several reasons. First, the types of organizations in the above mentioned studies were those in which a person spent only part of his time. Therefore, there would be less opportunity for contact than in the organizations in the present thesis in which the respondents were virtually there twenty-four hours per day. Second, Schwartz limited his respondents to reporting weekly or more frequent contacts, while Weiss and Jacobson permitted reports of contacts as infrequently as "several times a year." MacDonald placed an arbitrary limitation of thirty contacts per person on his contact checklist.

In examining why he had more contacts than the two previous studies, MacDonald (1970, pp. 69-70) said:

> It is likely that the employment stability and the coordination nature of the agency examined in the present study [headquarters staff of a federal agency] contributed to the much higher average number of contacts reported. People who have been members of a given staff or of field branches of the same agency for as long as twenty years probably know and communicate with most of their fellow employees at one time or another.

The present thesis examined organizations which included respondents with membership as long as fifty years or more.

The comparative findings were: Community One, integration = 55 per cent; Community Two, integration = 41 per cent; Community Three, integration = 27 per cent.

Therefore, the findings are in the opposite direction to that predicted and the hypothesis is not supported (see Table 11).

TABLE 11.--Integration index for the three organizations.

| Community | N | Formula |
|---|---|---|
| One | 62 | $\frac{1,035}{1,891}$ = .5473 or 55 per cent integration |
| Two | 67 | $\frac{900}{2,211}$ = .4070 or 41 per cent integration |
| Three | 84 | $\frac{793}{3,486}$ = .2748 or 27 per cent integration |

Liaisonness.--The hypothesis concerning liaisonness read:

H 2.0: The more innovative organization will have greater liaisonness in its communication network.

Since this hypothesis dealt with each organization as the unit of analysis, it was necessary to choose the frequency of contact which expressed relationships within the total organization. The social question was: How often is it reasonable to expect contact among members within a community of religious? More than once a week seemed too often; less than once a month seemed too seldom. Thus once a month or more often seemed plausible. After making this decision, the matrices of the various frequencies were studied. The "several times a day" (5), and once a day or more often (5) and (4) matrices divided the organizations into groups by either work or residence. Only when the once a month or more often (5), (4), (3), and (2) frequencies were combined did the communication patterns across groups or those which encompassed the whole organization become apparent. Therefore, the matrix showing the reciprocated once a month or more often contacts was used for hypothesis 2.0.

The findings were:

| Community | N | Range | Mean | SD |
|---|---|---|---|---|
| One | 62 | 6-48 | 33.3 | 24.4 |
| Two | 67 | 0-138 | 69.4 | 15.3 |
| Three | 84 | 0-101 | 31.5 | 20.0 |

| | Obained Mean | | Range-Free Difference | |
|---|---|---|---|---|
| Community One vs. Community Two | 36.0 | (2>1) | 1.8 | (predicted) |
| Community One vs. Community Three | 1.8 | (1>3) | .08 | (indecisive) |
| Community Two vs. Community Three | 37.9 | (2>3) | 2.1 | (opposite) |

Community One and Community Three actually showed so little difference in liaisonness that they could be considered the same, although the patterns of contact were quite different (see Appendix D). Community Two contained a much higher amount of liaisonness than either of the other two organizations. Thus the three organizations had a curvilinear relationship on the liaisonness scale (2>1>3) and the hypothesis is partly supported.

The three organizations were patterned very differently. Community One did not break into segments; it was one large group at the frequency of once a month or more often (see Appendix D). This meant there were no liaisons, bridge persons, or isolates. Individuals could only be ranked according to the number of reciprocated contacts they had had. Community Two broke into four segments. It contained thirty liaison persons, no bridge persons, and two isolates. Community Three contained four segments, although segment D was loosely composed (see Appendix D); thirteen liaisons, one pair of bridge persons; and three isolates.

TABLE 12.--Segmentation of three organizations.

| Community | N | Number of | | | |
|---|---|---|---|---|---|
| | | Segments | Liaisons | Bridges | Isolates |
| One | 62 | 1 | 0 ( 0%) | 0 | 0 |
| Two | 68 | 4 | 30 (44%) | 0 | 2 |
| Three | 84 | 4 | 13 (15%) | 2 | 3 |

A comparison of the percentages of liaisons found in the present study to the percentages in earlier studies showed that Community Three compared favorably to the others, while Community Two had a higher percentage of liaisons than the other studies. Jacobson and Seashore (1951) reported that 18 per cent of their 196 respondents classified as liaisons. In a study of college professors in a large university, Schwartz (1968) obtained 22 or 15.49 per cent liaisons from 142 respondents. MacDonald (1970) reported 14.1 per cent from 185 government employees, and Amend (1971) listed 18 per cent of his sample of 50 specialist staff members at Michigan State University.

### Communication Function Hypotheses

The second major focus of the present study was on the *functions* of internal communication. Function of communication was divided into five categories: to inform, to instruct, to influence, to integrate, and to innovate. A general hypothesis, which was sub-divided into three testable hypotheses, one pertaining to each of the three organizations, was postulated. These hypotheses were evaluated by comparing mean values of the scales for each function. Since the number of observations on which data were computed ranged from 49 to 86, and one variable was measured by a one-item scale with a potential range from 0 to 10, it was necessary to use a statistic which would indicate how much scores differed in relation to how much they could differ. The mean, range, and standard deviation of each function were calculated. The mean differences were computed for each successive pair of functions and this mean difference was divided by the average standard deviation between the two functions (see Tables 13, 14, and 15).

The function hypotheses were:

H 3.0: The functions of the internal communication of the organizations will vary with the organization's innovativeness.

H 3.1: The ranking of the relative amount of communication devoted to each function in the most innovative organization on the adaptation continuum will be as follows:

to inform>to innovate>to influence>to integrate>to instruct

H 3.2: The ranking of the relative amount of communication devoted to each function in the middle organization on the adaptation continuum will be as follows:

to inform>to influence>to innovate>to instruct>to integrate

H 3.3: The ranking of the relative amount of communication devoted to each function in the least innovative organization on the adaptation continuum will be as follows:

to inform>to instruct>to integrate>to influence>to innovate

The findings are as given in Tables 13, 14, and 15. If each community is considered individually first, one can obtain a better picture of the findings. The relative amounts of communication as perceived by the respondents in Community Three devoted to the various functions (Table 16) were ranked from highest to lowest as: (1) to innovate, (2) to integrate, (3) to influence, (4) to instruct, and (5) to inform. The hypothesis (H 3.1) ranked the functions: (1) to inform, (2) to innovate, (3) to influence, (4) to integrate, and (5) to instruct. The findings were that the respondents perceived much less information in the internal communication network than was predicted (respondents = 5; hypothesis = 1); and more communication to: innovate (respondents = 1; hypothesis = 2), integrate (respondents = 2; hypothesis = 4), instruct (respondents = 4, hypothesis = 5). Both respondents and the hypothesis placed "to influence" in third position. The hypothesis is partly supported.

The respondents in Community Two ranked the functions as: (1) to innovate; (2) to integrate; (3) to influence, (4) to instruct, and (5) to inform. The hypothesis (H 3.2) postulated: (1) to inform, (2) to influence, (3) to innovate, (4) to instruct, and (5) to integrate. The findings showed that the respondents perceived less communication to inform (respondents = 5; hypothesis = 1) and to influence (respondents = 3; hypothesis = 2); but more communication to innovate (respondents = 1; hypothesis = 3) and to integrate (respondents = 2; hypothesis = 5). Both respondents and hypothesis placed "to instruct" in fourth position. Again, the hypothesis is partly supported.

The respondents in Community One ranked the functions as: (1) to integrate, (2) to instruct, (3) to influence, (4) to innovate, and (5) to inform. The hypothesis (H 3.3) postulated: (1) to inform, (2) to instruct, (3) to integrate, (4) to influence, and (5) to innovate. As in the other two communities, the respondents in Community One perceived far less communication to inform than was predicted (respondents = 5; hypothesis = 1). They also perceived more communication to integrate (respondents = 1; hypothesis = 3), a little more "to innovate" (respondents = 4; hypothesis = 5), and "to influence" (respondents = 3; hypothesis = 4); and ranked "to instruct" as predicted (respondents = 2; hypothesis = 2). The hypothesis is partly supported.

To determine how much the functions varied when compared across communities (H 3.0), the range-free difference was found on each function between Community One and Community Three. The findings are that Community One has more communication to instruct (.77) and to influence (.04) than Community Three. Community Three has more communication to innovate (.59) and to integrate (.26) and to inform (.39). In terms of the statistical differences in the perceived number of contacts for specific functions, the to influence difference (.04) is only minimal; the to instruct (.77) and to innovate (.59) differences are substantial (see Table 17). The findings support hypothesis 3.0.

TABLE 13.--Matrix of functions of communication for Community Three.

| | Inform | Instruct | Integrate | Influence | Innovate | Total |
|---|---|---|---|---|---|---|
| Inform | x | - .77 | -2.22 | -1.23 | -2.44 | -6.66 |
| Instruct | + .77 | x | -1.40 | -0.26 | -1.58 | -2.47 |
| Integrate | +2.22 | +1.40 | x | +1.39 | -0.15 | +4.86 |
| Influence | +1.23 | +0.26 | -1.39 | x | -1.60 | -1.50 |
| Innovate | +2.44 | +1.55 | +0.15 | +1.60 | x | +5.74 |

TABLE 14.--Matrix of functions of communication for Community Two.

| | Inform | Instruct | Integrate | Influence | Innovate | Total |
|---|---|---|---|---|---|---|
| Inform | x | -0.28 | -0.67 | -5.48 | -2.37 | -8.80 |
| Instruct | +0.28 | x | -1.21 | -0.14 | -1.77 | -2.84 |
| Integrate | +0.67 | +1.21 | x | +1.27 | -0.20 | +2.95 |
| Influence | +5.48 | +0.14 | -1.27 | x | -1.98 | +2.37 |
| Innovate | +2.37 | +1.77 | +0.20 | +1.98 | x | +6.32 |

TABLE 15.--Matrix of functions of communication for Community One.

| | Inform | Instruct | Integrate | Influence | Innovate | Total |
|---|---|---|---|---|---|---|
| Inform | x | -1.78 | -2.01 | -1.43 | -1.85 | -7.07 |
| Instruct | +1.78 | x | -0.25 | +0.56 | -0.08 | +2.01 |
| Integrate | +2.01 | +0.25 | x | +0.83 | +0.16 | +3.25 |
| Influence | +1.43 | -0.56 | -0.83 | x | -0.65 | -0.61 |
| Innovate | -1.85 | +0.08 | -0.16 | +0.65 | x | -1.28 |

TABLE 16.--Functions as rated by relative amounts in Three Communities.

| Functions | Community One | Community Two | Community Three |
|---|---|---|---|
| To Innovate | Fourth | First | First |
| To Integrate | First | Second | Second |
| To Influence | Third | Third | Third |
| To Instruct | Second | Fourth | Fourth |
| To Inform | Fifth | Fifth | Fifth |

TABLE 17.--Range-free differences in functions: Communities One and Three.

| | Range | Mean | SD | RFD | | Function |
|---|---|---|---|---|---|---|
| Community One<br>Community Three | 2-9<br>2-9 | 5.21<br>3.79 | 2.05<br>1.61 | .77 | 1>3 | To Instruct |
| Community One<br>Community Three | 0-8<br>0-8 | 4.21<br>4.15 | 1.50<br>1.12 | .04 | 1>3 | To Influence |
| Community One<br>Community Three | 2-10<br>2-10 | 5.75<br>6.30 | 2.19<br>1.98 | .26 | 3>1 | To Integrate |
| Community One<br>Community Three | 2-0<br>2-0 | 5.39<br>6.60 | 2.11<br>1.94 | .59 | 3>1 | To Innovate |
| Community One<br>Community Three | 0-5<br>0-5 | 2.14<br>2.67 | 1.39<br>1.29 | .39 | 3>1 | To Inform |

## Other Hypotheses

Other variables treated in the present thesis included: opinion leadership, rate of adoption, satisfaction, uncertainty, overt conflict, and media of communication.

Opinion leadership.--Hypothesis 4.0 dealt with opinion leadership within the three communities. The respondent was asked to name three members of her community whom she would ask about three topics, each treated separately: prayer, community government, and apostolate. All nominees from the respondents were listed and each nomination was given equal weight since the blanks on the questionnaire had not been numbered, and on many questionnaires the respondents had skipped or ignored a space. Therefore, there was no way to decide which nominee the respondent considered second and which third, for example. Furthermore, Campbell (1960, p. 137) pointed out that a recurring problem is "the differential weighting of the first, second, and third choice in a sociometric or nominations setup. Good standard procedure is to disregard the order of choice and use the total of all mentions."

The operationalization of opinion leadership was a person nominated in one area (prayer, community government or apostolate) by at least 10 per cent of the respondents of her community. For Community One, 10 per cent equalled seven nominations; for Community Two, seven; and for Community Three, nine. Those who qualified as opinion leaders were listed in each category. The category lists were compared to obtain the number of opinion leaders qualifying in more than one category. The number of persons qualifying as opinion leaders in two or three categories were added and this number divided by the total number of respondents in the specific community.

The hypothesis read as follows:

H 4.0: The more innovative organization will have more monomorphic opinion leaders.

The findings following the procedure described above were:

| Community | Membership Considered Leader in 2 or 3 Areas | |
|---|---|---|
| | n | Per Cent |
| One | 4 | 6.25 |
| Two | 5 | 7.24 |
| Three | 5 | 5.81 |

There is a larger percentage of polymorphic opinion leaders in Community One than in Community Three. Therefore, the findings are in the direction predicted and the hypothesis is supported. However, Community Two does not follow the pattern predicted, as a higher percentage of its membership were considered polymorphic opinion leaders than in either Community One or Community Three. Thus the relationship between One and Two is in the opposite direction to that predicted.

Rate of adoption.--Hypothesis 5.0 read:

H 5.0: The rate of adoption of any given innovation will be faster in the organization which has adopted more innovations.

In two of the three organizations, hypothesis 5.0 was affected by intervening variables which made its testing invalid. Community One had a mandatory change of habit in 1966. By "mandatory change" is meant that the decision was made and all members were to comply, an "authority decision" according to Rogers (in press). This type of change is much faster by its very nature than one in which the decision to adopt or reject remains with the individual members of the organization.

In Community Three several members obtained permission from the Superior General in 1964 to experiment with wearing a contemporary suit rather than the habit. Gradually more and more members of Community Three began to adopt the innovation. The immediate past superior of the organization gave a date of December, 1966, as the time of official change of habit. However, according to the information the investigator gathered from the present superior, at no time had the Chapter (legislative body of the organization) ruled on the change of habit. In addition, respondents during data-gathering did not seem to remember a date for an "official" change, but would question one another when they came to question 10 (date of change) on the questionnaire.

These two circumstances, which did not follow the course expected by the investigator, that of the Chapter naming a date for a legitimate change of habit and the members freely choosing to make a change after that date, made comparison to Community Two, which followed the expected course, impossible.

The rates of adoption of change of habit for Community Two and Community Three are given in Figure 6. No attempt was made to compare the two; rather each was compared to the s-curve found in the diffusion of innovation literature (see Rogers, 1962).

In both Community Two and Community Three, a larger percentage of the members chose to adopt clothing style number four, contemporary clothes (secular dress) without veil, than any other style. In Community Two, approximately 62 per cent chose number four over a three-year period; in Community Three, approximately 55 per cent of the total membership chose this style over a six-year period.

Since style four (contemporary dress without a veil) was the most different from the religious habit formerly worn by women religious, the adoption of this style was considered the most innovative of the three optional changes. Yet the majority of members in Community Two and Community Three adopted the innovation.

In Community Two the members who chose not to wear a veil probably had worn contemporary dress with veil before the permission to remove the veil was given. Thus the adoption of style four was really a two-step process for most of these people. This would account for the very rapid adoption during the first year (1968).

In Community Three, the largest increase in adopters to the number four style of dress came in 1966-67. Since that time there had been a gradual leveling off with only 6 per cent more of the membership adopting in 1969, 1 per cent in 1970, and no one in 1971.

Styles number two (a modified habit) and number three (contemporary dress with a veil) exchanged places in the two communities in terms of percentages of adoption. In Community Two, approximately 27 per cent of the total respondents had adopted style two over a five-year period. In Community Three, approximately 10 per cent had adopted the modified habit over a two-year period; there had been no new adopters since 1969.

In Community Two, approximately 7 per cent had adopted the contemporary dress with a veil over a three-year period. In Community Three, approximately 25 per cent had adopted style number three over a six-year period. Approximately 96 per cent of the total respondents of

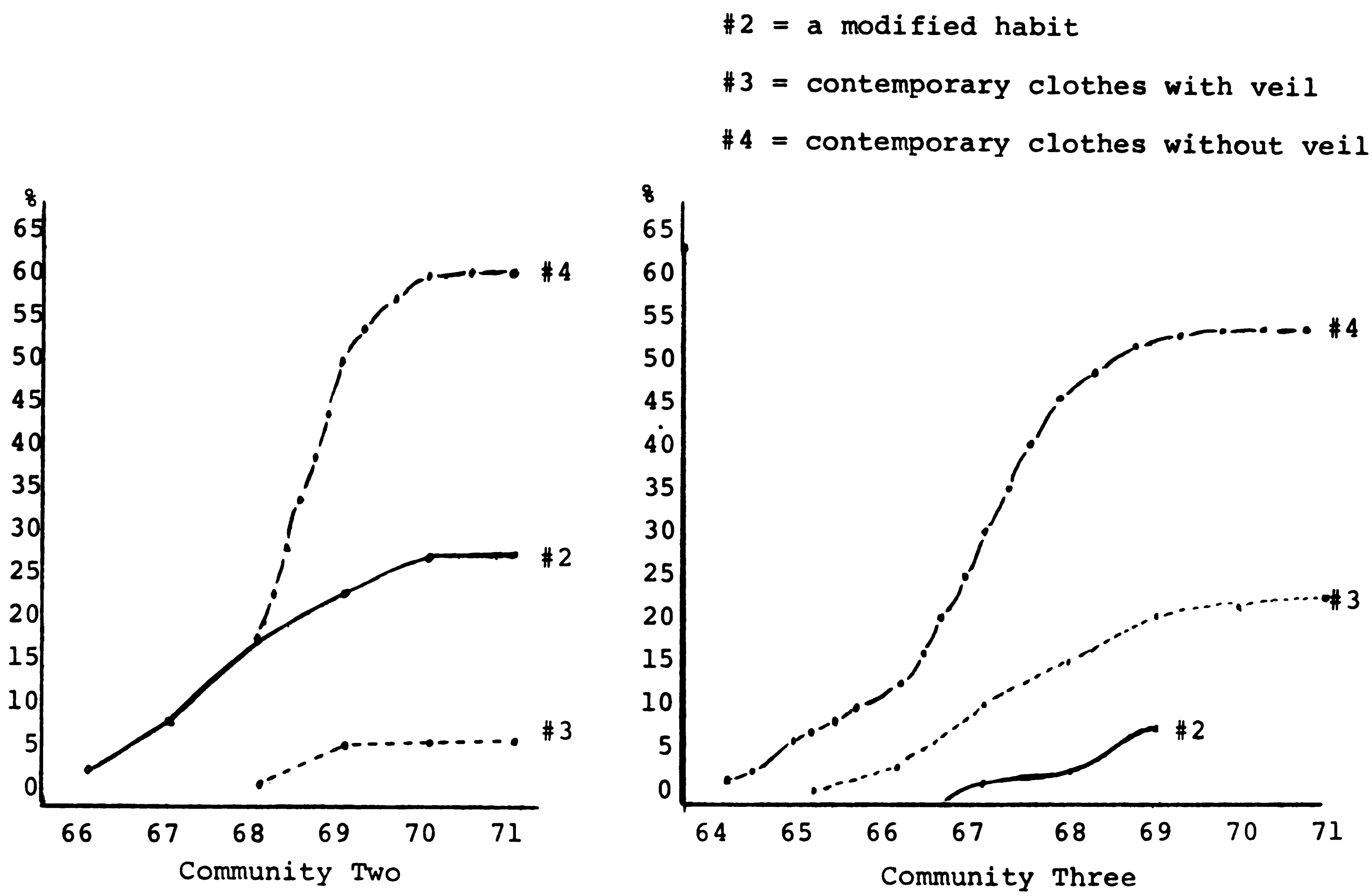


Figure 8. Ogive curve of adoption of three styles of clothing in two religious communities.

Community Two had made some adaptation in clothing; approximately 90 per cent of Community Three had made some change.

Satisfaction.--Hypothesis 6.0, which measured satisfaction, and hypotheses 7.0, 8.0, and 9.0 were tested by computation of the range-free differences as described earlier in the present chapter under "Communication Function Hypotheses." Hypothesis 6.0 differed slightly from the other hypotheses as it asked for the variance.

Hypothesis 6.0 concerned the respondents' perceptions of the level of satisfaction within their community. The hypothesis stated:

> H 6.0: There is a wider variance on the perceived satisfaction-dissatisfaction continuum in the more innovative organization.

The variable, satisfaction, was measured on a two-item scale with a possible range in scores from 1 to 9. The findings were:

| Community | N | Range | Mean | SD | Variance |
|---|---|---|---|---|---|
| One | 64 | 2-9 | 5.2 | 1.9 | 3.6 |
| Two | 69 | 3-9 | 6.3 | 1.5 | 2.2 |
| Three | 86 | 2-8 | 5.4 | 1.5 | 2.2 |

The variance on the perceived satisfaction-dissatisfaction continuum was greater in Community One (3.6) than in Community Two and in Community Three (2.2). Therefore, the findings were in the opposite direction to that predicted and the hypothesis is not supported.

Uncertainty.--Hypothesis 7.0 concerned the respondents' perceptions of the uncertainty level among the members of their community.

The hypothesis stated:

> H 7.0: The more innovative organization will have a higher uncertainty level among its members.

The variable, uncertainty, was measured by a six-item scale with a possible range in scores from 1 to 30. The findings were:

| Community | N | Range | Mean | SD |
|---|---|---|---|---|
| One | 64 | 12-15 | 18.6 | 2.9 |
| Two | 69 | 11-28 | 17.3 | 3.2 |
| Three | 86 | 14-17 | 20.3 | 2.5 |

| | Obtained Mean | | Range-Free Difference |
|---|---|---|---|
| Community One vs. Community Two | 1.3 | 1>2 | .43 (opposite) |
| Community One vs. Community Three | 1.7 | 3>1 | .62 (predicted) |
| Community Two vs. Community Three | 3.0 | 3>2 | .52 (predicted) |

Therefore, there was more perceived uncertainty in Community Three (predesignated the most innovative) than in Community One (predesignated the least innovative) and the hypothesis is supported. However, the respondents from Community Two (middle of the adaptation continuum) rated their organization as having the least uncertainty of the three. The relationship which the three organizations in the present study present between uncertainty and innovation was curvilinear; higher uncertainty in the most and least innovative organizations than in the middle organization.

Overt conflict.--The relationships between overt conflict and the innovativeness of the organization was postulated in hypothesis 8.0. The variable, overt conflict, was measured by a seven-item scale with a possible range in scores from 1 to 35. The hypothesis read:

> H 8.0: The more innovative organization will have greater perceived overt conflict among its members.

The findings are shown on page 174.

Community One versus Community Three was in the opposite direction to that predicted; the respondents from Community One reported perceiving more conflict in their community than the respondents in Community Three reported perceiving in their community. However, the range-free statistic computed value was .17, rather weak. The

| Community | N | Range | Mean | SD |
|---|---|---|---|---|
| One | 64 | 9-26 | 18.4 | 3.9 |
| Two | 69 | 4-24 | 18.5 | 3.0 |
| Three | 86 | 9-24 | 17.8 | 2.9 |
| | Obtained Mean | | Range-Free Difference | |
| Community One vs. Community Two | 0.1 | 2>1 | .02 (predicted) | |
| Community One vs. Community Three | 0.6 | 1>3 | .17 (opposite) | |
| Community Two vs. Community Three | 0.7 | 2>3 | .01 (opposite) | |

respondents in Community Two reported more overt conflict than the respondents from Community One or the respondents in Community Three. However, both range-free statistics were minimal: two versus one = .02; two versus three = .01. Therefore, respondents from the three communities rated their organizations as follows on perceived overt conflict: Two greater than One, which was greater than Three (2>1>3). Since there was more overt conflict reported in the least innovative community than in the most innovative community, the hypothesis is not supported between these two organizations. However, the relationship was in the direction predicted between Community One (the least innovative) and Community Two (the middle organization on the adaptation continuum). These three communities in the present study seemed to indicate that overt conflict rises as the organization moves through some adaptations, but then after some period of time begins to lessen.

Media of communication.--The ninth hypothesis established the expectation that the more innovative organization would have more written messages within its internal communication structure, while the less innovative organization would have more oral messages within its structure.

The variable, media of communication, was measured on a one-item scale with a possible range from 1 to 5. The hypothesis read:

> H 9.0: The more innovative organization will have more written communication within its structure.

The findings were:

| Community | N | Range | Mean | SD |
|---|---|---|---|---|
| One | 64 | 1-5 | 3.7 | 1.0 |
| Two | 69 | 1-5 | 2.5 | 1.1 |
| Three | 86 | 1-5 | 2.8 | 1.2 |

| | Obtained Mean | | Range-Free Difference | |
|---|---|---|---|---|
| Community One vs. Community Two | 1.1 | 1>2 | 1.0 | (predicted) |
| Community One vs. Community Three | 0.9 | 1>3 | 0.8 | (predicted) |
| Community Two vs. Community Three | 0.2 | 3>2 | 0.1 | (opposite) |

The statistics showed that Community One was .8 different from Community Three, and therefore, had more oral messages in its internal communication network. That is, Community Three had more written communication. Therefore, the hypothesis is supported. Community Two had more written communication than Community Three, however, which was in the opposite direction to that predicted. Once again the relationship was curvilinear among the three communities: Community Two had more written communication than either Community One or Community Three.

TABLE 18.--Summary of hypotheses tested.

| Hypothesis Number | Variable | Ranking of Organizations | Result |
|---|---|---|---|
| H 1.0 | Integration | 1>2>3 (Linear) | Not Supported |
| H 2.0 | Liaisonness | 2>1 = 3 | Partly Supported |
| H 3.0 | Ranking of Functions | | Supported |
| H 3.1 | Community Three | | Partly Supported |
| H 3.2 | Community Two | | Partly Supported |
| H 3.3 | Community One | | Partly Supported |
| H 4.0 | Opinion Leadership | 2>1>3 (Curvilinear) | Partly Supported |
| H 5.0 | Rate of Adoption | | (Not Testable) |
| H 6.0 | Satisfaction | 1>2=3 (Curvilinear) | Not Supported |
| H 7.0 | Uncertainty | 3>1>2 (Curvilinear) | Partly Supported |
| H 8.0 | Overt Conflict | 2>1>3 (Curvilinear) | Partly Supported |
| H 9.0 | Media of Communication | 2>3>1 (Curvilinear) | Supported |

# CHAPTER V

# SUMMARY AND DISCUSSION

In Chapter V a summary of the present thesis, a discussion of the main findings, of possible reinterpretations of the social situation, of the implications of the present study, and suggestions for future research are given.

## Summary

The present thesis was a comparative analysis of the structure and functions of the internal communication systems of three communities of women religious in the process of self-study and renewal.

The goals were specifically: to investigate the ways the communication network of organizations which had undergone relatively great change differed from the communication network structure of an organization which had undergone relatively little change; and to compare the relative number of communication contacts devoted to five selected functions: to inform, to instruct, to influence, to integrate, and to innovate within the organizations.[1]

A research study must relate to the theory pertinent to it. Although there is no "theory" as such of organizations, yet there are several schools of thought which have greatly influenced the study and understanding of the sociological phenomenon, complex organization. Most of these "theories" or approaches are static views, often called "machine theory." A relatively more recent viewpoint is the open systems approach. Its basic tenet is the interdependence of the roles or divisions of the organization. The present study was made under the open systems approach.

The adoption of the open systems approach in the present thesis meant that the organizations were viewed as dynamic, that is ever-changing, and that all parts of the organization: government, customs, roles, and communication patterns, were ever interacting with forces external to

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[1]Definitions of terms used above: an _organization_ is a set of two or more interrelated groups having a common status and control hierarchy and collective identity, devoted primarily to attainment of specific goals by a program of activity. A _group_ is a set of two or more individuals who have some systematic interaction. _System_ is used interchangeably with _organization_ in the present study. _Communication_ "is a process involving the transfer of matter-energy that carries symbolic information" (Berlo, 1969, p. 3). _Structure_ consists of relatively stable interrelationships among parts. _Network_ is used interchangeably with _structure_ in the present study. A _function_ is an observable, objective consequence of some action.

the organization: the supersystems, the Church and the American culture; and all of these with each other. Basically the systems approach is an attempt at a broader definition of the complex organization than was provided by the older methods.

Specifically the open systems approach influenced the present study in that hypotheses stated the _interdependence_ of variables, rather than a cause and effect relationship. The communication network was viewed as a system to be mapped without reference to formal or informal channels or expectancies. This relatively stable communication network was seen as composed of interpersonal linkages through which information flowed which affected the goals and life of the organization and its subsystems.

The research design used in the present study was a field survey conducted in three communities of women religious each having a membership between seventy and 100. All three organizations were in the Midwest of the United States, were teaching communities, had similar traditions and histories, and each worked in only one or two geographical areas. They differed, however, in the length of time they had been involved in a self-study and adaptation process. Thus Community Three was chosen because it had been adapting for several years, Community Two for a shorter period of time and Community One because it was only beginning adaptation. The criterion variable, innovativeness, was operationalized as the amount of change in government, personnel policy, and dress regulations as indicated by the written documents of the organization and by observation of the practices within the organizations.

Data for the study were gathered by a 48-item questionnaire and a Personal Contact Checklist, which listed all members of the organization and asked for an indication of the "average frequency of communication contacts" (see Appendix A). In addition, the investigator spent several days in each organization living the life of a member, observing customs and practices, interviewing the administrators and as many members as possible, and administering the self-completed questionnaire and checklist. In view of the focus of the present study on the analysis of the interpersonal communication structure, "saturation sampling" was required. A total of 251 women were members of the three organizations: Community One, 72; Community Two, 80; and Community Three, 99. Over 90 per cent of the members in all three communities participated in the study.

The items on the questionnaire were written after material was gathered from sixteen women religious from four communities other than the three in the present study. The items were then pre-tested on still another group of thirty women religious. The Personal Contact Checklist was a modification of the instrument originally used by Jacobson and Seashore (1951) and later by Schwartz (1968) and MacDonald (1970).

Before one can evaluate hypotheses, he must first adopt a position toward applying the tests of statistical significance to the data. The position taken in the present thesis was that under the conditions in which it was done, that of gathering data on the population rather than on a random sample of that population, the assessment of meaning to differences could not rest on statistical test results to which significance levels were ascribed. Therefore, differences were described in terms of: relative frequency on some characteristic or a range-free statistic obtained from the means and standard deviations. The statement, "hypothesis is supported," was used if the differences were in the direction predicted.

## Main Findings

Nine hypotheses were tested, two dealt with communication structure, one with communication functions, and six with other variables: opinion leadership, rate of adoption, satisfaction, uncertainty, overt conflict, and media of communication. All but the two hypotheses on structure investigated the respondents' perceptions of the variable within her specific organization.

### Communication Structure

Two hypotheses examined the communication structure:

H 1.0: The more innovative organization will have a more integrated communication network.

H 2.0: The more innovative organization will have greater liaisonness in its communication network.

The respondents in Community One reported a total of 3,078 communication contacts at frequencies "once a month" or more often. Approximately 2,070 or 67 per cent of these were reciprocated for an average of 33.4. In Community Two the 67 respondents reported a total of 2,463 contacts, 73 per cent of which were reciprocated, for an average of 26.8. Contacts in Community Three totaled 2,470; 1,586 or 65 per cent of which were reciprocated for an average of 18.8.

Reciprocated contacts only were used to form communimatrices by the Richards' (1971) computer program. The data were considered from four time periods, and matrices assembled for each period for a total of four communimatrices per organization or a total of twelve matrices for the study. The time periods used were: "several times a day"; "once a day" or more often; "once a week" or more often; and "once a month" or more often. The communimatrices provided by the computer program were then analyzed by the Weiss (1956) methodology to separate the total organizations into sub-groups or segments, and define the liaisons, bridges, group members, and isolates.

At the completion of the sociometric analysis, Amend's (1971) method for finding the liaisonness index was followed.

Integrativeness variable.--The integrativeness index was operationalized as the proportion of mutually chosen pairs to the total number of possible pairs. The three indices were: Community One, 55 per cent; Community Two, 41 per cent; Community Three, 27 per cent. Therefore, the findings were in the opposite direction to that predicted and the hypothesis (H 1.0) was not supported.

Liaisonness variable.--The liaisonness index was operationalized as the organization's score found by summing each contacter's score according to the Amend (1971) methodology and then using a range-free statistic to compare the three organizations. The range-free statistic was obtained by computing the mean, range and standard deviation of each organization, then computing the mean differences among the three organizations by taking two at a time, and dividing these mean differences by the average standard deviation of the two organizations concerned. For hypothesis 2.0 (liaisonness) the range free difference between Community One and Community Three was .08 in the opposite direction to that predicted, but at such a minimal level as to indicate no real difference. Community Two contained more liaisonness than either

Community One or Community Three. Community Two versus Community One equals 1.8 (2>1); Community Two versus Community Three, 2.1 (2>3). Therefore, the hypothesis was supported only partly. However, as can be seen by comparing the communimatrices in Appendix D, the patterns in the three organizations are very different.

The present thesis differed from Jacobson-Seashore (1951), Schwartz (1968), and MacDonald (1970) in considering liaisonness as a continuous variables. These previous studies considered it a dichotomous variable. In putting liaisonness on a continuum, the present study followed Amend (1971, p. 124): liaisonness, " . . . an attribute of individuals within organizations."

## Communication Functions

The functions of communication were divided into five categories: to inform, to instruct, to influence, to integrate, and to innovate. A general hypothesis, which was sub-divided into three testable hypotheses, one pertaining to each of the three organizations, was postulated. The hypotheses were:

H 3.0: The functions of the internal communication of the organizations will vary with the organization's innovativeness.

H 3.1: The ranking of the relative number of communication contacts primarily devoted to each function in the most innovative organization on the adaptation continuum will be as follows:

to inform>to innovate>to influence>to integrate>to instruct

H 3.2: The ranking of the relative number of communication contacts primarily devoted to each function in the middle organization on the adaptation continuum will be as follows:

to inform>to influence>to innovate>to instruct>to integrate

H 3.3: The ranking of the relative number of communication contacts primarily devoted to each function in the least innovative organization on the adaptation continuum will be as follows:

to inform>to instruct>to integrate>to influence>to innovate

To obtain these rankings, again the range-free statistic was used, this time the mean differences between successive pairs of functions and the average standard deviation of the two were used.

The respondents from the three communities ranked the five functions by their relative number of contacts as follows:

TABLE 19.--Functions as rated by relative amounts in the three communities.

| Functions | Community One | Community Two | Community Three |
|---|---|---|---|
| To innovate | Fourth | First | First |
| To integrate | First | Second | Second |
| To influence | Third | Third | Third |
| To instruct | Second | Fourth | Fourth |
| To inform | Fifth | Fifth | Fifth |

Therefore, although the main hypothesis: that "the internal communication of the organizations will vary with the organization's innovativeness," was supported, the actual ranking by amounts did not coincide with that postulated. Community Two's and Community Three's respondents ranked the functions identically. The biggest differences in ranking between Community One and the other two organizations were with the functions, to innovate and to instruct. Community One ranked "to innovate" fourth; Community Two and Three, first. Community One ranked "to instruct," second; Community Two and Three ranked it fourth.

Other

The respondent was asked in separate questions to name three members of her community whom she would ask about three topics: prayer, community government, and apostolate. The operationalization of opinion leadership was a person nominated in one of the three areas by at least 10 per cent of the respondents of her community. The lists of nominees for the three topics were compared to obtain the number of opinion leaders qualifying in more than one category. Those qualifying as opinion leaders in two or three categories were added and this number divided by the total number of respondents in the specific community. The hypothesis read:

H 4.0: The more innovative organization will have more monomorphic opinion leaders.

The findings were: Community One, 6.2 per cent of the membership was considered polymorphic opinion leaders; Community Two, 7.2 per cent; and Community Three, 5.8 per cent. There was a larger percentage of polymorphic opinion leaders in Community One than in Community Three; therefore, the hypothesis is supported. However, Community Two reported more polymorphic leaders than Community One. Thus, the relationship between One and Two is in the opposite direction to that predicted, giving a curvilinear relationship among the three organizations.

Hypothesis 5.0 concerned rate of adoption. It read:

H 5.0: The rate of adoption of any given innovation will be faster in the organization which has adopted more innovations.

Two of the three communities were affected by intervening variables which invalidated the testing of this hypothesis. Therefore, ogive curves for the cumulative percentage of members who had adopted new wearing apparel in Community Two and Community Three were computed, but no comparisons made. Results did show that approximately 96 per cent of the total respondents from Community Two and approximately 90 per cent from Community Three had made some adaptation in clothing.

The perceived satisfaction of other members and the satisfaction of the respondent were combined and measured by hypothesis six. It read:

> H 6.0: There is a wider variance on the perceived satisfaction-dissatisfaction continuum in the more innovative organization.

The variable, satisfaction, was measured on a two-item scale and the findings were: Community One, variance = 3.61; Community Two and Community Three, variance = 2.25. Therefore, the findings were in the opposite direction to that predicted and the hypothesis was not supported.

Hypothesis seven measured the uncertainty level among the members of each community. This hypothesis stated:

> H 7.0: The more innovative organization will have a higher uncertainty level among its members.

The variable, uncertainty, was measured by a six-item scale and the findings was a .43 range-free difference between Community One and Community Three in the direction predicted. The hypothesis is supported. However, the respondents from Community Two rated their organization as having the least uncertainty of the three, making the relationship curvilinear once again.

The relationship between overt conflict and the innovativeness of the organization was postulated in hypothesis 8.0. The hypothesis read:

> H 8.0: The more innovative organization will have greater perceived overt conflict among its members.

The variable, overt conflict, was measured by a seven-item scale; the findings were in the opposite direction to that predicted. Therefore, the hypothesis was not supported. However, the statistic was a rather weak one, .17, between One and Three. The respondents of Community Two reported more overt conflict than the respondents of Community One or Community Three, both by very weak range-free differences: Community One at .02; Community Three at .01. The three communities in the present study seemed to indicate that overt conflict rises as the organization moves through some adaptations, but then after some period of time begins to lessen.

The ninth hypothesis established the expectation that the more innovative organization would have more written messages within its internal communication structure, while the less innovative organization would have more oral messages. The hypothesis read:

> H 9.0: The more innovative organization will have more written communication within its structure.

The variable, media of communication, was measured on a one-item scale. The findings were that Community One had more oral messages than Community Three; therefore, the hypothesis was supported. However, Community Two had more written communication than Community Three; therefore, once again the relationship was curvilinear among the three communities.

## Discussion of Findings

### Theory and Methodology

When one appraises a study, one looks for explanations of the findings, both in the theory and in the methods used in the data collection and analysis. Theoretically, the study of complex organizations suffers from a lack "of a unifying model of this particular universe--a model to define the important problems, to provide methods and standards for their solution; and to illustrate good scientific practice" (Thompson, 1969, p. 61). The present study reflects this lack of recognized, substantiated theory.

In methodology the study of complex organizations must deal with relationships, rather than with isolated individuals. In trying to grasp a relationship, the researcher must abandon a principal assumption of statistical inference: selection of subjects by randomization; second, he must devise means to analyze the relationship data in order not to lose sight of the respondent as part of a larger structure, the organization. For the present thesis, these inadequacies were evident in the obtrusiveness of the instruments and in the arbitrariness of steps in the Weiss (1956) method for decomposing the communimatrix into segments, liaisons, bridges, group members, and isolates. A refinement both of the data collection instruments and of the Weiss method of analysis should produce more discriminating indices of communication structure and functions.

TABLE 20.--Resume of hypotheses tested.

| Hypothesis | Result |
|---|---|
| H 1.0 | Not Supported |
| H 2.0 | Partly Supported |
| H 3.0 | Supported |
| H 3.1 | Partly Supported |
| H 3.2 | Partly Supported |
| H 3.3 | Partly Supported |
| H 4.0 | Partly Supported |
| H 5.0 | Not Testable |
| H 6.0 | Not Supported |
| H 7.0 | Partly Supported |
| H 8.0 | Partly Supported |
| H 9.0 | Supported |

In summary, nine hypotheses were tested in the present study; one of these had three corollary hypotheses. The results show that two of the main hypothese "were supported," four partly supported, two were not supported and one was not testable. The three corollary hypotheses also were supported partly.

## Additional Reinterpretations

On the basis of the actual data from the present study, what are some of the possible reinterpretations?

Within-organization comparisons.--In addition to comparing and contrasting across organizations on one variable, one can examine also all variables within one organization. This gives a "total" picture of that organization. Before doing so, it seems helpful to alter the consideration of two variables, uncertainty and satisfaction. If "uncertainty" is reversed, making it positive (certainty), then all variables will be measured as the amount perceived present.

Hypothesis 6.0 postulated that there would be a wider variance on the satisfaction-dissatisfaction continuum in the more innovative organization. The findings were a wider variance in the least innovative organization, with the other two equal to each other. As explained in Chapter I, using the variance in rather than the amount of satisfaction perceived by a respondent, was a departure from the related research on this variable. This research indicated there would be greater satisfaction among the members of the more innovative organization.

What are the results if the amounts of satisfaction perceived by the respondents in each organization are compared? Two questions were asked on satisfaction: one inquired into the respondent's attitude; the second question sought the respondent's opinion of other members' satisfaction. In Community One (least innovative) 51 per cent of the members were satisfied; 53 per cent saw other members of their organization as satisfied. In Community Two, 71 per cent were satisfied; 75 per cent thought others satisfied. In Community Three, 51 per cent were satisfied; 95 per cent saw others as satisfied (see Table 21).

TABLE 21.--Amount of satisfaction among members of the organizations.

| Community | Respondent Satisfaction | Respondent Sees Others Satisfied |
|---|---|---|
| One | 51% | 53% |
| Two | 71 | 75 |
| Three | 51 | 95 |

Therefore, when the actual findings are compared to earlier research which indicated greater satisfaction among members of the more innovative organization, the organizations in the present thesis reinforce the positive relationship between satisfaction and innovation.

Community One is high (has more than) by position on integration and the functions, to instruct and to influence, among the three organizations. It is medium or low on all other variables. As the organization chosen for this study because it had undergone little change, it is characterized by all members being connected to other members by twelve or more reciprocated contacts. The pattern is one large group; liaisons do not emerge. This means the respondents are all about the same in their amount of communication with other members of the organization, rather than a few members accounting for a disproportionate number of communication acts. The implication would seem to be that if the organization is missing the links between groups of people, liaisons and bridges, the predictability of a message's pathway through the organization is low. Looked at from another viewpoint, the best source for information may not be known by members, since liaisons did not emerge.

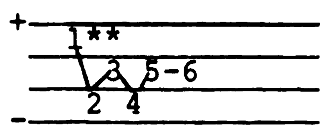
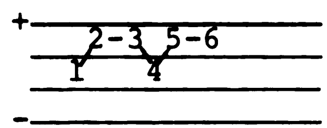
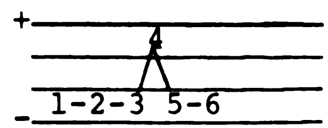
In summary, Community One is an integrated organization, but one with no distinguishable segments or communication groups. Members' satisfaction is the most varied of the three organizations in the study, from very dissatisfied to highly satisfied, but tends to lean toward dissatisfaction. The members perceive a moderate amount of certainty and conflict within the organization, while instructing and influencing are the purposes they see for most of the acts of communication (Table 22).

Community Two presents a profile more on the positive side. It is high on all variables except integration and satisfaction. The group patterns, liaisonness, were quite visible and pathways of communication traceable. The satisfaction of the members was indicated as moderate, with no one in either the very satisfied or very dissatisfied extremes. Certainty and conflict were both high (Table 22).

Community Three is the converse of Community Two on several variables, including satisfaction, but is similar in that liaisons and bridges were recognizable. Members' satisfaction was the highest of the three organizations, with the lowest variance among the members. Certainty and conflict were perceived as low, with the internal communication serving the functions primarily of integration, innovation, and information (Table 22).

Structure variables.--In re-examining the organizations in the present study, one realizes that the actual process of innovating, of which one operationalization was the giving of the individual member more freedom in choosing her employment, had the latent effect of sisters' having to set up separate residences near their work. Thus while the members of Community Three had been scattered through the undertaking of new apostolic works, the majority of members in Community One still lived together at one location. Jackson (1959, p. 159) states

TABLE 22.--Profiles of organizations.

| Variable | Community One<br>Position* | Community Two<br>Position | Community Three<br>Position |
|---|---|---|---|
| 1. Integration | High | Medium | Low |
| 2. Liaisonness | Lower | Higher | Lower |
| 3. Opinion Leadership | Medium | High | Low |
| 4. Satisfaction | Wide Variance<br>Low | Narrow Variance<br>Medium | Narrow Variance<br>High |
| 5. Certainty | Medium | High | Low |
| 6. Conflict | Medium | High | Low |
| |   |   |   |

*Position = ranking of particular organization on specified variable in relation to other two organizations.

**Number = number of variable as indicated in variable column.

that: "Other things being equal, people will communicate more frequently to those geographically closest to them, even within a relatively small organization." The reinterpretation of H 1.0: "The more innovative organization will have a more integrated communication network," is that as "innovative" is operationalized in the present study, the hypothesis should read: "the least innovative organization" will have a more integrated communication network because of the influence of the variable, propinquity.

Hypothesis 2.0 looked at the patterns of the network or the liaisonness: "The more innovative organization will have greater liaisonness in its communication network." The prediction was correct between Community One and Community Two; Community Two had more liaisonness. However, Community One and Community Three had approximately the same amount of liaisonness. The question can be asked if this construct really abstracted from the communication network structure the salient characteristics. As the matrices (Appendix D) are examined with hindsight, one can see a difference in pattern. Community One does not break into segments, as do Community Two and Community Three, as explained in Chapter IV. Rather its pattern seems similar to the one referred to as the "traditional."

> In a traditional society, if we ask a man to name his best friends and then ask each of these in turn to name their best friends, they will all name each other so that they form a closed group. . . . But today's

> social structure is utterly different. If we ask a man to name his friends and then ask them in turn to name their friends, these people would again name others, and so on outwards. There are virtually no closed groups of people in modern society . . . (Alexander, 1966, p. 20).

However, the organizations in the present study do <u>not</u> follow the "traditional" and "modern" patterns as these are used in the studies in the lesser-developed countries, where most of the diffusion of innovation research has taken place. The discrepancies may be due to the influence of the external environment (the developed American culture) on the organizations and to a different variable than what the matrix findings indicate. In the diffusion of innovation literature, the question most often was: "Who are your three best friends with whom you communicate most often?" "Whom would you ask about __________?" However the present study simply asked for all communication contacts, regardless of reason or function; it sought to describe the extant communication network.

## Implications of the Present Study

### Theoretical

The present study, after reviewing the various "theories" of the complex organization, examined three religious communities from the open-systems approach. As explained in Chapter I, this approach is an attempt to broaden the scope from that of the Weberian ideal type, the managerial model and the human relations model. The belief is that to understand a complex organization and its problems and conflicts, attention must be given to the larger structural features of the organization. Accordingly, the study was of a sociological nature. Initially, it was examining three organizations as social phenomena while emphasizing internal communication within these organizations.

The goal in organizational research is to find a model by which various types of organizations can be studied. The open-systems approach seems to hold the most potential for this conceptual integration. Another reason favoring this "theory" is that all three of the organizations are changing, each at a different rate. The open-systems stance is built upon this dynamic quality of organizations. Either the Weberian traditional model or the human relations model could be used to study a religious community. If comparisons, such as those made in the present study are to made, however, the open-systems approach seems superior to the other two.

Theoretically the present study, by using data selected from on-going organizations, rather than artifically created stimuli, justified itself. Etzioni (1961, p. 137) stated that "There are very few functional-structural studies of communication, in particular communication in organizations." Therefore, the present study is a much-needed contribution.

The findings of the present study support those of previous research, which suggest that a small percentage of the members of an organization serve as key linking individuals between subsystems of the organizations. However, the peculiarity of Community One (see Appendix D) in not breaking into segments needs further investigation. Secondly, the findings lend support to the notion that within the universe of complex organizations there may exist some traceable consistencies in the communication behavior of organization members. The findings also tend to suggest that the linear relationships between the variable, communication, and such variables as satisfaction, conflict, uncertainty, etc., need additional research.

## Methodological

The computerization of the matrices relieves the investigator of hours of manual labor and provides a mathematical basis on which to base segmenting, thus removing the arbitrariness of the former method. Additional work and a refinement in conceptualization of "liaisonness" is needed, however, in order that the pattern or ways a group relate to one another may be operationalized with more sophistication.

The functions of communication apparently were difficult for the respondents to grasp and the reliability of the instrument used is questionable. Again, a refinement in the operationalization of "functions of communication" is needed.

The investigator of the present thesis gained access to the organizations studied because she, herself, was a member of a similar organization. Under the church law of cloisture, the living quarters of the members of these organizations, until after Vatican Council II were forbidden territory for any "non-member." Therefore, there still remains a positive relationship between the amount of innovating a religious community has undertaken and the openness to outsiders. The present investigator had the advantage of being a type of participant-observer; this vantage point is closed to one who is not a member of a religious community. In addition, participation-observation would require a woman to undertake studies in convents and a man for monasteries of monks or men religious. However, examples of this limitation are also present in investigations of other social organizations, i.e., prisons, some mental institutions, etc.

<u>Substantive</u>

To the knowledge of the present investigator, the present thesis is the first of its kind undertaken in a community of women religious. Herein lies its social significance.

<u>A theology of communication</u>.--At the turn of the twentieth century, the religious philosopher, Maurice

Blondel initiated a new style of thinking into the Roman Catholic Church. As the new cultural conditions spread in the western world, the new mode of looking at the Gospel became accepted more widely. Its influence can be seen in many of the conciliar documents of Vatican II.

Following this philosophy, Gregory Baum (1970) reinterpreted the crucial issue facing the Church today, the doctrine of God, and in so doing produced a doctrine of man. It is this school of theological thought which seems to speak to the communication--religious community interface.

As the open-systems approach is used to study the organization, in similar fashion a process approach is used to study God and man. For example, Baum (1970, p. 37) says: "Man is a dynamic reality. By his actions man was inevitably carried forward to an option, the response to which determine him in his very being."

This view is opposed to the static view of man formerly held by Catholicism. Baum continues (1970, pp. 41-42):

> Man comes to be who he is through conversation with others. Man learns from others. This is true on the level of information and this is true on the deeper level of self-knowledge and the values of life. Man listens to others, in the family, the school, the community, to his friends and his adversaries, and his consciousness continues to be created by his response to the reality addressing him. Man is created through on-going communication with others.

A group of people come together to form a community known as a religious congregation or community to give witness that men can live together in peace and to perform some type of service for others. If these religious witness to the possibility of persons growing through community, and if this growth takes place through communication, then communication is of the utmost importance to the religious congregation.

_The organizations._--The three organizations chosen for the present thesis may be considered fairly representative of the three types into which the several hundred such organizations of women in the United States can be divided. Each has strong and weak points. What implications can be drawn for these organizations from the present study?

Community One represents the organizations which are at the beginning stage of adaptation. The area of concern in this organization should be the low satisfaction level of the members. Over one-half the members (52 per cent) placed themselves somewhere between dissatisfied to moderately satisfied with the renewal efforts within their community. Yet the administrators indicated that the community members were highly satisfied with these efforts. This discrepancy in perception indicates a breakdown in communication between members and administration, and may point to one of the sources of dissatisfaction.

There was other evidence of a lack of reliable upward communication (from members to superiors). More than one-third (34 per cent) of the members thought there was insufficient information given to the members, and over one-half (57 per cent) said they wanted more information about their organization, yet the superior said much information is given to the members.

Obedience and liturgy were two areas of conflict within Community One. Provisions for honest dialogue in which these differences of opinion can be expressed and explained need to be built into the schedule.

The failure of the community to break into smaller segments during the data analysis may indicate a superficial relationship among all the sisters and a lack of close friendships. This condition may be a result of most of the sisters' living in one large convent.

Over one-half (53 per cent) of the respondents said they wanted more searching for new ideas within the community (innovation). These answers would seem to point to the need for a loosening of structure and restrictions, and opportunities to experiment within the Community.

Community Two has been in the adaptation process for several years. The communication between administrators and members in Community Two seemed to be in greater agreement than in Community One. Usually those in administrative positions answered the questions as did the majority of members. Although almost three-fourths (72 per cent) of this community agreed that there is much information given to them, about the same number (74 per cent) wanted more information. Two questions when contrasted seem to indicate the existence of a certitude and acceptance of individuals within the community. Although over one-half (52 per cent) said there "is uncertainty about what is expected of a sister today," yet over two-thirds (68 per cent) said they "know what other members of their Community expect of them." This Community had been studied by a professional management firm about six months before the questions for the present thesis were asked. When the two studies were compared, there was agreement in several areas which both had considered. Both studies showed that the members think the Community encourages innovation, almost three-fourths (71 per cent) disagree that there is uncertainty about the continuance of their community; about the same number asked for more communication to inform (74 per cent), to integrate (68 per cent), and to solicit new ideas (64 per cent). Yet their feelings concerning the amount of information available to them indicated that they believed improvements had been made since the first study. Several stated that the superiors were making greater efforts to keep the sisters informed.

Community Three had been undergoing adaptation for the longest period of time of the three communities.

Uncertainty about "what is expected of a sister today" and about the continuation of the community was prevalent in this community. Those in administration expressed much the same ideas on the questionnaire, although the atmosphere was far from gloomy or pessimistic. About two-thirds of the members (67 per cent) expressed uncertainty concerning what is expected of a sister today and about three-fourths (75 per cent) were worried about the continuation of the community. Yet the level of satisfaction expressed indicated that the uncertainty was not affecting the sister's view of renewal to any great extent. Over three-fourths (79 per cent) said the Community encourages innovating and over one-half of the members were satisfied with the amount of communication for this purpose. The lack of, or infrequent communication between members living alone or in pairs, and the community at large would seem to point to a need for positive steps to remedy this situation.

Communication-religious community interface.--The tension created at the communication-religious community interface will remain and must be dealt with positively. As Baum has stated:

> Man is in need of the community to become himself. Yet the very dialogue which offers us new life is also a threat to us. To be addressed by others creates some fears in us. Can we afford to listen to them? Is there no danger that as we listen to another, we will be taken over by him and cease to be ourselves? . . . Man is always tempted to reject the dialogue to

> which he is called. A special strength is necessary to reply to the summons addressed to us (p. 49).

The same need which a man has to dialogue with others in order to become himself, exists for the religious community, which is also in the process of becoming. Therefore, it seems sound to extrapolate the thoughts in the above quotation to the organization level, uniting the systems approach to organizations and the process theology approach to man.

## Suggestions for Future Research

Based upon the evidence from the present study, future research should include a re-study of the three organizations in the present thesis in order to examine the changes within each of the three over time. The present study "mapped" the extant communication structure of three complex organizations along the dimensions of communication contact. Additional studies are needed also in other communities of women religious to refine the relationships among the variables examined and to test the validity and reliability of the methodology of the present study.

The qualitative approach to the variables also needs attention. How important are the various communication contacts to the respondents? Which of their contacts are required by work or necessities of daily living? Which contacts are on a voluntary basis? What is the relationship between the attitude of a member toward the community and her position in the communication network? What is the relationship between position in the communication network and drop-out rate from the organization? Are peripheral members or isolates in the communication network more likely to leave the community?

Another potential area of application of the methodology of the present thesis is to identify such relationships as "who influences whom" and to trace a given message through the organization, ECCO analysis.

Conceptual problems of the variables, integration of the network and functions of communication within an organization, need refinement in operationalization.

# BIBLIOGRAPHY

## BIBLIOGRAPHY


Ackoff, R. L. "Toward a Behavioral Theory of Communication." In Modern Systems Research for the Behavioral Scientist. Edited by Walter Buckley. Chicago: Aldine Publishing Company, 1968, 209-18.

Alexander, Christopher. "A City Is Not a Tree." Architectural Forum (April-May, 1965).

Allen, Richard K. "A Comparison of Communication Behaviors in Innovative and Non-Innovative Secondary Schools." Unpublished Doctor's dissertation, Michigan State University, 1970.

Amend, Edwin H. "Liaison Communication Roles of Professionals in a Research Dissemination Organiization." Unpublished Doctor's dissertation, Michigan State University, 1971.

Ammentorp, William. The Committed: A Sociological Study of the Brothers of the Christian Schools. Winona, Minn.: Saint Mary's College Press, 1968.

Back, K., and others. "Methodology of Studying Rumor Transmission." Human Relations, III, 3 (1950), 307-13.

Baldwin, Monica. I Leapt Over the Wall. New York: Rinehart, 1950.

Barnard, Chester I. The Functions of the Executive. Cambridge, Mass.: Harvard University Press, 1938.

Barnlund, D. C., and Harland, C. "Propinquity and Prestige as Determinants of Communication Networks." Sociometry, XXVI, 4 (December, 1963), 467-79.

Bass, Bernard M. Leadership, Psychology and Organizational Behavior. New York: Harper and Row, 1960.

Baum, Gregory. Man Becoming. New York: Herder and Herder, 1970.

Beal, George M., and others. System Linkages Among Women's Organizations. Report No. 42. Ames, Iowa: Department of Sociology and Anthropology of Iowa State University, 1967.

Bennis, W. G. "Leadership Theory and Administrative Behavior." Administrative Science Quarterly, IV (1959), 259-301.

Berge, Claude. The Theory of Graphs and Its Application. Translated by Alison Doig. New York: John Wiley & Sons, Inc., 1962.

Berkowitz, N. H., and Bennis, W. G. "Interaction Patterns in a Formal Service-Oriented Organization." Administrative Science Quarterly, VI, 1 (June, 1961), 25-50.

Berlo, David K. "Human Communication: The Basic Proposition." East Lansing, Mich.: Michigan State University, 1969. (Mimeographed.)

Berrien, F. Kenneth. General and Social Systems. New Brunswick, N.J.: Rutgers University Press, 1968.

________. "A General Systems Approach to Taxonomy." In People, Groups and Organizations. Edited by Bernard P. Indik and F. Kenneth Berrien. New York: Teachers College Press, 1968.

Blankenship, L. Vaughn. "Community Power and Decision Making: A Comparative Evaluation of Measurement Techniques." Social Forces, XLIII, 2 (1964), 207-16.

Blau, Peter M. "Structural Effects." The American Sociological Review, XXV, 2 (1960), 178-93.

________, and Scott, W. Richard. Formal Organizations: A Comparative Approach. San Francisco: Chandler Publishing Co., 1962.

Boulding, Kenneth E. The Image. Ann Arbor, Mich.: The University of Michigan Press, 1956.

Bovard, E. W., Jr. "Group Structure and Perception." Journal of Abnormal and Social Psychology, XLVI (1950), 398-405.

Buckley, Walter. "Society as a Complex Adaptive System." In Modern Systems Research for the Behavioral Scientist. Edited by Walter Buckley. Chicago: Aldine Publishing Company, 1968, 490-511.

Budd, Richard W.; Throp, Robert K.; and Donohew, Lewis. Content Analysis of Communications. New York: The Macmillan Company, 1967.

Burns, Tom. "The Directions of Activities and Communication in a Departmental Executive Group." Human Relations, VII, 1 (1954), 73-97.

Cadwallader, Mervyn L. "The Cybernetic Analysis of Change in Complex Social Organizations." In Modern Systems Research for the Behavioral Scientist. Edited by Walter Buckley. Chicago: Aldine Publishing Company, 1968, 437-40.

Campbell, Donald T. "A Rationale for Weighting First, Second and Third Sociometric Choices." In The Sociometry Reader. Edited by J. L. Moreno. New York: The Free Press, 1960.

Carzo, R., and Yanouzas, J. N. Formal Organization: A Systems Approach. Homewood, Ill.: Irwin and Dorsey Press, 1967.

Chapple, Eliot D. "Measuring Human Relations: An Introduction to the Study of Interaction of Individuals." Genetic Psychology Monographs, XXII (February, 1940), 3-147.

Charques, Dorothy. The Nunnery. New York: Coward-McCann, 1960.

Coleman, James S. "Relational Analysis: The Study of Social Organizations With Survey Methods." Human Organization, XVII, 4 (Winter, 1958-59), 28-36.

________; Katz, Elihu; and Menzel, Herbert. Medical Innovation: A Diffusion Study. New York: The Bobbs Merrill Company, Inc., 1966.

Congar, Yves. Lay People in the Church. Translated D. Attwater. Westminster, Md.: Newman Press, 1957.

________. "The Theology of Religious Women." Review for Religious, XIX, 1 (January, 1960), 15-39.

Cooley, Charles Horton. Social Organization. New York: Schocken Books, 1962.

Coons, Sister Dorothy, B.V.M. "Life Style Study: Convent Living." Review for Religious, XXIX, 6 (November, 1970), 849-56.

Davis, Keith. "Management Communication and the Grapevine." Harvard Business Review, XXXI, 5 (September-October, 1953a), 43-49.

________. "A Method of Studying Communication Patterns in Organizations." Personnel Psychology, VI (1953b), 301-12.

"Decree on the Appropriate Renewal of the Religious Life." In The Documents of Vatican II. Edited by Walter M. Abbott, S.J. New York: Guild Press, 1966.

Delany, W. "The Development and Decline of Patrimonial and Bureaucratic Administrations." Administrative Science Quarterly, VII (1963), 458-501.

Deutsch, Karl W. Nationalism and Social Communication: An Inquiry Into the Foundation of Nationality. Cambridge, Mass.: MIT Press, 1953.

________. "Toward a Cybernetic Model of Man and Society." In Modern Systems Research for the Behavioral Scientist. Edited by Walter Buckley. Chicago: Aldine Publishing Company, 1968, 387-400.

Dorsey, J. T., Jr. "A Communication Model for Administration." Administrative Science Quarterly, II (December, 1957), 307-24.

Eilon, Samuel. "Taxonomy of Communications." Administrative Science Quarterly, XII, 2 (September, 1968), 266-88.

Eisenstadt, S. N. "Social Change, Differentiation and Evolution." American Sociological Review, XXIX, 4 (1964), 375-85.

Etzioni, Amitai. A Comparative Analysis of Complex Organizations. New York: The Free Press, 1961.

________. Modern Organizations. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

Farace, R. V.; Morris, Clyde D.; and others. "The Communication System of Justin Morrill College." Unpublished report, Department of Communication, Michigan State University, 1970.

Festinger, Leon. "The Analysis of Sociograms Using Matrix Algebra." Human Relations, II (1949), 153-58.

Forsythe, Elaine, and Katz, Leo. "A Matrix Approach to the Analysis of Sociometric Data." Sociometry, IX (November, 1946), 340-47.

Foy, Felician, A., O.F.M., ed. 1971 Catholic Almanac. Paterson, N.J.: St. Anthony Guild, 1971.

Gardner, John W. Self-Renewal: The Individual and the Innovative Society. New York: Harper and Row, 1963.

Gerth, H. H., and Mills, C. Wright, trans. and ed. From Max Weber: Essays in Sociology. New York: Oxford University Press, 1958.

Goetsinger, Charles, and Valentine, Milton. "Communication Channels, Media, Directional Flow and Attitudes in an Academic Community." Journal of Communication, XII (March, 1962), 23-26.

Gold, David. "Statistical Tests and Substantive Significance." The American Sociologist, IV, 1 (1969), 42-46.

Guetzkow, Harold. "Communications in Organizations." In Handbook of Organizations. Edited by James G. March. Chicago: Rand McNally & Company, 1965, 534-73.

Guilford, J. P. Psychometric Methods. New York: McGraw-Hill, 1954.

Guimaraes, Lytton L. "Network Analysis: An Approach to the Study of Communication Systems." Technical Report No. 12. East Lansing, Mich.: Michigan State University, 1970. (Mimeographed.)

Haberstroh, Chadwick, J. "Organization Design and Systems Analysis." In Handbook of Organizations. Edited by James G. March. Chicago: Rand McNally & Company, 1965, 1171-1211.

Hall, A. D., and Fagen, R. E. "Definition of System." In Modern Systems Research for the Behavioral Scientist. Edited by Walter Buckley. Chicago: Aldine Publishing Company, 1968, 81-93.

Hall, R. "A Concept of Bureaucracy: An Empirical Assessment." American Journal of Sociology, LXIX (1963), 32-40.

Harary, Frank; Norman, Robert Z.; and Cartwright, Dorwin. Structural Models: An Introduction in the Theory of Directed Graphs. New York: John Wiley & Sons, Inc., 1965.

Harrison, P. M. Authority and Power in the Free Church Tradition. Princeton, N.J.: Princeton University Press, 1959.

Hershfield, Allan F. "Village Leaders and the Modernization of Agriculture Among the Ibos of Southeast Nigeria." Technical Report 10. East Lansing, Mich.: Project on Diffusion of Innovations in Rural Societies, Michigan State University, 1968.

Hertling, Ludwig, S.J. A History of the Catholic Church. Translated by Anselm Gordon Biggs, O.S.B. Westminster, Md.: The Newman Press, 1957

Hinnebusch, William A., O.P. "Origins and Development of Religious Orders." Review for Religious, XXIX (January, 1970), 59-78.

Hulme, Kathryn. The Nun's Story. Boston: Little, Brown and Company, 1956.

Hursh, Gerald; Roling, Niels R.; and Kerr, Graham B. "Innovation in Eastern Nigeria: Success and Failure of Agriculture Programs in 71 Villages of Eastern Nigeria." Report 8. East Lansing, Mich.: Diffusion Documents Center, Michigan State University, 1968.

Huyghe, Msgr. Gerard. "What Do We Mean by Religious?" In Religious Orders in the Modern World: A Symposium. Westminster, Md.: The Newman Press, 1965.

Indik, Bernard P. "The Scope of the Problem and Some Suggestions Toward a Solution." In People, Groups, and Organizations. Edited by Bernard P. Indik and F. Kenneth Berrien. New York: Teachers College Press, 1968a.

Indik, Bernard P. "A Summing Up--Toward a More Coherent Future of Research." In People, Groups, and Organizations. Edited by Bernard P. Indik and F. Kenneth Berrien. New York: Teachers College Press, 1968b.

Jackson, Jay M. "The Organization and Its Communication Problems." The Journal of Communication, IX, 4 (December, 1959), 158-167 ff.

Jacob, Martha A. "A Pilot Study of Organizational Communication in the Legislative Body of a Religious Community of Women." East Lansing, Mich.: Michigan State University, 1971. (Mimeographed.)

Jacobson, Eugene,; Charters, W. W.; and Lieberman, S. "The Use of the Role Concept in the Study of Complex Organizations." The Journal of Social Issues, VII, 3 (1951), 18-27.

________, and Seashore, S. E. "Communication Practices in Complex Organizations." The Journal of Social Issues, VII, 3 (1951), 28-40.

Johnson, Harry Morton. Sociology: A Systematic Introduction. New York: Harcourt, Brace and Company, 1960.

Johnson, Richard; Kast, Fremont E.; and Rosenzweig, James E. The Theory and Management of Systems. 2nd ed. New York: McGraw Hill Book Company, 1967.

Kahn, Robert L., and Cannell, Charles F. The Dynamics of Interviewing: Theory, Technique, and Cases. New York: John Wiley & Sons, Inc., 1957.

Katz, Daniel, and Kahn, Robert L. The Social Psychology of Organizations. New York: John Wiley & Sons, Inc., 1966.

Katz, Elihu, and Lazarsfeld, Paul F. Personal Influence. New York: The Free Press, 1955.

Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1966.

Kerr, Graham B. "Leadership and Communication in the Collective Adoption Process of Development Associations in Eastern Nigeria." Unpublished Doctor's dissertation, Michigan State University, 1970.

Lafferty, Sister Nancy, FSPA. "Experiences in Collegiality." Review for Religious, XXIX, 3 (May, 1970), 419-23.

Leavitt, Harold J. "Applied Organizational Change in Industry: Structural, Technological, and Humanistic Approaches." In Handbook of Organizations. Edited by James G. March. Chicago: Rand McNally & Company, 1965, pp. 1144-70.

Likert, Rensis. The Human Organization. New York: McGraw Hill Book Company, 1964.

________. New Patterns of Management. New York: McGraw Hill Book Company, 1961.

________. "A Technique for the Measurement of Attitudes." Archives Psychology, CXL (1932).

Lipset, Seymour M.; Trow, M.A.; and Coleman, J. S. Union Democracy. New York: The Free Press, 1956.

Lorsch, Jay W. Product Innovation and Organization. New York: The Macmillan Co., 1965.

MacDonald, Donald. "Communication Roles and Communication Content in a Bureaucratic Setting." Unpublished Doctor's dissertation, Michigan State University, 1970.

March, James G., and Simon, Herbert A. Organizations. New York: John Wiley & Sons, Inc., 1958.

Marcus, Alan S., and Bauer, Raymond A. "Yes, There Are Generalised Opinion Leaders." Public Opinion Quarterly, XXVIII (Winter, 1964), 628-32.

McDonnell, Kilian. "Religious Life in Low Profile." America (July 11, 1970), 16-20.

Merton, Robert K. Social Theory and Social Structure. New York: The Free Press, 1957.

Meyers, Sister Bertrande, D.C. Sisters for the 21st Century. New York: Sheed and Ward, 1965.

Milgram, S. "The Small World Problem." Psychology Today, I (May, 1967), 61-67.

Miller, J. G. "Toward a General Theory for the Behavioral Sciences." The American Psychologist, X (1955), 513-31.

Mitchell, William G. "Communication of an Education Innovation in an Institution of Higher Learning." Unpublished Doctor's dissertation, Michigan State University, 1970.

Morrison, Denton, and Henkel, Ramond E. "Significance Tests Reconsidered." The American Sociologist, IV, 3 (1969), 131-40.

Morse, Nancy C., and Reimer, Everett. "The Experimental Change of a Major Organizational Variable." Journal of Abnormal and Social Psychology, LII (1956), 120-29.

Mouton, Jane Srygley; Blake, Robert R.; and Fruchter, Benjamin. "The Validity of Sociometric Responses." In The Sociometry Reader. Edited by J. L. Moreno. New York: The Free Press, 1960, 362-87.

Mouzelis, Nicos P. Organisation and Bureaucracy: An Analysis of Modern Theories. Chicago: Aldine Publishing Company, 1968.

Neal, Sr. Marie Augusta, S.N.D. "Stirrings in the Religious Life." The Sister Formation Bulletin, XVI, 1 (Fall, 1969), 7-12.

________. "A Theoretical Analysis of Renewal in Religious Orders in the U.S." Prepared for Vol. 1 (1971). Social Compass. (Mimeographed.)

________. Values and Interests in Social Change. Englewood Cliffs, N.J.: Prentice Hall, 1965.

O'Meara, Thomas F., O.P. Holiness and Radicalism in Religious Life. New York: Herder and Herder, 1970.

The Official Catholic Directory, 1970. New York: P. J. Kenedy & Sons, 1971.

Parsons, Talcott. The Social System. New York: The Free Press, 1951.

________. Social Structure and Personality. New York: The Free Press, 1964.

________. "Suggestions for a Sociological Approach to the Theory of Organizations." Administrative Science Quarterly, I, 1 & 2 (June and September, 1956), 63-85, 225-39.

________; Bales, Robert F.; and Shils, Edward A. Working Papers in the Theory of Action. New York: The Free Press, 1953.

Patchen, M. "Alternative Questionnaire Approaches to the Measurement of Influence in Organizations." American Journal of Sociology, LXIX, 1 (July, 1963), 41-52.

"Preliminary Report of the Findings of the National Sister Survey." In The Proceedings of the Conference of Major Superiors of Women in the United States, 1966, 1967, 1968.

Proctor, C., and Loomis, C. "Analysis of Sociometric Data." In Research Methods in Social Relations. Edited by M. Jahoda, M. Deutsch, and S. Cook. Part 2. New York: Holt, Rinehart and Winston, Inc., 1951.

Pye, Lucian W., ed. Communication and Political Development. Princeton, N.J.: Princeton University Press, 1963.

Rao, Y. V. Lakshmana. Communication and Development: A Study of Two Indian Villages. Minneapolis: University of Minnesota Press, 1966.

Rapoport, Anatol. Operational Philosophy. New York: John Wiley & Sons, Inc., 1953.

Reindl, Max H. "Propositions on Information Management of Innovation Processes in Organizations." Unpublished Doctor's dissertation, Michigan State University, 1970.

"Renovationis Causam" ("The Formation of the Modern Religious"). Supplement to The Way, VII (June, 1969).

Richards, William D., Jr. "Computer Techniques for Analysis of Communication Networks of Complex Organizations." East Lansing, Mich.: Department of Communication, Michigan State University, December 2, 1970. (Mimeographed.)

________. "An Improved Conceptually-based Method for Analysis of Communication Network Structures of Large Complex Organizations." East Lansing, Mich.: Department of Communication, Michigan State University, April, 1971. (Mimeographed.)

Rogers, Everett M. Diffusion of Innovations. New York: The Free Press, 1962.

________. Diffusion of Innovations: A Cross-Cultural Approach. With F. Floyd Shoemaker. (In press.)

Rogers, Everett M. Modernization Among Peasants: The Impact of Communication. In association with Lynne Svenning. New York: Holt, Rinehart and Winston, Inc., 1969.

________, and Van Es., Johannes C. "Opinion Leadership in Traditional and Modern Colombian Peasant Communities." Report 2, Department of Communication, Michigan State University, 1964. (Mimeographed.)

Ross, Ian C., and Harary, Frank. "Identification of the Liaison Persons of an Organization Using the Structure Matrix." Management Science, I (1954), 251-58.

Rubenstein, A. H. "Problems in the Measurement of Interpersonal Communication in an On-Going Situation." Sociometry, XVI, 1 (February, 1953), 78-100.

Schein, Edgar H. Organizational Psychology. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965.

Scott, W. Richard. "Theory of Organizations." In Handbook of Modern Sociology. Edited by Robert E. L. Farris. Chicago: Rand McNally & Company, 1954, 485-529.

Schwartz, Donald F. "Liaison Communication Roles in a Formal Organization." Unpublished Doctor's dissertation, Michigan State University, 1968.

________. "A Viewpoint on Needed Research in Organizational Communication." Address at the International Communication Association Meeting, Minneapolis, Minn., May 6-9, 1970. (Mimeographed.)

Sells, S. B. "Taxonomy: A Model Solution." In People, Groups, and Organizations. Edited by Bernard F. Indik and F. Kenneth Berrien. New York: Teachers College Press, 1968.

Selltiz, Claire; Jahoda, Maire; Deutsch, Morton; and Cook, Stuart W. Research Methods in Social Relations. rev. ed. Chicago: Holt, Rinehart and Winston, 1967.

Selznick, P. TVA and the Grass Roots. Berkeley, 1949.

Shehan, Most. Rev. Lawrence J., D.D. "Opening Address: The New and Old--in Harmonious Union." In Proceedings of the 1958 Sisters' Institute of Spirituality. Edited by Joseph E. Haley, C.S.C. Notre Dame, Ind.: University of Notre Dame, 1959.

Shils, Edward. "The Theory of Mass Society." Diogenes, XXXIX (1962), 45-66.

Shotland, Robert L. "The Structure of Social Relationships at MSU: A Communication Study." East Lansing, Mich.: Educational Development Program, project report no. 302, 1969.

Simon, H. A. Administrative Behavior. 2nd ed. New York: Macmillan, 1957.

Strauss, George. "Direct Observation as a Source of Quasi-Sociometric Information." Sociometry, XV (1952), 141-45.

Thayer, Lee. Communication and Communication Systems. Homewood, Ill.: Richard D. Irwin, Inc., 1968.

Thompson, Victor A. Modern Organization: A General Theory. New York: Alfred A. Knopf, 1961.

________. Bureaucracy and Innovation. University, Ala.: University of Alabama Press, 1969.

Toffler, Alvin. Future Shock. New York: Random House, 1970.

Walton, Eugene. "Communication Down the Line: How They Really Get the Word." Personnel, XXXVI, 4 (July-August, 1959), 78-82.

________. "A Magnetic Theory of Communication." China Lake, Calif.: U.S. Naval Ordinance Test Station, 1962.

________. "A Study of Organizational Communication Systems." Personnel Administration, XXVI, 3 (1963), 46-49.

Webb, Eugene J.; Campbell, Donald T.; Schwartz, Richard D.; and Sechrest, Lee. Unobtrusive Measures. Chicago: Rand McNally & Company, 1966.

Weick, Karl E. "Laboratory Experimentation With Organizations." In Handbook of Organizations. Edited by James G. March. Chicago: Rand McNally & Company, 1965, 194-260.

Weinshall, Theodore D. "The Communicogram." In Operational Research and the Social Sciences. Edited by J. R. Lawrence. London: Tavistock Publications, 1966, 619-33.

Weiss, R. S. Processes of Organization. Ann Arbor, Mich.: Institute for Social Research, 1956.

________, and Jacobson, Eugene. "A Method for the Analysis of the Structure of Complex Organizations." American Sociology Review, XX (December, 1955), 661-68.

Wickesberg, A. K. "Communication Network in the Business Organization Structure." Academy of Management Journal, XI, 3 (September, 1968), 253-62.

Winch, Robert F., and Campbell, Donald T. "Proof? No. Evidence? Yes. The Significance of Tests of Significance." The American Sociologist, IV, 3 (1969), 140-43.

Wirth, Louis. "Concensus and Mass Communication." American Sociological Review, XIII (1948), 1-15.

Yadav, D. P. "Communication Structure and Innovation Diffusion in Two Indian Villages." Technical Report 2, Michigan State University, Project on Diffusion of Innovations in Rural Societies, 1967.

# APPENDICES

# APPENDIX A

# COMMUNICATION QUESTIONNAIRE

APPENDIX A

COMMUNICATION QUESTIONNAIRE

Community # ____________________
Respondent # ____________________

(Do not write above this line)

Which of the following categories comes nearest to describing the PRINCIPAL WORK you are doing at this time? Read through numbers 1, 2, and 3 until you find your principal work. Check the one item on this page which comes the nearest to describing your principal work.

1. (1)__teaching in the elementary grades (preschool through grade 3)
   (2)__teaching in the intermediate grades (4-5-6)
   (3)__teaching in junior high (7-8-9)
   (4)__teaching in high school
   (5)__teaching college (undergraduate, junior college)
   (6)__teaching graduate school
   (7)__teaching special education (blind, exceptional child, etc.)
   (8)__teaching in special programs for the poor (excluding any of the above categories)
   (9)__teaching continuing education (non-credit courses, leisure learning for adults)
   (0)__administrating a school or supervising a teaching program

2. If you marked an answer in 1, go to question 4 (next page). If you did not answer in 1, continue looking for your MAIN WORK. Mark only one category in 1, 2, or 3.

   (1)__catechetical work
   (2)__Newman Center work
   (3)__counseling (mainly not in religious community)
   (4)__social work (all kinds: include here working with orphans, disturbed youth, etc.)

(5)__publishing (all works related, such as printing, editing)
(6)__librarian (all kinds)
(7)__care of rectories, seminaries, churches, etc.
(8)__student--undergraduate
(9)__student--graduate
(0)__office of school board

3. If you marked an answer in 1 or 2, go to question 4. If you did not answer in 1 or 2, continue looking for your PRINCIPAL WORK.

(1)__formation director or vocation work
(2)__counseling of sisters (mainly)
(3)__full-time superior (local)
(4)__food service, home maintenance, seamstress, sacristan, clerical work
(5)__other forms of community work
(6)__infirmarian or nurse
(7)__administration of community (such as major superior, councilor, treasurer, other officers)
(8)__retreat house director or retreat work
(9)__retired or convalescing
(0)__none of above categories comes near to describing my present PRINCIPAL WORK.

If you check the last statement, please state briefly what your principal work is:

______________________________________________

______________________________________________

______________________________
(Please sign your name)

[First page ended here on actual questionnaire.]

Circle the correct item:

4. Your age now:

(1) under 20, (2) 21-30, (3) 31-40, (4) 41-50, (5) 51-60, (6) 61-70, (7) 71-80, (8) 81-90, (9) over 90

5. Number of years in community from first vows:

(1) less than one year, to five years, (2) 6-15, (3) 16-30, (4) 31-50, (5) more than 50

6. What is the highest educational level you have attained?

(1) eighth grade or less
(2) part high school
(3) high school graduate
(4) technical or professional schooling beyond high school, but no degree
(5) advanced training in performing arts
(6) some college but no degree
(7) college graduate
(8) master's degree or equivalent
(9) doctoral degree or equivalent
(0) professional degree, e.g., law, medicine

7. State briefly the type or kind of local government you have at the convent where you live.

______________________________________________
______________________________________________

8. How was the person(s) in the government of your local community put there? Check one.

__(1) appointed by General Superior
__(2) elected by members of the house
__(3) volunteered
__(4) other: please specify ____________________

9. Check the <u>one</u> statement which is true for you: Are you <u>presently</u> wearing:

__(1) the traditional habit
__(2) a modified habit
__(3) contemporary clothes (secular dress) with veil
__(4) contemporary clothes (secular dress) without veil

(If you checked (1), go to question 11.)

10. If you checked number (2), (3), or (4), when did you begin wearing the type of clothing you checked?

____________________
(month) (year)

11. Check the <u>one</u> phrase which most clearly describes the way you <u>receive</u> messages from the Community:

__(1) all or nearly all written messages
__(2) more written than oral
__(3) about one-half written and one-half oral
__(4) more oral than written
__(5) all or nearly all oral messages

(Answer the following items by checking the category which most nearly matches your feeling or opinion on that item.)

12. Within the Community, differences are expressed more today than ten years ago. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

13. How often do other sisters express ideas or opinions to you which conflict with your ideas?

__never __seldom __sometimes __frequently __very frequently

14. I feel I usually know what to expect of other members of our Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

15. Much information about Community affairs is made available to the members of our Community. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

16. Considering both the official communication (written and oral) and the informal communication among members of your Community: There is much communication to help sisters feel that others are interested in them. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

17. This communication "to help sisters feel that others are interested in them . . ." comes:

__(1) entirely from official sources
__(2) more from official sources than from the informal contacts
__(3) about one-half from official and one-half from informal contacts
__(4) more from informal contacts than from official sources
__(5) entirely from informal sources

18. How often do sisters express differences in ideas or opinions to each other?

__never __seldom __sometimes __frequently __very frequently

19. There is uncertainty in our Community about what is expected of a sister today. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

20. How often are different opinions concerning obedience and authority expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

21. How often do you talk about new and different ways for the Community to do things?

__very frequently __frequently __sometimes __seldom __never

22. Group, local community, and/or total Community discussions for the purpose of coming up with new ways of doing things are encouraged by the Community. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

23. How often do the members receive suggestions and/or recommendations from the Community Government?

__never __seldom __sometimes __frequently __very frequently

24. In conversations with sisters, how often do you find yourself expressing ideas which differ from what the others have expressed?

__very frequently __frequently __sometimes __seldom __never

25. Our sisters feel uncertain about the continuation of the Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

26. How often are different opinions concerning liturgy expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

27. How often do sisters make suggestions and recommendations to other sisters?

__never __seldom __sometimes __frequently __very frequently

28. I feel I know what other members of my Community expect of me. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

29. In general, how satisfied do you feel with your Community's efforts in renewal?

__(a) greatly dissatisfied
__(b) somewhat dissatisfied
__(c) haven't thought much about it
__(d) mostly satisfied
__(e) highly satisfied

30. There is concern in our Community over such questions as: "How does a Sister fit into today's world?" Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

31. It is more difficult to decide what is expected of a Sister in our Community today, than it was ten years ago. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

32. On the whole, there is much communication in our Community which gives specific directives on how to do things. Do you:

__strongly disagree __disagree __neither agree nor disagree __agree __strongly agree

33. What do you think is the level of satisfaction among the members of your Community with regard to the Community's efforts in renewal: (check one line only).

__high dissatisfaction; or
__dissatisfaction to moderate satisfaction; or
__some dissatisfaction to moderately high satisfaction; or
__high satisfaction

34. I feel I am <u>told what to do</u> more often than I am <u>asked for my opinion about new ways of doing things</u> in the Community. Do you:

__strongly agree __agree __neither agree nor disagree __disagree __strongly disagree

35. How often are different opinions concerning apostolic priorities expressed in your Community?

__very frequently __frequently __sometimes __seldom __never

36. If you wanted an opinion about a new idea on prayer, which other member(s) of your Community would you ask? (Write the name(s) in the blanks. Religious and family names, please.)

____________________, ____________________
____________________.

37. If you wanted an opinion about a new idea on Community government, which other member(s) of your Community would you ask? (Write the name(s) in the blanks. Religious and family names, please.)

____________________, ____________________
____________________.

38. If you wanted an opinion about a new idea on the apostolate, which other member(s) of your Community would you ask? (Write the name(s) in the blanks. Religious and family names, please.)

____________________, ____________________
____________________.

39-43. What is your overall impression of the extent to which various types of communication are used in your Community? First, read the five types (A-E) given below. Next, rank these types by putting a (5) before the type that appears most often in your Community,

a (4) = much
a (3) = the category or type which falls about midway among the five
a (2) = little
a (1) = very little
a (0) = none of that type

Use the same number for more than one category only if you find it impossible to decide which is larger.

__A. Business or official information: Some examples might be: a financial report of the Community, closing of an elementary school, or repairs at the Motherhouse, or statistics, such as number of members, etc.

__B. Directives or instructions which all sisters are to follow: Some examples might be: policy on dress, or certain prayers and penitential practices, or procedures for voting, or daily schedules.

__C. Suggestions or recommendations: Some examples might be: to attend a community event, or to take a certain attitude on Community issues, or on spiritual life, or to volunteer for a committee or position within the Community, or to attend a concert or lecture.

__D. Human interest, small talk, or things which have happened to various sisters: Some examples might be: "The following sisters received honors during the past month . . ." or "Our sick sisters . . ."

__E. Inquiries for the sisters' ideas or opinions: Some examples might be: solicitations for sisters' proposals for Chapter, or "What do you mean by 'life styles' for religious? By 'community'? How shall we prepare for the apostolate of 1980? These questions will be explored at a meeting on May 5. . . ." or "Do you think our Community should have a vocation director? Please send your ideas. . . ."

Check one answer in numbers 44 to 48.

44. How satisfied are you with the amount of information-giving communication in your Community?

__(1) I'd like more information
__(2) I'd like less information
__(3) I'm satisfied

45. How satisfied are you with the amount of communication which directs or instructs in your Community?

__(1) I'd like more directives
__(2) I'd like fewer directives
__(3) I'm satisfied

46. How satisfied are you with the amount of communication which gives suggestions or recommendations in your Community?

__(1) I'd like more suggestions or recommendations
__(2) I'd like fewer suggestions or recommendations
__(3) I'm satisfied

47. How satisfied are you with the amount of communication which deals with personal items about the sisters, small talk, human interest items?

__(1) I'd like more human interest
__(2) I'd like less human interest
__(3) I'm satisfied

48. How satisfied are you with the amount of communication which asks for the sisters' ideas or opinions in your Community?

__(1) I'd like more inquiries for opinions
__(2) I'd like fewer inquiries for opinions
__(3) I'm satisfied

Thank you for your cooperation and perseverance!

Personal Contact Checklist

______________________________
(Write your name here)

The attached Checklist asks for certain information about your communication with other members of your Community. This information is needed to complete the "mapping" of the communication structure of the Community, an integral part of my dissertation research.

Please place a check in the category beside each sister's name which most closely indicates the frequency of your communication with her. "Communicate" includes: face-to-face conversations, telephone conversations, letters, formal or informal meetings, memos, etc., which consist of more than a passing greeting. For example, "communicate" does include table conversations, business and professional conversations, information seeking. "Communicate" does not include saying merely "Good morning"! or answering the telephone and taking a message for another person.

Neither the following pages nor the code sheet containing the names and assigned numbers will be seen by anyone but myself. No one in your Community will see this information. Thank you for your cooperation.

# APPENDIX B

## PERCENTAGE OF BLANK ANSWERS ON QUESTIONNAIRES

## LISTED BY QUESTION NUMBER

Community # ____________________
Respond # ____________________

(Do not write above this line)

Put a check in the box which most closely indicates the frequency of your communication with each sister.

| Sister: | Several Times a Day | Once a Day | 1-2 Times Per Week | 1-2 Times Per Month | Less Than Once a Month | Not at all During Past Year |
|---|---|---|---|---|---|---|
| (Names) | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

TABLE B-1.--Percentage of blank answers on questionnaires listed by question number.

| Question Number | Communities | | |
|---|---|---|---|
| | One | Two | Three |
| 4 | 1.56 | 0 | 0 |
| 5 | 3.13 | 0 | 1.16 |
| 6 | 1.56 | 0 | 0 |
| 11 | 4.69 | 0 | 1.16 |
| 12 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 |
| 17 | 6.25 | 2.90 | 4.65 |
| 18 | 1.56 | 2.90 | 1.16 |
| 19 | 0 | 0 | 0 |
| 20 | 3.13 | 1.45 | 1.16 |
| 21 | 1.56 | 1.45 | 0 |
| 22 | 0 | 0 | 0 |
| 23 | 9.38 | 2.90 | 0 |
| 24 | 4.69 | 1.45 | 1.16 |
| 25 | 0 | 0 | 0 |
| 26 | 6.25 | 1.45 | 1.16 |
| 27 | 3.13 | 1.45 | 3.49 |
| 28 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 |
| 31 | 0 | 0 | 0 |
| 32 | 0 | 0 | 0 |
| 33 | 6.25 | 1.45 | 3.49 |
| 34 | 0 | 0 | 0 |
| 35 | 9.38 | 1.45 | 5.81 |
| 36 | 25.00 | 10.14 | 11.62 |
| | 31.25 | 15.94 | 33.72 |
| | 45.31 | 27.53 | 40.69 |
| 37 | 23.43 | 5.79 | 11.62 |
| | 37.50 | 20.28 | 37.20 |
| | 43.75 | 33.33 | 44.18 |
| 38 | 28.12 | 5.79 | 13.95 |
| | 39.06 | 23.18 | 33.72 |
| | 50.00 | 34.78 | 43.02 |
| 39 | 21.88 | 4.35 | 15.12 |
| 40 | 21.88 | 7.25 | 16.28 |
| 41 | 18.75 | 7.25 | 17.44 |
| 42 | 21.88 | 4.35 | 13.95 |
| 43 | 23.44 | 5.80 | 16.28 |
| 44 | 7.81 | 2.90 | 13.95 |
| 45 | 9.38 | 2.90 | 12.79 |
| 46 | 10.94 | 5.80 | 13.95 |
| 47 | 14.06 | 2.90 | 11.63 |
| 48 | 10.94 | 2.90 | 13.95 |

# APPENDIX C

## CONVERGENCE OF COMMUNIMATRICES THROUGH CONSECUTIVE ITERATIONS

TABLE C-1.--Convergence of communimatrices through consecutive iterations.

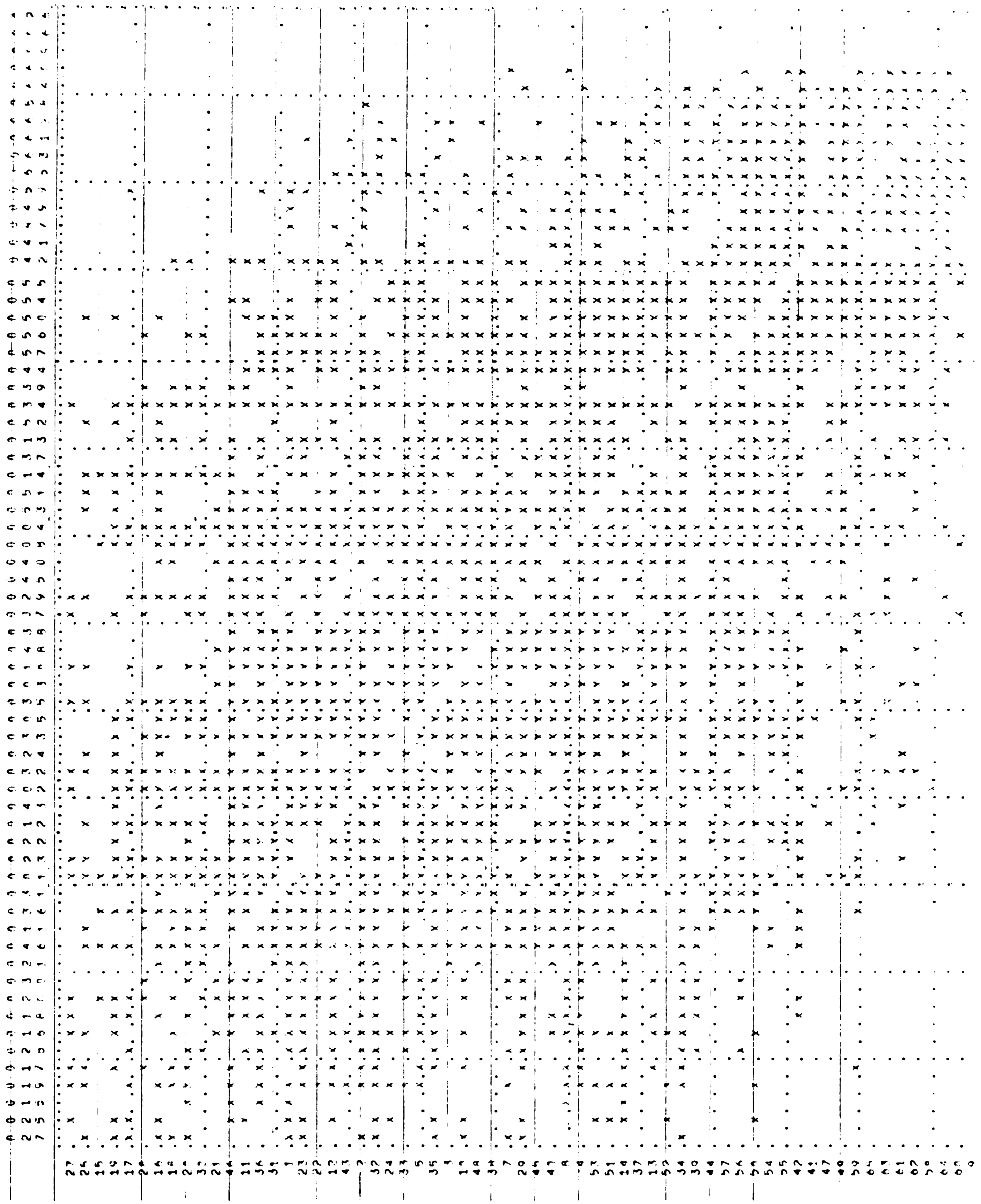
| Community | Iteration | # Changed Ranks | Sum of Rank Differences |
|---|---|---|---|
| Community One Frequency 2,3,4,5: "Once a Month" or More Often | 1 | 64 | 21066 |
| | 2 | 50 | 900 |
| | 3 | 43 | 222 |
| | 4 | 27 | 108 |
| | 5 | 17 | 26 |
| | 6 | 14 | 20 |
| | 7 | 10 | 16 |
| | 8 | 11 | 28 |
| | 9* | 7 | 10 |
| | 10 | 8 | 8 |
| Community Two Frequency 2,3,4,5: "Once a Month" or More Often | 1 | 72 | 9226 |
| | 2 | 49 | 426 |
| | 3 | 37 | 232 |
| | 4 | 33 | 926 |
| | 5 | 37 | 170 |
| | 6 | 34 | 416 |
| | 7 | 41 | 722 |
| | 8 | 41 | 232 |
| | 9 | 16 | 30 |
| | 10* | 17 | 34 |
| Community Three Frequency 2,3,4,5: "Once a Month" or More Often | 1 | 97 | 80202 |
| | 2 | 89 | 5036 |
| | 3 | 81 | 1136 |
| | 4 | 77 | 1460 |
| | 5 | 62 | 2292 |
| | 6 | 58 | 1418 |
| | 7 | 54 | 936 |
| | 8* | 51 | 798 |

*Iteration used.

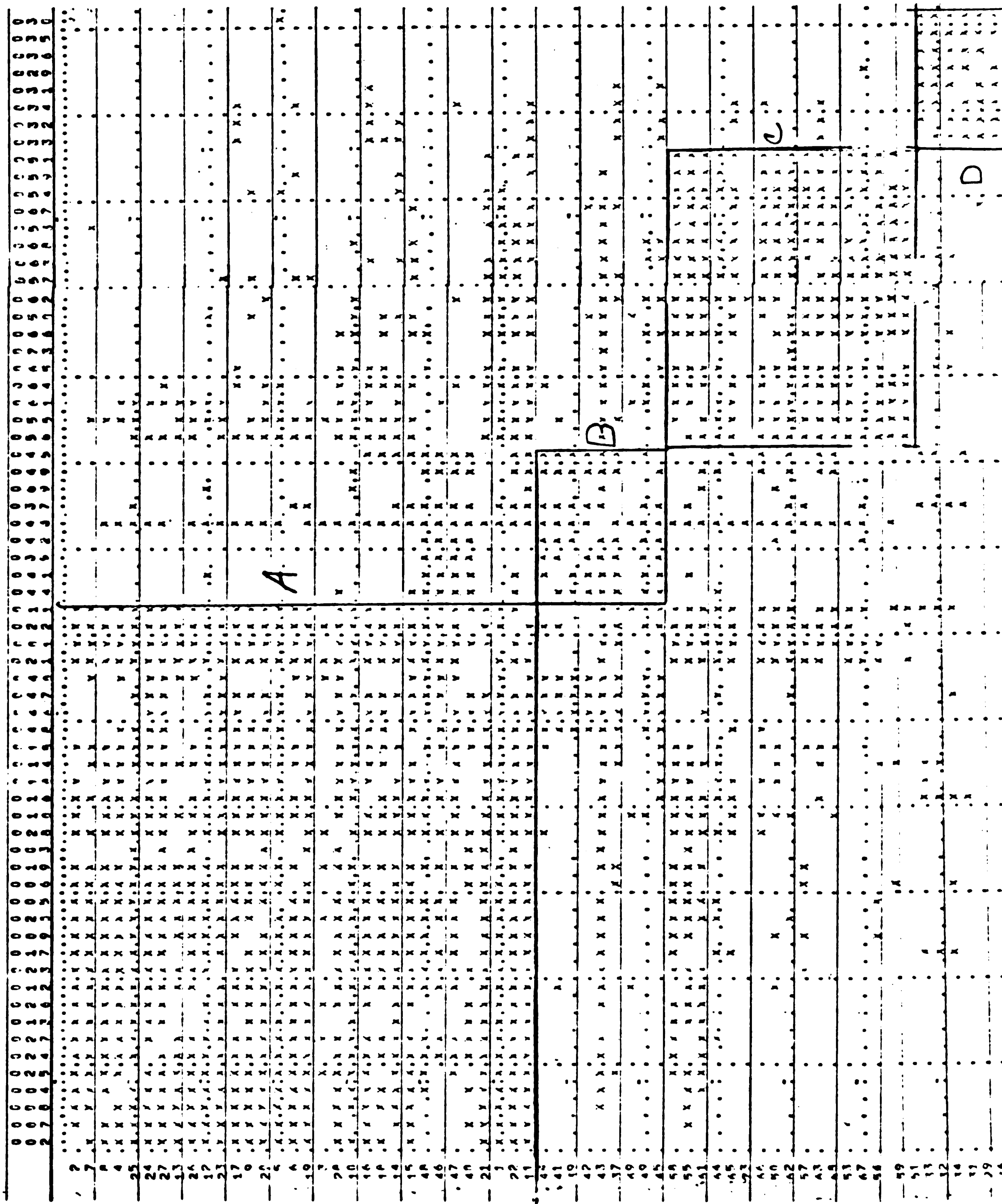
# APPENDIX D

# COMMUNIMATRICES OF THREE COMMUNITIES

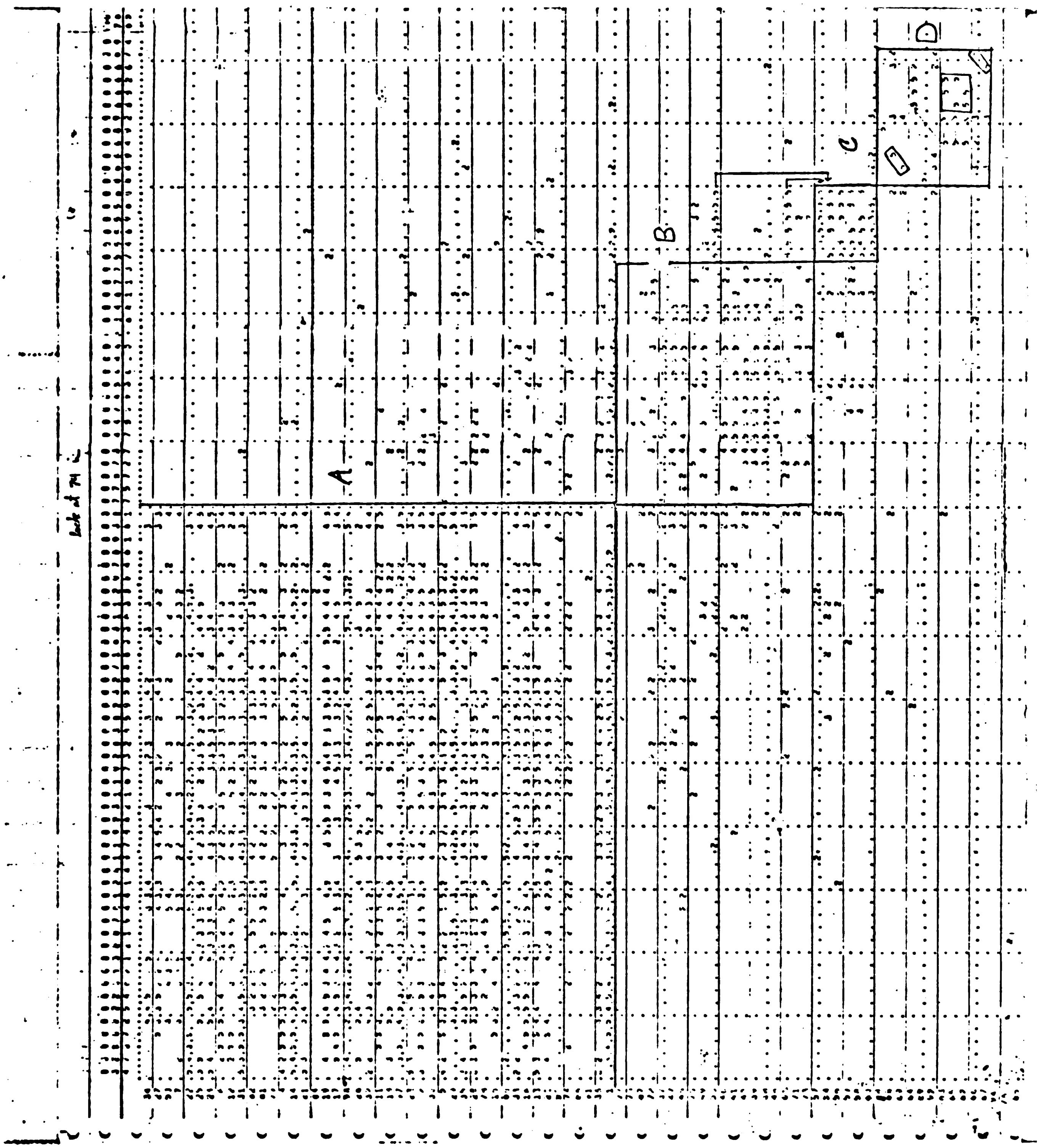
Community One



Community Two



Community Three



# APPENDIX E

# LIAISONNESS INDEX

TABLE E-1.--Liaisonness index--Community One.

| Respondent Number | Index Value | Respondent Number | Index Number |
|---|---|---|---|
| 1 | 47 | 33 | 44 |
| 2 | 48 | 34 | 57 |
| 3 | 28 | 35 | 45 |
| 4 | 50 | 36 | 44 |
| 5 | 45 | 37 | 30 |
| 6* | 0 | 38 | 32 |
| 7 | 40 | 39 | 28 |
| 8 | 51 | 40 | 41 |
| 9* | 0 | 41 | 16 |
| 10 | 45 | 42 | 43 |
| 11 | 33 | 43 | 28 |
| 12 | 44 | 44 | 40 |
| 13 | 38 | 45 | 25 |
| 14 | 44 | 46 | 42 |
| 15 | 6 | 47 | 29 |
| 16 | 30 | 48 | 40 |
| 17 | 23 | 49 | 26 |
| 18 | 24 | 50 | 41 |
| 19 | 27 | 51 | 37 |
| 20 | 30 | 52 | 26 |
| 21 | 17 | 53 | 47 |
| 22 | 34 | 54 | 39 |
| 23 | 40 | 55 | 36 |
| 24 | 25 | 56 | 47 |
| 25 | 19 | 57 | 38 |
| 26* | 0 | 58 | 19 |
| 27 | 15 | 59 | 32 |
| 28 | 19 | 60 | 12 |
| 29 | 44 | 61 | 26 |
| 30 | 24 | 62 | 26 |
| 31 | 29 | 63 | 26 |
| 32 | 48 | 64 | 17 |
| | | 65 | 30 |

Contact Values for Typology of Individuals

| | |
|---|---|
| Each Isolate | 0 |
| Each Group Member | 1 |
| Each Bridge Person | 2 |
| Each Liaison Individual | 3 |
| Each Liaison Group Member | 4 |
| Each Liaison Set Member | 5 |

*Unable to participate in study.

TABLE E-2.--Liaisonness index--Community Two

| Respondent Number | Index Value | Respondent Number | Index Value |
|---|---|---|---|
| 1 | 118 | 35 | 16 |
| 2 | 56 | 36 | 13 |
| 3 | 26 | 37 | 74 |
| 4 | 78 | 39 | 39 |
| 5 | 95 | 40 | 60 |
| 6 | 73 | 41 | 50 |
| 7 | 55 | 42 | 49 |
| 8 | 65 | 43 | 138 |
| 9 | 84 | 44 | 49 |
| 10 | 96 | 45 | 67 |
| 11 | 137 | 46 | 78 |
| 12 | 86 | 47 | 98 |
| 13 | 55 | 48 | 87 |
| 14 | 102 | 49 | 61 |
| 15 | 117 | 50 | 68 |
| 16 | 108 | 51 | 49 |
| 17 | 95 | 53 | 57 |
| 18 | 93 | 54 | 50 |
| 19 | 102 | 55 | 98 |
| 20 | 95 | 57 | 64 |
| 21 | 111 | 58 | 90 |
| 22 | 123 | 59 | 48 |
| 23 | 91 | 61 | 95 |
| 24 | 88 | 62 | 82 |
| 25 | 85 | 63 | 81 |
| 26 | 72 | 64 | 77 |
| 27 | 94 | 65 | 93 |
| 28 | 86 | 66 | 88 |
| 29 | 15 | 67 | 50 |
| 30 | 13 | 68 | 66 |
| 31 | 24 | 69 | 25 |
| 32 | 38 | 73 | 4 |
| 33 | 44 | | |
| 34 | 37 | | |

TABLE E-3.--Liaisonness index--Community Three.

| Respondent Number | Index Value | Respondent Number | Index Value |
|---|---|---|---|
| 1 | 101 | 48 | 23 |
| 2 | 64 | 49 | 40 |
| 4 | 41 | 50 | 23 |
| 5 | 63 | 53 | 37 |
| 7 | 25 | 54 | 37 |
| 8 | 47 | 56 | 34 |
| 10 | 32 | 57 | 36 |
| 11 | 51 | 58 | 32 |
| 12 | 42 | 59 | 31 |
| 13 | 58 | 60 | 30 |
| 14 | 53 | 61 | 29 |
| 16 | 56 | 62 | 3 |
| 17 | 42 | 63 | 6 |
| 18 | 30 | 64 | 11 |
| 19 | 51 | 65 | 3 |
| 20 | 56 | 66 | 6 |
| 21 | 45 | 67 | 4 |
| 22 | 43 | 68 | 10 |
| 23 | 50 | 69 | 3 |
| 24 | 38 | 70 | 23 |
| 25 | 46 | 71 | 21 |
| 26 | 18 | 72 | 35 |
| 27 | 37 | 73 | 15 |
| 28 | 64 | 74 | 40 |
| 29 | 45 | 75 | 7 |
| 30 | 40 | 77 | 2 |
| 31 | 45 | 78 | 35 |
| 32 | 47 | 79 | 27 |
| 33 | 51 | 80 | 28 |
| 34 | 25 | 81 | 34 |
| 35 | 64 | 82 | 32 |
| 36 | 49 | 84 | 1 |
| 37 | 42 | 86 | 3 |
| 38 | 35 | 87 | 15 |
| 39 | 29 | 88 | 2 |
| 40 | 38 | 89 | 1 |
| 41 | 38 | 90 | 22 |
| 45 | 32 | 91 | 1 |
| 46 | 29 | 92 | 6 |
| 47 | 32 | 98 | 60 |
| | | 99 | 44 |