

A PROPOSAL FOR INCREASING THE
EFFICIENCY OF RESOURCE USE IN ONE PHASE
OF THE LAND GRANT COLLEGE
COMMUNICATION PROCESS

Thesis for the Degree of M. S.
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J. C. Evans

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A PROPOSAL FOR INCREASING THE EFFICIENCY OF RESOURCE USE IN
ONE PHASE OF THE LAND GRANT COLLEGE COMMUNICATION PROCESS

By

J. C. Evans

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All errors of any character, in typing, in omissions, in observations, or in conclusions, are the sole responsibility of the author.

ABSTRACT

This thesis is concerned basically with five areas: goals of the agricultural information staff, certain problems with printed messages, a conceptual communication model for land grant colleges, one solution to some of the problems, and the progress to date on the project.

The first chapter is devoted to outlining some of the major goals of the agricultural section of the Information Services Unit at Michigan State University. There is a growing amount of evidence that land grant college information specialists are becoming increasingly discontent with functioning primarily as processors of messages. They are beginning to search farther out over the horizon for answers to questions concerning (1) the impact of the messages disseminated; (2) how that impact can be increased; and (3) how the whole process can be made more efficient.

The problem covered in Chapter II can be simply stated as follows: County Extension field staff members of Michigan State University are figuratively and literally drowning in printed information messages, part of which are produced by researchers, teachers, and subject matter specialists on the staff of Michigan State University. The balance derives from numerous commercial and institutional sources.

The next chapter is devoted to the construction and examination of a conceptual framework or model of the communication process as it

operates in the climate of a land grant college with respect to agricultural information. The model contains four major segments: (1) the Source Unit where messages originate; (2) the Processing Unit where messages are processed into various types of packages for distribution to the general public; (3) the Distribution Unit which consists of both direct and indirect channels; and (4) the target of these messages typically called the audience. This chapter also includes an economically oriented model for determining efficiency of the information process. It appears to have much potential for developing new insights needed for the development of an educational information program with a high degree of accomplishment.

Chapter IV concerns the development of a solution to the problem outlined in Chapter II, and within the framework of the conceptual model. The solution was developed after a substantial series of conscious observations made by a communications advisory committee that consisted of Extension subject matter specialists, field agents, and administrators from agriculture, home economics, 4-H work, and the author of this paper who developed the prototype of the package and the system of organization.

Chapter V discusses briefly the progress made to date on the development of the project from an idea to a reality. Included also are some observations on the problems encountered in the process of trying to introduce this idea, and how some of those problems might have been avoided or minimized.

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CHAPTER I

THE GOALS OF THE INFORMATION STAFF

Students of administration and program development often consider it quite essential to elaborate a fairly explicit set of broad goals toward which the organization or unit for which they are responsible is moving. With the relatively rapid and recent growth of land grant college information programs in the magnitude of dollars expended, numbers of information packages being prepared, and by most any other unit of measurement, a number of Information Service Departments across the nation have developed a serious interest in creating a well-integrated, overall program for relaying information messages from the source to the ultimate consumer. Some are becoming discontent with functioning strictly or even largely as processors of messages for the subject matter staff people. One of the Iowa editors recently reported: "Our entire staff spent a day, got away from the campus, and took a squared away look at our total job, how well we were doing it, and what we would like to do."¹ No conclusions were revealed but the main topics under discussion were increased staff training, much increased communications research, and expansion of the visual aids program.

¹ Candace Hurley, "We Took a Look at Our Jobs," ACE, Vol. 39, No. 1, (February, 1957), p. 5.

The current 12-man staff of the agricultural section of the Information Services staff at Michigan State University has been engaged for several months in periodic meetings for essentially the same purpose.

This staff, however, explicitly stated a series of guiding assumptions at the outset:

1. We are thinking through our problems and opportunities in a general climate expressed by the following question: "If you were organizing an educational information program for a new college of agriculture with an annual 10-million dollar operating budget, what would you propose?"
2. Current persons, personalities, programs and/or policies in this institution are unimportant in this process, and we must not permit them to interfere with imaginative thinking, sound planning, specific decision, or effective action.
3. Any educational information program that is developed must be simple and flexible, as free as possible from administrative red tape, but comprehensive in scope.

Before setting the overall goals for the entire program, the staff constructed a set of penetrating questions to be used by each individual staff member as a device for serious introspection:

1. What are you doing, and why? (Inventory and evaluation)
2. Which of your current activities are the most productive, and why? (Evaluation)
3. What are the key problems in accomplishing your goals, and why? (Identification and cause of barriers)

4. What should you be doing that you are not? Why not and/or why should you be? (Projecting, evaluating, planning)
5. What additional resources do you need (personnel, money, equipment, administrative support) to make the transition from what you are doing to what you think you should be doing? (Planning and acting)
6. How can you contribute most to the development of a program of strong leadership for the whole information program?

Out of the hours of discussion on these pertinent questions came the following tentative set of broad goals of the agricultural information staff at Michigan State University:

1. To provide strong and continuing leadership in (a) developing and (b) maintaining a highly efficient and effective educational information program.
2. To work with staffs of the various colleges and counties:
 - (a) to get useful information (accurate, understandable, systematically organized messages that are needed); (b) in saleable packages (television film, kinescope, or live show, radio script, news and feature copy, publications); (c) through appropriate channels (channels to which people have easy access); (d) to a selected audience (those who are interested in and want and need the message); (e) at the right time (when they need and want it).
3. To provide effective communications training for students, and for new and present staff members.

4. To evaluate the efficiency and effectiveness of the communication effort of the staff, to combine this information with basic communication research information, and to modify the educational information program accordingly.

In the opinion of the author, the first goal is a highly generalized one that will have to be earned by successful accomplishment of the other three goals, particularly No's 2 and 4, each of which certainly implicitly, if not explicitly, suggests a determination to attempt to increase the efficiency of the whole process. Therefore, it might be worth-while to digress temporarily and examine somewhat cursorily some of the inputs and outputs of this process.

In the opinion of the author, some of the more important inputs are: man hours of time used by authors (for preparing the copy which might include some part of the research effort), reviewers, administrators, editors, and secretaries; processing costs such as art and layout, type setting, engravings or negatives for offset duplication, paper, second colors, binding, presswork; and costs of distribution to the recipient--the total costs of promoting the message via newspapers, radio, television and circular letters.

What is the desirable output of these inputs? Identifying, defining, classifying, and measuring the output appears to be difficult enough to have inspired few any place in the nation to attempt to do so. This author is not certain that he can, but he is willing to try. Output appears to have quite different meanings to different people. For example, authors sometimes define output as the number of messages they can get published.

Publications editors occasionally use the number of publications they process as output. With publications varying so much in numbers of pages and size of format, a more meaningful measure might be the number of words handled per year. Perhaps an even more precise measurement would be the thousands of square inches of page space processed. Even this does not really reveal much for there is a tremendous variation in the number of hours of time needed per page between one filled with straight narrative copy, one filled completely with tabular copy, and one involving varying degrees of art and color work. Also, there is a tremendous variation in the amount of editorial work and hence hours of effort needed on manuscripts depending in large part on the ability of the author. The ability of the author depends in large part on his experience, training in writing, and natural ability. Actually there doesn't appear to be a very meaningful measuring stick for editorial efforts, particularly if the educational value is overlooked or ignored.

Authors sometimes identify output as the number of different publications released under their name in some specified time period. This may not be too useful a measure.

At this point the author would offer several notions that should be considered when attempting to measure output in a meaningful way. In the development of an efficiency concept for an information effort, not only for publications but for all information work, the following ideas should not be overlooked: (1) the relative and absolute number of different, important, clearly and simply expressed messages produced per year; (2) the relative and absolute number of people that were made

aware of the existence and the importance of these messages; (3) the absolute and relative proportion of the audience that received timely, understandable, useful, important messages which resulted in some kind of behavioral change (change in thinking, feeling, action, which includes such things as attitude and skills). In general the author suggests that the last item is a fairly useful definition of output for an information program. The concept of efficiency with respect to specific types of printed messages is discussed at the end of Chapter III.

Finally, inasmuch as the principal problem to be discussed in this paper will concern a specific segment in the area of printed information, most of the analysis of the later section on the conceptual framework will focus around accomplishing goals 2 and 4, though goals 1 and 3 are recognized as overlapping and important. These goals are so worded that they appear to be applicable either to the total information program or to most any specialized area of it.

Before launching a discussion of this analysis, however, it might be well to examine the specific problem situation as it was perceived and documented by some or all members of the communications advisory committee mentioned in the Abstract.

CHAPTER II

THE PROBLEM OF THE FIELD STAFF

The members of the agricultural field agent staff of the Cooperative Extension Service of Michigan State University are besieged daily with tremendous volumes of printed material. Printed material is defined as any piece of paper with symbols imprinted on it regardless of the method of duplication. It emanates from many sources other than the 20 or more departments in at least four colleges at Michigan State University (Agriculture, Veterinary Medicine, Science and Arts, and Business and Public Service). For example, county agricultural agents get printed material from national, state, and local pressure groups, various groups such as feed, fertilizer, machinery, and agricultural chemical manufacturers and dealers; special interest associations such as a national feed manufacturer's association and hundreds more similar ones. The Michigan Agricultural Conference has more than 80 organizations in the state which fit into this special interest category such as the Michigan Onion Grower's Association, The Michigan Celery Promotion Association, The Michigan Swine Breeder's Association, and others, many of whom send the county agricultural Extension staff material from time to time.

Still another source of volume which adds to the general confusion is the questionnaire kind of communication. One agent reported to the author that currently he gets an average of one questionnaire per day

from commercial people, staff members, administrators, graduate students working on theses, researchers, and others. And so the list grows almost to infinity, all of it creating competition for the county agricultural agent's attention with respect to subject matter material from the land grant college in the state.

At best, this kind of competition makes it highly desirable, if not absolutely necessary, for the college to provide the agent with a carefully planned, well integrated, purposefully coordinated, overall printed publications program that will permit the agent to spend a minimum of time examining the messages, filing them for future reference and/or sending them along to some audience. Instead, what is found?

In the 1956-57 fiscal year, the Michigan Agricultural Experiment Station printed approximately 120 publications in the six series with which it is immediately concerned; the Cooperative Extension Service printed approximately 180 in an entirely different set of series for a sum total of more than 300 publications, printed by commercial printers for one year. That is more than one per working day. And this is only a part (and no person in the institution knows what part) of the total amount of printed material going out. For example, in a recent mail survey, county agents listed some 52 different news letters, tip sheets, service letters, and other communications that they could "recall" having received in the "last month" from some staff member at Michigan State.²

² Survey conducted by George H. Axinn, administrative assistant to the Director of the Michigan State University Cooperative Extension Service, October, 1955.

Most of them confined these lists to material from agricultural people.
(See Appendix A, Table 1)

Many of the publications on this long list combined news material with how-, what-, and when-to-do-it types of subject matter material, research progress reports, outlook material, and others. Apparently, very little thought was given to continuity, regularity of release, organization of material, type of material, or quality of duplication. If it can be assumed that there is some merit in these particular characteristics, then some of the good subject matter reference material being processed and mailed out to county offices is being destroyed along with the news material.

And this is only the beginning with subject matter material being mimeographed in reams and mailed out. Even a cursory examination of subject matter now being duplicated by many of the departments involved with agricultural material reveals clearly that some of the best material is in mimeographed form. It is best in the sense that much of it is concise. Some of it is good in the sense of being needed in the field, but very poor in the sense of effective idea presentation, primarily because no experienced writer has helped with it.

As an interesting example, the combined total of publications of the three departments in the Animal Industries--Animal Husbandry, Poultry, and Dairy--is less than 50 printed publications itemized in the list of available publications published quarterly at Michigan State University. Fifty out of more than 500 in the list is a rather small

ratio, particularly in view of the fact that nearly two-thirds of the gross cash receipts received by Michigan farmers in 1955 came from these three areas. Strangely enough, or perhaps not so strangely, these three departments have a wealth of very good information in mimeographed form. Obviously, departments such as Agricultural Economics, Agricultural Engineering, Entomology, and others are also releasing material related to the animal world, but it is difficult to find it. One cannot always be safe in assuming, however, that sheer numbers of commercially printed publications are very valid criterion of the service being given any particular area of subject matter.

Hyman and Sheatsley³ write that "those responsible for information campaigns and programs cannot rely simply on 'increasing the flow' to spread their information effectively. The following statements create real problems and/or opportunities for those charged with the task of informing the public:

1. There exists a hard core of chronic 'know-nothing's.
2. Interested people acquire the most information.
3. People seek information congenial to prior attitudes.
4. People interpret identical information messages differently.

But printing, if nothing more, accomplishes at least three purposes:

1. Authors generally do a more careful job of preparing the message.

³ Herbert H. Hyman and Paul B. Sheatsley, "Some Reasons Why Information Campaigns Fail," in Public Opinion and Propaganda, edited by Katz, Cartwright, Eldersveld, and Lee, (New York: The Dryden Press, 1954), pp. 523-530.

2. The messages get indexed and placed in an organized series.
3. The copy is submitted to an experienced editor who presumably can make a contribution to the clarity, organization, and presentation of the message.

According to the observations of the aforementioned advisory committee, it is precisely these mimeographs and some of the material duplicated by the offset process that are causing considerable consternation among field agents, not because the material isn't good and potentially useful, but because of the excessive heterogeneity of: subjects covered, degrees and detail of coverage, formats, colors, styles of writing, types of presentations, timeliness, types of duplication, individual or departmental recognition and identification schemes, and a host of other lesser characteristics that add to the general confusion. In addition to this, there is also an unknown quantity of mimeographed letters being prepared by individual specialists and mailed to the agents--letters containing minute bits of specific subject matter that may be particularly timely and highly useful for future reference.

Then add to all this the numerous communications from research people in the Agricultural Experiment Station in the form of progress research reports, special material for a variety of purposes, requests for help with research survey projects, and many others. Very little of that material coming from any segment of Michigan State University other than that being commercially printed is identifiable through file numbers, any comprehensive indexing or numbering system, or in any

other fashion other than by name of the author. Occasionally, a department will number some of its mimeographed publications for its own use, but only one or two of the 18 or 20 departments are doing that. Frequently the individual mimeographed material does not even contain a name or departmental identification, particularly if the material is going to be mailed with some type of covering letter. The letter usually soon gets separated from the subject matter material and what little identification one might have had is quickly lost. Usually the material is lost too.

The Consequences of Volume

After numerous discussions with county agricultural agents in three states over a period of several years, the author concludes that county agricultural agents of many states are confronted by similar problems with respect to information messages coming from the staff members at the land grant college. Each in his own way seems to say about this: "I am getting so much information from so many different people at the college that I can't possibly keep up with it. I set most of it aside hoping that I will find an opportunity to examine it. But being honest about it, I frequently do not find time to do even that. After the pile gets about so high, or my mail basket gets full, I finally toss it in the wastebasket. I know that I'm throwing away much good information, but it is usually easier to phone or write the specialist when I have a problem than it is to sort out all the mail and keep what I need. It is shortsighted, but I don't have a very good filing system,

so I'm never sure just where to put it. After I put it someplace, I often can't find it. At first I tried to tear some of these mimeographed series apart and keep only those sheets that were of concern in my county. I tried to put them in a folder or a notebook so I could have them with me in the field, but I found many of them poorly identified or not identified at all. It didn't take long for my notebook to get fairly well filled up. And then I couldn't find the material in the book because the job of indexing it some way just never got done. So, I finally tired of that and bought information from a commercial organization that was performing the service I needed so badly. It is not ideal, but it is the only organized source of information that I can get my hands on. And I often find material in there from our own and many other land grant colleges. I would still, however, much prefer the information either produced at our college, or at least approved by them. But it is just not available."

This last solution reported by the agent is, in one sense, highly ridiculous, and, in another, extremely sensible. This and other commercial sources have simply asked to be put on the mailing lists of the land grant colleges in order to get the basic material which they promptly rework and publish for sale to the same people who had paid for: (1) the research work to be done in the first place; (2) the publications to be printed; and (3) the Extension educational work to be done. In effect, the public was and is donating its own hat to the public auction and then buying it back through a broker who gets his percentage from the charitable donation.

There are several relevant examples drawn from Michigan sources that are easily documented which reveal a few more of the obvious consequences of this unrestricted production of material. One rather interesting example of unknown significance and prevalence, but one which is suspected of being rather common, is illustrated by one specialist's experience in an agent's office. By reputation, this agent is one of the top agents in the state. The county in which he is located was in the top 20 with respect to gross value of agricultural products sold according to the 1954 census of agriculture. This particular specialist had been chairman of a commodity committee that had prepared a series of mimeographed letters, posters, slides, news articles, and other packages of information as a part of a state-wide Extension educational program for the year. The mimeographed subject matter material was distributed through local commodity organizations and firms that had places of business located strategically throughout the state--places which farmers frequented rather often. The Extension agents of the state were sent single copies of this material and fully informed of the distribution pattern, who was doing it, and why. The only specific job the agents were asked to do was to place the posters in appropriate places in local business establishments such as banks, stores, and other places of business, where the public would see them. According to the commodity people over the state, "this material was some of the best to come out of Michigan State University on this particular subject in many, many years."

Out of curiosity, the specialist, when in this particular county office on other business, casually asked the office secretary if he might see what they had on that particular subject. Much to his surprise and chagrin, the secretary, after a diligent search of all possible files, located one out of the thirteen different letters that had been produced and distributed. This gave the specialist reason to ask to see what they had on the latest technological developments in other specialized areas of his work. Almost to a subject, he found the latest material on file was from five to twenty years old. Mimeographs had been released with the last year on every subject about which he asked. After this disillusioning experience, he, quite by accident, noticed the posters mentioned earlier neatly stacked against the wall behind a file cabinet. None of them had been placed about the community as had been suggested and expected by the committee.

If this experience could be duplicated in substantial degree in more than a very few counties, one might logically ask at least two or three related questions. Are Extension specialists operating under an illusion when they rely on the field staff to handle the bulk of the distribution of printed messages? Where does the weakness of the system originate--in the county office, or at the state level? Whose job is it to correct such an obvious weak link in the chain? These and many other pertinent questions will be discussed in the next sections.

Another serious consequence of this somewhat loosely organized or unorganized system of communicating ideas via the printed word is the

rather frequently observed practice of specialists or researchers preparing material for some special purpose and not making much other use of it. For example, a group of Michigan State agricultural researchers in October of 1956 prepared a 12-page mimeographed publication on the costs and returns that could be expected from using various combinations of production practices and fertilizer application levels for a number of crops, and for several different geographic sections of the state. This was done in response to a specific request from a large farm supply distributor for use in its fertilizer meetings throughout the state. It was six months before anyone in the Information Services Office accidentally stumbled across this excellent paper. The first question asked by the information specialist of one of the co-authors was this: Has this been sent to the county agricultural agents? The answer: "No, I don't think that it has, but I guess it should have been. I have gotten letters from two or three agents asking for copies. They said they had been told by several farmers that the farm supply distributor had said that Michigan State University had prepared it and that they could get extra copies from their county agent."

One could go through innumerable examples, but the author hesitates to belabor the point. One more example of efficiency is in order, however, to illustrate another point. Some months prior to this writing, a district marketing agent came to the campus to get the latest information and advice on several different types of specialized subjects related to his work, one of which was some specific data on various phases

of drying either shelled or ear corn. He went to the Farm Crops Department first. After being shuttled around between at least three offices, he was directed to the Agricultural Engineering Department where he found essentially the same situation. His third stop was the Agricultural Economics Department with similar results. He did succeed in getting part of what he came after, but not some material he wanted most. Finally he gave up; he didn't know of any place else to turn. About three months later he noticed some copy prepared for the radio stations in the state that gave him the lead that eventually got him to the right person, (the person with the best answer). And where did it come from? Strange as it might seem, it originated in the Soil Science Department.

As Extension diversifies its program and employs new specialists who turn out copy in a new subject matter area, each agent gets each new specialist's product added to his daily collection. It is just one more area about which each agent is supposed to know something. Adding new agents in the field does not relieve the veterans, except as "specialist agents" are added.

Michigan already ranks third in the nation among land grant colleges in absolute numbers of agricultural subject matter specialists, and it ranks very high in the ratio of specialists to county agricultural agents. Only two states of any size, Indiana and Ohio, are equal to Michigan in this ratio. Michigan has added approximately 20 specialists since 1951, most of them young, aggressive, and prolific. This means essentially that each agent is now getting material from 20 more

specialists than he was only 6 years ago. In short, it would appear that the situation will likely get worse rather than better for the field agent with respect to volume and hence confusion with printed matter.

The hypothetical but rather representative statement of agents with whom the author has discussed this problem that was quoted early in this section, plus the Michigan-based examples, seems to suggest that the typical county agricultural agent wants several things:

1. Locally produced or approved subject matter information that is clearly and concisely written;
2. A workable system for filing information so that it is available at a moment's notice;
3. A departmentally and subject matter integrated, simple to use, uniform system of index labeling;
4. A reduction in the wide range in the types of format, variety of packages, heterogeneity of style, and comprehensiveness of coverage of subject matter or equal importance;
5. Any other feature incorporated into such a system that would improve his ability to service his customers.

The author took it upon himself to design a package and a system that would meet as many of the agent's needs as were within his (the author's) imaginative ability and the ability of those whom he could interest in the project. The author is hopeful that the experience

gained on this project may serve as a starting point for creating a serious interest in a carefully planned, objective program of evaluation for all segments of the information program.

CHAPTER III

A CONCEPTUAL FRAMEWORK OF THE LAND GRANT COLLEGE COMMUNICATION PROCESS

As a means of helping the reader grasp the real potential of the proposed solution, it might be profitable to have at least two kinds of background information:

1. a brief resume of the definitions of the term "communications" offered by researchers in the various disciplines interested in communications; and
2. a conceptual framework of the functional structure, and the responsibilities of and the interaction between the various segments of the Cooperative Extension Service with respect to conveying useful ideas from the source of the ultimate consumer.

Communication of Information

One of the essential functions of the agricultural staff members of the Cooperative Extension Service appears to be that of translating and transmitting to some audience the ideas or information that flow from the tremendous reservoirs of agricultural research going on in land grant college Experiment Stations in these United States. These messages must be in a form which the audience can understand and use. This is frequently labeled communications. Although most all Extension workers

are deeply involved in communications work, it is quite evident to the careful observer that they have about as many (though often less sharply defined) concepts of what the term communication means as do people conducting research in the area of communications. The author considers it worth-while to report just a very few to illustrate the variety in the area of communications research about which Westley and Maclean⁴ make the following statement: "Communications research and theory have blossomed from a variety of disciplinary sources in recent years. People probing the communications area have here focused on 'theoretical issues,' and there on 'practical concerns.' Thus, one finds today a jungle of unrelated concepts and systems of concepts on the one hand, and a mass of undigested, often sterile empirical data on the other."

This situation, of course, doesn't make it any easier for the Extension "practitioner" to clarify a concept for himself. Nevertheless it might be worth-while to examine some of the "expert's" expressions on the definition and meaning of communications.

Weaver⁵ has the following to say: "The word communication includes all of the procedures by which one mind may affect another. This involves not only written and oral speech, but also music, the pictorial arts,

⁴ Bruce H. Westley and Malcolm S. Maclean Jr., "A Conceptual Model For Communications Research," Journalism Quarterly, Vol. 34, No. 1, (Iowa City, Iowa: Association for Education in Journalism, Winter, 1957), p. 31.

⁵ Claude E. Shannon and Warren Weaver, The Mathematical Theory of Communication, (Urbana, Ill.: The University of Illinois Press, 1949), pp. 95-96.

the theatre, the ballet, and in fact, all human behavior....there seem to be problems in communications at three levels:

1. How accurately can the symbols of communication be transmitted?
(The technical problem)
2. How precisely do the transmitted symbols convey the desired meaning? (The semantic problem)
3. How effectively does received meaning affect conduct in the desired way? (The effectiveness problem)"

"Communication means the mechanism through which human relations exist and develop--all the symbols of the minds, together with the means of conveying them through space and preserving them in time. It includes the expression of the face, attitude and gestures, the tones of the voice, words, writing, printing, railways, telegraphs, telephones, and whatever else may be the latest achievement in the conquest of space and time."⁶

Hovland⁷ says: "I should like to define communication as the process by which an individual (the communicator) transmits stimuli (usually verbal symbols) to modify the behavior of other individuals (communicatee)." Some suggest that behavioral changes are not the only or even the most

⁶ Charles H. Colley, "The Significance of Communication," in the Reader in Public Opinion and Communication, edited by Bernard Berelson and Morris Janowitz, (Glencoe, Ill.: The Free Press, 1953), p. 145.

⁷ Carl I. Hovland, "Social Communication," in the Reader in Public Opinion and Communication, edited by Bernard Berelson and Morris Janowitz, (Glencoe, Ill.: The Free Press, 1953), p. 182.

important objectives of communications, but Weaver⁸ states: "It may seem at first glance undesirably narrow to imply that the purpose of all communication is to influence the conduct of the receiver. But, with any reasonably broad definition of conduct, it is clear that communication either affects conduct or is without any discernible and probable effect at all."

A convenient way to describe an act of communication is to answer the following question proposed by Lasswell:⁹ "Who says what in which channel to whom with what effect? The scientific study of the process of communication tends to concentrate upon one or another of these questions. Scholars who study the 'who' (the communicator) look into the factors that initiate and guide the act of communication. This subdivision of the field of communication research is called control analysis. Specialist who focus upon the 'says what' engage in content analysis. Those who look primarily at the radio, press, film and other channels of communication are doing media analysis. When the principal concern is with the persons reached by the media we speak of audience analysis. If the question is the impact upon the audience, the problem is effect analysis."

⁸ Shannon and Weaver, op. cit., p. 97.

⁹ Harold D. Lasswell, "The Structure and Function of Communication in Society," in The Communication of Ideas, edited by Lyman Bryson, (New York: Harper and Brothers, 1948), p. 37.

¹⁰ Schramm defines communications as follows: "Communication comes from the Latin word communis, common. When we communicate we are trying to establish a 'commonness' with someone. We are trying to share at least three elements--the source, the message, and the destination. A source may be an individual (speaking, writing, drawing, gesturing) or a communication organization (like a newspaper, publishing house, television station or motion picture studio). The message may be in the form of ink on paper, sound waves in the air, impulses in an electric current, a wave of the hand, a flag in the air, or any other signal capable of being interpreted meaningfully. The destination may be an individual listening, watching, or reading; or a member of a group, such as a discussion group, a lecture audience, a football crowd, a mob; or an individual member of the particular group we call the mass audience, such as the reader of a newspaper or a viewer of television."

"Communication occurs whenever a sender acts upon a receiver by means of some vehicle, so that some state or series of states of the sender--the message--is induced as a state or series of states of the receiver."¹¹

The heterogeneity of definitions and the varying degrees of clarity of meaning may be the product of numerous disciplines getting vitally

¹⁰ Wilbur Schramm, The Process and Effects of Mass Communication, (Urbana, Ill.: The University of Illinois Press, 1954), pp. 3-8.

¹¹ Philip H. Phenix, "A Philosophic View of Communication," in Communication and the Communication Arts, edited by Francis Shoemaker, reprinted from the Teachers College Record, Vol. 57, No. 2, (.....: Teachers College, Columbia University, 1955), p. 80.

interested in the subject of communications: sociology, social psychology, psychology, philosophy, journalism, political science, and others. This author rather prefers the definition and discussion offered by Schramm because of its simplicity and clarity. There is, however, at least one very essential element missing in his process, and that is the distribution mechanism used to transport the message from the source to the destination. Considerably more will be said about this later in the paper.

If the author were interested in examining the various ramifications of the communications process more closely, he would prefer to conceptualize this subject into the framework suggested by Lasswell. It appears to be much broader in scope and potentially more penetrating in analysis.

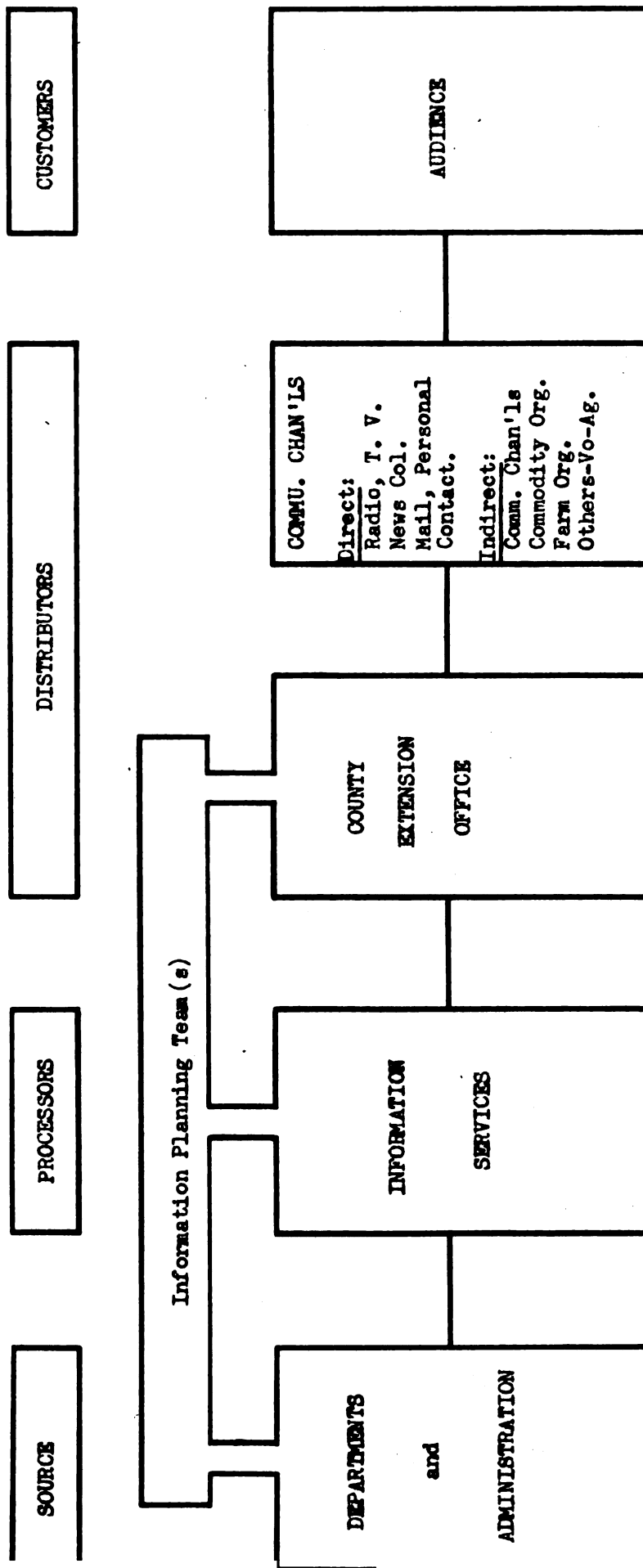
Functional Structure

The kind of background information that may be needed by most readers is that of a conceptual framework or model of the functional structure; the ways it operates and/or fails to operate with respect to duplicated material; and the transmission and translation of ideas to the ultimate consumer.

Figure 1 is designed to communicate the author's concept of the essential elements in the typical land grant college communication process, and the way it functions today in at least one of them.

There are at least three important broad categories of services being provided by various people in the land grant college system for

Figure 1:--ESSENTIAL ELEMENTS IN THE LAND GRANT COLLEGE COMMUNICATION PROCESS



communicating ideas via the printed word. Occasionally certain individuals in two or three of these categories perform more than one of the functions.

The first category is labeled THE SOURCE. This means the source of the ideas or message content of all information packages emanating from the state institution and going to audiences. For purposes of simplicity, the author has limited the groups listed under source to the two important ones--the subject matter departments of which there are 20 or more concerned with agriculture and related subjects at Michigan State University, and the administrative units of the state office. From observation, it appears that by far the large majority of packages in terms of sheer numbers originate in the subject matter departments.

The second category is labeled THE PROCESSORS. To some degree now, and to a greatly increasing degree in the future, this term is and should be a misnomer, in the opinion of the author. The Information Service Unit does process most all of the commercially duplicated messages now going to county offices or to commercial communication channels. However, as hinted at in the problem section, many messages are circumventing the processing unit. Many authors at this institution are successfully failing to take advantage of the professional services offered by this unit.

The third major category is labeled THE DISTRIBUTORS. First in the model is the county Extension office on whom Extension specialists

have traditionally and perhaps sometime blindly (see examples in problem section) relied to handle the distribution of their messages to the public. This also will be explored more fully in the next section of this paper. The major group in this distributor category is collectively called the communication channel of which there are at least two kinds--direct and indirect.

Direct channels are those which any member of the staff uses to go directly to his audience without using any middlemen to translate and/or transmit the message. Typical examples are the public mail, public meetings where handouts are offered, office pick-ups of printed messages, or any of the commercial channels such as radio, television, personal news columns in papers, special house organ articles and other which the agent uses personally.

Indirect channels are those which are controlled and/or operated by organizations and agencies outside the message content jurisdiction of Michigan State University. This includes all commercial professional communication channels, various types of commodity organizations such as the Michigan Milk Producers Association, general farm organizations, vocational agriculture teachers, and various other kinds of groups that might be happy to lend a helping hand.

The fourth and last major category, THE CUSTOMER OR THE AUDIENCE cannot properly be called a service, but it does appear to be an important element in the process. It is also one that seldom is accorded a very high degree of attention by either the source unit or the processors. In this audience are the folks with whom the source

presumably is attempting to develop "meaningful message contact."

Obviously, in an organization as large as Michigan State University, it is difficult to avoid some duplication and/or overlapping of services performed by these four groups. But this, in the broadest perspective, is the system used by land grant colleges for communicating educational ideas to any public audience with printed material.

The only remaining element in Figure 1 that has not been discussed in some degree is the area labeled "The Information Planning Team(s)." In laying out the broad objectives in an annual plan of work, this group might well consist of at least one member of Information Services Unit, a representative of the county staff group, and one or more persons representing administration and subject matter departments. One of the objectives of this kind of team certainly would be to integrate the information, administrative, subject matter, and county educational programs as much as possible.

From the standpoint of each individual printed message, this team might consist of the particular editor involved, the author of the message, and probably the assigned representative of the administrative team. Much of the activity of this kind of team would be informal but purposeful.

The Pipeline Routes Through Which Messages Flow

Before proceeding to a fairly detailed analysis of what needs to be known by the information specialist and/or the planning team(s) about each of these groups in order to develop an efficient system, the

author finds it helpful to take an intermediate step. It is that of examining fairly thoroughly the channels or pipelines (Figure 2) through which information messages pass from source to audience for at least two reasons:

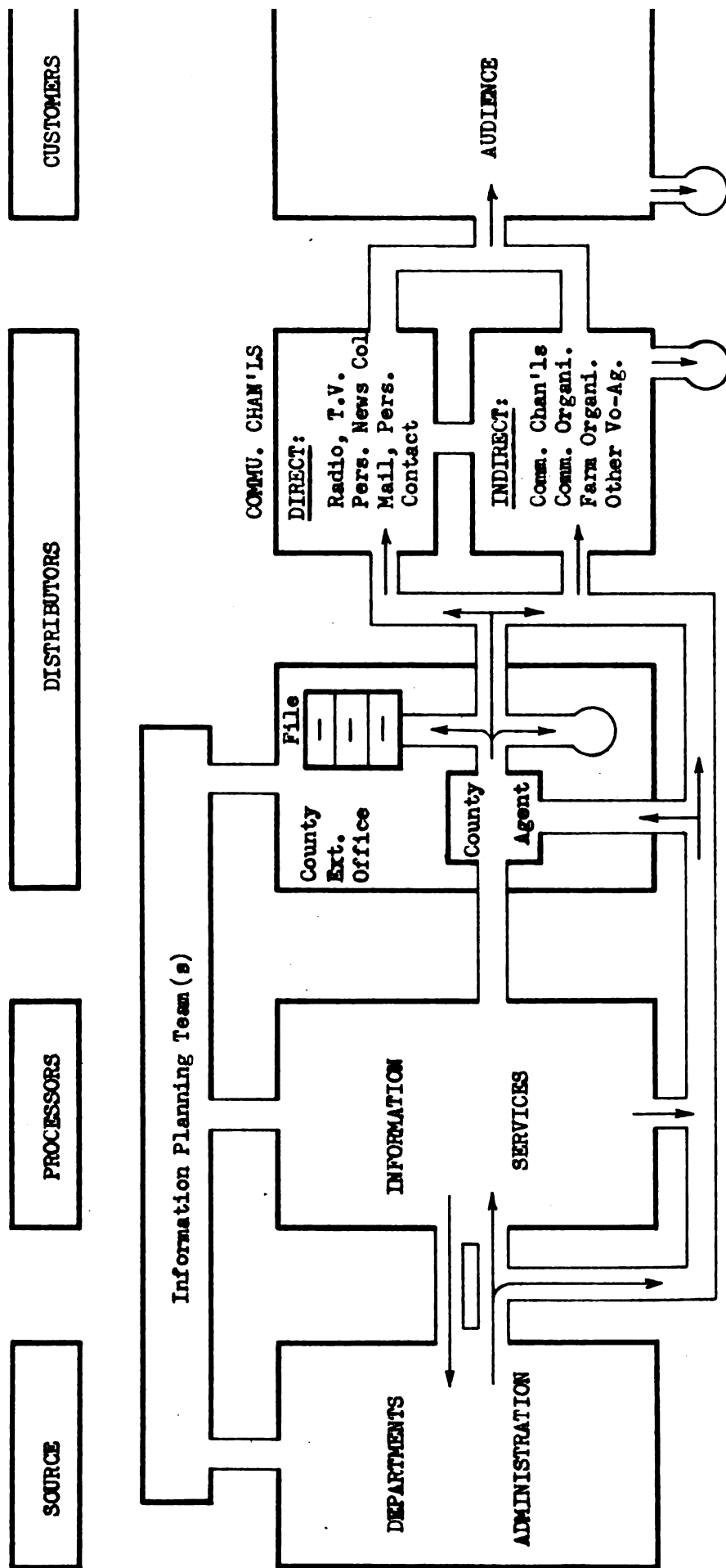
1. to conceptualize the pattern of flow of various types of messages;
2. to point out what it is about the system that permits the primary problem elaborated earlier in this paper to develop.

The essential difference between Figures 1 and 2 is the addition of pipelines between the major elements through which messages flow from source to audience. These pipelines are also convenient devices to use in tracing for the reader the various routes and possible destinations which messages take in going from source to audience. The small circular terminal points in at least one of the channels in each of the last three units represents a wastebasket, the ultimate destination of an unknown number of printed messages from Michigan State University.

A practical procedure will be to follow a commercially printed Extension publication through the pipeline, and enumerate the possible roadblocks along the line between the author and the reader.

First, for one or more of several possible reasons, a specialist or researcher prepares a manuscript. It is sent through administration to be examined for policy such as a check to learn if there is any material of a publicly controversial nature, or material that should be examined by some other specialist in a closely related field. Once the

Figure 2:---ESSENTIAL ELEMENTS PLUS TYPICAL PIPELINES TO CUSTOMERS



manuscript successfully negotiates this hurdle (and, according to many specialists and researchers, it is perceived as a highly unnecessary hurdle), it is then sent to the Information Services Unit for processing. This service includes copy editing, format selection, internal layout, type selection, and a substantial list of related services, a process which incidentally also has been considered as another irritating and annoying hurdle. The author suspects that one rather common evidence of the existence of this hurdle image is the large volume of institutionally duplicated material not now going through this unit but around it and through the channels at the bottom of Figure 2. However, once the manuscript has been transformed into an attractive publication and is delivered to the bulletin office, a single copy is then sent on its way to the county offices so that individual agent can order what he needs.

The county Extension agent can do at least three things with it:

1. He can order a bulk quantity to supply those folks in his county who would be interested in the particular subject.
2. He can file it for future reference.
3. He can direct it to the wastebasket.

Assuming that the agent follows procedure No. 1, he then has many ways to distribute this particular package. He can use any one of the several direct channels and contact the audience without the help of any message content middleman. Or he can call on some of the indirect distribution channels listed earlier to help get the package to the right

audience at the right time. And of course, he can use any combination of the direct and indirect channels. If he uses the indirect route only, however, he may run some additional risk of the message being directed into their wastebasket, hence reducing the potential effectiveness.

Of course if the county Extension agent chooses either No. 2 or No. 3, and, at present, very few in the institution know or are attempting to find out which method the agent chooses, an effective roadblock has been constructed. The existence of any roadblock certainly interferes with the efficiency of the process.

So much for the process of taking a commercially printed publication from inception at the SOURCE level, through the PROCESSING Unit, into and through the DISTRIBUTORS, and finally to the AUDIENCE. It is surprising and a source of no little anxiety to the author to discover the large number of Extension employees in both the SOURCE and PROCESSING groups who heave a sigh of welcome relief when the manuscript passes beyond their particular service. They think that the job is done. The author wishes to state that regardless of how discriminating the subject selection, how well the writing was done by the author, how perfect the job of editing and glamourizing of the package, little of it will bear fruit unless the publication is successfully transported into the hands of persons in the audience who are interested and can use it. From intimate observations in at least three states--Indiana, Maryland, and Michigan, the author suspects that few commercially printed

institutional publications attain a very high degree of efficiency; for those Michigan State publications that do, there is no one now in the institution who has enough tangible evidence to demonstrate it convincingly. Most of the claims for success appear to be impressionistic, intuitive, or optimistic imagination.

What about the institutionally duplicated manuscript that does not have to pass the acid test of administrative examination; one that does not have to be placed in the hands of an editor who may suggest making changes in how an idea is expressed in an attempt to improve the copy and make it a more palatable message; one that does not have to spend from two weeks to three months in the printing process. What route does this kind of manuscript follow?

The package containing such a message is usually duplicated within the specific department on an office mimeograph machine in quantities varying from 50 to 500 or more. Except for the rare occasions when an information specialist accidentally stumbles across such papers, many of which contain excellent material, the staff members in the Information Services Unit rarely know that they exist, and certainly have no opportunity to increase the effectiveness of them by performing some of their services. Information specialists will likely persist in and increase their efforts to devise ways to learn about and help with more of these messages.

Once this kind of package is duplicated, the specialist becomes the chief distribution dispatcher. He may use it only for his own

special audiences while his colleagues are unaware that it is available. He may send it to a select group of county agents or other special audiences. He may use it only for answering his mail concerning the problem. For sake of making a point, assume that he sends a copy to the county Extension agent. The agent once again can do at least one of three things with it: (1) file it if he can find a logical place to put it; (this was discussed in detail earlier); (2) he may rework it for his local radio, television, newspaper or circular letter; (3) what frequently happens, according to some of our best agents and for reasons already discussed, it finds its way into the wastebasket. Chances are good that the mileage rate of much mimeographed material is very low because of the high ratio of wastebasket destinations by agents' own admission, the unavailability of quantities of it for further distribution, the frequently scant knowledge on the part of many Extension personnel that it even exists, and numerous other reasons.

In summary, one can safely say that there is a tremendous volume of excellent material now being prepared and duplicated institutionally which probably has a very low efficiency ratio. In the author's opinion, this situation could be corrected with some imagination, courage, and leadership, and with little serious loss of individuality or freedom on the part of specialists. At any rate, many seem perfectly content to continue operating, figuratively speaking at least, at half mast efficiency wise, but individually with their printed information program. If this is true, there are few excuses that would be plausible to business-like farmer, legislators, or leaders.

All other messages, regardless of the particular package into which they are placed--television kinescope, film, radio script, news and feature copy, and visual aids follow the same channels as those traced out for the commercially printed and institutionally duplicated messages. However, most of these packages are processed through the Information Services Unit, but seldom through the Administrative Unit. Measured in terms of administrative scrutiny, there seems to be something more official about a message in a commercially printed publication than a message packaged in any other form. Perhaps it is because of its permanence. It would be rather interesting to develop a list of plausible reasons for this procedure.

Now that the major categories and the main pipelines through which printed messages travel have been examined, and problems and possible causes have been reiterated, perhaps it would be helpful to elaborate on some of the facts that anyone who faces up to this situation with the sincere intention of correcting it needs to know about each of the major categories. This includes specifically anyone who might serve in any capacity on any planning team.

Information Needed to Design an Efficient System

Any individual or group of persons, whether they be administrators, information specialists, or subject matter specialists, need a minimum amount of a specific information if they are charged with any part of trying to develop a workable, productive, efficient program of disseminating information, regardless of the type of package, the particular

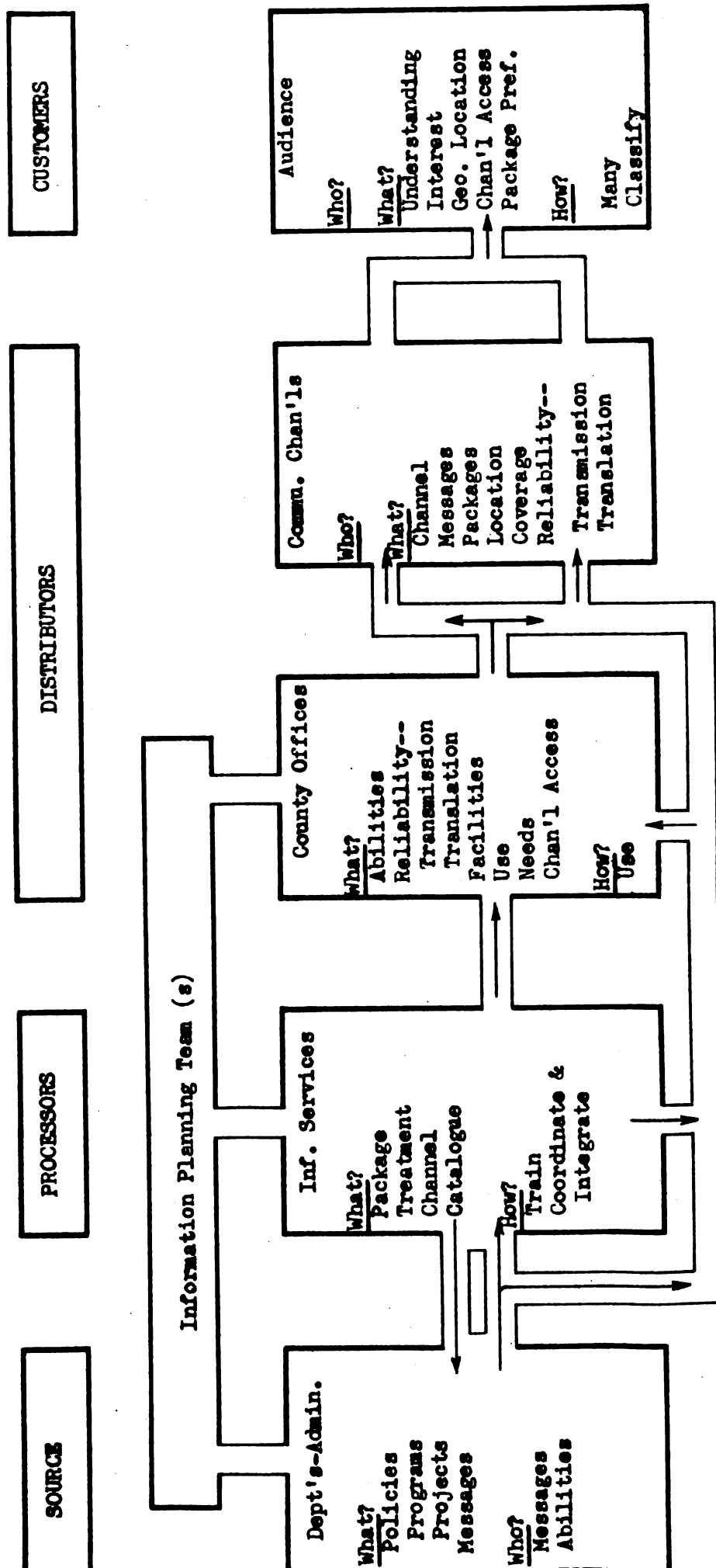
treatment of the message, the audience, or the distribution pattern. Goals stated earlier in the paper will be much easier to attain with this kind of information, particularly goal No's 2 and 4. Each category of Figure 3 will be examined and discussed separately and in some detail.

The Source

First, the SOURCE category. There are at least four different types of information needed here: (1) the broad policies, programs, and projects of the administrative unit--in this isolated instance it is the Cooperative Extension Service, which incidentally is only one of several units with which those in the Information Services Unit must deal; (2) the specific types of subject matter or administrative messages that are possible; (3) the abilities of each participating individual in the source category who use each of the specific media; and (4) tie No.2 and No. 3 together and identify with a specific individual personality who has the ability, the information, and the authority to issue it.

Why is knowledge needed about the policies, programs, projects of Extension to design a successful and efficient information program? The position of anyone on the planning team who attempts to integrate the writing efforts of many individuals without a full knowledge of this kind of information might be likened to skipper an old-time ocean-going sailing ship that is on the high seas with a crude compass and under instructions from his company to cross the ocean--destination, America. His ship's direction is determined largely by the unpredictable whims of the winds, and the skipper is not sure of his specific destination.

Figure 3:--ESSENTIAL ELEMENTS PLUS FACTS NEEDED BY INFORMATION PLANNING TEAM



Whether one is talking about the skipper of the nautical or educational ship, unless the skipper's imagination and vision is exceptionally good, the crew's contribution to the voyage will likely fall something short of the maximum possible. And so it is with the skipper of a printed information program, unless he knows which port his company wants him to reach and with what cargo, he is not likely to have much opportunity to make the company any more productive or profitable. Without the relevant information, he can keep the ship and the crew moving fast, but this proves little except that the crew is busy and that the ship is moving.

Secondly, this person, in order to be of maximum service, needs to have a complete knowledge of messages that have been, are, and can be produced by source people. Currently there is nobody at Michigan State University that has any more than a slight knowledge of this.

A clear idea of the whole is needed before the parts of the whole can be integrated so that any interested outside part or even a party within the institution could locate quickly the specific information or person who has it. One example already given on pages 16 and 17 illustrated the inability of at least one to accomplish this. The author would suggest that it might be equally difficult for other persons and other subjects.

Thirdly, this person or his specialized associates must have a good working knowledge of each source person's ability to use the various media such as radio, television, publications, and others. Information of this kind provides an opportunity to help use the talents that are

available in those areas in which they are most productive. For example, there is little point in expecting to get much good printed material from a specialist who dislikes to write. If persons in the Information Services Unit knew who these persons were, they could proceed to get the material some other way such as sending a competent writer to the specialist to get the facts and to check them once the manuscript had been prepared.

As an example, when this author came to this institution two and a half years ago, he learned of a frequently expressed need for information on a particular problem concerning a certain kind of livestock. On numerous occasions, several people had requested the specialist to prepare a manuscript on the subject. Six months went by, and then a year, then two years. Finally, it became quite obvious that nothing was going to get done. Ultimately the information specialist directly concerned learned that, among other reasons for not getting the job done, the subject matter specialist did not like to write. It was just plain hard, disagreeable work for him. Currently, as an experiment, the information specialist is in the process of interviewing the subject matter specialist and taking pictures as a preliminary step to writing the publication himself. Question--should county agricultural agents employed in a state whose farmers derive one-third of their gross cash receipts from that commodity have to wait more than two or three years for some official printed material on a subject of importance?

Had the appropriate persons on this suggested planning team had an inventory of this subject matter specialist's abilities and interests

at the time this author first became aware of the need for the manuscript, chances are excellent that something would have been published at least two years ago. As it was, county agricultural agents have had to go without, or turn to other sources, a practice that was also discussed earlier.

This, of course, raises a series of interesting questions. Is it efficient to have specialists who do not like to write, or who cannot write well, struggling along even trying to write? Is this a good use of personnel resources for the Cooperative Extension Service, or should Extension have a battery of competent writers to assign to these cases? Should the ability to communicate via the printed word be one of the important criteria for employment as a subject matter specialist? It would seem reasonable to assume that one certainly needs more than just a comprehensive knowledge of some subject to be of any substantial value as an adult public educator.

Finally, in the opinion of the author, this planning team must have a thorough knowledge of who has what kind of information, and to be able to associate and integrate this with the knowledge of abilities, somehow combining the various productive resources into the most profitable combination. The full knowledge of policies, programs, projects, messages, abilities, and personalities would be a substantial asset to anyone interested in developing and maintaining an integrated, efficient information program for printed material that meets the specifications of the goals stated earlier.

The Processors

The second category of inputs is labeled PROCESSORS. What information is needed about this unit, or about the services they can perform?

Generally, one of the first things a good information specialist considers when planning to get a specific message to a particular audience, is to ascertain (1) to what channel(s) does the intended audience have relatively easy and frequent access? Is it only the public mail through which institutional publications can flow? Is it television, radio, or daily or weekly newspaper delivery by carrier. Or is it a combination of these or others which appear to be the most practical and efficient to convey the message to the audience?

Concerning the area of message and package selection, Schramm¹² has developed a "fraction of selection" which is expressed as a formula:

$$\text{The Fraction of Selection} = \frac{\text{Expectation of Reward}}{\text{Effort Required}}$$

OR

$$= \frac{\text{Motivation of Individual}}{\text{Availability of Message}}$$

He suggests four characteristics of message or meaning availability: (1) skill of reading; (2) time for reading (allowing for competition for time); (3) economics of obtaining messages; and (4) the space (time and

¹² Schramm, op. cit., p. 19.

distance) between the reader and the reading material. The latter is the characteristic most frequently used when layman think about and discuss communications, but the others are tremendously important in terms of transmitting ideas successfully.

He says that motivation is the kind of inner patterning that directs us toward certain behavior because we expect to reduce inner tensions or uneasiness. It is therefore the kind of patterning which directs us toward most of our behavior. There is little undirected behavior in the human adult.

Secondly, people in this unit have to know what packages to use and when. For example, for a particular kind of message designed for a particular kind of audience that has access to a particular kind of communication channel, which package technique is the best to use, or which combination is best to use? Suppose the best channel is the public mail, or a meeting, and the package is a publication, which kind of package is best--a mimeograph, a newsletter, a folder, a fact sheet, an Extension bulleting, a research bulletin, a book, or numerous other possibilities. Which is most likely to attain the goal? To do the job well, an information person must know which package is the most likely to be successful for each purpose, for each audience, for each channel. More than this he should be able to help other staff members learn it too.

Thirdly, they must know what treatment to give a message. For purposes of illustration, the treatment concept might be likened to some common commodity--apples that are packaged in a metal or glass

container. How are apples treated before packaging? Does the processor bake them whole, quarter them and package them raw, slice them, make applesauce out of them, or package them as cider. Or perhaps the processor applies a special treatment for diabetics. Figuratively speaking, there may be many diabetics in most any Extension audience who need messages that are given special treatment.

Messages are subject to the same kind of treatments as apples. For example, suppose the following facts had been spelled out:

1. Cornpicker operators (audience) living in southern Michigan (geographic location) have had a series of tragic accidents in the last year or two (reason enough for selecting the following as a message to be transmitted): "The Human Consequences of Careless Operation of Cornpickers."
2. This ready made interest group usually is watching (attention factor) television (channel access) early in the evening (time).
3. Though the county agents in this area do not have a regular program on any of the commercial television stations, they can get important messages such as this used if the messages are prepared in a professional fashion, either by trained television talent or a film or kinescope done by experienced people.

Considering all these explicit facts, and the agent's inexperience before cameras, the best package to use appears to be a 15-minute film

prepared by professionals. Now the question becomes this: What kind of treatment is this particular message given for the maximum impact to the specific audience?

Following are a few of the many possibilities with varying degrees of potential success:

1. a qualified safety specialist giving an educational lecture on cornpicker safety;
2. the same specialist being interviewed by a county agent or some other personality;
3. the specialist or county agent leading a panel discussion with a group of cornpicker operators who have never had any serious accidents with the machine;
4. a panel discussion with a group of cornpicker amputees;
5. a bedside interview with a recent accident victim;
6. a series of stills or movies showing what can happen in a real accident (use dummy to dramatize), or get actual pictures of a real accident;
7. an interview with a doctor who has handled many such accident cases along with a current patient;
8. an interview with a family recently widowed or orphaned by a cornpicker accident.

The same can be done with other packages such as publications.

Next, it would be helpful to most persons in the audience to have the numerous messages catalogued in one central location, and the catalogue made available to anyone. In the opinion of the author, the

absence of a useful catalogue is one of the major weaknesses of the printed information program at Michigan State University. Observations from other states have not revealed any better situation either. The best information possible is not of much use to anyone if he is unable to locate it when he wants it. One or two individual departments have made some attempt at some identification system, usually primarily for their own use, but the author is much more concerned about one for use by anyone, and particularly for the entire institutional staff.

There are many other aspects to the responsibilities of this unit such as communications training, both in the field and with the state staff, but they are generally irrelevant here except as they might improve the ability of the source persons to produce more useful and meaningful messages.

The Distributors

The next major category is labeled THE DISTRIBUTORS which includes county Extension offices, and direct and indirect communication channels. Without belaboring the point, suffice it to say that information specialists and members of the planning team need to know something about the communication abilities of each member of the field staff. Is he a reliable person to translate or transmit this message? Evidence already cited suggests that there are at least some who are not. What facilities does he have for handling the distribution function for the various types of messages? What use does he or can he make of them? Does he know about all the possible uses? To what channels does he have access?

Does he know how they should be used? Does he know how to use a bulletin, a mimeograph, a folder, to its fullest advantage? Is he just handing publications out indiscriminately, or does he have them well concealed in a box in the store room where not even he knows where they are? It would be very useful and helpful to know the answers to these and many other questions for every county in Michigan in order to be prepared to do a thorough and purposeful job of planning for maximum efficiency.

What about the other half of this distribution team--the direct and indirect communications channels? Who are they--names, faces, personalities? A comprehensive listing of all the possible units is needed, particularly the indirect, a project on which the author has already made a simple start. What channels do they control or can they use? What packages can they handle? For example, the Michigan Swine Growers Association members may have access only to the mails to distribute bulletins or folders, while the Michigan Milk Producers Association may have access through larger funds, to radio, television, or other mass media, but this must be known.

It would be helpful to know the geographic location of these various distributors as well as their location with respect to the various specialized audiences. Their coverage maps must also be clearly known. And the designer of an effective program would want to know the reliability of each channel in terms of both transmitting and/or translating any particular message, particularly the transmission of printed matter.

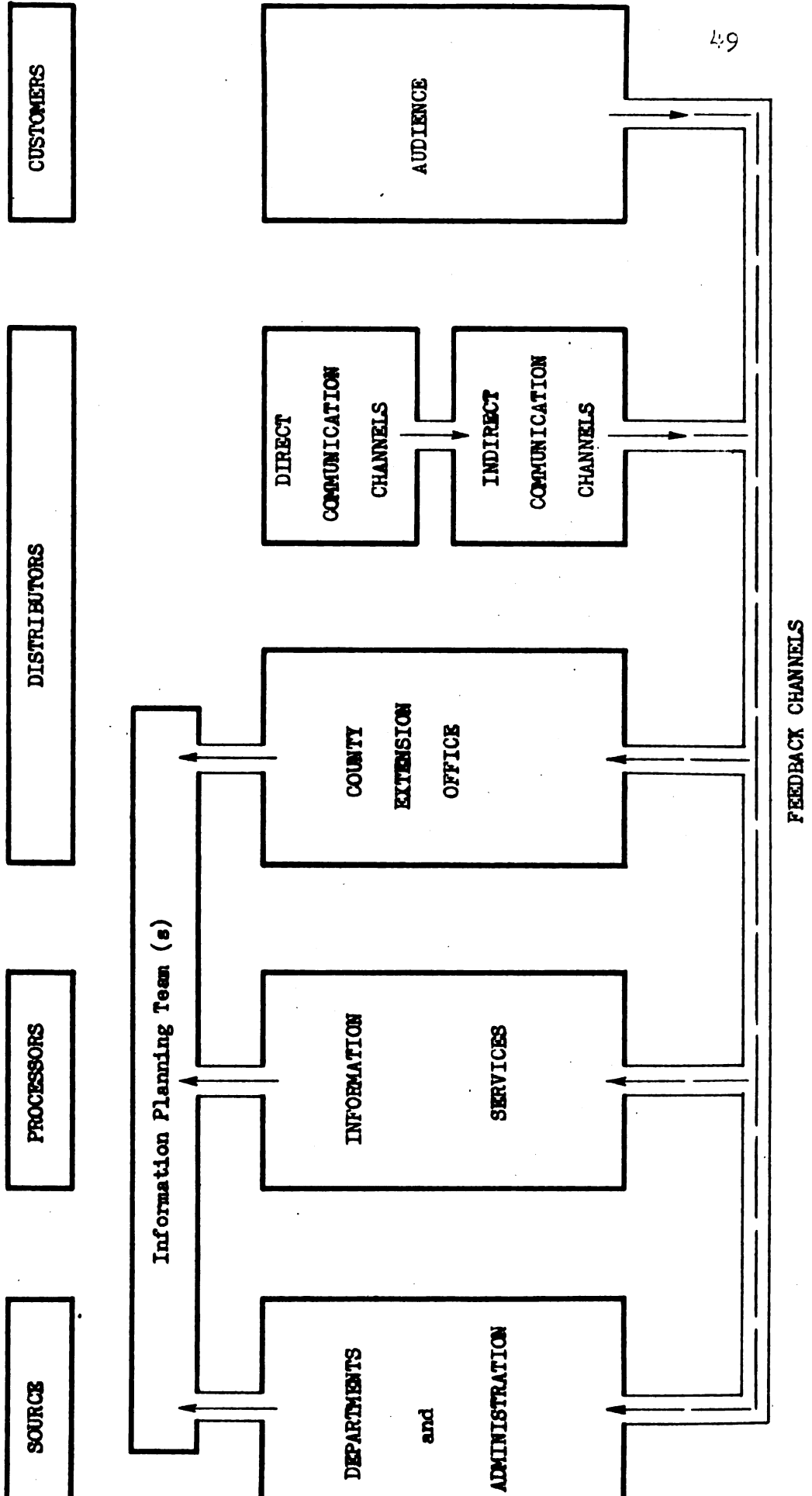
The Audience

The last major category is the customer, more frequently called the AUDIENCE. Who is he with respect to various demographic and other relevant characteristics? Who is he with respect to his interests, needs, and what is his present understanding of the subject matter? Where is he living geographically, and to which communications channels does he have access? Does he have a preference for a particular kind of package? Does he want a 64-page bulletin with comprehensive treatment of the subject, or does he want a concise treatment of the specific problem with which he is immediately concerned? How many people are there in each type of audience in the state, 100 or 10,000 or 100,000? Would the marginal cost of inventorying and classifying them as a means of improving the efficiency of the effort be equal to, less than, or more than the marginal value product of doing it? Should Extension forget about trying to identify specialized audiences and rely largely on mass media--everything for everybody? Or does mass media imply the shotgun approach?

Finally, once the answers to all these and many more relevant questions have been determined for each of the major segments, someone has to analyze them, then integrate them into a working program for the College of Agriculture.

One more element, however, must be added to the schematic diagram to make the land grant college communication process more complete. That element is added in Figure 4. Academic and professional communicators generally identify this new element as "Feedback." In the

Figure 4:--ESSENTIAL ELEMENTS PLUS FEEDBACK CHANNEL



simplest of language and with respect to this particular kind of communication process, it is nothing more nor less than an organized, systematic pattern of pipelines through which messages can travel from the customer back to the distributor, the processor and/or the source. Feedback generally also implies the use of messages so received.

Feedback is the system which assures that if (A) is to utilize his experience in influencing (B), he must have information about any changes in the condition of (B) attributable to his communications. (C), as (B's) agent, is equally concerned with effects on (B) if he is to help (A) do a more effective job of communications with (B), at least so suggest Westley and Maclean.¹³ In the case of the communications model presented in this paper, (A) might be construed to be the source unit, (C) the middleman such as the processing and distribution units, and (B) the audience.

Houle¹⁴ states that "the education of adults is concerned not so much with the process of reading as with its effect."

Schramm¹⁵ says that when two individuals engage in a personal conversation, one is constantly communicating to the other, but in return, the communicator is also receiving direct feedback messages from his audience in the form of a nod of the head, a hand gesture, a frown,

¹³ Westley and Maclean Jr., op. cit., p. 36.

¹⁴ Cyril O. Houle, "The Use of Print in Adult Educational Agencies," in Adult Reading, (Chicago: The National Society For The Study of Education, 1956), p. 157.

¹⁵ Schramm, op. cit., p. 13.

a smile, a look out the window or at the clock hanging on the wall. He also says that the destination of mass communications (such as the type engaged in by many land grant colleges are individuals--reading the newspaper or other types of publications, listening to the radio, or viewing television. This receiving situation is much different than face-to-face communications discussed above. For one thing, there is very little direct feedback from the receivers to the source. The kind of feedback that comes to a mass communication organization is an inferential expression--receivers stop buying the paper, or no longer watch the television show. Only in rare and usually planned instances do such organizations have an opportunity to see how successful their messages are. "An experienced communicator is attentive to feedback, and constantly modifies his messages in the light of what he observes about or hears from his audience."¹⁶

It is fairly evident that such questions as these must be answered in the feedback mechanism: Did the whole message, or any part of it reach the intended audience? What effect did this message have on those whom it reaches? Did it meet their needs? Was it used, or did it get destroyed? Does the audience have a real need for other types of messages which they are not getting? Was the proper channel or were the proper combination of channels used? Are there communication channels which are willing and able to disseminate any of our messages which are not being used? Could the message be understood by the

¹⁶ Ibid., p. 9.

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¹⁶ Ibid., p. 9.

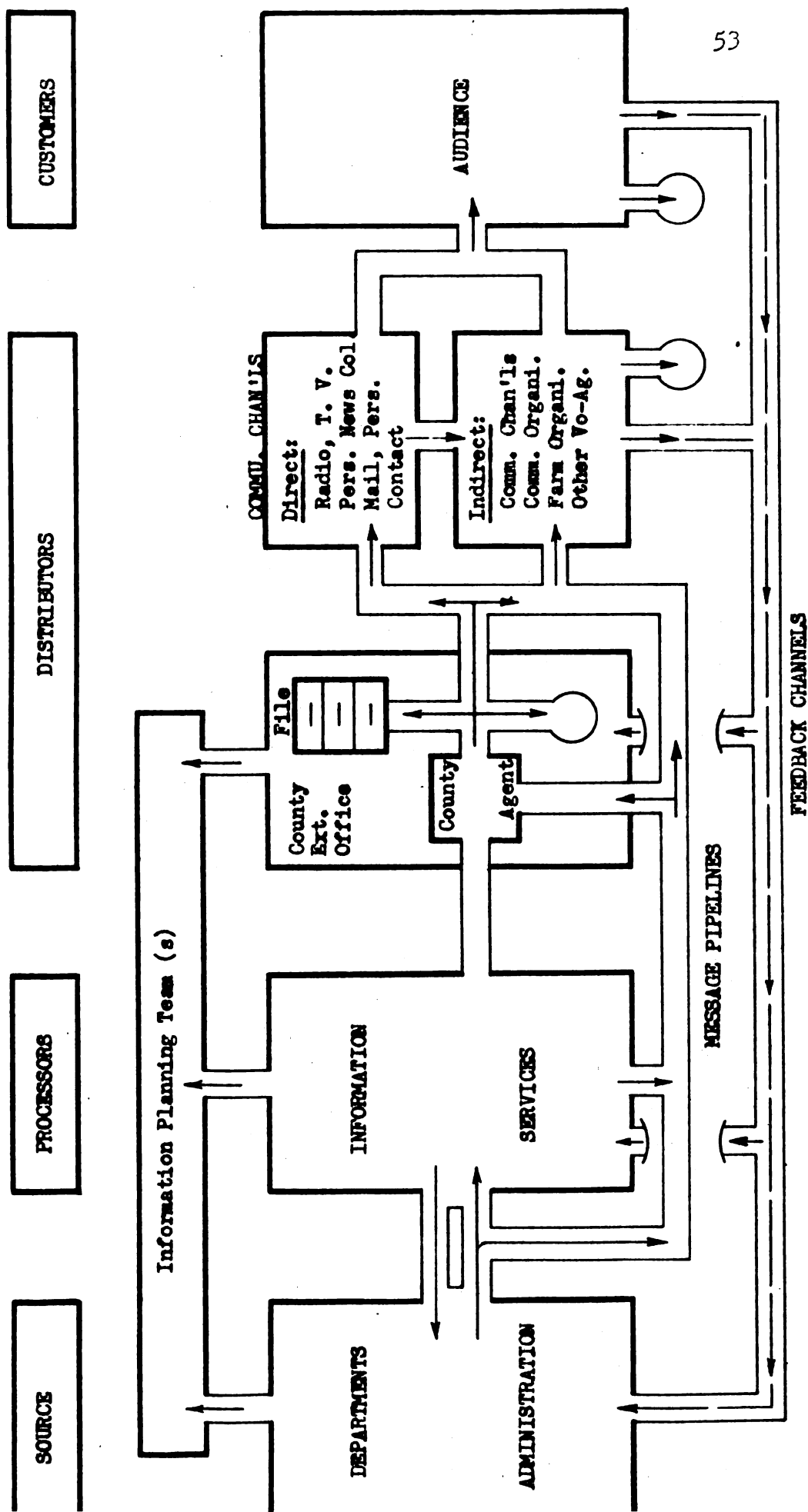
audience? If not, why not? What proportion of the potential audience even knows that messages are available from land grant colleges? If the audience is not getting information from the land grant institution, where is it getting information? Are there other outside groups that could do both a more efficient and effective job of communicating our ideas?

This is only a small sample of the kinds of relevant questions that need answering before many statements regarding the efficiency and effectiveness of any land grant college message or communication process can be much more than the product of speculation, intuition, impression, or subjective preferences. Other than what now appears to be a haphazard, unorganized feedback, primarily through subject matter specialists, there is little intentional feedback being measured or used.

Creating such a feedback route and system for making some of these crucial measurements might be an invitation to some embarrassing results. On the other hand, though the communications system seems to have no well organized plan, research may demonstrate that the product of a loosely and informally organized system differs little from that which would be realized under an organized system, perhaps even better. At any rate, no statement could be justified without such knowledge which could be obtained with a well-used feedback channel.

Figure 5 is simply a composite of several of the numerous important items covered in Figures 1 to 4.

Figure 5:--THE ESSENTIAL ELEMENTS, THE PIPELINES TO CUSTOMERS, AND THE FEEDBACK CHANNELS, AND THE INFORMATION PLANNING TEAM IN THE LAND GRANT COLLEGE COMMUNICATION PROCESS



Efficiency and the Communication Process

Certainly one of the principle results of a carefully designed and well used feedback mechanism (discussed in the last section) should be the accumulation of new information that results in increasing the efficiency of the communication process. The author suggests that this information can be collected in a number of ways by various people:

(1) Information specialists might get it by keeping in close personal contact with (a) the field Extension staff through office visits or district conferences; (b) the various managers of both direct and indirect communication channels, and (c) a representative sample of farm operators involved with the major agricultural commodities in the state. They might also collect information by mail questionnaire to specific groups. A number of other feasible possibilities also exist. (2) The county staff could serve well as the middlemen in this feedback mechanism between the ultimate consumer of the information and the producer of the information. (3) The state staff, by being in close touch with current conditions over the state could be of considerable help in developing the proper balance in the public information program. (4) Administrators at all levels travel over the state frequently and are in contact with many people often enough to be in a position to serve well as a sounding board for the program. In the opinion of the author, success in this endeavor will result only with the efforts of all these mentioned and others, plus the enthusiastic interest of some able person to spearhead the fact finding process. Efficiency, if it is to be meaningful, has

to be something more than turning out so many bulletins, fact sheets, or mimeographs at so many cents per copy.

Figure 6 is a diagram which illustrates a number of relevant points concerning the efficiency of the process with respect to two types of printed messages: (1) Y_1 which represents fact sheets prepared for incorporation in a carefully indexed agricultural reference manual for Extension staff members (to be discussed in the next chapter); and (2) Y_2 which represents units of mimeographed material now being prepared and distributed exclusively by individual departmental staff members without regard to any interdepartmentally oriented index system.

Line FTSAG is one of a series of iso cost lines or production opportunity lines which represents all the possible combinations of Y_1 and Y_2 that can be produced for a given cost such as \$50,000. If the entire \$50,000 were allocated to the production of mimeographs, an amount OG along the horizontal axis could be produced. Likewise, if the total available resources were allocated to the production of fact sheets, an amount OF could be produced. It is well to note, however, that OI and not OG is the maximum of Y_2 that can be produced when part of the resources are diverted to the production of Y_1 . For example, assume that part of the costs were represented by the salaries of two editors whose sole job it is to edit mimeograph copy. Due, however, to the fact that subject matter staff members, who, because of a disinterest in writing or an inability to write well, can not produce enough copy to keep the editors usefully occupied editorially; hence

they are partially unemployed. Subsequently, they decide to use this extra time to prepare copy for use in printed fact sheets from the facts they can get by interviewing subject matter people. In the process of personal contacts with these people, however, the editors are able to make a number of helpful suggestions to these subject matter persons (personal contact often proves to be a rather effective technique in communications training) which results in increasing their ability to prepare clearer copy for mimeographs with less effort. In this situation, allocating some resources to the second product increases the production of both with no change in total costs. This is true up to a point A on line FTSAG. Beyond that point, some of Y_2 must be sacrificed to get more of Y_1 . The area from G to A is known as an area of product complementarity. From point A on the iso cost curve up to point T is an area where the two products are in a competitive relationship for the same resources. Beyond point T, the production of Y_1 decreases as increasing amounts of resources are diverted away from producing Y_2 and devoted to the production of Y_1 . For example, suppose that beyond point T. toward the Y_1 axis, authors were spending considerable time phoning the editor trying to find out why their copy hadn't been delivered yesterday, or to locate some lost galley or page proofs. The time wasted in this process might have been used rather productively for the preparation of copy for departmental mimeographs. By the time all the resources are devoted to the production of the printed fact sheets the system is producing FJ fewer fact sheets and JT fewer mimeographs than were being produced at point T on the iso cost curve.

Since this particular case deals with products that are not sold on any market, some additional lines which indicate the consumers' preference or utility for the products must be superimposed on Figure 6. Line KL is such a line and is called an "indifference" curve. This says that at any point along this line the customers will experience equal amounts of satisfaction or utility with varying quantities of Y_1 and Y_2 . The customer is actually indifferent as to which quantity of each he can get as long as he stays on the line. The problem now is one of determining at which point along the iso cost line can the customer derive the most satisfaction. Any line lying below line KL and between there and the origin O indicates a lower level of satisfaction to the customer. Similarly, any line lying above line KL indicates greater satisfaction, an area which is unattainable because it lies above the maximum possibilities or iso cost line. No production is possible beyond the given cost area bounded by OFGO.

The point at which an indifference line is just tangent to the iso cost curve is the point of optimum satisfaction for a given cost. For a given cost of \$50,000 the customer can obtain OD units of Y_2 and OE units of Y_1 and be on highest attainable indifference curve. This then is the amount of fact sheets and mimeographs which will satisfy the audience to the highest degree possible for this amount of money which he, as a taxpayer, is willing to surrender to a public agency for the purpose of transmitting information in these two types of packages.

Although this discussion has centered around only two possible products, the model is capable of handling more than two.

Through persistent and careful use of the feedback mechanism discussed both in Figure 5 and in the early part of this chapter, the author would hope to approach some kind of reliable estimate of the point of tangency for the various types of information being produced for agriculture at Michigan State University. Those responsible for guiding the information program for adult education need to know whether this curve is tangent at points A, S, and C, on the FTSAG iso cost curve before they can give any sound assurance of doing a creditable job. More will be said in Chapter V about the problems encountered in establishing the location of this point of tangency and of the utility curve itself for this project.

The objective, however, would be much broader than establishing the precise point on iso cost curve FTSAG. The ideal would probably be to establish a whole series of curves for a variety of possible cost situations. These would serve as guides to the program in cases of change in the budget temperament of legislators, or in cases of changes in the images of land grant college administrators with respect to the efficiency and effectiveness pattern of the various packages for each particular purpose. Such information might even counteract or abet an aggressive information specialist who was intensely pursuing some pet project or idea.

A hypothetical set of utility curves has been constructed in Figure 6 starting with line K_1L_1 and descending through line K_7L_7 . If the points of tangency of the utility and iso cost curves are connected,

line MN results. This is known as a "scale" line. It helps to locate the proper combination of the two products to produce over a fairly wide range of cost situations. If this, or even a close approximation of this kind of picture could be established, the administrators would have a much more reliable basis for making decisions in information work than they now possess.

This completes the discussion on the various inputs, essential segments of the model, some of the various weaknesses in the current system, the various possible ways in which messages may be produced, the kind of feedback mechanism that is needed, and the efficiency of the process with respect to two different packages of printed material. The next and most essential part of this thesis will concern a proposed solution to the problem of too much volume of unorganized material emanating from the Source Unit and going into the county agricultural agent's office.

CHAPTER IV

THE SOLUTION AND THE PEOPLE IT INVOLVES

The portable filing cabinet for the proposed packages will be a rugged, 5-ring notebook binder into which any $8\frac{1}{2}$ x 11 sheet of paper might be fit. The sponsor, which in this case is the Cooperative Extension Service of Michigan State University will be well identified with large gold letters stamped on the cover in an attractive design. There is no question in the mind of the author that this book can prove to be a genuinely useful trademark which can add much to the public relations of the Cooperative Extension Service. It will be called the Agricultural Handbook.

What the Agricultural Handbook Is and How to Use It

The following copy is an introductory page for the benefit of anyone who possesses the book:

"This agricultural handbook is designed to provide you with a practical, systematically organized reference manual for filing much useful agricultural information being published by the various departments at Michigan State University.

"The table of contents on the next page (of the handbook) is divided into 20 fairly well defined sections. But even more important than this, the key subject matter title of every page in the handbook

is incorporated in several places in the thoroughly alphabetized, cross-referenced index located in the first section of the book. This will permit you to locate quickly the exact subject matter that is available. A sub-section of the index that you will also find helpful is an up-to-date alphabetized index of all other printed, subject matter publications that are not designed for the book but are in standard bulletin or folder format.

"Each of the major sections in the book will eventually contain four basic types of information. Each type will be printed on an individual sheet marked with some distinguishing feature to facilitate rapid identification and filing. Each sheet will be well identified with the subject matter title, the author(s)' name(s), and their department(s).

1. Short-term information (with 1-12 months value such as current price outlook, annual income tax changes, or emergency information (e.g., unexpected disease outbreaks, weather or insect damage). (On a colored sheet)
2. New research information, most of which is now being mimeographed, which county agricultural agents should know about (progress reports on research projects). (On a colored sheet)
3. Permanent Reference information, most of which is now being mimeographed, but some of which is being published as 4 x 9 folders. These will be printed on white pages with some kind of distinctive masthead, many of which will be available for general distribution to the public.

4. Abstracts from highly technical papers currently being mimeographed for speeches, meetings, and clinics. (On a colored sheet)

"The first 10 pages of each section will be reserved for the first two classes of information to facilitate rapid location and easy removal when revised.

"This handbook is a constantly growing reference manual with new pages being added periodically, and old pages being revised whenever needed. The pages are numbered according to the table of contents. In the upper right-hand corner of each page you will find the page number plus the general file number being adapted for county agricultural agents.

"One more bit of helpful information--FILE PROMPTLY--DO NOT WAIT!
You will have a much more useful book if you keep it up to date."

Table of Contents

The section headings conform to master county file system now being adopted by many Michigan agents.

<u>Pages</u>	<u>Section</u>
I-C	INDEX
1-499	Agricultural Economics
500-999	Agricultural Engineering
1000-1499	Animal Husbandry
1500-1999	Dairy
2000-2499	Diseases and Parasites
2500-2999	Farm Crops
3000-3099	Fisheries and Wildlife
3100-3399	Forestry
3400-3499	Forest Products
3500-3999	Horticulture
4000-4499	Insects-Insecticides
4500-4599	Land and Water Resources Development
4600-4699	Landscape Architecture and Urban Development
4700-5199	Poultry
5200-5299	Sociology
5390-5799	Soils
5800-6999	Tourist and Resort
6000-6499	Weeds
6500-6999	Other-Miscellaneous
7000-	Abstracts

The range of the page numbers per section is set at what would now appear to be practical limits in the foreseeable future. As visualized now, the book could hold between 300 and 500 sheets, depending on the exact size of the ring, and the weight of the paper that is used for printing. Any pages in excess of this that any agent would want to keep would probably go in at least one of two places; in another book, or in the office file. If they go into another book, chances are good that ten plus or minus two or three of the major sections will go into each book. If they go into the file, pages could be placed in at least two places. They could be filed according to the master file mentioned earlier along with all other types of information that an agent might collect. Secondly, and what is probably more likely, a section in one file drawer will be reserved for the extra pages to be filed in numerical order according to page number. If filed in this manner, one could easily use the alphabetized index in the front of the book for locating material in the file.

The author speculates that very little of the material will be filed anyplace except the initial book until it begins to fill up. Each agent's book up to this point will be similar to every other agent's book. However, when this point is reached, agents then must become selective and retire the least used material to the file or the wastebasket. It is possible that an agent might attempt to keep in the book those pages that are timely for the season, adding and removing pages as the season demands.

The Alphabetized Index

In the opinion of the author, this index is the key to the usefulness of this book. If this job is not handled with care, the book will not and cannot be used to its fullest capacity. To demonstrate the technique used, some sample titles of current mimeographed material have been itemized below and then alphabetized. The object is to select key words whether these keywords are in the title or not. If the title is not complete or is not descriptive or accurate, other key words might be added. The words in parentheses are such key words added in the alphabetized index.

Titles Used in the Sample Index Below

1. Common Insect Pests and Their Control.
2. How Far Can You Go Into Debt. (Credit, Borrowing)
3. Investing in a Silo (Dairy)
4. Does Tiling Pay?
5. Where Michigan Farmers Get Credit (Money, Borrowing)
6. Can I Afford a Bulk Milk Tank?
7. Retailing Prepackaged Meats

Small Sample Index

A

B Borrowing,

How Far Can I Go Into Debt, 1119

Where Michigan Farmers Get Credit, 312

Bulk Milk Tanks, Can I Afford One? 619

C Control, Common Insect Pests and Their, 3131

Credit

How Far Can You Go Into Debt, 1119

Where Michigan Farmers Get Credit, 312

D Dairy, Investing In a Silo, 6313

Debt, How Far Can You Go, 1119

E

F

G

H

I Insect Pests and Their Control, 3131

Investing in a Silo, 6313

J

K

L

M Meat, Retailing Prepackaged, 1931

Milk, Can I Afford Bulk Tanks, 619

Money, Where Do Michigan Farmers Get Credit, 312

N

O

P Pests, Common Insects and Their Control, 3131

Prepackaged Meats, Retailing, 1931

Q

R Retailing Prepackaged Meats, 1931

S Silo, Investing in One, 6313

T Tiling, Does It Pay, 4321

U

V

W

X

Y

Z

This index will have to be revised whenever it needs it, perhaps with every 15 to 25 new pages added. The author would speculate too that users of the book will be trying to add material from commercial sources and from other land grant institutions, and that they will be attempting to fill in their own page numbers. As yet, he can see no way to incorporate it for their benefit except to leave plenty of space between individual entries in the index for write-in material.

Examples of Good and Poor Presentation of Educational Material

There are several rather specific types of material that will be satisfactory for this agricultural handbook: (1) tabular, both numerical and narrative types with several variations; (2) straight narrative (3) recipe--combination narrative and numerical non-tabular; (4) problem and answer; (5) any of these combined with a wide range of illustrations, such as halftones, line illustrations, or combinations. The next few

pages will present concise samples to illustrate the various types, and the good and bad features about each.

The straight narrative needs very little explanation except to say that it often is the poorest manner in which to present ideas. Frequently, it is very wasteful in terms of space and time for the reader, and particularly so if one gets very much of the following kind of gobbledygook in copy: "Militant consumer elements in the population are continuing to stress the basic and fundamental necessity of an overall stabilization of the domestic price structure at a lower level than they are at the present time." So far as the lay reader is concerned, all this fuzzy-thinking economist really said was: "Consumers keep saying that prices must go down and stay down." Less dignified--perhaps. More clearly expressed--no doubt about it. Basically, what one has to do when attempting to communicate with the printed word is to express ideas as clearly and simply as possible and the words will take care of themselves. It is when writers attempt presumptuously to express themselves instead of ideas that they encounter difficulty with readers. A good writer once told this author: "Don't attempt to write in a complex, academic style in an attempt to impress anyone until you have had enough experience to do it well. By that time, if you are like most people, you will have overcome the desire to 'show off' in writing."

The other extreme in idea presentation is with standardized symbols in numerical tabular form. As with most forms of expression, there are several pitfalls in this technique that are often evident in the type

of material that is now bypassing the processing services of the Information Unit--material that probably will be in the handbook.

Table 1 is an example of a good tabular numerical expression--clear, neat, orderly, and complete. The columns are clearly and concisely labeled. The range on both the columns and the stubs is wide which permits a broad coverage of the subject in a minimum of space.

TABLE 1.--Average amount of feed required per day and per dozen eggs by 100 hens of different weights and egg production
(Two-ounce eggs are assumed)*

Eggs per 100 hens per day	Feed for 4-pound hens		Feed for 5-pound hens		Feed for 6-pound hens		Feed for 7-pound hens		Feed for 8-pound hens	
	Per		Per		Per		Per		Per	
	day	dozen eggs	day	dozen eggs	day	dozen eggs	day	dozen eggs	day	dozen eggs
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
0	15.6		17.8		20.0		22.2		24.4	
10	17.0	20.5	19.2	23.2	21.4	25.7	23.6	28.4	25.8	31.0
20	18.5	11.1	20.7	12.4	22.9	13.7	25.0	15.0	27.2	16.4
30	19.9	8.0	22.1	8.8	24.3	9.7	26.5	10.6	28.7	11.5
40	21.3	6.4	23.5	7.1	25.7	7.7	27.9	8.4	30.1	9.0
50	22.8	5.5	25.0	6.0	27.1	6.5	29.3	7.0	31.5	7.6
60	24.2	4.8	26.4	5.3	28.6	5.7	30.8	6.2	33.0	6.6
70	25.6	4.4	27.8	4.8	30.0	5.1	32.2	5.5	34.4	5.9
80	27.0	4.1	29.2	4.4	31.4	4.7	33.6	5.0	35.8	5.4
90	28.5	3.8	30.7	4.1	32.9	4.4	35.0	4.7	37.2	5.0
100	29.9	3.6	32.1	3.9	34.3	4.1	36.5	4.4	38.7	4.6

* Illinois Agricultural Handbook, Extension Service in Agriculture and Home Economics, University of Illinois, Urbana, 1949, p. 338.

A very small percentage of any group of readers other than those highly familiar with the subject matter would be able to guess what the

information in Table 2 means. The numerals are in percentage form, but percentage of what? The title certainly does not describe "what" clearly. In other words, this table is completely worthless if one doesn't have the key, and the key could easily have been provided in the table title or in a narrative example immediately following the table.

TABLE 2.--Percentage of feed fed to each class of livestock to minimize income variability. Farm Bureau Farm Management Service, 1953-52*

	Beef cow herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry
Dairy cow herds	0%	24%	0%	7%	14%	25%
	100%	76%	100%	93%	86%	75%
Beef cow herds		90%	12%	19%	63%	53%
		10%	88%	81%	37%	47%
Feeder cattle bought			9%	0%	49%	43%
			91%	100%	51%	57%
Native sheep raised				29%	69%	59%
				71%	31%	41%
Feeder sheep bought					100%	79%
					0%	21%
Hogs						62%

*"Livestock Income Variability," Illinois Farm Economics, No. 220, May, 1954. University of Illinois, Urbana.

Another rather common type way of expressing ideas concisely especially for such subjects as plant and animal diseases, listings of various kinds of plants with associated bits of information is found in Table 3. It is an excerpt from a much longer table.

The "recipe" combination narrative and numerical non-tabular is illustrated below.

SUGGESTIONS FOR CONTROLLING SHEEP TICKS AND LICE

"....Sheep ticks are blood sucking insects which interfere with the thrift of the flock, increase food requirements, and reduce the value of the wool clip.¹⁷ After the flock is shorn, the ticks transfer their blood sucking activities to the lambs and seriously retard their growth.

"....Both ticks and lice can be controlled by dipping or spraying. Treat all animals in the flock.

Materials to use in dipping:

ARSENICAL MATERIALS--Follow manufacturer's directions.

ROTENONE-- $\frac{1}{2}$ pound of 5% - OR - six tenths of a pound of 4%

Rotenone powder to 100 gallons of water.

DDT or METHOXYCHLOR--4 pounds of 50% - OR - $2\frac{1}{2}$ pounds of 75%

wettable powder to 100 gallons of water.

LINDANE-- $\frac{3}{4}$ pound of 25% wettable powder to 100 gallons water.

COAL TAR DIPS--are not generally recommended.

¹⁷ Michigan State University mimeograph from Animal Husbandry Dept.

TABLE 3.--Principal Poisonous Plants*

PLANT	LOCATION	Parts of plant that usually cause poisoning	Animals most commonly poisoned	Conditions under which poisoning usually occurs and minimum quantity required	Characteristic effect
Arrowgrass (Triglochin maritima).	Salt or alkaline marshes and wet places throughout the United States.	Leaves and stems	Cattle and sheep	Eating about 1 percent of animal's weight of green plant in a few minutes.	Difficult breathing, spasms, coma, illness of short duration.
Baccharis (B. ramulosa).	Hillsides of western Texas and southern New Mexico and Arizona.	Leaves	Cattle	Scarcity of feed in fall and early winter.	Extreme prostration, severe inflammation of stomach.
Beach Laurel (Leucodermis)	Springy ground in Sierra Nevada Mountains of California.	do	Sheep	Eating 0.2 pound in a day's feeding.	Salivation, vomiting and weakness.
Bitter rubberweed, bitterweed (Actinella odorata).	Western Texas to southeastern California.	Leaves, stems and flowers	do	Eating small quantities daily for several days.	Vomiting, weakness.
Black nightshade (Solanum nigrum).	Waste ground from Maine to California.	Green fruit and leaves	Cattle, sheep, goats, chickens, ducks and geese.	Feeding on green plant.	Thirst, diarrhea, loss of appetite, weakness, lack of coordination.
Brake, bracken fern (species of Pteridium).	Tickets, Hills and rich woods throughout United States.	Fronds	Horses and cattle.	Eating 5 pounds daily for about a month.	Horses: lack of control of legs, weakness. Cattle: hemorrhages in various parts of body.
Cherry (wild) (species of Prunus).	Hillsides, along streams in woods throughout U. S.	Leaves	Sheep and cattle	Eating 1 percent of animal's weight of green plant in a few minutes.	Difficult breathing, spasms, coma, illness of short duration.

*Doone's Agricultural Digest, Roane Agricultural Service Incorporated, 1955, St. Louis, Missouri.

Spraying:

Careful, complete coverage is necessary. Power sprayers are...."

County agricultural agents get a great deal of this kind of subject matter material expressed in this fashion, particularly from entomologists, weed control experts, and others using chemical materials. It is an excellent combination of letter and numerical symbols.

A fourth general type of material that will likely prove to be very useful for county agricultural agents using this book can be classified as the problem-answer kind of expression:¹⁸

HOW TO CALIBRATE A SPRAYER

1. Set 2 stakes 333 feet apart.
2. Fill tank with water and run sprayer to check that all nozzles are functioning properly; close boom valve.
3. Refill tank completely.
4. Set tractor in motion at least 15 feet back of stake with throttle in marked position and boom valve closed.
5. Open boom valve as tractor passes first stake.
6. Drive in a straight line without changing throttle position.
7. Shut off boom valve as tractor passes second stake.
8. Carefully measure amount needed to refill tank.

¹⁸ From an anonymous commercial source.

Multiply gallons used by 132 and divide by width sprayed in feet. This will give you the number of gallons per acre.

$$\frac{\text{Gals. used} \times 132}{\text{width sprayed in feet}} = \text{gallons used per acre}$$

Example: Say you have a 12-foot boom and it took 8 gallons to refill the tank:

$$\frac{8 \times 132}{12} = 88.0 \text{ gallons per acre.}$$

If you keep the throttle in the same position and the bypass valve is not changed, the rate of application will remain the same, provided all the equipment is functioning properly. If the test shows the rate of application is higher than you want, use a lower pressure on the system, or drive slower. If it is still too high, get smaller nozzle openings. Do just the opposite if you are trying to increase the rate of application."

All the examples used thus far except Table 2 have been what the author considers rather successful techniques for combining various types of symbols to communicate ideas clearly in the most economical manner possible. There are innumerable other combinations which anyone with a bit of imagination and experience can readily visualize and use. However, people who are writing, even in land grant colleges, do not always have this imagination or ability to communicate to others. Sometimes an author is too concise; sometimes he is too busy trying to impress others such as a colleague in another state, with scarcely a serious thought

given to the intended audience. Editors too frequently find authors coming to their desks with a private gem approved by anyone who should approve it. But when the editor asks him what audience he was writing for, the idea of considering an audience appears to be a completely new and irrelevant thought, and an impertinent question by someone whose job it is to process the message into the proper form and not concern himself with purposes and policies.

At any rate, the following is a typical example of at least three or four ways an idea was or could be presented. The problem is one that has been of increasing concern to farmers who are interested in drying corn. So the specialist at one institution who revered conciseness provided the answer for how much weight was lost when drying corn from any moisture content down to any other moisture content in the following manner:

HOW TO CALCULATE MOISTURE LOSSES WHEN DRYING CORN

"In order to find the quantity of corn left after drying from any percentage to any other percentage, divide the percentage of dry matter in corn at the beginning of storage (100 minus original percentage of moisture) by the percentage of dry matter remaining at end of storage, and multiply by 1,000."¹⁹

And that was the end of the answer, just as simple as that. To the specialist who prepared this, it was peobably a very clearly, concisely written answer to a critical problem. How could it be done any more

¹⁹ From a University of Illinois mimeograph, otherwise anonymous.

simply? Maybe it could not, but simplicity is not the only or even the most important criterion by which to measure the value of a message. Most county agricultural agents, though they probably could figure this out, would not be likely to do so. It would be much easier for them to go to some manufacturer or dealer in grain drying equipment and get the answer, and that is what many of them are doing regularly.

This specialist could easily have improved this message by just adding a paragraph or two using an example to illustrate how to compute the answer. For example:

If you want to compute the loss of weight in 1000 bushels of corn being dried from 28% moisture to 15.5%, use the following formula:

$$\frac{100\% \text{ minus } 28\% = \text{total dry matter in corn out of field}}{100\% \text{ minus } 15.5\% = \text{total dry matter after drying}} \times 1000$$

$$= \frac{100-28.0}{100-15.5} \times 1000$$

$$= \frac{72}{84.5} \times 1000$$

$$= 852 \text{ bushels out of the original thousand harvested.}$$

In other words the operator lost 148 bushels by drying a thousand bushels down to No. 1 grade. Now it is relatively easy for him to calculate the profitability of doing so, because he probably will know how much it cost him to dry it, how much he could get for the corn at both the 28% and the 15.5% level.

However, has this simple explanation even done the job for either the county agricultural agent or for the farmer? The author says no!

The specialist could do much more. Except for whatever merit there might be "going through the learning experience" of computing these values, it is a waste of the manpower resources of the Michigan Cooperative Extension Service if more than one agent has to make these computations for himself, when one specialist could calculate the full range in much less time. Then it could be used by anyone who was interested. In the author's opinion, the job of presenting the idea has not been done until one combines (1) the concise paragraph at the beginning of this particular section of the paper; (2) the problem-answer example given next; with (3) the following table (table 4) for converting to 15.5% basis.

This table makes it easy to see at a glance what pound or percent losses would be involved in such an operation. But what if it did not pay to dry corn down to 15.5%, or what if the operator did not want to, but he wanted to know how much weight he would have left if he dried to 18% instead? Does this table tell him? Not directly. It could be calculated by dividing the index figure for the 18% by the index figure for 28. Again, in the opinion of the author, few agents would discover this unless told, and if told, few would likely go through the mathematical manipulation to do it, particularly if there was an easier way to get it.

TABLE 4.--Approximate ratios for converting quantities of corn at various moisture levels to 15.5 percent moisture basis.*

Percent Moisture	Ear Corn	Shelled Corn	Soy- beans
35	.709	.770	.756
30	.775	.829	.814
28	.803	.852	.837
26	.832	.876	.860
24	.861	.900	.882
22	.893	.924	.906
20	.925	.947	.930
19	.945	.959	.941
18	.960	.970	.952
17	.975	.982	.965
16	.994	.994	.977
15.5	1.000	1.000	.983
15.0	1.007	1.006	.989
14	1.025	1.018	1.000
13	1.037	1.029	1.012
12	1.051	1.041	1.024
10	1.080	1.064	1.045

Example: 100 pounds of 20 percent moisture ear corn will dry down to 92.5 pounds of 15.5 percent moisture corn.

*Economic and Marketing Information, Purdue University, West Lafayette Indiana, August 25, 1953.

The final step that is necessary, in the opinion of the author, is to make the full table available to anyone who is interested as is done in Table 5.

The combination of the narrative paragraph on pages 76 and 77, the problem answer section on page 77, the partial table on this page, with the full table on the following page completes the requirement for communicating a simple idea clearly and in the most useful form.

TABLE 5.--Shrinkage in shelled corn dried naturally to specified moisture contents (1,000 bushels when cribbed).*

Moisture in corn when cribbed	Amount of corn remaining when moisture is reduced to								
	19	18	17	16	15.5	15	14	13	12
Pct.	pct.	pct.	pct.	pct.	pct.	pct.	pct.	pct.	pct.
	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
28	889	878	867	857	852	847	837	828	818
26	914	902	892	881	876	871	860	851	841
24	938	927	916	905	900	894	884	874	864
23	951	939	928	917	911	906	895	885	875
22	963	951	940	929	924	918	907	897	886
21	975	963	952	940	935	929	919	908	898
20	988	976	964	952	941	941	930	920	909
19	1,000	988	976	964	959	953	942	931	920
17.5			994	982	976	971	959	948	938

*Illinois Agricultural Handbook, Extension Service in Agriculture and Home Economics, University of Illinois, Urbana, Illinois, 1949, p. 17.

From here one might logically attempt to construct a series of tables concerning the economic aspects of performing such operations including costs of drying, alternative gross returns from corn sold at different moisture contents in a particular market at a particular time. At least this might be one way to get at the maximum profit point in this operation.

This kind of material could also probably be improved by presenting certain ideas graphically in combination with the methods already demonstrated. The point in educational material is to maximize the quantity of useful and clearly expressed ideas with the use of the minimum quantity of symbols. But, as clearly illustrated in this example, conciseness is not to be revered for its own sake.

These examples demonstrate that numbers of pages, words, and tables are important. There are no clear-cut rules of thumb that work every time for idea expression in printed form. Each idea presents a different problem for the communicator. The point is that the author should select and choose among the many techniques that are available for expressing ideas. Because many authors find it easier not to do so when preparing material outside the official printed publication series, such material frequently falls short of its maximum potential. In other words, the marginal value product of the author's inputs are likely lower than necessary. And this author is fairly sure that the marginal cost of many messages is far higher than necessary. That fact is fairly evident when commercial concerns can sell land grant college staff members their own products.

The Mailing List for the Agricultural Handbook

Initially, the book is being designed primarily for the county agricultural agents as a means of solving a crucial information problem. Each employee of the Michigan State University Cooperative Extension Service will be provided with a book, including the home demonstrations agents if they choose. In the opinion of the author, however, if this book is developed to its fullest potential, there will be a very broad demand from many other professional persons in the field of agriculture; vocational agriculture teachers, other state agency people such as the Soil Conservation Service, the ASC people, commercial agricultural

people, bankers, and many more. If this demand develops, no doubt some modifications in the proposed book are going to have to be made. There are certain types of information such as the research progress reports that probably will have to be confined to a special in-the-family audience.

The Method of Mechanical Distribution

The sheets for this book will likely be mailed out periodically, perhaps with some specified regularity such as monthly or semi-monthly if there are enough of them (enough would likely be 4 to 6 to stay within specific mail regulations). However, whenever any of the emergency material discussed earlier has to be sent immediately, such would certainly be done promptly.

Present plans call for the regular bulletin office to handle the mechanics of mailing. Special, well-identified envelopes will likely be developed for mailing so that the field staff will recognize the material before it is opened and not place it in the stack that is usually ultimately destined for a wastebasket.

If the project progresses to the point of having either the entire book or some part of the book available to anyone outside the Extension family, some additional provisions will have to be made.

Also, if, as the author suspects will happen, some and perhaps many of the sheets will be useful for general public distribution, probably they will be handled in bulk as all other publications are now handled. For, in effect, these pages simply become another type of official

publication and certainly need no special treatment.

Method of Keeping the Book Up-to-Date

Only limited observations and speculation are used as a basis on which to make any statement concerning likely developments. If an agent's secretary keeps the book complete, the agent may very well soon discover that he does not know what is in the book. If he keeps the book, it would appear to be a poor use of his time to handle such a routine matter. Perhaps what the secretary can do is simply to give the agent a list of the titles of the new pages added. Another possibility is to have the agent examine the pages and then have the secretary do the filing. Each county office will probably have to work out its own preferred system.

The Tie-in with the Master Filing System for the Counties

This too was discussed earlier and needs little repeating here except to reiterate that, in the author's opinion, there is no plausible reason why any Cooperative Extension Service should have any more systems of indexing material than are absolutely necessary. In most cases this can be cut to one or two. The effort to combine, or at least to tie the master filing system to the pages for this reference manual is, the author hopes, only the first step in a series of future steps designed to simplify and make the whole system more useable and efficient.

Presentation to the Staff

Current plans call for no staff member, either state or field, particularly field, to get the book until at least 75 pages have been prepared and processed. At that time, departmental, regional, district, sub-district, or county staff meetings will be held for the purpose of explaining the book to every Extension employee. This will provide an opportunity to ask and answer questions. Probably a number of pages will be given to each person in the class for practice in filing in the book, just for experience. The entire project will be demonstrated, which includes the purpose, the mechanics of mailing, and all other phases of importance.

The Contributors and Their Role

It is the responsibility of the subject matter person, whether he is a specialist or researcher, to be the authority in the subject, in effect what is said. If he is doing his job well, he also ought to have a rather thorough and up-to-date knowledge of what subject matter is needed in the field. And if the material is needed, it is his responsibility to get it prepared. The author has heard numerous administrators in several institutions report that some specialists much prefer to "ride than write."

During a meeting in which the author participated recently, a good county agricultural agent complained that he needed a certain kind of subject matter very badly. The specialist authority who could prepare

it was sitting across the table. Here is a very concise summary of this conversation:

Agent: "I've wanted a bulletin, or folder, or some kind of hand-out sheet for 2 years on....Why can't I get it?"

Specialist: "Although I know that I could reach many more people than I do with such a publication, I just have so many agents calling for meetings that I can't find time to write it. Besides that, you know that I can't say no when an agent calls in and asks for me to come out, even if he only winds up with 10 people at the meeting. How would it sound if I said no and told him that I was writing a bulletin?"

The agent agreed that he would be disappointed if the specialist said no to him. This was the end of a useful conversation and the beginning of a public acknowledgment of perennial but common stalemate about the chore of writing. Why couldn't he say no? He says no every year without fail to permit a week or two for deer hunting, and two weeks for annual leave without being burdened with an overwhelming sense of guilt. His argument just doesn't ring true. If he doesn't like writing, it would be helpful for him to say so.

What is the responsibility of the information specialist? As already stated, one of his important jobs is to get the mechanical processing job done properly. But, as also stated earlier, his responsibility is much greater. He has an obligation to the reader to know what the reader

wants and when the reader needs it, what he can understand, what package and treatment is needed, and where he is located geographically. Then it is the editor's responsibility to help the specialist to express his ideas in this form and get them to the reader as efficiently as possible. An open route for the feedback messages is highly essential if the information specialist is going to make any substantial contribution to improving the current situation.

In the author's opinion, the key to the value of this book will depend on the quality of the material going into it, not only the specific subject matter, but the manner in which the ideas are expressed, the facility with which the material can be used. But it is going to take the cooperation of the administrators, the information specialists, and the departmental subject matter specialists. It has to be a team effort.

The Advantages of the System

There is a relatively long list of advantages for this proposal which will be discussed rather briefly, particularly since some of these advantages have either already been discussed or alluded to in various places throughout the paper.

- a. It is a fairly carefully thought-out plan for systematizing and organizing a type of information that has not been organized before, namely material that is now appearing in numerous departmental mimeographs, a wide variety of newsletters, subject matter from other sources. This is probably, by most

odds, the outstanding advantage of this book in terms of increasing the efficiency of the use of published material.

- b. The single sheet, $8\frac{1}{2}$ x 11 format is one of the easiest to file in a manila folder in standard file cabinets compared to a 4 x 9 folder, some of which likely will be transformed to this format when they are revised. It is also very easy to store in quantity lots in cabinets, and it is easy to display on bulletin boards. Also, if one wants to mail it out, it is a relatively easy matter to fold them for No. 10 envelopes.
- c. It has the advantage of putting a limit on the amount of space that can be used for idea expression as compared to mimeographed material where it is usually much easier to add another page or two than to rewrite and prune the copy. This pruning process, if done objectively by an experienced person usually results in more copy clarity.
- d. The masthead feature now proposed for the permanent sheets is expected to serve as a trademark for this type of publication and for the institution. From past experience in other states, the author has seen this kind of trademark establish itself in 6 months, while bulletins or folders that have been prepared for years still do not have any such feature because each has a different cover, while a masthead is the same for every subject.

- e. One of the advantageous aspects to this format, when printed, is the tremendous space-saving feature of printing compared to mimeographing. Because most mimeographed material is double-spaced and seldom backed, there is an immediate ratio of 4 pages to 1. Then add in the feature of more characters per unit of line space and the ratio increases to a range of between five and six to one. If tabular matter is involved, it is not uncommon for this ratio to jump to 10 to 15 pages to one. It is very obvious that this is a significant advantage in terms of sheer volume when it comes to trying to pack the maximum number of facts into one book. Of course more printing is much neater and more legible than even the best of mimeographing. Editing usually also results in some reduction of copy.
- f. This proposed container may very well serve as a portable filing cabinet for some, perhaps many agents. Several are now carrying homemade notebooks with them, and the author has no reason to believe that more wouldn't if the information was worth carrying. With the wide range of increasingly complex subject matter now needed by an agent, he becomes less and less able to have it at his immediate command from memory, and more and more he needs a convenient ready reference.
- g. By combining it with the master county agent file system, the system begins to take on the values attributed to a single system of indexing, which can be a real asset to any

recipient of such a volume as county agricultural agents now get.

h. For those specialists who somehow or other just cannot get around to writing a bulletin, as the one discussed earlier, this provides an opportunity to prepare one part of the broad subject at a time. Almost before he realizes it, he can complete a comprehensive coverage of the subject, except that it is now in several individual segments that can be easily grouped for the individual who wants all the information on the subject. This feature may stimulate delinquent specialists to write

i. It is an economical manner in which to reproduce information. If one considers all the costs of mimeographing, and that includes all the hidden costs such as secretarial time for cutting stencils, duplicating the material, assembling, stapling, mailing, etc., mimeographing is not inexpensive. For example, below is a table comparing the costs of mimeographing and printing an identical amount and type of information:

TABLE 6.--Comparative costs of printing versus mimeographing.*

	Number of Copies			
	500	1,000	2,000	5,000
Mimeo costs	\$28.00	37.00	56.50	113.00
Printed costs	49.00	52.50	59.00	78.00

*Calculated at a 5:1 ratio.

If one were able to measure the comparative use of this material between the two and compute the marginal cost per translated idea, the author speculates that mimeographed material would be the most expensive in every category in the above table.

And, although printing costs have so many variables, on the basis of experience, the author is fairly certain that, for example, if the decision were made at the time of revision to print Extension Bulletin 335 (a 48 page, 6 x 9 entitled "Swine Production in Michigan") in the form of a series of individual fact sheets instead of the 6 x 9 bulletin form, the total cost would be reduced. Several costs are incurred in bulletin form that would not occur in the 8½ x 11 format: the cover and the art work for the cover of the present bulletin cost slightly in excess of \$100; there are approximately five pages wasted in this bulletin--front cover, inside front cover, two pages of contents which would not be necessary in the individual sheet form, and the inside back cover; the cost (\$387) of binding--folding, stitching and trimming could be avoided. If this many copies of each sheet (25,000) were printed, however, there would be some folding and punching charges, but much less than the \$387. Also, it is quite possible that one could find it unnecessary to print 25,000 copies of each segment of the book. Perhaps 10,000 would be enough of certain areas of subject matter. In addition to this kind of saving, there could be a big saving in county offices, assuming that many people in the audience have a particular problem they are trying to solve when they ask for the printed material on hogs.

Instead of giving the customer a bulletin that costs in excess of 8¢ per copy, the county agricultural agent could hand him an individual sheet that cost a cent or slightly more per copy. If the individual wanted the whole story on "Swine Production in Michigan," the agent could hand him the whole series. Also, there are very few bulletins in which all the copy needs revising simultaneously. If the subject were covered in segments, each could be revised when necessary.

- j. In addition to the dollar savings in printing charges, there would be a considerable saving in the use of an information specialist's time. He wouldn't need to make trips to the artist to get a cover designed. His layout time would be reduced because he could go from machine to pages and eliminate the galley proof and paste-up stages. He would very likely standardize more than he now has with type faces for the body copy, the display and subheads, and tables. He would probably have to spend less time helping the author organize his ideas into a logical whole, except at the outset of the whole series. And he would probably have to spend considerably less time begging and pleading for certain manuscripts to be prepared, because the authors would find it easier to write a series of short manuscripts than a **long, comprehensive one**.
- k. The last, but by no means the least of the advantages is that of increased flexibility of the whole package compared to that of mimeographs, bulletins, folders. One can do anything with

the 8 $\frac{1}{2}$ x 11 format that he can do with either the 6 x 9 or the 4 x 9, or any other format, plus a whole series more possibilities such as: store them in file drawers conveniently; punch them and place them in a notebook binder (which cannot be done very successfully with any other format).

This is enough on the advantages of the various phases of the agricultural handbook project. It is relatively easy to visualize why it has great appeal to county agricultural agents, at least to the ten or more Michigan agents who have had the opportunity to inspect and discuss this project.

The Disadvantages of the System

The author is so completely convinced that this solution is an improvement over the present situation that he finds it difficult to list any important disadvantages, particularly if the objective is to solve the problem and not to please individuals. No doubt some specialists will not be happy to have more of their material going through administrative and editorial inspection, and this could be classified as a disadvantage from their vantage point. Processing this material through commercial printers will naturally take longer than processing it on the office mimeograph, and this will be classified by some as a disadvantage. None of these, however, could be classified as disadvantages of any consequence by an editor who is interested in maximizing the efficiency of the process.

CHAPTER V

THE PROGRESS AND SOME OF THE PROBLEMS TO DATE

The problem which prompted the creation of this solution was discussed rather completely in Chapter II. Since this proposal was first offered, nearly 150 staff members, both field and state, have had a 3- to 5-hour opportunity to discuss these two alternatives rather thoroughly with the appropriate Extension administrators and the author. In the opinion of the author, after hearing much stimulating and interesting discussion, and after examining the cost data in Table 6, the indifference curve which would fairly and accurately represent the utility of these two alternatives for the Extension staff is indicated by the curve U_1V_1 in Figure 7. Currently many specialists in the Cooperative Extension Service are operating as though the indifference curve were located well down the iso cost curve near the horizontal axis, which in fact it may be. If the U_1V_1 to U_3V_3 pattern of indifference lines is fairly accurate, however, then the operation according to a pattern of WX is highly inefficient. Consumers are at a much lower level of satisfaction on U_3V_3 than they would be at U_1V_1 . It should be pointed out that, by definition, an iso cost curve represents equal costs any place on the line. If legislators thought the public was deriving a U_3V_3 amount of satisfaction from the expenditure of FCAG costs when

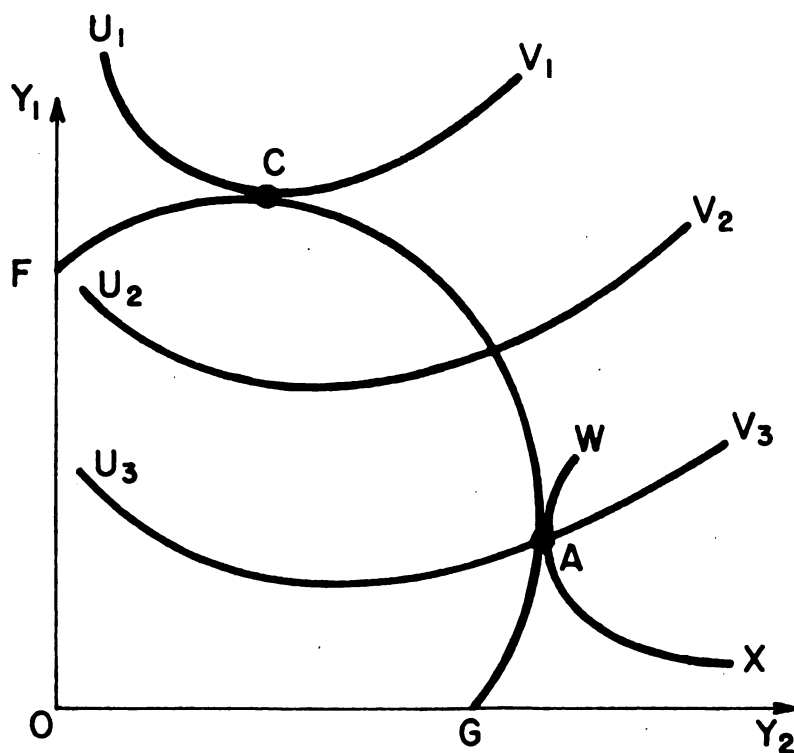


Figure 7:--A consumer indifference map with an iso cost curve superimposed.

they could be getting a U_1V_1 amount for the same tax dollar, chances are good that some changes might be suggested.

Presumably one of the purposes of operating democratically and offering this proposal to the many staff members for their careful inspection was to locate such a utility line which could be used as a guide in the administrative decision making process. The majority of the exposure of staff members to the proposal occurred during a period of several months ranging from 18 to 24 months prior to this writing. This process, in effect, was one form of the feedback mechanism in operation. At numerous times during the past two years it appeared to the author that the administrative decision making team was about to acknowledge that the U_1V_1 curve was, in fact, the most accurate indifference curve, only to slide back down the iso cost curve to the approximate location of curve WK.

It was not until rather recently, however, and after nearly two years of consideration during which time the author rather vigorously pointed out and repeated the list of the advantages just discussed that some optimum quantity of observations and analyses appeared to have been attained which permitted a decision to proceed with the project. Soon after this decision, however, two more questions arose: (1) Should these fact sheets be printed in large enough quantities so the county Extension agents could distribute them to the general public if the demand arose, or should the distribution of these sheets be confined to the Extension family for reference only. (2) Since some of the material would be very similar to that now found in the 4 x 9 folder series of

the institution, should the folders, at the time of revision, be converted to the $8\frac{1}{2}$ x 11 format of the fact sheet?

Rather suddenly a cloud of uncertainty once again settled over the project, which may reveal an ex poste anxiety situation that is nothing more than a continuation of an ex ante uncertainty situation projected through the act of decision. At any rate, it now appears that the part of the project, if not the entire project, is about to retreat from Johnson and Haver's²⁰ "risk situation" to their "learning situation." These authors describe five knowledge situations which managers use to handle changes and imperfect knowledge; two basic causes for the necessity of making decisions: inactive, learning, forced action, risk, and certainty. The "risk situation" is a knowledge situation where a manager does not see all the probable results or consequences of a contemplated action perfectly, but nevertheless has enough information (acquired through learning and experience) to decide whether or not to act, and to be willing to accept the responsibility for the choice. The "learning situation" is one in which a person's knowledge is not complete enough for him to be willing to take a contemplated action, but in which he values improvements in his knowledge more than the cost of making such improvements. Johnson and Haver²¹ also classify the management process into five functions: "observation, analysis, decision making, action,

²⁰ Glenn L. Johnson, and Cecil B. Haver, Decision Making Principles in Farm Management, (Lexington, Kentucky: Kentucky Agricultural Experiment Station Bulletin 593, 1953), p. 12.

²¹ Ibid., p. 8.

and responsibility bearing," usually conducted in about that sequence.

If the author had been aware of the possibility of this prolonged period of learning, which, in essence, appears to be a circular route between observations and analysis, he might have been able to reduce it substantially. Also, if he had been more acutely aware of the implications of some of the observations made by several rather eminent authors to be quoted immediately, he might have been able to predict more quickly and perhaps prevent what now appears to be a rather rapid regression from a risk situation to the relative safety of the learning situation. Perhaps the following two or three brief statements will shed some light on the problem of why this regression occurred.

Boulding²² notes that: "The further we diverge from regular or habitual behavior the less certain we are of the consequences. The larger the negative value that we give to uncertainty or to vagueness in our value orientation, the more likely we are to select the familiar and the known: the more likely we are, therefore, to do today what we did yesterday...unless there are good reasons for doing otherwise.... Secondly, the good reasons which are necessary if we do not do today what we did yesterday derive mainly from dissatisfaction with what we did or with what happened to us yesterday....At some point the misery in the contemplation of habitual behavior overcomes the uncertainty involved in contemplating any other kind of behavior and we make a reorganization."

²² Kenneth E. Boulding, The Image, (Ann Arbor, Michigan: The University of Michigan Press, 1956), p. 86.

Chester I. Barnard²³ says that "the making of decisions, as everyone knows from personal experience, is a burdensome task. Off-setting the exhilaration that may result from a correct and successful decision and the relief that follows the termination of a struggle to determine issues is the depression that comes from the failure or error of decisions, and the frustration which ensues from uncertainty."

F. H. Knight²⁴ writing in 1921 made the following observations: "A rather interesting misconception in regard to the public official should be pointed out. It is common and natural to assume that a hired manager, dealing with resources which belong to others will be less careful in their use than an owner. This view shows little insight into human nature and does not square with observed facts. The real trouble with bureaucracies is not that they are rash, but the opposite....they universally show a tendency to 'play safe' and become hopelessly conservative. The great danger to be feared...is not a reckless dissipation of the social resources so much as the arrest of progress and the vegetation of life."

It would appear to the author that the economic evidence presented in Table 6 along with the inspiring vote of confidence of subject matter and field staff that was sensed in the periods of exposure to the project which includes the two recent questions should have placed the Extension

²³ Chester I. Barnard, The Function of the Executive, (Cambridge, Massachusetts: The Harvard University Press, 1950), p. 189.

²⁴ F. H. Knight, Risk, Uncertainty, and Profit, (New York: Houghton-Mifflin Co., 1921), p. 361.

administration decision makers in a position to make an affirmative decision. This, in essence, was a trial run for the feedback mechanism discussed in Figure 5. One of the important aspects of the feedback concept, however, is that the information so collected be used, not just accumulated. The author rather suspects that a persistent quest for a situation of perfect knowledge may be a futile one. Such a state occurs so infrequently that it appears to be a mirage that succeeds in arousing curiosity and stifling action for long periods of time. In the opinion of the author, enough evidence has already been accumulated to proceed boldly and, in effect, locate the indifference curve of the Extension staff at or in the vicinity of point C on the iso cost curve in Figure 7 and act accordingly. The point of diminishing returns of collecting additional evaluations has long since been bypassed for both the project and the two questions that arose after the decision.

Finally the author suspects that part of the conflict just described is the result of substantial difference of opinion regarding the optimum amount of information and the degree of accuracy needed on which to base a decision. It is not impossible, however, that this situation may also be a conflict between the enthusiasm of younger men (sometimes interpreted as a reckless desire for change devoid of sound thinking) and the wisdom of older men (sometimes interpreted as blind or apathetic conservatism devoid of imagination). It seems that it should somehow be possible to weld this combination into a team that operates wisely with dispatch and enthusiasm.

CHAPTER VI

SUMMARY

The following relevant points summarize the various areas of this project:

1. County agricultural agents in many states are confronted by a common problem--that of being recipients of a large volume of printed material coming from many different sources: commercial groups of producers, processors, manufacturers, distributors, communicators; general farm organizations; other governmental agencies, both state and federal; and from several different sources at the local land grant college such as researchers, Extension specialists, administrators, graduate students, various kinds of committees wanting help or "grass roots" advice or approval.
2. Few land grant college administrators have clearly recognized and faced up to these field problems much less made any perceptible progress in trying to solve them, even with respect to the material that is produced by their own staff members.
3. There are several basic reasons for this lack of progress at Michigan State University:
 - (a) Few people at the state level have taken the time or the interest to examine in detail just what is being mailed

out by staff members, nor have they exercised enough imagination to solve it. Few problems ever get attention in a large and busy institution unless they are first recognized by leaders as serious problems. The author speculates that since these problems are not immediate problems of consequence to anyone of the state staff, very few get concerned.

4. With the gradual increase in the number of subject matter specialists and with the gradual diversification of subject matter covered, all of which gets funnelled to each agent in the state whether there are 80 or 800, the author suggests that the problem will continue to get more critical rather than less, perhaps even with the development of this project.
5. County Extension agents have been unable or unwilling to complain collectively about their problem, and their individual complaints have been relatively inaudible. Thus, a substantial number have continued to tolerate a situation of disorganized or unorganized volume and are turning in increasing numbers to other more satisfactory sources for information.
6. The specialists and the administrator in the Information Unit of this land grant college communication process cannot make much of a contribution to this or any other solution unless they create an opportunity to get into the field and open up the routes that permit feedback messages to help guide the total effort. Much of the future progress in the total

information program will depend on the type of feedback messages and the use to which they will be put.

7. If the total information program is ever to be successful, and the author means measurably successful, the specialists in the information unit must become something more than processors of messages. If this is all that is needed, land grant colleges do not need college graduates for information specialists. Less well formally educated vocationally trained specialists in the printing, radio, television, visual aid, news trade would do equally well and perhaps better.
8. The solution to this or any other problem of any consequence in the world of information will need the interested and willing assistance from at least three segments of the institution: the administration, the subject matter departments, and the information specialists. Any one of them, by intention, accident or default can be a roadblock to any effort to design and operate an efficient communications system.
9. None of these three units can make their maximum contribution until they have a relatively common conceptual framework of this process and what it is trying to accomplish. And, in terms of printed material, the dominant goal has to be something more than personal aggrandizement, either prestige-wise, position-wise, or salary-wise.

10. If the Cooperative Extension Service of Michigan State University is serious about developing a more efficient program of distribution of printed messages, someone in the service must learn more about the various channels throughout the state, and then find out the best way to cooperate with them. The author is certain that only the surface has been scratched in this area.
11. At present, there are many possible roadblocks to getting ideas transmitted from source to audience, but few know what or where they are, or even if they exist. Hence, none can say with any certainty that the process is either efficient or inefficient.
12. A comprehensive classification of the potential audiences for these printed messages should be developed. It is hard to say with any degree of conviction that a good job is being done with this or that unless the audience is known well, who they are, where they are, what their interests are, and how to reach them.
13. The proposed solution which, at the time of this writing is in the process of being developed at Michigan State University, is only one phase of what the author expects to be a long series of critical evaluations of the whole information program capped with some positive action. This particular solution for one serious problem is evidence that it can be done if time and talent are allocated to a recognized problem, and if every

effort is made to avoid permitting the fear of making a mistake to dominate the decision making process.

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APPENDIX A

TABLE I.--Titles of publications received by Michigan county agricultural Extension agents from Extension specialists and Experiment Station researchers during October, 1955.

Take Aim	Food Market Topics
Director's News Letter	MABC News Letter
News Releases for Papers and Radio	4-H Foundation News Letter
Dairy News Letters	Flood Flashes
Management Views for County Agents	Television For You
Michigan Farm Economics	Making Radio Work For You
Homemakers Radio News	MSPIA News Letter
Entomology Notes	Poultry and Egg Situation
MSU Magazine	Consumer Panel Reports
Poultry News	Agricultural Economics Market
Horticulture News Letter	Reports and Outlook
Agricultural Economics News Letter	The Wholesale Meat Report
Home Economics News Letter	News and Views
4-H News Letter	Ram Day and Beef Day Material
Michigan Extension News	District Elimination Summaries
Pathology Notes	IFYE Letter
Larzelere's Market Letter	Animal Husbandry
Quarterly Bulletin	The New Michigan Marketing Program
Spray News Letter	Michigan Cattle Feeders Newsletter
Marketing and Consumer Information	Agricultural Finance Clinic Program
Duane Nelson's Tips on Photography	Poultry Improvement News
Poultry Market Tips	Crop Reporting
ABA Views	Homemakers Information Extension
Agricultural Tip Sheets	and Research
Fly-Free Date	Town-Country
State 4-H Show Letters	4 different marketing releases
Agricultural Engineering	from 4 different people

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