The Adoption Process

Part 1

Implications from research on the diffusion of innovations may serve as a theoretical basis for a strategy of change

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SINCE its inception, the main purpose of the Cooperative Extension Service has been to change human behavior by teaching people how to apply the results of scientific research. In recent years, Extension workers themselves have begun to adopt the results of scientific research on how new farm ideas spread. Thus, Extension agents are adopting the approach they try to develop in farmers and homemakers.[1] Although aided by several excellent summaries of the some 300 research studies on the diffusion of new farm and homemaking ideas,[2] most Extension agents probably have only a fragmentary grasp of the available findings.

The purpose of the present article is to review and synthesize the research findings on the diffusion of innovations[3] and to point out their implications for Extension workers. In one sense, the present article seeks to offer a theoretical basis upon which the Extension

[1] A. W. van den Ban, "Research in the Field of Advisory Work," *Netherlands Journal of Agricultural Science,* IX (May, 1961), 122-133.

[2] North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices, *How Farm People Accept New Ideas,* Iowa Agricultural Extension Service Report (Ames: Iowa State University, November 15, 1955); and North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices, *Adopters of New Farm Ideas: Characteristics and Communication Behavior,* Michigan Agricultural Extension Service Bulletin (East Lansing: Michigan State University, October, 1961).

[3] This review is based largely upon *Diffusion of Innovations,* by Everett M. Rogers (New York: Free Press of Glencoe, 1962).

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might consider grounding his personal "strategy of change."

All Extension workers are change agents—professional persons who attempt to influence adoption decisions in a direction they feel is desirable. The original purpose of the Cooperative Extension Service, as stated in its Smith-Lever birthright, makes it plain that Extension workers are change agents and that diffusion of new ideas is a central concern. "In order to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same . . . agricultural extension work shall be carried on. . . ."

Background of Diffusion Research

The background of rural sociology research on the diffusion of innovations dates from the 1920's. At that time the Federal Extension Service instigated evaluations of the effectiveness of Extension's program. As a handy measure of the effectiveness of various Extension methods, M. C. Wilson[4] and his colleagues utilized the adoption of farm and homemaking practices. Wilson's research methods have had considerable influence on later studies. Perhaps it is significant that diffusion research was begun by Extension Service program evaluators. Now, findings from this research may need to be more closely integrated into Extension workers' strategies of change.

One of the first major studies by a rural sociologist was an investigation of the rejection of new disease-control sprays by Dutch celery growers in Michigan.[5] This research was sponsored by the Agricultural Experiment Station with a view toward improving the effectiveness of the Michigan Extension Service. In this study Hoffer found that the celery growers' value on frugality was an important barrier to their adoption of new sprays.

The classic study was an analysis by Ryan and Gross[6] of the diffusion and adoption of hybrid seed corn in Iowa. This study more than any other influenced the methods, findings, and interpretations of later students in rural sociology. This investigation is probably best noted for three of its findings: (1) The adoption of hybrid

[4] M. C. Wilson, *Influence of Bulletins, News Stories, and Circular Letters Upon Farm Practice Adoption with Particular Reference to Methods of Bulletin Distribution*. USDA Extension Circular 57 (Washington, D.C.: USDA, 1927).

[5] Charles R. Hoffer, *Acceptance of Approved Farming Practices Among Farmers of Dutch Descent*, Michigan Agricultural Experiment Station Special Bulletin 316 (East Lansing: Michigan State University, 1942).

[6] Bryce Ryan and Neal C. Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," *Rural Sociology*, VIII (March, 1943), 15-24.

seed corn by Iowa farmers closely approached a normal, bell-shaped curve; (2) hybrid seed salesmen were most important in calling the idea to the attention of farmers but the influence of neighbors was most important in convincing them to adopt; and (3) a considerable time lag, more than five years on the average, was required for Iowa farmers to try hybrid seed after they were once aware of the idea.

Since the mid-1950's there has been a great increase in the number of studies on the diffusion of new ideas. In fact, a survey of the literature[7] indicated over 300 different publications by 1962. Some of the findings from diffusion research are known to Extension agents through a popularized presentation by Professors George M. Beal and Joe M. Bohlen of Iowa State University.

In most recent years, the major trend in diffusion research has been to investigate the adoption of new ideas in traditional cultures. Excellent studies have been completed or are underway in the Netherlands, India, Pakistan, and Columbia.

Four main areas of findings that have significance for Extension workers will be analyzed: (1) the adoption process, (2) the rate of adoption of innovations, (3) adopter categories, and (4) opinion leadership. The remainder of this section of the article will deal with the adoption process. The other three areas will be covered in the next issue of the *Journal*.

Certain shortcomings in the research studies upon which this article is based should be mentioned.

1. These studies were greatly concentrated in the Midwest. There is no assurance that the generalizations will hold true for other areas of the United States, or for developing societies.
2. The respondents in most of these studies were farm operators; the diffusion of new homemaking innovations has received less research attention by rural sociologists.
3. Little is known from diffusion research about the role of youth programs in the adoption of innovations, although one justification for 4-H Club work might be that the parents' behavior is changed through the youth's project work.
4. The innovations studied have been technological in nature. It is unknown whether the same generalizations will hold in the case of new ideas like Rural Areas Development, the National Farmers Organization, or new child-raising practices.

[7] Rogers, *op. cit.*

Adoption Process

It is obvious to Extension workers that most individuals do not adopt a new idea immediately after becoming aware of its existence. The notion that there are *stages* in the adoption process is based upon psychological learning theory, social psychology, and empirical research by rural sociologists. Five stages in the adoption process most commonly accepted today are as follows:

1. Awareness stage—the individual is exposed to the innovation but lacks complete information about it.
2. Interest stage—the individual becomes interested in a new idea and seeks additional information about it.
3. Evaluation stage—the individual mentally applies the innovation to his present and anticipated future situation and then decides whether or not to try it.
4. Trial stage—the individual uses the innovation on a small scale in order to determine its utility in his own situation.
5. Adoption stage—the individual decides to continue full use of the innovation.

Information Sources

Researchers have found it useful to categorize the information sources utilized by farmers and homemakers as (1) personal, in which there is a face-to-face exchange between the communicator and the receiver, and (2) impersonal.

A generalization apparent from many research studies is that *impersonal information sources are most important at the awareness stage and personal sources are most important at the evaluation stage in the adoption process.* One obvious implication of this generalization is that Extension agents should utilize mass media methods to create awareness of new ideas, and seek to use meetings, personal contacts, and neighbor-to-neighbor influence to secure a favorable decision at the evaluation stage. It also implies that mass media probably can not entirely replace personal information channels.

It is useful to categorize information sources on the basis of whether they are cosmopolite or localite. *Cosmopolite* information sources about an innovation reach the individual from outside his community. An "over the back 40 fence" discussion with a neighbor is a localite source of information, while a visit with an agricultural scientist is a cosmopolite information source. It is important

to note in this example that both the discussion with the neighbor and the scientist are personal sources of information, although most cosmopolite sources are likely to be impersonal.

A generalization that can be drawn from many research studies is that *cosmopolite information sources are most important at the awareness stage, and localite information sources are most important at the evaluation stage.* This finding implies that there is a general process through time by which a new idea becomes a part of individuals' thinking. In the early stages of the adoption process the idea must enter from external sources. Gradually the innovation is planted within a community and becomes a part of the local culture. Then, local information sources become important in the evaluation stage.

Adoption Period

The adoption period is the length of time required for the individual to pass through the adoption process—from awareness to adoption. The first individuals to adopt innovations require a shorter adoption period than do relatively later adopters.

For example, an Iowa investigation[8] of the adoption of 2, 4-D weed spray indicated that innovators (the first to adopt a new idea in a community) adopted the practice the same year they became aware of its existence, while some laggards (the last to adopt) required ten years to pass through the adoption process. Perhaps it is important to remember that Extension workers can secure almost immediate adoption of innovations with certain individuals but a much longer period of deliberation is required for other portions of their audience.

Not only do individuals vary in the length of their adoption period, they vary as to the size of installments of a new idea (that is divisible) which they will try. *Earlier adopters try innovations on a smaller scale than later adopters.* Compared to laggards, innovators take more installments to go from trial to adoption. They also try a new idea with a smaller first installment. This generalization can be observed in the data presented in Table I.

It might seem inconsistent that early adopters try innovations on a smaller scale than later adopters, yet have shorter adoption periods. The reason for the apparent inconsistency is that earlier adopters move more rapidly to make a first trial of an innovation

[8] George M. Beal and Everett M. Rogers, *The Adoption of Two Farm Practices in a Central Iowa Community,* Iowa Agricultural and Home Economics Experiment Station Special Report 26 (Ames: Iowa State University, 1960).

Table 1. Earlier adopters try innovations on a smaller scale than later adopters*

Year of trial** of hybrid corn by 257 Iowa farmers	Per cent of corn acreage in hybrid during first year
Before 1936	13
1936-1937	19
1938	25
After 1938	42

* *Source:* A re-analysis of Ryan and Gross[9] data.
** It should be cautioned that "innovativeness" was measured in terms of time of *first trial* of hybrid seed, rather than time of *adoption.*

but are more hesitant as they move to 100 per cent use. Perhaps at the time the laggard adopts, he feels able to utilize, in part, the results of his neighbor's experience as his own psychological trial.

Overadoption

It should not be assumed that the adoption of all innovations by everyone is necessarily desirable. Overadoption can occur when a new idea is adopted under conditions that experts would consider unwise. One example of overadoption occurred in the Midwest in 1949 and 1950. Farmers were so enthusiastic about 2, 4-D weed spray that they applied it to many cornfields where resulting increase in yields did not justify its use. Observers estimate that millions of dollars were lost through overadoption of the weed spray before farmers learned to use it more wisely.

Overadoption often results from insufficient knowledge; overadopters may perceive the innovation as a panacea. This was the case in a home-canning campaign in a Georgia county in the early 1940's.[10] Some families, in a zeal for canning, filled jars with sweet potatoes, pumpkins, and turnips. These could have been stored without canning. Many were so proud of their canned goods the first year they would not open their jars. Change agents realized the need to teach the families how to use the food they had been taught to can.

In three years of this campaign, 500 low-income tenant families increased the number of quarts of home canned food from 12 to

[9] Ryan and Gross, *op. cit.*
[10] Arthur Raper and Pearl Wheeler Tappan, "Never Too Old to Learn New Tricks: The Canning Program in Greene County, Georgia," *Applied Anthropology,* II (February, 1943), 3-11.

499 per family. An unexpected consequence of the canning campaign was the prestige that came to be associated with canned food. Many families kept their jars on display in the parlor or guest room or on shelves around the kitchen.

These examples imply that the change agent's role may include discouraging overadoption as well as encouraging adoption. Responsibilities are not fulfilled when the adoption process is completed; assistance is needed in the proper use of the innovation after it is adopted.

Part II of this article will appear in the next issue of the *Journal*. It will deal with the rate of adoption, categories, and opinion leaders.