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A THEORETICAL AND EMPIRICAL ANALYSIS
OF THE ADOPTION–DIFFUSION PROCESS
OF SOCIAL CHANGE.

Louisiana State University and Agricultural and
Mechanical College, Ph.D., 1968
Social Psychology

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A THEORETICAL AND EMPIRICAL ANALYSIS
OF THE ADOPTION-DIFFUSION PROCESS
OF SOCIAL CHANGE

A Dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
in
The Department of Sociology

by
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B.S., University of Southern Mississippi, 1956
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January, 1968
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ABSTRACT

This work represents an effort to achieve the following general aims: to establish the requisites for a theory of social change; to review the tenets, with regards to change, of the various sociological schools; to establish a theoretical model for purposes of studying change in general; to adapt this model to the study of the adoption-diffusion process; to organize and synthesize research and theory of the adoption-diffusion process; to establish "ideal types" of "high" and "low" adopter potential; and to test the adequacy of the ideal types, for predicting adopter behavior, with an empirical study of adoption of woodland management practices.

Cognitive theory, which has been little used in adoption-diffusion studies, was articulated with a social action "Model of Behavioral Factors." Adoption-diffusion terminology was translated in terms of the combined models of social action and cognition and with this as a guide the factors in the adoption process were derived. From the factors, ideal types of "high" and "low" adopter potential were developed.

Several specially developed scales were employed for purposes of securing information needed to test specific hypotheses generated by the ideal types. Those variables found to be significantly related to adoption levels (high, medium, and low) were: The presence of children in the home, the degree of formal education, the occupation of the woodland owner, his type of farm enterprise, the size of his total holdings...
and the size of his woodlands, his perceptions of the benefits of woodlands, having given consideration to "tree farming," having received advice on farm problems and woodland management, the number and variety of information sources used, the acceptance of other innovations, the source of the family's income, socioeconomic status and the owner's orientation (progressive--conservative).
CHAPTER I

INTRODUCTION

Man has long concerned himself with the phenomenon of social change, its causes and its consequences, both planned and unanticipated. He has desired knowledge of how to inhibit it so as to promote stability and how to bring it about for the satisfaction of his wants or, failing in these efforts, how to adjust to its fluctuations. The interest manifested by this work is in gaining an understanding of some of the processes of social change. The task is initiated by considering selected works of others on this phenomenon.

The generally recognized founder of sociology, Auguste Comte, urged the followers of this discipline to look for laws of change in their attempts to understand human behavior.\(^1\) Sociologists since Comte's time have not spent all their energies in pursuit of these "laws," but all who have tried to systematize their thought and explorations in human behavior have had to grapple with the problem of social change.

The attempts at understanding change have varied from those of Sorokin's in explaining fluctuations in "cultural supersystems"\(^2\) and Auguste Comte's search for the laws of

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progress to such studies as "The Acceptance of Approved Farming Practices Among Farmers of Dutch Descent,"\textsuperscript{3} and "Forces Behind Food Habits and Methods of Change."\textsuperscript{4} The former represent some of the most general and abstract approaches to the problem while the latter are much more specific and concrete in that they are not so far removed from behavioral referents.

This study represents an approach to the problem of social change which is somewhat intermediate to the polar types given above. It seems desirable to steer away from approaches which are so broad and general that their level of abstraction renders them impotent for the production of new knowledge through hypothesis testing. At the same time it is recognized that if the specific researches are not oriented to some fairly well defined system of general statements and assumptions the potential of having general significance within the problem area is lost.

Scope and Plan of Study

The plan of this work included four steps as follows: First, an attempt was made to determine what was

\textsuperscript{3}Charles R. Hoffer, "Acceptance of Approved Farming Practices Among Farmers of Dutch Descent" (East Lansing: Michigan Experiment Station Special Bulletin, 316, 1942).

needed in a theory of social change. Second, an evaluation was made of the perspectives of change of various sociological schools. Next, one perspective was chosen to guide the development of theoretical models for purposes of dealing with the adoption-diffusion processes of social change. Then a synthesis was made of adoption-diffusion research findings from which "ideal types" of "high" and "low" adopters were developed. And finally, the adequacy of the ideal types was tested by applying the schema, of which they are a part, to an analysis of adoptions of recommended forest management practices.

A summary and conclusions chapter attempts to articulate with the theoretical framework, the additional information gained from the study and to point to implications of the findings for theory, methodology, and practical policy.

The Basic Requisites of Social Change Theory

The procedure followed in determining requisities of social change theory involved the use of logic, experience, and extension of characteristics of theory in general. The purpose of the formulation was to provide an explicit guide for the efforts at theoretical model building which occur later in this work.

1. A theory is needed which does not allow or cause the student of social change to lose sight of the act or event as the basic unit of change analysis.
All abstractions of qualities of human behavior should be relatable to validating criteria, namely the acts or events in the lives of people. Any abstraction which can thus be related to human acts and can be so measured as to tell if it varies over time or in space is a legitimate unit of study in a theory of social change.

2. Within the limits set by the above proposal, there is a need for a set of conceptual tools which will allow analyses of social change at any level of abstraction. That is, a systematic, integrated conceptual framework is required which will allow treatment of change at the dyad or at the civilizational level.

3. The theory should permit the integration of the now existant body of empirical findings into generalized statements.

4. The theory should be so constructed as to allow specialized focus on any one of the factors needed to account for human behavior. When such factors as "culture," "personality," "social organization," "interaction," and "situational" are abstracted as general variables in human behavior, each should be isolatable for study purposes without losing sight of their relationship to the other variables and to behavior itself.
5. The theory needs to conceptualize a mechanism by which behavior initiated by actor "A" in response to whatever sources, subsequently becomes a part of the action pattern of actor "B" who did not originally display the behavior.

6. Time and space conceptualizations need to be worked into the theory of change since they are so vital to the definition of the process.

7. The theory should permit the usage of a wide variety of methodologies and techniques.

8. The framework needs flexibility, such that change may be treated as historical process, current function, or resulting product.

The set of requisites, for a theory of change which has been outlined above, served as a guide in evaluating the theories of change of the various sociological schools. It is not within the scope of this work to review the conceptualizations of all, or even the most outstanding of social change theorists. What is desired is a synthesis of the basic assumptions of the various schools so that implications may be drawn for the basic interest of this study; that of developing a theory of the adoption process.

A Classification and Evaluation of Theories of Change

The discussion of sociologists treatment of change follows closely the work of Don Martindale who has distinguished
five major schools of sociological theory and a number of subdivisions.\(^5\)

**The Schools.** There may be disagreements over the value of categorizing the works of specific men into given schools. But, it seems inescapable that there is value in trying to ascertain, as has Martindale,\(^6\) just what the assumptions, positions, and implications of a variety of theories have been on a given problem such as social change. Martindale's views with regards to the different schools of sociological thought are summarized below.

**Positivistic Organicism.** This school, in the view of Martindale, weds two unlikely mates. One, positivism, which is a way of looking at social phenomena after the model of the natural sciences, explains phenomena purely in terms of the phenomena themselves. And second, organicism, which looks at social phenomena as if they were organisms or had properties of organisms, and apparently contains assumptions that go beyond the data of immediate experience. This view that society and social groupings can be conceptualized as "organismic like" limited the school to an imminent evolution explanation of social change. There was also a tendency for the proponents of the organismic school to view change in a

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positive light, to see the developmental process to be progress. A prime factor in the demise of this school was that it served as a conservative ideology. 7

Conflict School. The conflict theory school of thought about social relations developed as a partial corrective for the biases of positivistic organicism according to Martindale. Generally, the conflict theorists were even more intensely positivists than were the organicists, but they did not conceive of social reality in the same way. For the conflict theorists, social reality was thought to be a process of conflict of individuals and of groups over scarce values.

Martindale 8 is careful to distinguish between conflict ideologies developed in the nineteenth and twentieth centuries and sociological conflict theories proper, though the former elaborated some politically effective theories of social change. It is the ideas of conflict of the sociologists which are of interest here.

Generally, the conflict theorists accepted social and cultural change as being progress, much as had the positivistic organicists, however, to them progress represented the "establishment of equilibria of interests in the course of a struggle for social, economic, and political power.

8 Ibid.
They assumed a more or less constant tendency to shift the scene of the contest to the more comprehensive arenas of power.\(^9\) This school dwindled in importance in this country for lack of adherents, possibly because it was confused with conflict ideologies which were unpopular in American Society.

Formalists School. The sociological formalists are distinguished by their emphasis on the forms of social relations in contrast to their content. The formalists ignored history and thus cast aside most of the problems of social change. In fact, the development of the school is attributed in part to a failure of the theories of social change of the positivistic organicists. At any rate the formalists never developed a general theory of social change.

The Functionalist School. Structures and their functions for the system are primary interests of the functionalist school. Functionalism has received much criticism for its lack of emphasis on the processes of social and cultural change. Moore\(^10\) contends that structure-functionalism is not inherently static but that its proponents in establishing implicit equilibrium models and reifying the system have limited the possibilities of change agents to sources outside the system with the exception of the dysfunction concept.


Martindale is even more critical of functionalist theory in terms of its change conceptions.

Functionalism is not in principle prevented from accounting for changes arising internal to the system (except for dysfunctions which call for adjustment,) but it was put into position where only the imminent evolution of the system adequately accounts for change. In short, the character of functionalistic theory seems to force it into the position where it must account for social and cultural change in the same manner as was originally attempted by the positivistic organicists. However, the memory of the disaster suffered by the early forms of imminent evolutionism is too fresh to make the prospect of a theory of social change which rehabilitates the doctrine of imminent evolutionism very appealing. Functionalism has been left in the unenviable position where the one major alternative open to it is unacceptable.11

Efforts have been made in recent years to systematize the functionalists' views on social change.12 No doubt Parsons' attempts to develop a theory of social change congruent with functionalist assumptions is partially an outgrowth of the many criticisms on this point. However, it appears that despite the recent efforts most of the criticisms of functionalism still obtain.

The Social Behaviorist School. Social behaviorism sees interhuman acts and events as constituting social reality. Also basic to this school is the contention that beliefs, needs, etc. are behind the observable acts making them meaningful and giving them organization. The several branches

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of social behaviorism contain a number of qualities that make it especially amenable to the treatment of the problems of social change theory which have been outlined above.

The following are some advantages of the social behaviorist approach to social change.

1. It views the acts of individuals as social reality, and assumes the causes for patterns or systems of these acts to be multiple and varied. Other units of acts (social organization), beliefs and feelings about what should be (culture), the interrelationships among actors (interaction), the biological needs and social dispositions of the organism (personality) and other factors seen to impinge on human behavior (situation), all may contribute to the production of a particular pattern of activity within the system. Thus, change can begin within any one of the subsystems (culture, personality . . .) or may be initiated by another system relatively independent of the first.

2. The holders of this theory are not ideologically prone to see change as either progression or regression. Neither are they committed to explain change as cyclical, unilinear, etc. The change agent may come from within or without a perceived system. Some parts of the system may change more rapidly than others, it does not posit a state of
equilibrium, thus has no need to defend given acts or events as necessarily contributing to the maintenance of the whole.

Summary. Martindale has distinguished five major schools of sociological theory and a number of subdivisions thereof. Elsewhere he relates these schools to varying conceptions of the social change mechanisms and value positions with regards to change. He further contends that some of the schools are ideologically and methodologically wed to given positions concerning social change which render them sterile for producing research and information in this area.

The validity of Martindale's criticisms of various approaches to change are assumed and his suggestion that "social behaviorism" has greater flexibility as an approach to studying this problem has been accepted and amplified. From this point an independent attempt has been made to develop a framework for studying social change in general, but especially the adoption-diffusion process about which Martindale was little concerned.
CHAPTER II

DEVELOPMENT OF A THEORETICAL MODEL

The approach to the problem of change outlined below is popularly called the social-behaviorist viewpoint because of its focus on meaningful inter-human acts as the basic units of society. This approach has relevance for sociology in general, however, the emphasis here is on its applicability in the study of the direction, extensiveness, intensity, speed and permanence of the change process. Pursuit of any or all of the above interests requires that concrete inter-human acts or their cumulative results be considered, for social change can only be understood in terms of changed arrangements of these acts in the time and space dimensions. It should be emphasized that it is not the single act that is of importance but rather patterns or sequences of acts. The social-behaviorist change theorist, then, is basically interested in how arrangements of acts are created, maintained or modified, and the implications these patterns have for human efforts aimed at satisfaction of needs.

If the student of social change is going to do more than simply note sequences or count recurrences of acts he must develop an implicit or explicit model or models of what goes into the make-up of human acts and their varied arrangements. Obviously this model is of extreme importance
for his theoretical formulations and should be made as explicit as possible both for his own clarity and that of the reader.

Three models and a synthesis of relevant parts are developed in this chapter as guides for later, more specific formulations. A social behaviorist approach provides broad, general conceptualizations of the factors that impinge on the development or change of any behavior pattern. Cognitive theory, as developed in social psychology, offers a conception of the mechanism by which changes in behavioral patterns take place. And "stage" oriented adoption-diffusion research proposes some empirical regularities about the spread of an idea or practice.

First, attention will be focused on a broad, general model of factors influencing social behavior. Next, relevant features of the cognitive processes will be developed. Then, the nature of the process of change known as adoption will be examined. Finally, these three analytic frameworks will be drawn together to serve as a guide for approaching an empirical adoption problem.

Model of Behavioral Factors

Observation of the behavior of man in his environment has permitted a number of factors influencing behavior to be abstracted and conceptualized. Each of the factors (see figure I) is viewed as an analytically separate system
which is interdependent with all the other systems. This means that a change in one system is apt to produce or promote changes in the other systems.

Such a conceptualization has important implications for a theory of change since it permits one to view multiple sources from which change might be initiated. For the purposes of this study, however, it will serve as a guide for identifying elements which enter the cognitive processes (manipulation of meaningful symbols) of the actor when he is faced with behavioral alternatives. The referents of each basic term used in the model will be specified so that there is less possibility of misunderstanding.

1. Culture. The term culture as used hereafter refers to the commonly shared expectations for action, thought, or feeling held by the actors of a given social unit toward social or non-social objects. Its basic unit is the norm or specification of what act or feeling or sentiment is appropriate when, where, how and under what circumstances. Each cultural system also contains a complement of artifacts for aid in achieving goals and following norms. These artifacts are sometimes known as material culture.

The commonly shared norms then are partially responsible for the patterns of acts which are perceived in a social unit or subunit, because
FIGURE I
MODEL OF BEHAVIORAL FACTORS*

CULTURE
The expectations, norms and values shared by social groupings

BIO-PERSONALITY
Those attributes, biological and psychic which produce the uniqueness and similarity of actor responses to the other variables

SITUATIONAL
 Represents other factors in the action setting to which behavior must be adjusted.

Communication
INTERACTION
The process by which meanings and sanctions are exchanged by actors. It is here that the other factors converge as actors exchange.

SOCIAL
The patterned sequence of human acts.

ORGANIZATION

Antecedent Factors

Processes

Results

*The above factors represent abstracted qualities of human behavior which have been conceptualized by various social scientists. The attempt of this paper is to develop a model depicting their dynamic interrelationships.

they enter into the cognitive process as systems of expectation.

2. **Bio-Personality.** The bio-personality system represents the product of those biological, psychic and social processes which prepare the human organism to respond to stimuli. The cognitive world map which influences the evaluations made by the actor is located in this system, but is influenced by other qualities of the organism when the actor engages in evaluative processes or begins an exchange with others.

3. **Situation.** The situational variable represents other factors in the action setting which exert a limiting or permissive influence on human action, but cannot be properly placed among the other major variables. Geographic factors, historical accident, sequential variation and demographic phenomena are among the situational factors. They are seen as helping to form a setting in which human behavior develops.

4. **Interaction.** Interaction refers to the exchange of meanings (communication) and sanctions or influence (social control) which takes place when actors reciprocate. In this process the previously conceptualized factors are seen to merge, each exerting pressures or directives for behavior along
with the other actor(s) in the exchange system. It is in the process of interaction, then, that the cognitive structure of the actor may be worked on by others to try to get him to include a given activity or idea in his repertoire. Not all of the activity which takes place in the interaction process is repeated in time and space. Some is abandoned for various reasons and that which survives as patterns is termed social organization.

5. Social Organization. The social organization variable includes the patterned, repetitive arrangement of unit acts that is present in interhuman activity. A unit of social organization is any sequence of interhuman acts that can be differentiated on the basis of time, space, meanings to actors, frequency, intensity, complexity, number, or degree of integration.

The basic unit is the reciprocal act—an act which implies or calls for a complementary act. These reciprocal acts may be combined into units such as: elemental groups (all actors having reciprocities with all the others), and multi-group organizations (two or more elemental groups joined by a coordinating or interstitial group).¹ In

addition, collectivities of various kinds may be identified.

Social organization is seen as emerging from the social interaction process, but not all of the definitions developed in interaction point to actor relationships. Some of the definitions indicate how the actor is to view and behave toward non-social objects, dieties, etc. In so far as these acts are patterned by socially shared definitions then they too will be considered as part of social organization.

A very fundamental observation, but an often overlooked detail, in that the factors outlined in the above model have relevance for ordering or reordering behavior only when experienced by actors. If this observation is granted validity, then it becomes obvious that whatever qualities given actors possess, which cause them to experience a given set of stimuli similarly or differentially, become important for the explanation of behavior. It is toward one of these qualities of actors that attention is now turned.

A Model of The Cognitive Factor

The term cognition has a number of referents among processes involved in knowing. Included among these referents are perceiving, remembering, imagining, conceiving, judging, and reasoning. Through these various processes the actor
comes to "know" his universe. Cognitive maps are formed through experience, according to Tolman, and serve as guides in subsequent action situations.

Bruner et. al. have pursued knowledge of the means by which human organisms cognize the worlds in which they live:

At first the child's world is known to him principally by the habitual actions he uses for coping with it. In time there is added a technique of representation through imagery that is relatively free of action. Gradually there is added a new and powerful method of translating action and image into language, providing still a third system of representation. Each of the three modes of representation—enactive, ikonic, and symbolic—has its unique ways of representing events. Each places a powerful impress on the mental life of human beings at different ages, and their interplay persists as one of the major features of adult intellectual life.

The above material was cited to indicate developments in the study of how man knows. This is interesting of itself, but the concern of this section is to establish that what is contained in the cognitive maps of man is an important and often neglected area of consideration by those concerned with understanding changes in patterns of inter-human activity.

The importance of the cognitive structures of the actor is that they influence what he perceives, what he remembers,

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how he organizes subsequent stimuli to which he is exposed, and how he evaluates what he must, ought, or should do in a given situation.

Actors not only have cognitions of the objective world around them, but also of their own subjective states—their feelings, their biases, and the fact that they sometimes act without knowing why. An unexplainable cognition such as "I don't know why, but I just don't like him." is surely an important element in the evaluation of the "other."

There have been many efforts to conceptualize the cognitive structures of individual actors or collectivities of actors and attempts to show how these structures influence behavior. For example, when a society is characterized as having a "gemeinschaft" orientation, (a highly personalized quality of behavior exists) a part of this orientation consists of certain distinctive cognitions of the world shared by the members of that society. Such a predisposition to respond, as is created by the "gemeinschaft" orientation then, assumedly influences the actions of members of society when they are faced with stimuli, familiar or novel. Likewise, individual actors with "cosmopolitan" as opposed to

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4Donald South and Jay Meddin, Unpublished Manuscript, University of Georgia, Department of Sociology and Anthropology. This work represents an effort to organize and synthesize the varied conceptualizations of orientation of actors or collectivities of actors.
"localistic" orientations are supposed to perceive and respond to the world of stimuli differently.\(^5\)

Despite the general concern with "orientations"\(^*\) over a long period of time, there has been very little research designed to delineate and measure specific cognitive structures of designated areas of life and their behavioral correlates. An impressive beginning is found in the work of Tompkins,\(^6\) who has demonstrated how cognitions (beliefs) about the "goodness" or "badness" of humans was associated with varying beliefs about and reactions to other behavioral areas. For instance, mathematicians who believed man to be "basically bad" viewed their discipline differently from those mathematicians who believed man to be "basically good."

Cognitions are an important component of attitudes, according to Kretch and Crutchfield,\(^7\) along with affect and action tendencies. Cognitive elements, like attitudes, may stand in different relations to each other. Some cognitive elements or cognitive clusters may be dissonant, some may


\(^*\)Orientation is used here to refer to a variety of qualities of the actor, preparing or predisposing him to respond to stimuli. Commonly used terms which refer to orientation are: cognitions, feelings, action tendencies, attitudes, "set," and moods.
be consonant, and some may have no logical or meaningful relation to each other, they are irrelevant.8

A significant finding for those agents attempting to promote a change of order in the behavior of actors, is that of varied research reports which indicate that change is more readily accomplished by developing cognitions consonant with relevant existing patterns. Resistance to change is associated with efforts producing dissonant cognitions. Dissonant cognitions produce psychic stress for actors; and if the incongruences are among cognitive elements of areas important to the actor, he is motivated to perform symbolic or overt behavioral operations which reduce the stress. "In general, a person may reduce dissonance by decreasing the number and/or importance of dissonant elements compared to consonant elements, or he may reduce the importance of all relevant elements together."9

Some of the findings of adoption research become understandable within the framework of the conceptions of cognitive consonance (the compatibility of cognitive elements), cognitive dissonance (the incongruity of elements), selective perception, perceptual distortion, and the process of cognitive organization (ways of reducing dissonance). For example,

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9Ibid., p. 4.
Robinson and Bailey\textsuperscript{10} have tried to "portray the utility of Festinger's theory of consonance and dissonance as an explanatory framework for acceptance behavior in relation to the adoption of farm practices."

The following contentions of cognitive theorists are of particular relevance for this study.

a. Every man through cognitive work develops his own world of meaning, his world view.

b. "His irrational acts no less than his rational acts are guided by what he believes, what he anticipates."\textsuperscript{11}

c. Any new stimuli from the actors surroundings is evaluated, classified and ordered in terms of his world view.

d. Because of the above: (1) Not all stimuli within the actor's environment enter into his cognitions (selective inattention); (2) He is much more ready to receive some stimuli (selective perception); and (3) He imposes order on what is received, thus setting up the possibility of "distortions."


\textsuperscript{11}David Kretch and Richard S. Crutchfield, \textit{op. cit.}, p. 17.
Thus far, an effort has been made to establish why and how the cognitive structures of the actor influence his behavior with regards to given objects or situations. In summary, it is sufficient to note that these cognitive structures weigh heavily in the actor's evaluation of stimuli presented to him, whether these stimuli be in the form of another actor, recommended farm practices, or an idea.

By the very nature of the evaluative process, the actor faced with a new idea (stimulus) or alternative for behavior launches into action cost accounting, with many of the variables which he manipulates being cognitions of social-psychological qualities. Such as: What will I lose or gain in terms of prestige or esteem by taking on the new action or belief? How will I feel about the change? Will it take too much of my time and energy or increase these valuables? In short, the actor through cognitive work asks what must be given up to pursue a given course of action or what might be the gains. He assesses how much personal and social capital (any variables which have relevance for personal and social esteem) along with monetary units must be expended to achieve desired ends. This system is frequently imprecise and faulty because all the variables are not known, or because some of them are not easily quantified, thus, making exact accounting difficult. However inexact and invalid, such a system of
FIGURE II

MODEL OF COGNITIVE STRUCTURES AND PROCESSES

Notes:

1. Cognitive structure is viewed as being part of the Bio-personality factor in the Behavioral Model.

2. The cognitive structure is a result of the actor's experience.

3. The factors involved in that experience are conceptualized in the Behavioral Model.

4. Factors in the Behavioral Model also have implications for the style of handling new cognitive elements, and

5. The resulting cognitive structure obviously is related to the Behavioral Model.
accounting does exist in the everyday actions of man according to Homans.12

Each act involves some kind of investment. Minimally, time is expended which might be used in pursuing other alternatives. Maximally, the image of self and all of social capital might be bartered for some desired condition or end. Most investments obviously are intermediate to these extremes and show considerable individual and categorical differences both in terms of type of investment and thrift of expenditure.*

Reference to the Model of Behavioral Factors has suggested some of the variables other than economic which are involved in social-psychological accounting when an actor is contemplating a change of action. The following is an organization and partial listing of these variables:

**The Units of Expenditure**

1. Personal esteem or the prestige of the actor or group which might be gained or lost,
2. Psychic and physical energy required in the exchange,
3. Time (actually the alternative uses of time),
4. Ego (self concept). Does the proposed change enhance or discredit?

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*The idea for usage of economic terms for this purpose came from Homans, Social Life, Its Elementary Forms (New York: Harcourt, Brace and World, Inc., 1962), Chapters 3 and 4. The extensions of the idea are those of the author.
5. Ideas, information,
6. Emotion (affect),
7. Cultural meanings, values, traditions, etc., may be enhanced or endangered by the change,
8. Some existing patterns of behavior (social organization) might be the cost of the change.

The Terms of Investment

1. Long range, deferred gratification requirement in exchange may be evaluated differently from --
2. Short range, immediate returns,
3. Continuous vs. momentary expenditure or returns on investment may be a factor to be considered in the change,
4. Return in kind or complementary compensation,
5. Investment security, Relative Assurance of return is a factor in social exchange,
6. Machinery for handling bad investments; What alternatives are available in the case of a "bad" exchange?

The Media of Exchange (communications and social control)

1. Direct, face to face exchange (personal),
2. Impersonal, symbolic exchanges as communications with agencies and organizations,
3. The mass media.

Noting the many factors which go into the cognitive processes engaged in by the actor, considering a new course
of action could be highly discouraging if one is interested in understanding, prediction, or control. However, it appears that there might be a limited and manageable number of cognitive styles within a given population, and that if specified stimuli are fed into these cognitive systems a predictable result will follow. It is suspected that knowledge of actors beliefs (cognitions), feelings and action tendencies with regard to a relatively few dimensions of "their world" would permit the placement of those actors in "orientation categories" which will systematically vary with differences in adoption behavior. The above generalization was partially tested in the empirical portion of this study.

Thus far, there has been developed a model of factors represented as contributing to patterns of human behavior. It has been pointed out that the importance of the model for this problem is that it points to the factors which impinge on the actor when he is faced with the necessity to make a response to stimuli. Then, relevant considerations of cognitive processes and structures were articulated with the behavioral model. Now, the problem becomes that of relating the analytical framework established above to the central concern of this paper, the adoption-diffusion process.

Model of the Adoption-Diffusion Process

In simplified terms the problem of understanding the adoption-diffusion process is that of explaining what takes place between a set of actions \( A^n \) which does not include a
specified idea or practice and action set \( (A^2) \) which does include that idea or practice. Initially, there is some unit of acts (action set) on the part of one or more actors from which there is absent a specified kind of act or idea which does exist elsewhere. At a latter point in time, the specified act or idea is evident for the same actors or extensions thereof.

The terms diffusion and adoption are commonly used in presenting the idea of the spread of a new idea, object or practice from its source(s) of invention to its ultimate users or adopters. When the matter is being pursued from a cultural point of view, the term diffusion is ordinarily used and implies a degree of spread of the item in question within some socio-cultural unit. A typical generalization from this perspective is that the spread of an item within a social unit typically describes an "S" curve in graphic terms. On the other hand, when the actions of people with regards to the acceptance or rejection of an item is being analyzed, the term adoption is more generally used and conveys the idea of the subjectivity of the acts involved in the process. A representative generalization from this perspective is that the "better" educated actor more readily adopts items in general than does a "less well" educated actor. An action oriented analysis is utilized here, hence the adoption terminology will be employed.
The Stages Model

A research tradition has developed which distinguishes stages in the subjective processes of individuals who adopt an idea or practice. Awareness, interest, evaluation, trial, and adoption stages as represented by Rogers are relatively separate and distinct enough to merit attention as analytic variables in an attempt to understand the adoption process.

Other researchers have distinguished varying numbers of stages from 3 to 7, and some have used variations on the order these stages followed. Some studies specifically designed for the purpose have tended to validate the five stage adoption process concept.

Granting the usefulness of the stage concept for analytic purposes, this study attempts to throw some light on a possible source of differences of stage conceptualization in terms of number of stages and the sequence in which they occur. At the same time the reformulation should satisfactorily explain the "discontinuance" of an adopted idea.

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14 Ibid., pp. 80-81.
16 Rogers, op. cit., pp. 88-93.
The contention here is that most of the problems of the stage conceptualization lie in the usage of the "evaluation" stage. There is perhaps greatest variation in sequential placing of this stage and it gives most difficulty to both interviewer and respondent in the interview technique for gathering data. The essence of the problem as it is conceived here is that in subjective terms "evaluation" is going on continuously for the actor and can not be relegated to a particular time and space location in a sequence of stages.

For example, it is feasible that actor "A" has made an evaluation of his situation which categorically dismisses the possibility of any particular or all other practices as being of value to him. Therefore, the cognitive processes of selective inattention and perception should be evident. In this case evaluation is playing a part even before the so-called awareness stage and may well inhibit the development of the latter. Further, if and when awareness takes place, evaluation sets in immediately. Again the actor may summarily dismiss the idea as having relevance for him without doing any further "information seeking" or showing any "interest." But let it be granted that the second stage, "interest," does develop and that evaluation does follow. This does not end the evaluative activity of the actor. For while the "trial" of the idea or practice is underway, almost certainly evaluation is still going on, and if one might judge by the researches showing high rates of "discontinuance"
of adoptions, evaluation is still taking place when the proposed final stage, "adoption" is reached.

Casual observation reveals that the terms conventionally employed to delineate the stages in the adoption process, have as their referents conditions or processes of human cognition (See figure 3). "Awareness" results when a stimulus (idea) becomes an element in the "cognitive map." "Interest" indicates selective attention to related elements. "Evaluation" and "trial" are not easily distinguished as cognitive processes, since both refer to relating the new cognitive element to others in various ways and combinations. And, "adoption" refers to behavior resulting from the relatively permanent "fit" or integration of the new cognitive element with those previously existing. "Discontinuance" occurs when the cognitions of a given idea, object or practice become dissonant within the cognitive structure of the actor.

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FIGURE III
A DEPICTION OF COMMUNAL REFERENTS AMONG THREE APPROACHES TO THE ADOPTION PROBLEM: ADOPTION STAGES, COGNITIVE THEORY AND CHARACTERISTICS OF THE INNOVATION

<table>
<thead>
<tr>
<th>Adoption Stages</th>
<th>Cognitive Theory Terminology and Referents</th>
<th>Characteristics of the Innovation, Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>a new element enters the cognitive structure (map)</td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>&quot;selective attention&quot; to related elements</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>&quot;symbolic manipulation&quot; relative advantage of relevant elements</td>
<td></td>
</tr>
<tr>
<td>Trial</td>
<td>&quot;symbolic manipulation&quot; compatibility of the innovation of the new elements (those added by the &quot;trial&quot;) plus the existing elements</td>
<td></td>
</tr>
<tr>
<td>Adoption</td>
<td>the integration of a new cognitive element with those elements previously existing</td>
<td></td>
</tr>
<tr>
<td>Discontinuance</td>
<td>occurs when cognitions of the practice are no longer consonant with existing elements</td>
<td></td>
</tr>
</tbody>
</table>

"multiplexity of cognitive elements" vs. complexity of the innovation simplex systems

no clear cut cognitive divisibility of the referent, though cognitive qualities may influence the actors ability to perceive divisibility

depends on existing language structures and the innovation incorporation of these into the cognitive structure of the actors
Characteristics of Innovations Approach

Rogers,\textsuperscript{18} drawing on the works of varied researchers, points to five "characteristics of innovations" which have relevance for their rate of adoption. Just as the "adoption stages" appear to have cognitive referents, likewise for the so-called "characteristics of innovations." Actually the discussion of these "characteristics of the innovation" reveals that what is really important is the actor's perception of the innovation, not so much qualities of the innovation itself.\footnote{It is recognized that qualities of the object play a part in how it is perceived (cognized), but it would appear that the more important factor for behavior is the subjective experience of the object by an actor, not some objectively attributed set of qualities.}

For example, "relative advantage," said to be a quality of the readily adopted innovation, has to be experienced cognitively by the actor before it can be a factor in his behavior. Relative advantage may not be nearly so much a function of the object as it is that of the "frame of reference" of the actor.

The "compatibility" factor is explicitly recognized by Rogers\textsuperscript{19} as having a cognitive referent, for he states, "the compatibility of a new idea, as perceived by members of a social system, affects its rate of adoption." Cognitive theory would have predicted that a stimulus object providing

\textsuperscript{18}Rogers, \textit{op. cit.}, p. 124.

\textsuperscript{19}Ibid., p. 127.
relevant cognitive elements consonant with existing elements would be more readily received than an object which produced dissonant elements.

It has been stated by Rogers\textsuperscript{20} that "the complexity of an innovation, as perceived by members of a social system, affects its rate of adoption." The usual findings support a generalization that the relation of complexity to adoption is inverse. Again, cognitive theory would predict this relationship. The more complex the cognitive elements associated with the new practice, the more difficult it would be to perceive all the varied ramifications of the new activity for the structure of activities already existing. But, once a complex idea or practice has been adopted, it should be more resistant to change or "discontinuance".

Finally, the degree to which an innovation may be characterized as having "communicability," is obviously in part dependent on the kinds of cognitive structure or "sets" which the communicants possess. There is a wealth of research on perception of attempted communication which should yield some further hypotheses for the study of adoption behavior.

The essence of the argument employed above is that the terminology of adoption-diffusion researchers implies the importance of cognitive factors in adoption behavior, but fails to develop explicitly a recognition of these factors

\textsuperscript{20}Ibid., p. 130.
and researchers do not employ what is known about cognition in formulating their hypotheses. This writer urges that the cognitive qualities of the personality variable be more carefully considered in subsequent research as one of the determinants of the actor's response to change agents.

It has been demonstrated, hopefully, that the terminology of the adoption stages approach has referents in states of cognition, as do most of the terms utilized under the heading "characteristics of innovations." This clearly makes them a part of the personality variable in the Model of Behavioral Factors developed at the outset of this chapter. The remaining "qualities of innovations" become "situational" variables in that same model. Thus, given the model as context, adoption researchers have demonstrated that various of the factors: Culture, Bio-Psychic, Situational and Interaction influence changes in the patterns of behavior of actors within a social system.

Figure 4 depicts three potential ways of representing what takes place in adoption behavior. Adoption-diffusion research elaborates a sequential development of stages through which an actor passes in adopting an idea or practice. Cognitive theory conceptualizes an explanation of the mechanism of change within the actor who is faced with a novel stimulus by a "change agent." The behavioral model is capable of handling the qualities which these two perspectives represent, and in addition sensitize to other factors
FIGURE IV
A SYNTHESIS OF MODELS RELEVANT TO THE ADOPTION-DIFFUSION PROCESS

A. Adoption-diffusion Research

Awareness—Interest—Evaluation—Trial—Adoption (Stages)

B. Cognitive Theory

Selective Perception and Inattention, Perceptual Distortion, Cognitive Consonance and Dissonance (Mechanism)

C. Behavioral Model

Convergence of Culture, Bio-Personality, Situational and Social organization factors through the Interaction process (Factors)

A. Adoption-diffusion Research—conceptualizes sequential development of change (stages)

B. Cognitive Theory—conceptualizes a mechanism of processes of change.

C. Behavioral Model—sensitizes to factors in the social system which enter the cognitive and interactional processes.
in the social system which influence patterns of human behavior.

Thus, the model of factors in human behavior (Figure 1) provides a basis for: (1) organizing the findings of previous adoption-diffusion research; (2) provides a basis for conceptualizing a manageable number of factors found to be related to adoption behavior; and (3) points to hypothetical relationships of the variables to each other and to adoption behavior. These tasks are pursued in the following chapter.
CHAPTER III

A SYNTHESIS OF PREVIOUS FINDINGS AND SOME GENERALIZATIONS ABOUT ADOPTION-DIFFUSION PROCESSES

Previous chapters have outlined some considerations of perspective on the adoption-diffusion processes. This perspective included a model of factors in human behavior to which was articulated the "adoption stages" concept and conceptions of cognitive structure and process.

The combined perspectives functioned as an aid in organizing and synthesizing a variety of empirical findings and interpretations relevant to the adoption-diffusion problem. From this effort came hypotheses which were tested by analysis of field data.

The theoretical model employed in this study depicts the behavior of a given actor as being a part of a larger system including: (a) cultural expectations for behavior and implementing artifacts; (b) bio-psychic qualities of the actor; (c) a situation; (d) interacting personalities which are exchanging meanings and sanctions; and (e) a patterned sequence of activities of the social unit.

A given actor has made some kind of adjustment within this system at any given point in time. The actor's adjustment might be satisfactory or unsatisfactory to the actor or in the view of other actors in the social system, but it
does represent a pattern of response, a habitual way of behaving. Obviously, actors can and do change their patterns of behavior, whether these patterns be religious, familial, or economic. The question to which this section is addressed is that of, "What factors may be identified as being related to changes in patterns of social behavior?"

The following section contains an explication of the findings related to various factors entering the process of change in patterns, by the adoption of "new" ideas or practices.

Incentive

There must be incentive if the actor is to abandon established patterns and adopt a new idea or behavior. Incentive involves the economic, personal, or social gains to be made by change (adoption of a practice) on the part of the actor. The degree of incentive is related to:

(a) whether or not gains are seen as being immediate or more long range; (b) perceptions of what kinds of costs, social, economic, and psychic are involved in making the adoption; and (c) evaluations of what alternatives are precluded by making the change. The questions are for the student of adoption behavior: What will produce a changed pattern of response in the actor? What will motivate him to behave differently than he has previously?

It is here that the social-psychological cost accounting mechanism of the actor is manifested. He is visualized
as weighing various cognitive elements and feelings and arriving at a decision with regards to the acceptance of innovations.*

The model of factors in human behavior and research efforts of others suggest some generalizations with regards to the kinds of factors entering the cognitive processes and producing incentive to adoption. Because the factors in the model interact with each other little effort was made to keep the generalizations derived from each factor completely separate. For example, in writing of the cultural influence in terms of values and norms it is obvious that these are of little consequence except as experienced by the personality of the actor in question.

Culture-Personality Factors as Incentive

A. A culture containing values of "progress" (defined as material well being) will orient the actors sharing that culture to receive more readily objects and ideas defined as progressive.

B. Cultural diversity not only stimulates invention but also increases the probability that actors will come into contact with and be more receptive to the adoption of new ideas and practices.¹


*This conception is not to be confused with that of "rational man." Here the actor is merely characterized as calculating; the elements may be of "rational" or "non-rational" nature.
C. Some socio-cultural systems contain norms favoring the adoption of innovations by its members, while others tend to inhibit both innovations and their adoption by others. That is, some innovations are defined favorably while others are defined unfavorably.  

Situational Factors in Incentive  

A. There appears to be somewhat greater incentive to try and adopt innovations which can be broken down into component parts (divisibility) and tried in sequence. Being able to try an innovation on a small scale basis also appears to have incentive value.  

B. Crisis situations threatening existing adjustments produce incentive to try an innovation by revealing the "relative advantage" of the new over the old.  

C. The presence of children in the household may be an incentive to adoption of some kinds of innovations. If the innovation is such that it will not make for immediate returns but appears to be a good investment for the future,

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3Lionberger, op. cit., pp. 104-105.

then the presence of children to receive the delayed benefits should provide some stimulus to adoption of the practice. Children may also furnish an impetus to change in another way. They may bring new ideas into the household, thus, being a source of information. And, they may pressure for the adoption of practices from which they see the possibility of much greater benefits than do their parents.

D. Being involved in specialized enterprises may provide an incentive to adopt some types of innovations as indicated in the literature. However, specialization of enterprise could well inhibit the adoption of other innovations which do not well fit such specialized interests. Thus, any generalization of the relation of pursuit of specialized enterprise to readiness to adopt should be qualified as to type of innovation.

Interpersonal Relations as Incentive

An important source of incentive to try a new idea or practice results from the actors relations with others. In the interaction process two basic things are exchanged: information and influence. Thus, the principle processes of interaction are communication and social control. These are not readily separable but at this point more emphasis is placed on the social control or influence process, whereas later the means and types of communication are emphasized.

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A. Persons who are accorded higher status in their interpersonal relations are more apt to be early adopters. This finding occurs frequently in the adoption-diffusion literature. One possible explanation for the finding may be that "change agents" are more apt to seek out the higher status actor in promoting the idea or practice in question since they have been found to be more effective opinion leaders. More ready adoption may be also a status maintaining device, both in terms of its resultant economic advantage and in terms of the definitions accorded the actor who is early to try something new. It has been pointed out by LaPiere that innovators are apt to be relatively free from social controls. Higher status persons are more apt to experience such freedom.

B. Those actors reluctant to adopt innovations, ("laggards") are also likely to be marginal to the social system from which the promotion of the innovation springs. They apparently interact with other actors to a relatively low degree, thus, they are less apt to come under the influence of primary or secondary promoters of the innovation. In

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fact, such laggards have been found to be more likely than other adopter categories to drop out of the social unit under investigation in adoption studies. This finding indicates a low degree of cohesiveness and morale on the part of the actor in the unit and should predict lesser amenability to the influences of the unit.

Both the "innovators" and the "laggards" are alike in terms of relative freedom from social control within their social unit, but they differ with respect to the probability of being sought out by "change agents", the probability of having important referents outside the local social unit and likely in terms of perceptions of their own ability to derive psychic, social or economic gains from the change.

C. The influence of peers opinions and evaluations of a given innovation has been demonstrated frequently to be an important factor in providing incentive to try that innovation. This peer influence is reported to be relatively more evident for relatively later adopters than the earlier ones. However, if consideration is given to the

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8Rogers, Diffusion of Innovations, op. cit., p. 191.
9La Piere, op. cit., p. 327 ff.
12Rogers, Diffusion of Innovations, op. cit., p. 220.
possibility that the "innovator's" and "early adopter's" peers are apt to be the type persons promoting a new idea or practice in the community, the difference in peer influence as reported by Rogers and Beal¹³ might not hold. In fact, there are research findings which indicate that change agents have more contacts with higher status than with lower status members of a social system.¹⁴ Impressionistic evidence indicates that frequently the change agent's "friends" in the community are apt to be of higher status. Thus, it is difficult to tell if the influence is personal, through the friendship, or the result of impersonal pursuit of his job by the change agent. It has become apparent that, whatever the case, the extent to which the promoters of change interact with members of the community influences positively the rate of adoption of an innovation.¹⁵ Rogers¹⁶ cautions that the same data could


¹⁶Rogers, Diffusion of Innovations, op. cit., p. 260.
mean that the change agent becomes more active when he judges by the ready acceptance of the actors that they are "ready" for his item.

Energy

Other factors which influence the actors' response to the stimuli must be considered once the incentive to act positively with regards to an innovation has developed. Thus, the energy factor becomes salient. Around the energy factor there is a clustering of such variables as age, health, active versus passive temperaments, command of energy (talent and work) of others and a variety of physical conditions.

Relevant considerations reported in the literature or derived from the model perspective include the following:

A. Earlier adopters are younger in age than later adopters.¹⁷ There are likely other variables associated with the age of the actor, but the energy variable is so evident that it needs no explication. Related to relative youth is the increased probability that there will be children in the home of the actor, another important source of energy and incentive for some enterprises.

B. Early adopters have been characterized as having higher socioeconomic status than later or non-adopters. Some implications of this factor were drawn above, but it should also be noted here that actors in high socioeconomic categories are more apt to have command of the kinds and amounts of energy required to profit from many types of innovations.

C. Widowed, crippled, ill, and elderly actors have such a limit of personal energy required to benefit from some innovations, that unless they possess some means of controlling the energy of others, they have to dismiss adoption of some innovations as being unfeasible.

Communication

As indicated above and in the "Model of Behavioral Factors" communication is one of two basic processes in the exchanges taking place among actors. The importance of the exchange of sanctions or influence (social control) has already been elaborated as a factor in promoting incentive to adoption. At this point, the relevance of modes of communication for the adoption of innovations is considered.

Researchers using the adoption stages formulation have concluded that:

A. Impersonal information sources, such as the mass media, research bulletins, etc. are most important at the
"awareness" stage and personal sources are most important at the "evaluation" stage of the adoption process.  

B. Information from sources outside the local social system apparently play a larger part in the decisions of early adopters, while sources within the local system are more important for later adopters. This typically means that the early adopters receive communications more directly from the source of origin of the innovation than do later adopters.

C. Early adopters use a greater number and variety of information sources than do later adopters.

D. The degree of ease with which the idea of an innovation and information necessary to implement it are communicable is a demonstrated factor in its rate of adoption. The techniques of communicating about innovations may, thus, influence rates of adoption of some innovations.

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E. There are many barriers to the communication of an innovation which are not inherent in the innovation but are the result of different "sets" or "frames of reference" of the communicator and communicant. Quite likely, knowledge of the frames of reference or "cognitive styles" of actors, who are to be presented with a stimulus to adopt, would produce greater predictability of their reaction to the stimulus.

Orientation

The term orientation as used here refers to a cluster of variables which predispose the actor to respond to stimuli in limited ways. Beliefs, norms, values, attitudes, motor habits, needs and cognitive structures (an actor's symbolic organization of relevant stimuli) all serve to orient the actor with regards to how he responds to novel stimuli.

A. The readiness to innovate is associated with a modern (progressive) rather than traditional orientation.

B. The actors behavior with regards to innovativeness is a reflection of the norms of his social system relative to innovativeness.22

C. If there is perceived compatibility of an innovation with the existing orientation of the actor he will more readily adopt it.  

D. Earlier adopters tend to have a more cosmopolitan orientation, later adopters a more localistic orientation. 

E. The kind of orientation resulting from formal training and relatively high degree of general information would be logically expected to correlate with ready adoption, at least in a society where these kinds of experiences stress "progress."

Situation

The situational factor includes all variables in the action setting with which the actor is faced in adjusting to given stimuli.

An actor may be favorably predisposed to change (adoption of an innovation) in terms of all the foregoing factors, but his situation may be such that he cannot easily implement the proposed change. Such variables as time, incompatibility with other enterprises or interests, lack of


economic means, and the absence of other actors, necessary to implement the innovation, may all be inhibitors to the adoption of new ideas or practices.

The salient situational variables will differ from one actor to another and from one innovation to another, however, there may be communalities for given types of actors for given innovations. For instance, it might be expected that holders of small acreage, who engage in dairy farming, would have limited land for other uses such as a "managed" forest.

The following generalizations gleaned from the literature and the model perspective are illustrative of the situational factor.

A. The apparent divisibility and complexity of an innovation are positively related to its rate of adoption. Recognition is made of the subjective factor in perception of divisibility and complexity, but it appears also that there may be divisibility and complexity qualities of the innovation which are somewhat independent of the subjective factor.

B. Early adopters appear to regard the divisibility of the innovation as being more important than do later adopters. Perhaps the situation does not provide the early adopter with all the kinds of information he needs, thus, he tends to proceed with trials of smaller units of the whole until more cognitive elements are at his disposal.

C. The size of the actor's operation or enterprise frequently is a situational factor to which he must adjust.

E. Specialization of enterprise appears to be related positively to adoption, but likely only to adoption of innovations relevant to that enterprise.

Social Organization as a Situational Variable

Social organization refers to the pattern of recurrent human behavior within a social unit. It is that part of interpersonal exchange which survives over time and is repetitive in space. Sociologists sometimes make distinctions among types of social organization as being basically "agrarian," "industrial-commercial," "village type," or "isolated homestead." These terms call attention to common qualities or patterns of social units in similar situations.


Sociologists generally recognize the importance of existing social arrangements for the acceptance or rejection of a given item introduced to a social unit. Some of the implications of this factor for "incentives to adopt" a new practice have been pointed out previously. The following generalizations which are viewed as part of the actors situation seem applicable at this point.

A. There should be greater receptivity to an innovation where there exists an arrangement in the social unit for promoting the item. Such activities as mailing bulletins, radio and T. V. information, and demonstrations by personnel of governmental and commercial agencies are examples of such promotional efforts.

B. If arrangements for implementing a new idea or practice are available to most members of the social unit there should be greater adoption of that item. Some such arrangements might be facilitating loans, mutual aid, or other man power arrangements, public or private machinery, and organization of markets for products of the adopted item.

c. Arrangements for the welfare of those actors who might become "victims" of the new idea or practice which they are being asked to try might facilitate adoption of those practices. For example, if there is some way to recoup "lost" financial, social, or psychic capital or to "write it off" this should become a factor in the actor's
cost accounting when he is considering the adoption of a new item. The most outstanding such arrangement which comes to mind is the "write off" of certain losses for Federal Income Tax purposes.

Summary

A set of logically derived factors has been presented along with the variables viewed as clustering around or making up the factors. The next section presents the factors and their variables in condensed form.

Figure 5 represents a synthesis of known and hypothesized variables related to the adoption of ideas or practices by members of a social unit. Figure 6 represents an ideal typology of "high" and "low" adopters. These ideal types were formulated from variables, selected in such a way as to represent each of the five logically derived factors.

The next chapter will outline the research strategies for testing the adequacy of the ideal typologies for predicting adoption behavior.
FIGURE V

THE FACTORS IN AN ACTOR'S RESPONSE TO INNOVATIONS
A SUMMARY OF KNOWN AND HYPOTHETICAL VARIABLES
IN EACH OF THE CLUSTERS

INCENTIVE to change is determined by the actor's perceptions of:

Gains: economic, social and psychic.

Costs: economic, social and psychic.

Immediacy of returns on his investments.

Cultural definitions of progress.

Cultural definitions of the object or idea in question.

The "fate" of existing ideas or practices.

The divisibility of an idea or practice.

Possibility of trying the new item on a small scale.

Applicability of the practice to the actor's enterprise.

Favorable response to the item by actor's peers.

Actor's status in the community.

Degree of actor's integration into the community.

Contacts with change agents.

Impersonal information sources.

ENERGY variables which aid or retard implementation of new items:

Age.

Health.

Temperament--active vs. passive.

Command of the energy of others--their talent and labor (children and employees).

Physical conditions.

COMMUNICATION variables which influence actor's response to change stimuli:

Exposure to multiple and varied sources of information.

Exposure to personalized sources of information during the evaluative stages.

Ease of communicability of the new item.

Accurate assessment of the "set" of the actor by the communicator.
FIGURE V (Continued)

ORIENTATION or antecedent variables of personality which influence actor's response to new items:

Belief or ideological systems of the actor.

Attitudes and values.

Norms (expectations for behavior) which the actor has internalized.

Cognitive style of the actor.

Progressive or traditional orientation of the actor.

Cosmopolitan vs. localistic orientation.

General knowledgability.

Specialization of interest.

SITUATION variables to which the actor must adjust in responding to a new item:

Time available to apply to the new item.

Compatibility with the actor's life organization.

Economic means to utilize item.

Divisibility and complexity of the new item.

Size of the actor's enterprise.

Specialization of enterprise.

Other interests and obligations.

Existing patterns of social organization.
FIGURE VI

IDEAL TYPE OF HIGH AND LOW ADOPTERS

HIGHEST---------------------------LOWEST

(a) economic, social, and psychic gains seen as relatively great and immediately possible.

(b) relative youth, good health, and energy potential exists.

(c) there is a relatively high degree of both general and specific knowledge.

(d) there is "good" communications exposure.

(e) situational factors are permissive.

(f) the actor is flexible in personality or oriented to change.

(a) economic, personal, and psychic gains from change are seen as unlikely, or if at all, distant.

(b) there is relatively old age, poor health, or low energy potential.

(c) there is little general or specific knowledge.

(d) there is "poor" communications exposure.

(e) situational factors influencing implementation are not permissive.

(f) there is a rigidity of personality or tradition orientation.
CHAPTER IV

RESEARCH STRATEGIES AND MEASUREMENT TECHNIQUES

Previous portions of this work have dealt with efforts to establish a fruitful perspective on the adoption-diffusion process, and with attempts to synthesize what is currently known about adoption behavior. These efforts have led to the formulation of certain generalizations, some of which are tested in the following empirical study. It is hoped that other of the generalizations will lead to further study. Some will, of necessity, have to await further development of measuring techniques and study design.

A convenient and challenging opportunity arose to test some generalizations derived from the perspective outlined in the foregoing chapters. Administrators of the Southern Forest Experiment Station expressed a willingness to sponsor research which could at once serve their practical needs and the needs of the practitioners of science. Thus, an opportunity was afforded to test the predictive power of the ideal typology explained in the previous chapter, and to provide those interested in the management of "small" woodland plots with information needed to pursue their ends. *

*A publication containing materials relevant to the sponsor's interests has been done previous to this work. See, Donald R. South, Thomas Hansbrough, and Alvin L. Bertrand, "Factors Related to the Adoption of Woodland Management Practices" (Baton Rouge, Louisiana State University, Experiment Station Bulletin No. 603), September, 1965.
Both the practical and theoretical interests in the study were pursued by setting up the following specific objectives:

1. To characterize small woodland owners, the category of actors whose behavioral qualities were the empirical referents of this study.

2. To achieve a measure of the degree of adoption of a woodland management complex so that the study population would be differentiated into "high," "medium," and "low" levels of adoption of management practices.

3. To identify correlates of the varying degrees of adoption of the woodland management complex.

4. To indicate, wherever possible, the significance of the findings for the theoretical perspectives guiding this research enterprise.

The objectives set forth above dictated the usage of the survey approach commonly used by Rural Sociologists. Thus, an area of the state of Louisiana known as the Florida Parishes was selected as the research site because it was known to contain numerous "small" woodlands holdings.

Forty-eight per cent of the privately owned forest land constituted in the study area is in tracts of less than 500 acres each. The 14,782 owners of these small forest holdings constituted approximately 98.7 per cent of the woodland owners in the area.
The data in Table 1 indicate that, with the exception of Livingston Parish, the per cent of Woodlands in small ownerships (less than 500 acres) is relatively uniform, although there is considerable variation in number of owners. This variation between the number of owners and the relatively uniform per cent of woodlands in the small ownership class indicates that the number of acres per individual holding is largest in East Feliciana Parish and smallest in Tangipahoa Parish. Major differences exist in all parishes with respect to the per cent of the forest land held in large tracts. In this connection, forest holdings are largest in Washington, Livingston, and St. Helena parishes. Industrial and corporate ownerships are also more concentrated in these parishes.

Attention was focused on persons with "small woodland" acreages (3 to 800 acres) who maintained a residence on the land. It was assumed that by focusing on such subjects, the number of actors making management decisions would be maximized and thus, there would be more opportunity to discover the factors entering the decision-making process. Therefore, the following classes of woodland owners and/or administrators were excluded from the study: industrial and corporate owners, public and private land administrators, and "large" absentee owners. The management decisions of these classes do not appear to be "individualized" decisions and did not hold the promise of the rich variety of "situations" as did the category of "small woodland owners."
TABLE 1
FOREST LANDOWNERSHIP IN SELECTED SOUTHEASTERN LOUISIANA PARISHES

<table>
<thead>
<tr>
<th>Parish</th>
<th>0-500 acres</th>
<th>500-1,000 acres</th>
<th>1,000-5,000 acres</th>
<th>5,000 plus acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Feliciana</td>
<td>1,161</td>
<td>56</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td>St. Helena</td>
<td>1,562</td>
<td>50</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Livingston</td>
<td>3,462</td>
<td>33</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Tangipahoa</td>
<td>5,320</td>
<td>56</td>
<td>36</td>
<td>5</td>
</tr>
<tr>
<td>Washington</td>
<td>3,277</td>
<td>53</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,782</strong></td>
<td><strong>48</strong></td>
<td><strong>110</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>


*Parcels if under 500 acres.*

Per cent of parish's woodland acreage.
The following categories of small woodland owners were included in the study universe:

1. Farm operators - persons who operated a farm enterprise, sometimes in addition to a non-farm job, and who owned some woodland.

2. Retired farmers - individuals who lived on their land but had ceased farming because of age, health, etc.

3. Ex-farmers - woodland owners who had given up farming for other employment but continued to live on their property.

4. Woodland residents - persons other than retired or ex-farmers who lived on a woodland site but were not farm operators.

5. Tree farmers - woodland owners who farmed their woods as a primary source of income.

To assure a representation of the universe, a multi-stage sampling procedure based on probability area sampling was utilized in the investigation.¹

First, from among the selected Parishes (counties), large segments were delineated, each containing about equal numbers of residences. These large segments, randomly selected for the study, were then broken down into smaller segments.

segments containing about 15 residences each. A sample of these smaller segments was drawn and the interviewers used a screening item concerning the ownership of woodlands to determine which respondents in the smaller segments would be interviewed at length. The 185 respondents so selected for intensive interview should be representative of small woodland owners of the Florida Parishes (Southeast Louisiana).

Interviewees were questioned at length on such matters as their current woodland practices, on the nature and scope of their farm or other enterprises, on the extent to which they had accepted change in other areas, on their beliefs and attitudes about woodlands in general, on their knowledge of sources of assistance and information about forestry practices, and on a variety of other matters (See Appendix A). Interviews were made during August, September, and October of 1962. The number of interviews by parish was as follows: East Feliciana - 39; St. Helena - 45; Livingston - 36; Tangipahoa - 45; Washington - 20.

Information was sought from interviewees which specifically pertained to the adoption of a complex of items collectively referred to as "recommended forestry practices." This information permitted the scoring of respondents on the degree of adoption behavior with regard to the complex of practices. Thus, it was possible to utilize an ordinal measurement scale of adoption behavior (an ordering or ranking of respondents) which established the possibility of
correlation analysis. In this connection the following scales were developed:

**Adoption Scale**: Woodlands Management Practices. This scale (See Figure 7) utilized a number of specific practices which ranged from simple and easily implemented practices to those which were complex and difficult to establish. Information was obtained as to whether the interviewee had:
(a) knowledge of the practice, (b) sought additional information pertaining to it, (c) evaluated the possibilities of its implementation, (d) tried the practice, (e) adopted it or (f) adopted and subsequently dropped it.

To arrive at an index of degree of adoption of the woodlands management complex the following scoring procedure was used:

A. A respondent was given a 1 for each practice of which he had knowledge (had read or heard of). The subtotal for the first column was 15.

B. A value of 2 was assigned for each item in which the respondent had shown an interest (on which he had sought information) or which he said he had evaluated.

Because the respondents had difficulty in making a distinction between "interested in" and "evaluated" these two columns were scored together. That is a value of 2 was assigned for a plus in either column two or three for a given item, or
FIGURE VII
SCALE OF ADOPTION OF WOODLAND MANAGEMENT PRACTICES

The following are some woodland practices followed by some people; we want to find out what you have done with regards to them.

<table>
<thead>
<tr>
<th>WOODLAND PRACTICES</th>
<th>Read or heard of</th>
<th>Interested in</th>
<th>Evaluated</th>
<th>Tried</th>
<th>Adopted</th>
<th>Dropped</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Fencing out live-stock</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>(2) Pruning trees</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(3) Constructing fire guards (lanes)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(4) Deadening scrub trees</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(5) Reforestation (Plant trees or direct seed).</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(6) Removing dead or dying trees</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(7) Thinning out trees</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(8) Sell on lump sum basis (accept offer for entire stand)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(9) Establishing woodland on open land suitable for trees</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(10) Sell on price agreement per cord</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(11) Preparing ground for natural seeding or planting</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>WOODLAND PRACTICES</td>
<td>Read or heard of</td>
<td>Interested in</td>
<td>Evaluated</td>
<td>Tried</td>
<td>Adopted</td>
<td>Dropped</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>-----------</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>(12) Marking trees for selective cutting</td>
<td>+ -</td>
<td>+ -</td>
<td>+ -</td>
<td>+ -</td>
<td>+ -</td>
<td>+ -</td>
</tr>
<tr>
<td>(13) Using a written contract in selling wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(14) Having a plan for growing or selling trees or forest products. (management plan)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(15) Getting technical advice from trained foresters.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotals 15 30 45 60 -60
a plus in both. The subtotal for columns two and three combined was 30.

C. A value of 3 was assigned to each plus in the fourth or "tried" column. The subtotal for this column was 45.

D. A value of 4 was assigned each plus in column five (adopted). Thus, the subtotal was 60.

E. A value of -4 was assigned to each plus in the final (dropped) column. The value of this column was then subtracted from the accumulated value of the other columns and the "degree of adoption score" was the remainder.

F. The scores were then arrayed, with the top quartile being called "High Adopters," the lowest quartile "Low Adopters" and the intermediate quartiles were labeled "Medium Adopters."

The degree of adoption scores have little absolute value, but they do afford a means of ordering or ranking a given population on the degree to which they have accepted by adoption a complex of practices.

It appears that advantages of this procedure are that it establishes the possibility of different types of analyses than have previously been used in adoption-diffusion studies. First, there is available a range of scores from higher to lower rather than the simple dichotomous "adopter," "nonadopter" classification usually found in adoption
studies. Second, the score is based on responses to a complex of items which should be a more reliable index of adoption behavior than would be a response to a single item.

The only measure of reliability used with regards to this scale was that of between-interviewer consistency. Comparing the responses of subjects of the various interviewers, where similar populations can be assumed, amounts to a split-half type of technique for measuring reliability. There were no consistent differences among the interviewers, thus, a crude measure of reliability was established.

There was no real question of validity for this scale as it simply functioned to describe the population with regards to adoption behavior.

Adoption Tendency Scale. This scale utilized knowledge of the respondent's behavior with regards to varied other items which had, relatively recently, found their way into the local social system. It was expected that the responses of the actor to these varied other practices (see scale items, page 71) would be a good predictor of his behavior toward a specified practice or complex of practices. Thus,

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the scale represents what some students of attitude measurement refer to as "action tendency." 

The scale was scored by simply computing the percentage used of items relevant to the actors situation (see scale items, Figure 8). There was an element of subjectivity in determining what was relevant, but there could be little question, for instance, that such items as telephone or television were not relevant to the adoption proneness of an actor whose area did not have electricity. Likewise, where a man had no cattle, artificial insemination was considered to be nonrelevant.

Just as for the scale described above there was no evidence of consistent differences among interviewers on this scale, thus, reliability was considered satisfactory. The scale had "content validity" as judged by a panel of experts.

Orientation Scale. This scale was designed to yield information on whether the respondent was "conservatively," "moderately," or "progressively" oriented. It consisted of a list of statements concerning beliefs about social issues in the community to which the respondents indicated a degree of approval or disapproval (see scale items, Figure 9). The scale was an attempt to measure a basic personality disposition of the respondent so that this factor could be entered into the adoption potential formula. It represents a measure of cognitive "set," "style" or "mapping" which was

\[ \text{Ibid., p. 140.} \]
FIGURE VIII

SCALE OF PRACTICES CURRENTLY IN USE

1. Hot running water
2. Television
3. Telephone
4. Tractor
5. Hybrid seed corn
6. Crop insecticides
7. Artificial insemination
8. Terracing of land
9. Health or hospital insurance
10. Arrangement for retirement income
11. Checking account (bank)
12. Planned vacation

NOTE:
The subject's score on this scale was his per cent of items used which were relevant to his "situation."
FIGURE IX

ORIENTATION SCALE

1. The consolidated schools are generally superior to neighborhood or community schools.
   S.A.____ A.____ D.____ S.D.____

2. Governmental subsidies (support prices) are necessary for the continued welfare of the nation's farmers.
   S.A.____ A.____ D.____ S.D.____

3. Most of the materials "put out" by Agriculture Experiment Stations are useless to the farmer.
   S.A.____ A.____ D.____ S.D.____

4. Educational programs offered in the community for adults are of vital importance to the citizenry.
   S.A.____ A.____ D.____ S.D.____

5. Home Demonstration Agents make a valuable contribution to the farm family.
   S.A.____ A.____ D.____ S.D.____

6. The present educational system fails to prepare the youngsters as well as the educational system of the past.
   S.A.____ A.____ D.____ S.D.____

7. Marketing and buying co-op's can be of great economic benefit to the farmer.
   S.A.____ A.____ D.____ S.D.____

8. Economically speaking the farmer of the past was actually "better off" than is today's farmer.
   S.A.____ A.____ D.____ S.D.____

9. Despite some arguments to the contrary today's youngsters are better reared than were children in the past.
   S.A.____ A.____ D.____ S.D.____
FIGURE IX (Continued)

10. Community life in general is considerably "worse" than it was a generation or two ago.

S.A. ___ A. ___ D. ___ S.D. ___

11. There is "too much" emphasis today on having a good time, on recreation, and on vacations.

S.A. ___ A. ___ D. ___ S.D. ___

12. The churches in general are actually "worse" today than they were some years ago.

S.A. ___ A. ___ D. ___ S.D. ___
previously suggested to have great relevance for behavior toward given objects or situations.

Between-interviewer agreement proved satisfactory on the set of items and both content validity, as determined by judges, and predictive power of the scale were positive.

Hypotheses

The survey and synthesis of the literature in the immediately preceding chapter and the "Model of Behavioral Factors" suggested that the highest adoption scores would occur where:

(a) economic, social, and personal gains are seen as immediately possible;

(b) relative youth, good health, and energy potential exists;

(c) there is a relatively high degree of both general and specific knowledge;

(d) there is "good" communications exposure;

(e) situational factors influencing implementation are permissive;

(f) the individual is flexible in personality or oriented to change and possesses the means to change.

Conversely it was expected that the lowest adoption scores would be found where:

(a) economic, personal and social gains from change are seen as unlikely, or if at all, distant;
(b) there is relatively old age, poor health, or low energy potential;
(c) there is "poor" communications exposure;
(d) there is little general or specific knowledge;
(e) situational factors influencing implementation are not permissive;
(f) there is a rigidity of personality or tradition orientation and a lack of means of change.

Null hypotheses regarding the relationships of specific factors with degree of adoption were formulated in such a way as to test the accuracy of the above generalizations about adopter characteristics. A chi square test of significance of differences in frequency of occurrence of a given characteristic by adoption level was employed to test the specific null hypotheses. Those relationships having a .5 or lower probability of having occurred by chance were accepted as significant.
CHAPTER V

FINDINGS OF THE STUDY

The initial section of this chapter is an attempt to characterize the study population in terms of type of ownership, size of holdings, and salience of woodlands as a source of income. The second section presents the significant correlates of adoption rates.

Characteristics of Woodland Owners

None of the woodland owners indicated that the major part of their income was from their woodlands. Therefore, none of them were classified as "tree farmers" (see woodland owner typology, page ). Seven respondents, however, held certification as "tree farmers" from the American Forest Products Industries. The holdings of the certified farmers ranged from 10 acres to 650 acres. Omitting the one holding which was larger than 500 acres, the average size of the remainder of the tracts was 56 acres.

The bulk of the woodlands was owned by "farm operators," who constituted 45 per cent of the interviewees (Table 2). "Woodland residents" made up 24 per cent of the owners in the sample population; "retired farmers" comprised 16 per cent; and "ex-farmers," the remaining 15 per cent.

Ownership patterns in Livingston Parish diverged from those found in the other four parishes. A much larger proportion of woodlands was held by "woodland residents" in
<table>
<thead>
<tr>
<th>Parish</th>
<th>Farm Operators</th>
<th>Retired Farmers</th>
<th>Ex-Farmers</th>
<th>Woodland Residents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
</tr>
<tr>
<td>E. Feliciana</td>
<td>16</td>
<td>41</td>
<td>6</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>St. Helena</td>
<td>23</td>
<td>51</td>
<td>10</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Livingston</td>
<td>7</td>
<td>19</td>
<td>5</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Tangipahoa</td>
<td>26</td>
<td>58</td>
<td>7</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Washington</td>
<td>12</td>
<td>60</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>45</td>
<td>29</td>
<td>16</td>
<td>28</td>
</tr>
</tbody>
</table>
this parish and correspondingly a smaller proportion of woodlands was held by "farm operators" (Table 2).

It can be seen in Table 3 that nearly half (49 per cent) of all the woodlands held by persons questioned was in plots of less than 30 acres. Holders of "30 to 74 acres" of woodland made up 29 per cent of the interviewees and the persons in the "75 or more acres" category made up the remaining 22 per cent of the total sample population. There was little difference in size of woodland holdings of various owner types, except for "retired farmers" who on the average held smaller acreages (Table 3).

The owners generally derived small proportions of their total income from their property, all woodland and other sources considered. More than two-fifths of the respondents (44 per cent) claimed that less than ten per cent of their total annual income was from their farm property, while 22 per cent indicated that ninety per cent or more of their income was from farming (Table 4). Only 16 per cent of the interviewees had obtained an income from their woodlands in the past five years.

Characteristics of Woodland Owners with High Adoption Rates

Fifteen variables were found to be significantly correlated with high rates of adoption of recommended practices by small woodland owners. Each of these variables is listed
## TABLE 3
WOODLAND ACREAGE BY TYPE OF OWNERSHIP

<table>
<thead>
<tr>
<th>Acres Owned</th>
<th>Farm Operators</th>
<th>Retired Farmers</th>
<th>Ex-Farmers</th>
<th>Woodland Residents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
</tr>
<tr>
<td>0 - 29</td>
<td>41</td>
<td>49</td>
<td>14</td>
<td>52</td>
<td>14</td>
</tr>
<tr>
<td>30 - 74</td>
<td>22</td>
<td>26</td>
<td>11</td>
<td>38</td>
<td>8</td>
</tr>
<tr>
<td>75 or more</td>
<td>21</td>
<td>25</td>
<td>4</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>45</td>
<td>29</td>
<td>16</td>
<td>28</td>
</tr>
</tbody>
</table>
### TABLE 4

**PROPORTION OF FAMILY INCOME DERIVED FROM PROPERTY**

<table>
<thead>
<tr>
<th>Per Cent Income from Property</th>
<th>Number</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10</td>
<td>84</td>
<td>44</td>
</tr>
<tr>
<td>10 - 49</td>
<td>27</td>
<td>15</td>
</tr>
<tr>
<td>50 - 89</td>
<td>35</td>
<td>19</td>
</tr>
<tr>
<td>90 or more</td>
<td>41</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
<td>100</td>
</tr>
</tbody>
</table>
below and its correlation with adoption rates described. Together, they provide a "profile" of the owner most likely to be "progressive" in his approach to tree farming.

**Children at Home Are a Factor in Adoption of Recommended Practices.** Two-thirds of the heads of households interviewed had no children at home. However, more than half of the interviewees classified as high adopters had children living at home. Of the respondents classed as medium or low adopters, less than one-third said they had children at home (Table 5).

Why this pattern of behavior? Hypothetically, it can be assumed that families with children are younger and thus, more likely to accept new ways. It may also be that children bring home new ideas and exert some influence on their parents to adopt them. Perhaps the management of woodlands represents a long range investment which persons with children find relatively more attractive. However, more study is needed to verify these conjectures. For this study, all that can be said with a high degree of certainty is that there is a positive relationship between adoption and the presence of children at home.

**Education Is Related to Adoption in a General Way.** The data indicate that educational attainment is significantly related to "high" adoption. Only 15 per cent of the high adopters had less than 10 years of schooling. By contrast, more than two-fifths (43 per cent) of the low adopters had
TABLE 5
ADOPTION LEVEL RELATED TO THE PRESENCE OF CHILDREN AT HOME

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Children at home</th>
<th>No Children at Home</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
</tr>
<tr>
<td>High</td>
<td>21</td>
<td>51</td>
<td>20</td>
</tr>
<tr>
<td>Medium</td>
<td>26</td>
<td>29</td>
<td>63</td>
</tr>
<tr>
<td>Low</td>
<td>14</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>35</td>
<td>113</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 6.94, \text{ P.} > .05 \text{ with 2 d.f.} \]
progressed no further than the ninth year of schooling. At the other extreme, well over one-fourth (27 per cent) of the high adopters had attended a college or university, but only 14 per cent of the low adopters had this much schooling (Table 6). This pattern of behavior is consistent with other studies of the acceptance of innovations and emphasizes the value of education in promoting change, at least where educational orientation and the proposed direction of change are consistent.

Occupational Pursuits Are Associated With Adoption Level. Fewer than half, 45 per cent, of the interviewees indicated that farming was their major occupation. The majority were non-farmers or part-time farmers, including 29 per cent who said they were retired. Sixteen per cent had retired from farming and 13 per cent from non-farm pursuits.

Responses show that farming is definitely and significantly associated with the adoption of recommended practices. Almost two-thirds of the high adopters said their occupation was "principally farming." The non-farmers had consistently low adoption rates, as can be seen in Table 7.

Adoption Levels Vary With Type of Farm Enterprise. Some 163 respondents claimed to be engaged in farming "to some extent." Of this number, two out of three (110) considered themselves to be livestock farmers, i.e., they had either a beef or dairy enterprise or both. The remainder of the
### TABLE 6

THE RELATIONSHIP BETWEEN ADOPTION LEVEL AND EDUCATIONAL ATTAINMENT

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Education of Respondent</th>
<th>0-9 years</th>
<th>10-12 years</th>
<th>College</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>6</td>
<td>15</td>
<td>23</td>
<td>58</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>19</td>
<td>43</td>
<td>19</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25</td>
<td>30</td>
<td>42</td>
<td>50</td>
</tr>
</tbody>
</table>

\[ X^2 = 8.76; \text{ p.} > .02 \text{ with 2 d.f.} \]
TABLE 7
ADOPTION LEVEL RELATED TO OCCUPATION

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Farming</th>
<th>Farming and Other</th>
<th>Non-Farming</th>
<th>Retired Farmer</th>
<th>Retired Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
</tr>
<tr>
<td>High</td>
<td>26</td>
<td>63</td>
<td>7</td>
<td>17</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Medium</td>
<td>40</td>
<td>45</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Low</td>
<td>12</td>
<td>28</td>
<td>16</td>
<td>14</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>45</td>
<td>24</td>
<td>14</td>
<td>21</td>
<td>12</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 14.78, \ P > .05 \text{ with 8 d.f.} \]
farmers included "mixed" farmers mostly (48) and vegetable farmers (5). When type of farming enterprise is related to adoption rate, it is found that, although less than half of the persons doing some farming were high adopters, the greater relative number of high adopters were "mixed" farmers, however, more actual high adopters had a livestock enterprise (Table 8). It can thus, be concluded that mixed farming is likely to be associated with the ready acceptance of recommended forestry practices. This finding may be viewed as being contrary to the generalization of Rogers that early adoption is associated with specialization of enterprise.¹

Size of Holding Is Related Significantly to Adoption Rates. In view of the findings of previous studies which have related adoption rates to size of land holdings, it is not surprising that respondents with larger acreages were more likely to have high adoption scores. This finding is especially significant since the study was limited to relatively small holdings. The median number of acres on the farms of persons interviewed was 62. Six classes of holdings were delineated, ranging from 25 acres or less, to 200 acres or more, as may be seen in Table 9. Only 14 per cent of the high adopters were on holdings of less than fifty acres, but 65 per cent of the low adopters were in this class. By contrast, 59 per cent of the high adopters owned more than

TABLE 8

THE RELATIONSHIP BETWEEN ADOPTION LEVEL AND FARMING ENTERPRISE

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Dairy</th>
<th>Beef</th>
<th>Dairy &amp; Beef</th>
<th>Vegetable</th>
<th>Mixed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Num-</td>
<td>Per</td>
<td>Num-</td>
<td>Per</td>
<td>Num-</td>
<td>Per</td>
</tr>
<tr>
<td></td>
<td>ber</td>
<td>Cent</td>
<td>ber</td>
<td>Cent</td>
<td>ber</td>
<td>Cent</td>
</tr>
<tr>
<td>High</td>
<td>10</td>
<td>25</td>
<td>6</td>
<td>15</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Medium</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>18</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Low</td>
<td>8</td>
<td>20</td>
<td>3</td>
<td>7</td>
<td>22</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>18</td>
<td>23</td>
<td>14</td>
<td>58</td>
<td>36</td>
</tr>
</tbody>
</table>

\[ x^2 = 21.68, \text{ P.} > .01 \text{ with 8 d.f.} \]
TABLE 9
ADOPTION OF RECOMMENDED PRACTICE RELATED TO SIZE OF LAND HOLDINGS (TOTAL ACREAGE)

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>-25</th>
<th>26-50</th>
<th>51-75</th>
<th>76-100</th>
<th>101-200</th>
<th>201+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Num-Per</td>
<td>Num-Per</td>
<td>Num-Per</td>
<td>Num-Per</td>
<td>Num-Per</td>
<td>Num-Per</td>
<td>Num-Per</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Medium</td>
<td>23</td>
<td>26</td>
<td>18</td>
<td>20</td>
<td>10</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Low</td>
<td>13</td>
<td>30</td>
<td>15</td>
<td>35</td>
<td>5</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>22</td>
<td>36</td>
<td>21</td>
<td>17</td>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

$x^2 = 27.83$, $P > .01$ with 10 d.f.
one-hundred acres of land, while only 16 per cent of the low adopters had this much land acreage. The relationship between size of total holding and adoption rate is thus, quite pronounced.

**Acreage in Woodlands Is an Important Factor in Adoption Rates.** It may be seen in Table 10 that the larger operators, i.e., those with more land in woods (exclusive of land used for pasture or cultivation), were relatively high adopters. In fact, only 7 per cent of the respondents operating more than 75 acres of woodlands were classified as low adopters. This pattern is essentially the same as that found for total acreage owned, and is consistent with findings on the relation at size of enterprise to the adoption of other items.

**Persons Who Perceive Woodlands to be Beneficial Are More Likely to Adopt Recommended Practices.** All respondents were asked if they considered their woodlands of benefit. Responses to this question were ambivalent in many instances. For example, a person might answer "no" and yet go on to point out some compensation or satisfaction which had been derived from his holdings. Nevertheless, it can be assumed that his initial response to the question represented a "primary" feeling with regards to the value of woodlands.

About half (47 per cent) of the interviewees believed that their woodlands were beneficial and worthwhile. It is perhaps more interesting that almost one-fourth (23 per cent) were convinced that their woodlands were of no value
### TABLE 10

ADOPTION LEVEL RELATED TO SIZE OF WOODLAND HOLDINGS

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Acres in Woodlands</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 29</td>
<td>30 - 74</td>
<td>75 +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>10</td>
<td>15</td>
<td>16</td>
<td>41</td>
<td>100</td>
</tr>
<tr>
<td>Medium</td>
<td>47</td>
<td>23</td>
<td>19</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
<td>Low</td>
<td>27</td>
<td>14</td>
<td>3</td>
<td>44</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>52</td>
<td>38</td>
<td>174</td>
<td>100</td>
</tr>
</tbody>
</table>

\[ x^2 = 19.84, \ P > .001 \text{ with 4 d.f.} \]
to them. Most of the persons who were high adopters (71 per cent) perceived their woods to be of unquestionable value. Only 27 per cent of the low adopters perceived such benefits to accrue their woods (Table 11).

After determining whether or not a respondent considered his woodlands to be of benefit to him, follow-up questions were asked to determine in what way, if any, the woods were beneficial. Of the persons who perceived benefits, almost half made a direct reference to the sale of pulpwood and/or timber. One-fourth of this group said their woods served as a pasture and shelter area for livestock and almost one-fifth considered woodland as a long-term investment. Nearly one in ten realized benefits through such home uses as fence posts, firewood, and pine straw.

Persons who did not think they derived benefits from their woods were also divided in opinion as to why this was true. Approximately one-third responded with statements such as "you can't sell wood" or "can't sell wood at a profit." About one-fifth of the respondents said their wood did not have commercial value or they did not have enough wood to sell. The remainder gave miscellaneous reasons, such as "woodland management conflicts with livestock enterprise" and "wood production is undesirable."

Persons seeing no benefit in their woodlands were asked, "Could your woodlands be made more beneficial?". Those answering in the affirmative indicated that better
TABLE 11

THE RELATIONSHIP BETWEEN ADOPTION LEVEL AND THE PERCEIVING OF FOREST BENEFITS

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Woodlands of Benefit</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Num-</td>
<td>Per</td>
<td>Num-</td>
<td>Per</td>
<td>Num-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ber</td>
<td>Cent</td>
<td>ber</td>
<td>Cent</td>
<td>ber</td>
</tr>
<tr>
<td>High</td>
<td>Yes</td>
<td>29</td>
<td>71</td>
<td>8</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>Yes</td>
<td>40</td>
<td>45</td>
<td>28</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Low</td>
<td>Yes</td>
<td>12</td>
<td>27</td>
<td>17</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>Yes</td>
<td>81</td>
<td>47</td>
<td>53</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

\[ x^2 = 18.75, \text{ P} > .01 \text{ with 4 d.f.} \]
management or shifting to other uses were the alternatives in this regard. It is significant that about one-third of all respondents felt their forest acreages would be more beneficial by shifting them to some other land use.

Owners who perceived a potential for greater benefits from their woods but had not moved to achieve these benefits were asked why they had not done so. Most said they were too old, in bad health, lacked the necessary financial resources, or gave answers which indicated an evasion of recognition of discrepancy between potential and achievement. Each of these types of answers may be viewed as a way of handling dissonant cognitive elements. The latter adjustment is probably the referent for the term apathy so frequently applied to this type case.

**High Adopters of Recommended Practices Are More Likely to Farm Their Land.** An arbitrary measure of intensity of land usage was worked out which included factors related to how frequently the land had been used, what proportion of the land was in use, and whether or not current operations were being increased or diminished. Farms were classified as follows: (1) never been farmed, (2) farmed in part all of the time, (3) farmed in part a part of the time, (4) farmed in part in the past, (5) currently expanding, and (6) currently diminishing.

The finding of most importance to this study was that high adopters had made more use of their land and were more likely to be expanding their operations (Table 12).
TABLE 12
ADOPTION LEVEL RELATED TO FARMING

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Never Farmed</th>
<th>Part of Land Farmed</th>
<th>Use of Land</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
<td>Number</td>
<td>Per Cent</td>
</tr>
<tr>
<td>High</td>
<td>1</td>
<td>2</td>
<td>20</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>Medium</td>
<td>13</td>
<td>15</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Low</td>
<td>6</td>
<td>14</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>12</td>
<td>68</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>33</td>
<td>12</td>
<td>7</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 18.46, \ P > .05 \text{ with } 10 \text{ d.f.} \]
High Adopters Are More Likely to Have Seriously Considered Going into Tree Farming. In keeping with one aim of the study, each interviewee was asked if he had considered tree farming as an economic enterprise. Only 26 per cent of the persons interviewed answered, "yes." However, of this group, almost half were classified as high adopters. It seems evident that persons who had seriously considered the possibilities of supplementing their economies through "tree farming" had concluded that woodland management had an economic potential. This deduction is reinforced by the fact that only 18 per cent of the individuals classified as low adopters had given some thought to tree farming (Table 13).

Persons Seeking Outside Help or Advice on Farming Problems Are More Likely to Have Adopted Recommended Practices. All interviewees farming currently or who had done some farming in the past were asked if they had received help or expert advice on farming or woodland practices. About half of the interviewees with farming experience said they had obtained help or advice on farming. More than two-thirds of the farmers who were high adopters of woodland management practices admitted seeking such assistance. Fewer than two-fifths of the low adopters said they had help of this kind. Only one-fifth of the interviewees with farm experience had received aid in woodland management, but 7 out of 10 of this group were high adopters (Table 14).
TABLE 13

THE RELATIONSHIP BETWEEN ADOPTION LEVEL AND ECONOMIC CONSIDERATIONS GIVEN TO TREE FARMING

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Considered Tree Farming</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>High</td>
<td>17</td>
</tr>
<tr>
<td>Medium</td>
<td>18</td>
</tr>
<tr>
<td>Low</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
</tr>
</tbody>
</table>

\[ X^2 = 8.72, \ p. > .02 \text{ with } 2 \text{ d.f.} \]
### TABLE 14

**ADOPTION LEVEL RELATED TO ADVICE OR HELP FROM OUTSIDE SOURCE**

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Help or Advice on Farming</th>
<th>Help or Advice on Woodland Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent</td>
</tr>
<tr>
<td>High</td>
<td>27</td>
<td>69</td>
</tr>
<tr>
<td>Medium</td>
<td>37</td>
<td>46</td>
</tr>
<tr>
<td>Low</td>
<td>16</td>
<td>38</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>50</td>
</tr>
</tbody>
</table>

\[ x^2 = 9.31, \text{ P.} > .01, \text{ with 2 d.f.} \]

\[ x^2 = 46.76, \text{ P.} > .001 \text{ with 2 d.f.} \]
The above finding has significance for both the forester interested in getting recommended practices adopted and the student of adoption-diffusion processes. Since aid in most instances had been given through direct contact with the area forester, it can be assumed that this approach is most effective, or as an alternative, that the forester selectively attends those he perceives as most likely to adopt.

**Persons Seeking Information From Numerous Sources Are More Likely to Adopt Recommended Practices.** Respondents were quizzed on the different sources of information they had utilized in connection with their farm and woodlands operations. Some 35 per cent of the high adopters claimed to have consulted four or more different sources for information (Table 15). By contrast, only 6 per cent and 7 per cent, respectively, of the median and low adopters had sought information from this many sources. At the other end of the continuum, more than three-fifths of the median and low adopters had not consulted any type of expert for advice. One-fourth of the high adopters reported they had not received any type of advice. With respect to the latter, interviewers noticed the reluctance of some respondents to admit they had received help. Apparently, there was a feeling that such an admission would destroy an image of self-sufficiency. If this interpretation is correct, then cognitive images of "self" may inhibit the revelation of
<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Number of Sources</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>Medium</td>
<td>54</td>
<td>61</td>
</tr>
<tr>
<td>Low</td>
<td>27</td>
<td>61</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>53</td>
</tr>
</tbody>
</table>

\[ x^2 = 34.29, \text{ p.} > .01 \text{ with 8 d.f.} \]
relevant information of some kinds. Likewise, this same condition could inhibit the acceptance of aid by those viewing themselves as self-sufficient.

**Individuals Who Adopt Recommended Woodland Practices Consistently Adopt New and Improved Ways of Doing Things.** It was hypothesized that individuals adopting improved practices for woodland management would also tend to adopt new items in other spheres of activity. In other words, cognitive theorists presume that action-habits and attitudes of a given type would not be compartmentalized, but would be part of a larger system of cognitions.

The responses obtained indicated that more than half (56 per cent) of the high adopters of woodland practices were also high adopters of "other" practices. Only 14 per cent of the persons who scored high on the "other adoptions" scale ranked low on the "woodland practices" scale (Table 16). These results seem to give support to the above hypothesis.

**Source of Family Income Is Significantly Correlated with Adoption of Recommended Practices.** All respondents were asked what percentage of their total income was derived from their farm property. This information was correlated with their adoption of recommended practices. Although the correlation is not straight-line, there appears a significant tendency for persons who derived a high percentage
TABLE 16
THE RELATIONSHIP BETWEEN ADOPTION OF WOODLAND PRACTICES AND OTHER PRACTICES

<table>
<thead>
<tr>
<th>Woodland Adoption Level</th>
<th>Adoption Level</th>
<th>Other Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>High</td>
<td>23 56</td>
<td>14 34</td>
</tr>
<tr>
<td>Medium</td>
<td>24 27</td>
<td>36 40</td>
</tr>
<tr>
<td>Low</td>
<td>6 14</td>
<td>18 42</td>
</tr>
<tr>
<td>Total</td>
<td>53 31</td>
<td>68 39</td>
</tr>
</tbody>
</table>

\[ X^2 = 21.38, \ p > .01, \ with \ 4 \ d.f. \]
of their income from their farm property to be high adopters of practices (Table 17). Persons deriving most of their income from outside sources tended to be low adopters. Why this pattern should hold is open to speculation. Perhaps, those individuals who are dependent on income from their own farms have more incentive to use "efficient" practices.

Socioeconomic Status Is Closely Related to Adoption Levels. Each interviewee was ranked on a socio-economic scale. The scale took into consideration level of living, income, and certain subjective factors.* In keeping with findings of previous studies of acceptance of innovations, high adopters tended to have a high socioeconomic rank. Low adopters generally were characterized by low socioeconomic rank (Table 18). This pattern is predictable in part because those persons who accept new ways readily are more likely to accumulate wealth and vice versa.

Orientation Is Closely Related to Adoption Behavior. The attitude orientation scale developed for this study has been described elsewhere. All interviewees were classified as "conservatives," "moderates," or "progressives" according to their responses to attitude questions. No conservative was a "high adopter" of recommended practices (Table 19). Conversely, very few progressives were classified as

*Interviewers rated each interviewee according to a ten point scale, based on personal observation of home, yard, and surroundings in general. There was no evidence of between-interviewer bias.
TABLE 17
ADOPTION LEVEL RELATED TO SOURCE OF FAMILY INCOME

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Income from Farm Property</th>
<th>Livestock-</th>
<th>Woodlands</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Cultivation</td>
<td>Pasture</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>7</td>
<td>17</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Medium</td>
<td>34</td>
<td>39</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Low</td>
<td>13</td>
<td>31</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>32</td>
<td>42</td>
<td>25</td>
</tr>
</tbody>
</table>

\[ X^2 = 17.61, \quad P > .01 \text{ with 6 d.f.} \]
# TABLE 18

ADOPTION LEVEL RELATED TO SOCIOECONOMIC STATUS

<table>
<thead>
<tr>
<th>Socioeconomic Status Rank</th>
<th>Upper</th>
<th>Middle</th>
<th>Lower</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>High</td>
<td>8</td>
<td>29</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>Medium</td>
<td>9</td>
<td>51</td>
<td>25</td>
<td>85</td>
</tr>
<tr>
<td>Low</td>
<td>1</td>
<td>22</td>
<td>19</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>102</td>
<td>47</td>
<td>167</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 17.61, \text{ P.} > .01 \text{ with 4 d.f.} \]
TABLE 19
THE RELATIONSHIP BETWEEN ADOPTION LEVEL AND ATTITUDE ORIENTATION

<table>
<thead>
<tr>
<th>Adoption Level</th>
<th>Attitude Orientation</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conservative</td>
<td>Number</td>
<td>Per Cent</td>
<td>Moderate</td>
<td>Number</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>0</td>
<td>0</td>
<td>26</td>
<td>63</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>13</td>
<td>15</td>
<td>61</td>
<td>69</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>8</td>
<td>19</td>
<td>28</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>21</td>
<td>12</td>
<td>115</td>
<td>67</td>
</tr>
</tbody>
</table>

\[ X^2 = 10.90; P > .01 \text{ with 2 d.f.} \]
low adopters. Moderates were about equally divided among the three adoption classes. This finding is consistent with previously reported empirical patterns, and would be predicted by cognitive theory.
CHAPTER VI

SUMMARY AND CONCLUSIONS

The central task of this study was to develop a better understanding of the process of social change known as adoption or diffusion. The adoption perspective on the problem of change serves to focus attention on qualities of the actor relative to change, while the diffusion perspective is a nonpersonalized one.

The actor centered analysis chosen to guide the study effort makes the basic assumption that man is to some degree a calculating animal. He is visualized as manipulating symbols of his experience in the process of choosing among alternatives. Some have conceptualized the actor in the decision making process as being somewhat like a computer. This does not imply that the elements which the actor uses in the process are "rational" in nature. To the contrary it is recognized that some of the variables involved in the cost accounting of actors faced with a decision are feelings, myths and attitudes as well as empirical information, and logically derived beliefs. The point is that whatever action is taken with regards to a given stimulus for behavioral change or constancy it is a result of the calculative process and perhaps at some levels habitual response.

This basic assumption led to an effort to conceptualize the field of forces producing, maintaining, and changing
patterns of human behavior. A conceptual model emerged which encompassed a view that; cultural, bio-psychic and situational factors influence the interrelations of actors in such a way as to produce patterned sequences of human activity (social organization). There was articulated with this perspective a reformulation of the "adoption stages" and "characteristics of the innovation" conceptualizations.

The combined perspectives functioned to organize and synthesize existing knowledge of adoption behavior and to point out potential gaps in this knowledge. Additionally, ideal types of "high adoption potential" and "low adoption potential" were derived. These ideal types included variables from each of the factors in the "Model of Behavioral Factors;" and served as the basis for hypotheses concerning the adoption of woodland management practices.

A variety of specific hypotheses were formulated to test the adequacy of the "ideal types" for predicting adoption behavior. Among the characteristics significantly differentiating "high" from "low" adopters were:

1. The presence of children in the home
2. The degree of formal education
3. Occupational pursuit
4. Type of farm enterprise
5. Size of land holding
6. Acreage in woodlands
7. Positive perception of woodland functions in the community
8. Intensity of land usage
9. Having sought information on "tree farming"
10. Having sought expert or professional advice on farming problems
11. Having sought information and advice from numerous and varied sources
12. Having readily adopted other, non-related practices
13. Source of family income (mostly farm or non-farm?)
14. Socioeconomic status
15. Orientation (Progressive - Conservative)

In general, the "ideal types" were confirmed by the above findings and impressionistic evidences.

It appears that some additional steps may now be taken which would increase knowledge of the adoption-diffusion process.

Perhaps, the most neglected of the factors influencing patterned behavior is the interplay between given types of socio-cultural experience, and resulting "cognitive styles" (ways of organizing and manipulating cognitive elements). To be sure, there has been consideration of the functions of attitudes in behavior. And cognitions are a component of attitudes, but not much seems to be known about what types of experiences produce what types of cognitive structures or frameworks. Further efforts in this direction might prove profitable.
One of the most emphasized points of this study was the reevaluation of the "stages" concept of the adoption process. The perspective employed herein calls for recognizing that the "stages" are roughly equivalent to cognitive processes of the actor. If this point is accepted, then much of what is known about "cognitive dissonance," "balance," "congruity," etc. becomes relevant for understanding adoption behavior.

Empirically, scores on the scale designed to measure the cognitive structuring or orientation of actors were highly related to adoption behavior.

Another question which is of theoretical significance was given a partial answer in this study. Those persons, who employ recommended and approved woodlands management practices to a low degree, are what adoption-diffusion researchers call "laggards." The practices on which the adoption scale were based were not for the most part new, but had existed for a relatively long period of time. Indeed, nearly all respondents claimed knowledge of the existence of the practices, but for a variety of reasons had not "progressed" further toward adoption.

Every social unit (community, neighborhood, or group) seems to contain persons who resist changes of a specific nature more so than do others. A very important question in this connection is, "do the same people consistently resist varied specific changes thus, creating a general pattern of resistance to change?", or, "do differing
individuals within a given social unit become the 'laggards' with regards to varied specific items?". This study supports to some degree the idea of a general personality trait of "resistance to change." But there remains the task of defining the socio-cultural factors related to such a personality trait.

A crude logical-factoring procedure was employed in this study in an effort to synthesize what had been done previously by students of the adoption problem. This procedure resulted in conceptualizing the following factors:

1. **Incentive.** The incentive cluster involves the economic, personal, or social gains to be made by adoption on the part of an actor. The degree of incentive is related to the perceived immediacy of the gains; what kinds of costs, social, economic and psychic are involved in making the adoption. And what alternatives are precluded by making the change.

2. **Energy.** Around the energy factor there is a clustering of such variables as, age, health, active versus, passive temperaments, command of energy (talent and work) of others and a variety of physical conditions of the actor.

3. **Communication.** The communications cluster includes considerations of; what kinds of media have influence on what kinds of actors at various points
in the adoption process? Communications exposure, barriers to communication, and the "communicability of innovations are additional variables in this factor.

4. **Orientation.** This cluster includes variables which predispose the actor to respond to stimuli in limited ways. Examples are: beliefs, knowledge, norms, values, attitudes, motor habits, needs and cognitive structures.

5. **Situation.** The situational factor includes those variables in the action setting impinging on the actor as he evaluates what course of action is appropriate with regards to a given field of stimuli.

Perhaps, a statistical factoring technique would reveal that a relatively few clusters of characteristics account for most of the variability in adoption behavior. It would also be of importance to ascertain whether some one factor or factors weighs more heavily in adoption decisions for actors in general and also for actors in specified situations.

Practical Considerations

Insofar as the resistance to acceptance of a given item stems from a basic personality attribute of the "laggard," nothing short of intensive and prolonged psychotherapy may be effective in modifying patterns of performance.
Obviously, these means are not at the disposal of persons implementing a program of woodland management.

Next, a large proportion of the factors found to be statistically associated with "high" and "low" adoption cannot be readily or immediately changed by the forester, if and when the ways in which they contribute to woodland management are discovered. Many of these factors represent difficult-to-alter situations to which the woodland owner must adjust, at least in the short run.

However, there are possibilities for furthering the implementation of "better" woodland management. Knowledge of which situational and other factors contribute to varying degrees of management, and cognizance of the reasons why owners resist the recommendations suggests two general types of solution.

1. The forester can work on those variables which are susceptible to modification. Among those variables found to be significant in the study and most readily subject to change were such factors as: (a) perception of the value of woodlands; (b) having given consideration to the possibilities of tree farming; (c) having received help or advice on woodland management in person from the forester; and (d) having been exposed to sources of information about woodland management programs. In addition, the variety of reasons given for not participating more fully in woodland management programs suggests to the forester the kind of
information and misinformation which woodland owners use to make decisions regarding adopting improved practices. Correcting the information which some owners have should also alter the attitudes they hold toward woodlands and their management.

2. There is a variety of situational factors such as age, sex, health, the presence or absence of children to help with the farm enterprise, the size of holdings, occupation, formal education, and socioeconomic rank to which the woodlands' owner frequently must adjust his various other behaviors. He sometimes feels threatened by and thus alienates himself from the forester who insists that he attempt to implement a specific set of practices. This suggests that the forester might best achieve management and production goals by developing programs which are "ideal" for a variety of situations rather than pursuing one all-encompassing "forester's ideal" which scares off or alienates some owners who would be receptive to ideas which meet their needs and situation.
Books


Monographs and Bulletins


South, Donald R., Thomas Hansbrough, and Alvin L. Bertrand, "Factors Related to the Adoption of Woodland Management Practices," Baton Rouge, Louisiana State University, Experiment Station Bulletin No. 603 (September, 1965).


Journal Articles


Beal, George, et. al., "Validity of the Concept of Stages in Adoption Process," Rural Sociology, 22, 166-168.


**Unpublished Materials**


BIBLIOGRAPHY

SELECTED BIBLIOGRAPHY OF RELATED WORKS


A STUDY OF THE CHARACTERISTICS OF THE "SMALL" WOODLAND OWNER IN SELECTED LOUISIANA PARISHES

Louisiana Agricultural Experiment Station
Department of Rural Sociology
in Cooperation with
United States Department of Agriculture and
United States Forest Service

Schedule No. _______________ Interviewer __________________
Parish ___________ Ward ___________ Segment ___________

Do you own or operate three or more acres of woodlands?
Yes ___ No ___

Do you currently have land which is idle (not being used for crops or improved pasture)? Yes ___ No ___
I. We would next like to obtain some census-like information about you and your family.

<table>
<thead>
<tr>
<th>Relation to family</th>
<th>Age</th>
<th>Sex</th>
<th>Race</th>
<th>Education</th>
<th>Occupation</th>
<th>Place of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Husb.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wife</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(circle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other

Organizational Affiliations

<table>
<thead>
<tr>
<th>Name of Organization</th>
<th>Length of Membership</th>
<th>Officerships</th>
<th>Committee Attendance</th>
<th>Function of Organization for member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wife:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
II. Tenure status

1. How many acres are in the holdings which you own or operate?  
   Self? ____  
   Total ____ In cultivation? ____ By:  
   (acres) (acres)  Other? ____  
   In pasture? ____, In woodlands? ____, Pine ____  
   (proportion)

2. As you see it, is your woodland of any benefit to you?  
   Yes ____ Some ____ No ____  
   (If "yes" or "some")  
   A. In what way does it benefit you?

   (If "no")  
   B. Why is it not of benefit?

3. Do you think your woodlands could be made more beneficial to you?  
   Yes ____ Maybe ____ No ____  
   (If "yes" or "maybe")  
   A. How?  
   B. What factors, if any prevent you from employing practices which you would like to?
4. How long have you owned this property? _______ (years)

5. How did you gain ownership of the property?

6. What proportion of ownership time has property been farmed? ____________________________

7. If currently farming:
   A. Major crops
      Kind ______', ______', ______', ______'
      Acres ______', ______', ______', ______'
   B. Livestock
      Kind ______', ______', ______', ______'
      Amount ______', ______', ______', ______'
   C. What are your plans for usage of the land in the future?

8. If ceased farming:
   A. Why?

   B. What have you been doing with your farmland over the past, and what do you intend to do with it in the future?

   C. Have you considered the possibility of tree farming on your soil? (any comments offered)
      Why not?

9. If ever farmed:
   A. Have you received any help or advice on farming?
      Yes ___   No ___.

1. Where or from whom did you get help or advice?

2. What kind of help or advice did you get?

B. Have you received any help or advice on woodland practices?

Yes ___ No ___

1. Where or from whom did you get help or advice? (If from neighbor or community member get respondent to specify)

2. What kind of help or advice did you get?

C. How did you learn that help was available?

(Circle no. of the sources mentioned.)

1. Newspapers 7. Movie
2. Magazines 8. Radio or T.V.
3. County Agent 9. Church
4. Farmer's meeting 10. School
5. Newsletter 11. Personal contact
6. Fairs 12. Other (specify)___

10. Items and practices currently used on farm or in home: (circle no.)

1. Hot running water 7. Artificial insemination (where applicable)
2. Television 8. Terracing of lands
3. Telephone 9. Health or hospital insurance
4. Tractor 10. Arrangement for retirement income
5. Hybrid seed (corn) 11. Checking account (bank)
   (farmers only) 12. Planned vacation
6. Crop insecticides
   (spray or dust crops)
11. The following are some woodland practices followed by some people; we want to find out what you have done with regards to them.

<table>
<thead>
<tr>
<th>WOODLAND PRACTICES</th>
<th>Read or Interes-</th>
<th>Eval-</th>
<th>Tried</th>
<th>Adop-</th>
<th>Drop-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>heard of</td>
<td>ted in</td>
<td>uated</td>
<td>ted</td>
<td>ped</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

(1) Fencing out livestock

(2) Pruning trees

(3) Constructing fire guards (lanes)

(4) Deadening scrub trees

(5) Reforestation (Plant trees or direct seed).

(6) Removing dead or dying trees

(7) Thinning out trees

(8) Sell on lump sum basis (accept offer for entire stand)

(9) Establishing woodland on open land suitable for trees

(10) Sell on price agreement per cord

(11) Preparing ground for natural seeding or planting
<table>
<thead>
<tr>
<th>WOODLAND PRACTICES</th>
<th>Read or Interested</th>
<th>Evaluated</th>
<th>Tried</th>
<th>Adopted</th>
<th>Dropped</th>
</tr>
</thead>
<tbody>
<tr>
<td>(12) Marking trees for selective cutting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13) Using a written contract in selling wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(14) Having a plan for growing or selling trees or forest products. (management plan)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(15) Getting technical advice from trained foresters.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotals 15 30 45 60 -60
12. To which magazines, journals, newspapers or bulletins are you usually exposed?

Popular: __________ Farm: __________ Newspapers: __________

___________ __________ __________

___________ __________ __________

___________ __________ __________

___________ __________ __________

Other: __________

IV. Property and Economics

13. Gross income from products of your farm for last year: (The value of all products sold) $ __________

14. About what proportion of your family's income has been made from your property in recent years?

(proportion)

From cultivation? (proportion) From woodlands? (proportion)

From rental? (proportion) From livestock? (proportion)

15. In the near future do you:

A. Plan to continue your cultivation, pasture, and woodlands operation about as you have in the past?

Yes ___ No ___

(Any comments which are offered)

B. Plan to change the proportion of cultivation, pasture, or woodlands of present holdings?

Yes ___ No ___

(If yes, explain)
C. Anticipate selling any of your property, or buying of additional land? Yes ___ No ___ (If yes, explain)

D. Are there any economic or other circumstances of the area that might make it increasingly harder for you to continue your present way of life? Any factors that are apt to make you change?

16. Who holds ownership of most of the woodlands in your community?
   1. Small private ownerships _________
   2. State or Federal government _______
   3. Wood-using industries or corporations ______
   4. Absentee ownership ________
   5. Other (specify) _______________________________

17. Do you feel that this type of ownership is "best" for the community? Yes ___ No ___
   Why?

18. We would like to hear you express your feelings about woodlands and farming.
   A. What do the local people generally think and feel about woodlands, their uses and benefits?

   B. Do you feel that woodlands might be of benefit to you personally?

To others?

19. From your contact with the respondent indicate into which socioeconomic category you would place him:

<table>
<thead>
<tr>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>High</td>
<td>Middle</td>
<td>Low</td>
<td></td>
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</tbody>
</table>
APPENDIX B

Other Relationships Tested, but not Having the Stipulated .05 Level of Confidence.

Social Participation
("high," "medium" and "low") $P = .10$

Parish, $P = .20$

Idle lands
(Yes, No) $P = .20$

Adoption Level, by:

Age, $P = .20$

Sex of Owner, $P = .15$

Sex of Children at home, $P = .40$

Marital Status of Owner, $P = .70$

Respondents Place of Work
(at residence or away) $P = .60$

Length of Ownership Time, $P = .30$

Race, $P = .25$
EXAMINATION AND THESIS REPORT

Candidate: Donald R. South

Major Field: Sociology

Title of Thesis: A Theoretical and Empirical Analysis of the Adoption-Diffusion Process of Social Change

Approved:

Signature
Major Professor and Chairman

Signature
Dean of the Graduate School

EXAMINING COMMITTEE:

Signature

Signature

Date of Examination:
July 21, 1967
VITA

The author was born August 14, 1934, in Mobile County, Alabama. He attended elementary and secondary schools there, and was graduated from Semmes High School in 1951. The next five years were spent in alternate periods of work and study and culminated in a Bachelor of Science degree in Sociology and Psychology from the University of Southern Mississippi in August, 1956. In February of 1956 the author was married to the former Arva Jo Miller of Mobile, Alabama. In September of that year he entered the Graduate School of Louisiana State University and was awarded a Master of Arts degree in January, 1959.

In subsequent years the author taught at the University of Southern Mississippi (Assistant Professor of Sociology, 1959-1962) and the University of Georgia (Assistant Professor of Sociology, 1963-1967) while pursuing work at Louisiana State University toward the Doctor of Philosophy degree in Sociology with a minor in psychology.

The final requirements for the Doctor of Philosophy degree were met in July, 1967, and in September of that year the author assumed the position of Assistant Dean of Arts and Sciences at the University of Georgia.

Four additional reasons for this work have emerged over the years; they are Donna, Daryl, Barry, and Ramona.