GEORGE C. MARSHALL SPACE FLIGHT CENTER

CONFERENCE ON ORGANIZATIONAL COMMUNICATION
AUGUST 8 - 11, 1967

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NASA-GEORGE C. MARSHALL SPACE FLIGHT CENTER

CONFERENCE ON ORGANIZATIONAL COMMUNICATION
AUGUST 8-11, 1967

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MANPOWER UTILIZATION AND ADMINISTRATION

FOREWORD

COMMENTS AND RECOMMENDATIONS FROM WALT WIESMAN, CONFERENCE CHAIRMAN

Goals of Conference

1. To create a better understanding of organizational communication among professional specialists representing NASA Headquarters and Centers, U. S. Civil Service Commission, MSFC prime contractors, MSFC local support contractors, and major MSFC elements.

2. To review the state-of-the-art in organizational communication as seen by the academic community, aerospace industry, and government.

3. To identify "common interest areas" between MSFC and contractors where improved communication could lead to improved performance.

4. To determine future cooperative actions.

Observations

1. Participation on the part of NASA Centers was very limited. It was even more limited in terms of attendance of members of Center Personnel Offices, even though conference announcements had been mailed with the endorsement of the NASA Personnel Director.

2. Participation on the part of MSFC prime contractors could have been better. Some organizations had a difficult time identifying a function such as "organizational communication" in their major operating divisions and were uncertain about whom to send as representatives.

3. Participation on the part of MSFC local support contractors was good. Here, too, identification of "organizational communication" as part of their organizational structure and functional concepts presented difficulties.

4. The Marshall Center has done a poor job in communicating to contractor organizations on matters other than technical, legal, and project information. In other words, we have communicated on the "must" items, but have done little in regard to motivational and intangible issues. One contractor representative expressed his feelings in the summary with the comment, "I am leaving this conference with the conviction that Marshall has an interest in people, not just in change orders and forms."

5. A professional relationship between MSFC and contractor personnel responsible for employee communication and motivation had been nonexistent before this conference.

Proposed Actions

1. For NASA Personnel Office to identify employee communication even more clearly to the Centers as a permanent part of the personnel program. This is entirely in line with the interpretations of the Civil Service Commission.

2. For MSFC prime contractors to identify professional specialists, both on corporate and MSFC divisional level, for the purpose of informal relations with the MSFC Internal Communication Coordinator.

3. For MSFC local support contractors to identify professional specialists for the purpose of informal relations to the MSFC Internal Communication Coordinator.

4. For the MSFC Internal Communication Coordinator to promote actively his relationship with his contractor counterparts through informal meetings, periodic conferences, and mailings.

Words of Thanks

To Dr. Phil Tompkins for serving as program advisor and conference coordinator.

To Mr. Jim Douglas for contributing his vast experience.

To Mr. Ray Carter, Dr. Thorrel Fest, and Dr. Jack Healy for representing the academic community and for being such effective seminar stimulators and observers.

To the various representatives of MSFC elements for their fine presentations on "common interest areas."

To Mr. Ed Riddick and his staff for the efficient administrative arrangements and the excellent briefing and tour for conference participants.

Our special appreciation to Mr. Ray Carter for his thorough, and unsolicited, evaluation of the entire conference. His report is being published in its entirety as part of this conference record.

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KEYNOTE ADDRESS

By

Brigadier General Edmund F. O'Connor
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General O'Connor has directed MSFC's Industrial Operations since November 1964. As Director he is responsible for both technical and management functions in the Saturn Launch Vehicles Program. A pilot on current flying status, he was detailed to NASA from the Air Force through a special personnel arrangement with the Department of Defense. Here, as keynote speaker, General O'Connor offers insight to particular internal communication problems and barriers involved in the Center's contracting system.

First, let me welcome the visitors from our prime contractors, local support contractors, NASA headquarters, and the various NASA Centers. It's a pleasure to have you with us. I hope the briefing and tour yesterday gave you a better understanding of our capability, mission, and facilities.

It is gratifying to see a considerable in-house representation for this first conference day. I believe that we will all benefit from this "first-time" effort to bring together you people in the NASA and contractor families who are responsible in the broadest sense for internal relations in their respective organizations. Let there be no illusion about our goal. We do not expect to find all the answers to our communicative challenges and problems this first time around! There are different approaches to every problem. A minister put on a bulletin board outside his church, "If you are tired of sin, come in." Someone else with a different approach added, "If not, call Butterfield 8-9000." Let us approach the problems and explore the areas in which improved communication may well be the answer to better all-round performance.

Had anyone told me 25 years ago that one of my primary concerns in the late '60's would be communication, I would have wondered quite strongly about that person's good judgment. Little could I forecast that most of my career would be spent in the management of major weapons systems and systems designed to explore space. Today I can identify communication as one of the prime requirements for the successful execution of military and civilian projects commonly found in what we call the aerospace business.

After all, what is communication but the need --

to convey goals,

to bring together a myriad of factors, a complex of governmental and industrial organizations,

and

to follow up constantly,

to inject changes,

to modify timetables,

to convey again all this to the proper parties,

and, most of all,

to hope that thousands of human beings get the right word at the right time.

One can wonder historically what would have happened had Paul Revere not understood the value of communications in 1775.

While the demands for today's SATURN project are staggering, one could really shudder about the communicative challenges inherent in tomorrow's VOYAGER and any of our advanced applications projects. More factors are being introduced through a heavy involvement of the scientific community as our "customers" for payloads. New types of individuals enter the scene — new academic and research institutions as well as additional industries and government agencies.

We fully recognize the enormous job to be done to accomplish the formal communications necessary for project coordination. But this conference was not called to talk about that type of communication. We need to look at the even more difficult side, the informal, motivational side, if you please, through which we communicate to the thousands of men and women who really perform the bread-and-butter jobs in our organizations. For example, the Air Force now consists of 1 200 000 people scattered over the world. The challenge is getting the word to and from the last man. It seems that all of us have trouble remembering that communication is a two-way street — a swinging door arrangement — up, down, and sideways. It's not, for example, always easy to traverse this two-way — to communicate exactly what we mean. Often we misunderstand — we do not, or cannot get our message across. This difficulty in communicating can sometimes produce frustrating results.

Let me cite one example. Recently our people spent several months around the conference table negotiating the conversion of a prime contract. Long hours were spent exchanging facts, supporting positions, and seeking agreements. Yet, after he had returned to his headquarters, the contractor requested additional meetings to clarify certain areas he did not understand. Frustrating without a doubt. But all too typical of our communication problems today. We had failed to communicate our objectives, the terms and conditions. But equally important, the contractor had failed to communicate his lack of understanding at the time.

As our responsibilities at Marshall have grown, this problem of two-way communications has increased by a factor of ten. In 1960 Marshall operated with a small rocket team basically located on one small arsenal. Coordination was relatively easy, for the design engineer was across the street from the manufacturing specialist. Verbal orders often came before the paperwork. The message was easily conveyed in a personal manner.

As Marshall's role and responsibility increased from 1960, our area of communications also increased and spread out. It now reaches from coast to coast and border to border. And naturally — we find communication becoming a critical problem. We can't move so swiftly as we used to move. We are impeded by the numbers of people engaged in the program and the volumes of paperwork that have top priority. This is not to say that we are inefficient; my point is — all communications suffer and hence getting the job done is hindered.

If we look far into the future, we can see that space transportation systems of the future will be as far advanced over those of today as the Saturns are over Redstone. We must not only be able to accept these changes that new projects bring — we must anticipate them. And our communications systems must keep pace. To meet these challenges, we must have knowledgeable, thinking employees; and in order for all of us to have thinking employees, we must have a never-ending flow of stimulation and motivation. In short, communication. Let's be frank — most of us are still stumped when it comes to communicative situations requiring our personal perceptive powers and human influence on our fellowmen.

We, here at Marshall, are pioneering in what one might call the "human side" of communication. We have been facing up to many of the unusual demands placed on supervisory and project personnel to maintain two-way communications. Take my word for it, working with sophisticated information systems in chart and control rooms is infinitely safer and easier than handling this elusive commodity called people. Yet, we would betray our charter if we were to ignore that the impact on the human side of our total mission can make or break us.

We have identified a number of specific programs that depend for their success on employee - and

information,

understanding,

acceptance, and

participation.

Such programs are vital to the entire Marshall and NASA family, and we need to impress employees in government and industry alike with their importance.

These programs will be the subject of detailed considerations at this conference. So, let me just mention some of the most import ones.

Cost Reduction

Quality

Reliability

Safety

Data Management

Configuration Management

Incentive and Award Fee Contracting

Ethics and Conflict of Interest

Many of the aspects related to these programs are all too often identified only with technical, budgetary, legal, and other such formal matters with little or no consideration to motivate those people who could make the most meaningful contributions as they work day-to-day. We must be more professional, more consistent, more methodical in our manner of communicating to our people the importance of our national mission.

In closing, let me state in very oversimplified fashion the three most fundamental requirements for an internal communication program. First, the acceptance and support of top management. Next, the quality of the communication specialist. Third, the need to know our employees. As such a program is started or as an existing one is expanded and improved, the pitfalls most commonly creating problems must be avoided. One is to try to work on standard solutions in communication. Whatever solution may have been very effective for one organization may be poison to the next one, even with the major factors being seemingly identical. In face-to-face as well as broad media communication, no one given situation is ever identical to another one. It is necessary to consider all the factors of the purpose or the problem at hand and to make the appropriate decision.

We must not expect results overnight nor miracles after the first 90 days. If any organization has been living in an internal information vacuum, it will take the employees a little time to accept the idea that management really wants to communicate. Don't expect immediate feedback, either. You must first demonstrate that management means to make this new effort a permanent part of its philosophy. Feedback will gradually develop as the work force accepts management's willingness to communicate. We have started this effort at Marshall. I know of similar endeavors among our contractors.

This conference should serve to bring together the minds responsible for these efforts. Whereas this first day will give you an overall introduction to our thinking, the work sessions tomorrow and Friday morning will give us the opportunity to mutually explore ideas and methods. It is also my sincere hope that this conference will open new avenues for all of you in internal communication.

ORGANIZATIONAL COMMUNICATION: A STATE-OF-THE-ART REVIEW

By

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Dr. Tompkins served as summer faculty consultant to Marshall Space Flight Center and as coordinator of the conference. His discussion addresses itself to a history and description of current research and theory in the area of organizational communication. He further offers what may be termed a 'general theory' of organizational communication. Dr. Tompkins is presently Associate Professor of Speech at Wayne State University, Detroit, Michigan.

"Communication is an old, worn-out word. You need to find a more exotic term." These words of advice were recently given to me by a well-meaning person. I took them as reassurance that perhaps the communication tail-waggers and truth-seekers may be leaving the field for newer, more exciting words and slogans. But while they were still with us, they contributed to the vast literature on communication. Part of this is based upon research, part of it is based upon experience — and still another part is based upon neither. Let's forget for a moment the how-to-do-it and look at the this-is-how-it-is, i.e., let's survey the research studies which (1) have been conducted in real-world organizations, and (2) have employed some kind of controlled observation or quantification. I have something like a hundred studies that seem to satisfy both criteria.

But before we survey these studies, let's take a brief look at the history of organizational communication: first, from the academic viewpoint and, second, from the management-practitioner viewpoint.

The first impetus for the communication movement (disregarding Dale Carnegie's YMCA courses in speech, memory, "personality," etc.) came from the Human Relations group in the Harvard Graduate School of Business Administration. The famous Hawthorne studies, although not designed as communication research, did emphasize its importance. The interviewing program stands as "the first serious scientific attack upon the problems of employee communication." [1]

The Harvard group was influenced significantly by Korzybski and the General Semanticists. This led to direct research attacks upon communication. The leading general semanticist of the speech field, Irving Lee of Northwestern University, took notice of this work and himself became interested in problems of communication in business organizations. He visited the Harvard group in 1951, conducted courses for business executives, and devoted his writings to these problems [2].

Lee also encouraged his students and colleagues in speech departments to become more interested in the field of organizational communication. It was in 1952 that the late P. E. Lull founded the Communication Research Center, Department of Speech, at Purdue University (now headed by W. Charles Redding). Another milestone was Thomas R. Nilsen's 1953 doctoral dissertation at Northwestern University: "The Communication Survey: A Study of Communication Problems in Three Office and Factory Units." Today, research is being conducted in scores of universities by people located in departments of psychology, sociology, speech, and business administration as well as by the "practicing communicator" in business and governmental organizations.

From the viewpoint of the practitioner, C. J. Dover has seen three eras of management communication. The first was the Era of Entertainment (pre-World War II). Organized management communication efforts were puny by today's standards; company publications dealt with choice items of gossip,

social chitchat about employees, notices of local recreation, and entertainment opportunities.

The Era of Information spanned the decade of the forties. Employee publications increased from about 2000 in 1940 to about 6000 in 1950. The most significant change of this era, in Dover's view, was in the content of management efforts. The number of empolyee publications offering only entertainment and service content (probably in excess of 90 percent before 1940) dropped to 43 percent of the total by 1948. The new emphasis in content was on informing employees about the company — its policies and operations.

The 1950's were characterized by Dover as the Era of Interpretation and Persuasion. The new features of management communication were: (a) interpretation — emphasizing or explaining the significance of the facts in terms of employee interest; (b) persuasion — urging employees to take specific action or to accept management's ideas and opinions. The archetypal company communication program of this era would certainly have to be General Electric's well-known philosophy of "Boulwarism." Dover, who for a while was responsible for implementing "Boulwarism," predicted that the interpretation and persuasion functions would be the dominant pattern of management communication programs in the future. We have numerous contractor representatives in the audience today who can evaluate that prediction. We can also add that in the fifties and sixties, management has discovered that there is a great deal more to this problem of organizational communication than employee publications [3].

These slides will show the way that people have viewed organizational communication. An organization chart is like a bikini; what it reveals is interesting, but what it conceals is vital (Fig. 1). This diagram is the classical model of organization, a composite extracted by Walton from the writings of Weber, Urwick, and others. The principles of hierarchy, task specialization, unity of command, and line-staff bifurcation results in the following communication system:

1. Instructions and commands to do or not do are always communicated down the chain of command, and only from one person to others directly below him in the hierarchy.

2. Reports, inquiries, and requests are always communicated up the chain of command, and only to the one person directly above the communicator in the hierarchy.

3. Subgroups do not communicate directly with other subgroups at their level on the chart, but instead communicate up the chain of command until the message arrives at an office where both subgroups share a common supervisor, then down the chain of command to the recipient subgroup.

4. The staff plays the role of communication gadfly — i.e., it is given free reins to collect and disseminate nonauthoritative information in its role as an extension of the boss [4].

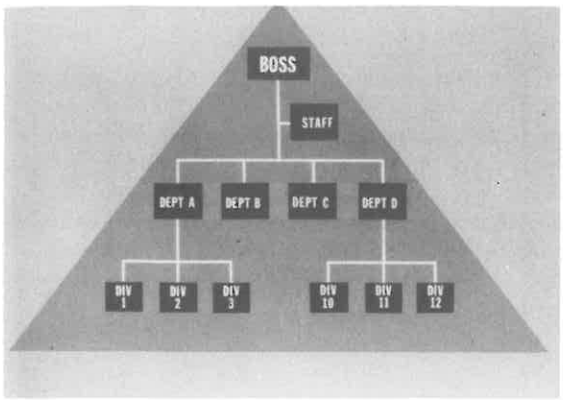

FIGURE 1. THE CLASSICAL MODEL OF ORGANIZATION

This model has had great influence upon the forming of concepts and practices of organizational communication. We speak, for an example, of downward, upward, and horizontal (or lateral) communication. In fact, let's use those three concepts in organizing the studies we are going to discuss today — keeping in mind that we may be concealing something vital.

FORMAL CHANNELS OF COMMUNICATION

Downward-Directed Communication

Downward-directed communication in business organizations has perhaps been the subject most frequently attacked by research workers in the field. The reason seems obvious. Those who sit at the top of an organization are naturally concerned with the efficacy of their attempts to communicate directives,

policies, and information down the line to their employees. And the people at the top are most likely to decide what kind of research can or could be done.

Let us recognize from the start, however, that not all organizations desire to communicate with their employees on even such basic matters as industrial relations policies. As recently as 1948, Helen Baker surveyed 44 companies and found that only 42 percent distributed most policies to all employees. This figure was viewed as "impressive" by the researcher because business had not been seriously interested in communication as a subject of attention until late in the 1930's. In addition, Baker found that some companies still feared to commit their policies to paper [5].

The basic problem of downward-directed communication today, however, can be illustrated by some findings reported by the Opinion Research Corporation. While studying communication within a metals-producing organization, the researchers found that top management's acute concern over declining profits had failed to filter down to the most logical place for remedial action — the first-line supervisor (Fig. 2).

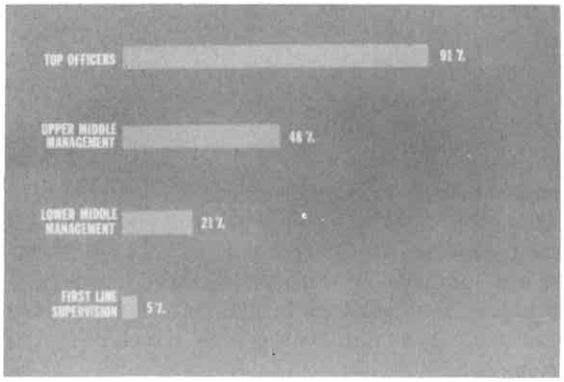

FIGURE 2. PERCENTAGE WHO UNDERSTAND THAT PROFITS ARE UNSATISFACTORY

Note that each level of management seems to have acted, not as a vehicle, but as an obstacle to downward communication [5].

Ineffective downward communication may be the rule rather than the exception. Funk and Becker, for example, administered a multiple-choice type of test to 37 staff members of the Technical Division of the Student Counseling Bureau of the University of Minnesota. They found that the employees and their supervisors were far from fully informed concerning the policies and practices which had been communicated by way of manuals, memoranda, and conferences [7]. In his case study of a small urban bank, Level employed questionnaires and interviews to determine the level of understanding of company policies among employees. He found that the employees' information about bank practices and policies was only mediocre, and that there was widespread ignorance about such matters as insurance benefits [8], despite the small number of employees (only about 50).

Odiorne used what he called a "Communication Audit" to measure the effectiveness of downward communication in an electronics research and development firm of 300 employees. He asked 10 members of top management to complete the questionnaire as they thought their employees would, and he then asked 30 project engineers to complete the questionnaire from their own perspective. After making the obvious comparisons, Odiorne found that top management estimates of the adequacy of information disseminated throughout the organization were more favorable than those of the engineers [9].

In a study done on a chemical company's sales activities, Opinion Research Corporation found that salesmen felt shortchanged on information they needed to improve sales performance. For example, 71 percent of the salesmen said they did not get enough information on which products were most profitable nor on which ones were "break-even" or loss items; 50 percent said they did not get enough information on how best to sell and service their products [10].

It must be stressed that the studies mentioned above dealt only with understanding. A distinction needs to be made here between communication and persuasion. It is entirely possible for top management to get certain information across without changing attitudes. For example, the president of a manufacturing company changed the objectives from emphasis on new product development to the improvement of existing products. One year later, even those in management who got the message disagreed with the change. Exactly 70 percent of the management members who knew of the new emphasis said that they disagreed and that the emphasis should be on new product development [10].

Furthermore, there is evidence to suggest that communication between people who do not have complete trust in each other does not lead to understanding. In his study of a large governmental body devoted to medical research, Mellinger found that an individual is likely to distort his own attitudes in communicating with people whom he distrusts. This distortion — concealment may be a better word — was accomplished by evasive, compliant, and aggressive communications. Thus, said Mellinger, a distrusted individual may be led to overestimate agreement in others [11].

Considerable research has been conducted in order to discover whether there is a relationship between downward communication and morale, i. e., between being well-informed and being happy with the organization. Browne and Neitzel studied three levels of supervisors in a Michigan utilities company. They asked the supervisors to estimate the extent of their authority, responsibility, and delegation of authority. These were compared with the estimates of each person's supervisor; the difference was called a "disparity score" and taken as a measure of incomplete or unsatisfactory communication. The researchers then compared the disparity scores with the results of a morale scale and found a negative relationship between the two. In other words, the higher the disparity score (poor communication) the lower the morale. This was especially true for the relationship between the responsibility disparity scores and morale [12].

Another study indicated a relationship between the type of downward communications and effects on the receiver's morale. A study in a public utility company varied experimentally the kind of communications supervisors gave their subordinates. The employees became threatened and anxious in response to two different kinds of messages: when the communication was unclear and when the supervisor was inconsistent from one message to another [13].

Other studies, however, have come up with contradictory findings. Perry and Mahoney tested the employees of five Minnesota firms. They constructed an information test for employees of each firm; the information being tested varied from firm to firm — topics such as company history, products, finances, etc. The same employees were given an attitude scale (a 15-item form of a standardized scale), and the results were compared with the test scores. They found practically no support for the hypothesis that there is a relationship between an employee's attitude toward his company and how much he knows about his company [14]. Likewise, in his previously mentioned study of an urban bank, Level found no significant relationship between the level of information and employee morale [8].

A study by Jackson found that frequent communication among personnel made working for the organization either more or less attractive for them. The mediating factor was whether the persons who were in communication valued each other's contribution to the mission of the organization [15].

In his case study of communication within the "United Sound and Signal Company," Stryker found what he considered to be "overcommunication" and the resulting frustration of knowing too much. In fact, Stryker argued that the solution might be to train executives in the art of discreetly withholding information from other executives [16]. This question clearly needs more research. Perhaps some kinds of information are more related to morale than others; for example, the degree of one's responsibility is undoubtedly more important to that person than his understanding of company history. And it may be that being well informed on certain topics is a prerequisite to good morale, but no guarantee of it. And finally, can a worker be expected to have high morale after being full informed of his dismissal?

How can a manager select from the many media and methods available for downward communication? This question has preoccupied researchers and practitioners alike. Peters reported the findings of a National Conference Board survey conducted in 1948. These results are shown in Table I. In his own survey of 40 companies known to have extensive communication programs, Peters got returns from 22. He found that there were 21 different media or methods, ranging from radio programs to orientation courses, used by at least 9 percent of the companies [17].

O'Brien, in an article summarizing two studies conducted by the Opinion Research Corporation, pointed out that between 1951 and 1953 management began to give increased attention to the pivotal role played by foremen and supervisors in company communication programs. The two surveys, conducted among companies with assets of $5 million or more in manufacturing, utilities, transportation, wholesale, and retail trade, showed that meetings with supervisors were employed regularly by 97 percent of the companies in 1953, as against 70 percent only two years previously. The use of employee publications, on the other hand, leveled off at 72 percent of

TABLE I. COMMUNICATION MEDIA USED BY COMPANIES

	Wage Earners (Percent of 360 Companies)	Salaried Employees (Percent of 360 Companies)
Bulletin boards	99	92
Letters or bulletins	51	62
Meetings	44	59
Payroll inserts	51	39
Employee handbooks	28	36
Employee magazines	20	33
Financial reports	16	28
Films	16	23
Other special booklets	16	21
Employee newspapers	16	20
Safety manuals	19	15
Public address systems	12	10

the companies studied during 1953, from a peak of 76 percent in 1951 [18].

In a survey of presidents of the 100 largest corporations in the United States, Lull, Funk, and Piersol found that a majority felt that very important policies should be transmitted orally or in combination with written media [19]. Tompkins and Conboy, repeating the study among large firms in the greater Kansas City area, found essentially the same results [20]. From the viewpoint of operating management, 443 participants in management conferences conducted at Purdue University said that oral media were the best in communicating down, as well as the greatest source of trouble [21]. Level found that the bank employees whom he studied preferred oral and personal communication to written or impersonal methods [8].

Walton asked 100 randomly chosen employees of the U. S. Naval Ordnance Test Station, China Lake, California: "Suppose management made an important change in the way the station would be run — through what channel would you most likely get the word first?" Walton's findings are summarized below [22]:

Channel	Percent
Grapevine	38
Supervisor	27
Official memo	17
Station newspaper	7
Station directive system	4
Bulletin boards	4
Other	3

Walton also asked the employees, "Which of these media has the greatest overall effectiveness?" but unfortunately the findings are not comparable because different "channels" were posed [22].

In perhaps the best controlled experimental research executed in Industrial Communication, Dahle made a comparative study of five different methods of transmitting information to business and industrial employees. Actually, he conducted three separate experiments: In the first, he attempted to communicate the contents of a beginning speech-course syllabus to 1030 students at Purdue University; in the second experiment, he attempted to communicate insurance-benefit information to 84 employees in operating departments of the Rostone Corporation of Lafayette, Indiana; in the third experiment, he tried to transmit information pertaining to company benefits to 528 employees of Spiegel, Inc., of Chicago. The five different methods employed are shown in Figure 3, arranged in order of communication effectiveness (as measured by paper and pencil test). The results also revealed that the most effective method, combined oral and written, was closely followed by the oral-only method (the oral presentations were made by instructors in the first experiment and by supervisors in the second and third studies). The written-only method was a poor third. The results were consistent from study to study, except that the bulletin board was not employed in the second study [23].

Smith compared the relative effectiveness of (1) an oral symposium, with a forum period following it; and (2) a mimeographed memorandum for communicating product-information from management to

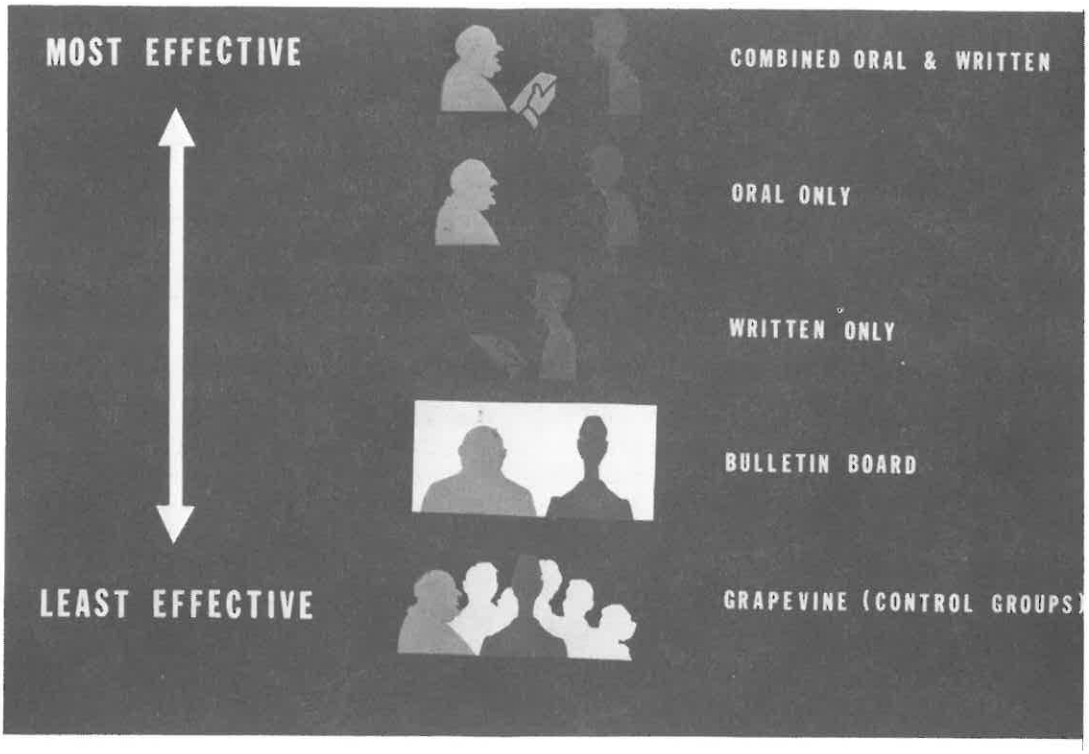

FIGURE 3. RELATIVE MEDIA - EFFECTIVENESS

non-production employees of a Midwestern engine/transmission division of a large corporation. He found no difference between media, but did discover that this experimental situation was perceived by the employees as a new experience, an "adventure," which probably therefore transcended any specific media-effects that might have been found [16].

The medium for downward communication most frequently studied, probably because of its permanence, is the written. This report cannot hope to review all these studies, but a representative sample will be examined. In 1948, Paterson and Jenkins stated that the literature of industrial relations and personnel work had failed to emphasize the importance of communicating in language that the average man can understand. They applied the Flesch readability formula to an information sheet presented to potential applicants for employment in a needle trade factory. It was classified as hard — typical of an academic type of magazine — requiring a high school or some college level of reading ability to comprehend it. The information sheet was rewritten, preserving the ideas of the original sheet, and the resulting readability score was found to be easy, typical of pulp fiction writing and comprehensible to those with a fifth-grade level of reading ability. The rules followed in rewriting the information were taken from Flesch, Thorndike, and others — e.g., use short sentences, words of one or two syllables, words in frequent use, eliminate unnecessary adjectives, etc. [24].

In an ambitious study of written communication within a railroad, 748 officers and employees stationed at seven major points were interviewed. Only two-thirds of the employees could identify the Annual Report with the title removed from the cover. Only 9 to 12 percent of those interviewed had read the report thoroughly. Householder concluded that as an instrument for informing employees, the report had very little impact [25].

Carlucci and Crissy investigated the readability of employee handbooks of the so-called "Billion Dollar Club" of American industry. They found that many of the handbooks were not comprehensible to the lowest levels of employees in the respective companies [26].

In a more thorough study of employee handbooks, Lawshe, Holmes, and Turmail considered such criteria as readability and eye appeal. They first made a content analysis of 84 handbooks; 15 topics were discovered; the three main topics covered in the average handbook were policies and rules, company information, and company facilities. The percentages of total space in the average handbook devoted to these topics were, respectively, 33.5 percent, 17.6 percent, and 10.7 percent.

Thirty judges were asked to rate the eye appeal of the covers and inside layouts. The reliability of the ratings was .983. The high-rated handbooks were characterized by the following: pictures on the cover, color, a reduced Life format, more interior graphic space, more space on company information, and size ranges from 4 by 6 inches to 6 by 9 inches. The investigators also learned, by means of the Flesch formula, that the level of reading interest was too low and the level of reading difficulty, too high for the intended reader.

By means of a questionnaire survey of the companies whose handbooks had been studied, the researchers found that the respondents felt that some sort of follow-up was desirable — in other words, handbooks are better used when accompanied by some sort of talk or discussion of the findings. The survey also indicated the importance of feedback (which is covered more extensively in a later section); the researchers found that the handbooks of those companies which asked employees for suggestions were more interesting than those of companies which did not ask their employees [27].

Convinced that Flesch readability scores were meaningless unless the reading ability of the intended audience was known, Colby and Tiffin of Purdue University sought to find an efficient method of predicting reading ability. They administered the Nelson Silent Reading Test to 518 supervisors in seven Indiana manufacturing plants. The test scores were then correlated with years of age and schooling to determine the multiple correlation coefficients. The suggested prediction formula was

$$RTS = 90.84 - .633A + 5.27S$$

where RTS means predicted reading test score, A is the reader's age, and S is the reader's years of schooling. The coefficients -.633 and +.527 indicate the relative influence of age and schooling on the reading test scores of the group of supervisors who participated in this study. The researchers emphasized that it was an imperfect measure, that refinements were needed. Nonetheless, it can be of value to the practicing communicator who must prepare written material for supervisors or employees or both. By implication, Colby and Tiffin in this research study are advising communicators to analyze their receivers before communicating with them [28].

In the survey made by Helen Baker, described above, the conclusion was drawn that the most discouraging aspect of the research was that so many companies still (1948) depended largely on miscellaneous, uncoordinated printed materials for their downward communications of policy [5]. Two years later, Baker and France surveyed large urban department stores. Again it was found that management was preoccupied with written communication [29].

Some attention has been paid to the philosophy of labor relations — known as "Fairlessness," after the U. S. Steel executive — characterized by management's almost exclusive communication with employees by way of their union. How widespread is this practice? In one of the first organizational studies of communication, Baker, Ballantine, and True of Princeton University found that the union organization provided an important adjunct to management's channels of communication [6]. In a survey of department stores, Baker and France found evidence of failure on the part of management to use union channels [29]. In 1954, Mahoney received returned questionnaires from 168 "practicing communicators" (61 percent return) from 91 firms. A majority of respondents disapproved of using the union as a channel of communication [30]. In 1956, however, the Bureau of National Affairs surveyed 106 companies of varying size and types. A majority of the respondents in this case reported that they sometimes used the union as a channel of communication. Only 36 percent of the larger companies and 28 percent of the smaller said that they never used the union for such purposes [31]. It would appear from this limited but chronological review that the trend is in the direction of more widespread use of the union by management as a means of reaching the organized worker.

While on the topic of unions, it is profitable to examine the media and methods employed by unions in their own downward communication; unions face unique problems of communication, and their practices offer an opportunity for comparison with those of management.

While making their study of Johnson and Johnson's communication efforts, Baker, Ballantine, and True also focused on the New Brunswick Local (No. 630) of the Textile Workers Union of America. They found members in general to be not well informed on policies, organization, and aims of the union. Printed material was found to be a relatively ineffective means of communication (only about one-half of the members read the bimonthly paper). The members preferred informal, oral, on-the-job communication. The union steward, unique in his potential ability to satisfy this preference, was found to be unaware of the importance of his role in communicating information to the workers. The union meeting, potentially the most effective means of downward (and upward) communication was found to be rendered ineffective because of poor attendance by members [6].

Dee studied the written [32] and oral [33] channels of downward communication in a local of the United Steelworkers of America. He found the written channels (bulletin boards in the plant and a column in the weekly CIO News) to be inadequate. As for oral methods, the meetings were seen to be poorly planned, publicized, organized, and attended. Stewards were ineffective because of the lack of a clear-cut recognition and definition of this communication function; these deficiencies, in turn, appeared to be caused by their lack of training.

Craft and construction trade unions, in comparison, appear to have even more insurmountable problems of communication than the industrial unions. In his study of a national building-trade union, Tompkins again found the problem of poor meeting attendance and ineffectiveness of the written medium. In addition, building-trade union members suffer from a lack of propinquity. They work on widely separated jobs and may even be widely separated on the same construction site. Hence, bulletin boards, as well as stewards, are almost totally ineffective. These problems, however, may be partially compensated for by aggressive business agents, full-time employees of the union, who make the rounds of various jobs, passing on vital information to members [34].

Implications for Communicators

In summary of the research on downward communication, it seems reasonable to conclude that widespread ineffectiveness is the rule, probably because of a variety of causes. The studies seem to suggest that management is ill-advised to depend on one-message-campaigns or upon the written medium alone. Communication effectiveness can better be achieved by careful analysis of the intended receiver, by use of a combination of media and methods (giving the oral medium prominence), by careful monitoring of feedback, and by a continual effort to communicate. Redundancy — telling more, and more more often, than is logically necessary — emerges as a significant guide line.

Upward-Directed Communication

Two vital points must be made as a preface to this section. First, many writers and practitioners feel that upward communication within organizations is noteworthy only because it serves as feedback for management, i. e., the responses to management communications given by the worker serve as clues to the relative success of a given message from management. This is an oversimplification, it seems, because management's response to a message initiated by an hourly-paid worker could just as accurately be classified as feedback. If management is interested in upward communication solely for its clues to employee response, then management forces itself into the position of having to anticipate (by some kind of divine inspiration) every significant development at the shop level.

The second prefatory point is this: It will so become clear that there is a paucity of research on upward communication in organizations. If the researchers reflect the interests and practices of management (as is likely), we may have a fresh hypothesis to explain the lack of success in downward communication. We have already seen the value of careful analysis of intended receivers; how can management learn the mind of the employee except by attending to upward communication?

Management's preoccupation with downward communication (hence, its relative apathy about upward communication) was suggested by several studies mentioned earlier. This conclusion is supported by the results of a survey of company practices conducted by the New York State Department of Labor published in 1955. Fifty-three representative industrial firms cooperated. Communication policy, the results showed, was determined by one of the following officers in 75 percent of the companies: president, general manager, personnel director, or the industrial relations manager. The authors concluded that nearly all the companies seemed less

concerned about upward than about downward communication, and that most of the companies used only the suggestion box as a means of ascertaining workers' views [35].

Another manifestation of the problem is evident in the figures shown below. The percentages represent proportions of managers and supervisors in ten different cases who agreed to the following statement: "In our corporation there is not much opportunity for supervisory people to let higher management know our views on things that affect us and our work" [10].

Cases	Managers and Supervisors (Percent)
# 1	73
# 2	70
# 3	63
# 4	58
# 5	52
# 6	49
# 7	44
# 8	40
# 9	34
# 10	28

A creative research approach to the problem of upward communication was taken by Maier, Read, and Hooven. They interviewed 35 pairs of superiors and subordinates in four companies. The interview data were independently rated for degree of agreement-disagreement by three judges. They found agreement between the boss and his subordinate on the content of the subordinate's job duties and responsibilities, but there was significant disagreement when both were asked to rank job responsibilities in order of importance.

The bosses and subordinates were found not to share the same ideas about future changes in the jobs of the subordinates. Subordinates often saw few possibilities for changes, whereas the bosses were aware of many. Greater lack of agreement occurred on the obstacles and problems which were of greatest concern to the subordinates [36].

Maier, Hoffman, and Read employed much the same methodology in studying communication between a subordinate and a supervisor who had previously held that subordinate's job. Two sets of data were gathered. In one sample, degree of superior-subordinate agreement concerning five aspects of the subordinate's job was compared for 20 pairs in which they had not. In the second sample, agreements in rankings by superiors and subordinates of the seriousness of the subordinates' job problems, by 11 pairs in which the superiors had held the subordinates' jobs, were compared with the agreements of 41 pairs in which the superiors had not been in the subordinates' jobs. No consistent over-all differences, or patterns of differences, were found between the two types of pairs in either sample. Having held their subordinates' jobs proved to be no advantage to managers in producing communication effectiveness with those subordinates [37].

Read hypothesized a negative relationship between "upward-mobility aspirations" of members in an industrial organization and the accuracy with which those members communicate upward in the hierarchy; that is, the more ambitious the executive, the less he will tell his boss.

To test this hypothesis, Read selected, at random, 52 superiors (drawn from the third level removed from hourly workers in 31 major industrial organizations) and an identical number of their subordinates. Accuracy of communication was defined as the degree of agreement between superior and subordinate about the relative difficulty of the subordinate's problems in the following five areas: coordination and communication; budget and cost; technical; pressures and deadlines; administration and supervision. Both members of each pair were asked to rank-order these problem areas. The subordinate's upward mobility aspiration was measured in three different ways, including a ten-item test presenting the subordinate with alternative moves in the organization.

The results generally supported the hypothesis that, in industrial hierarchies, mobility aspiration among subordinate executives is negatively related to the accuracy of upward communication. The results were modified strikingly by the amount of trust the subordinate had in his boss. In other words, the ambitious subordinate may withhold information about his problems from his boss (possibly from fear that such information would be threatening to him) except when he has a great deal of trust in his superior [38].

To summarize briefly, the research indicates that many members of management seem to care little for facilitating upward communication. We have also seen (1) that bosses and subordinates commonly fail to agree — indicating a communication breakdown — on problems facing the subordinate;

(2) that having formerly held a subordinate's job does not improve communication between that superior and his subordinate; and (3) that the ambitious executive may refrain from communicating with his boss — particularly when he has little trust in the boss. There is, in addition, some research evidence to support the common-sense observation that subordinates are often reluctant to ask superiors for help when they need it — because this might be perceived as a threatening admission of inadequacy [10], [39].

One of the few encouraging studies on this topic was presented by Jackson. He conducted a study of communication patterns among all the personnel of a medium-sized government agency. He found that people preferred to communicate with someone of higher status than themselves, and tried to avoid communicating with those lower in status than themselves. The only exception to this tendency was when a person had supervisory responsibilities which removed his restraint against communicating with particular lower status persons [40].

The classic study of feedback — even though conducted in an artificial situation using students as subjects — was carried out by Leavitt. He created four communication situations ranging from "zero" (no) feedback to "free" feedback. The sender attempted to communicate geometric diagrams so that his listeners could reproduce them. He found that completing the circuit between sender and receiver (free feedback) increased the accuracy of communication. Feedback also increased receiver and sender confidence in what they had accomplished. Zero feedback engendered doubt in the sender. The cost of feedback, according to the results of this study, was time; that is, communication with free feedback was more time-consuming than with zero feedback [41].

In another experiment, this one conducted by Berkowitz, groups of subjects involved in problem-solving were "fed back" varying amount of information relating to their performance. The researcher found that increasing the quantity and quality of feedback messages resulted in an increased level of organization within the groups, improved coordination, and improved performance [42].

It has been argued, of course, that unions fulfill the workers' need to speak to management; that is, unions force upon management an upward channel of communication (e.g., grievances) when management has failed to provide such a channel. In the Baker, Ballantine, and True study of the Bayway refinery of Esso Standard Oil and its union (Independent Petroleum Workers of New Jersey), it was found that channeling the worker's point of view to management was part and parcel of the union's basic function [6].

Implications for Communicators

The strongest recommendation made by the research in this section is that management must learn that it is in its own best interest to be concerned with upward communication. The executive must realize that ambitious subordinates will normally keep him in the dark — unless he can instill trust and confidence. The best way of accomplishing this may be by demonstrating that he can listen to a subordinate's problems without using them as threats. Management must also learn to monitor feedback, i.e., to listen and watch for employee responses, and adjust its communication behavior accordingly.

Horizontal Communication

Although research and practices by management in communication indicate a preoccupation with downward communication to the detriment of upward communication, it is just as true that interest lies in vertical communication to the detriment of horizontal. Effective horizontal communication is sometimes encouraged in theory because it is indispensable to coordination, but the research into this phenomenon has been negligible.

It has been contended that adequate upward communication is a prerequisite to effective downward communication. It is argued by at least one researcher that horizontal, or as he called them — lateral, channels are essential to the proper functioning of the vertical system. This researcher, Tom Burns, used a self-recording technique on four executives in a British engineering factory. The executives made systematic records of their activities and interactions over a five-week period.

The records indicated that as much of the executive's time was spent with those who had staff as with those with whom they had line relationships — a lateral displacement of communication suggesting difficulties over the authority component in the direct relationship of superior and subordinate. There was

a marked tendency for interaction to be initiated downward rather than upward. The even balance at the same status level served to maintain communication circuits among groups of equivalent status which crossed departmental boundaries; communication "leaked" from level to level.

The lateral system, therefore, whereas its importance was largely owing to displacement of line communication and of status determinants of interaction, was yet essential to the proper functioning of the vertical system.

The stereotype of communication in an executive chain as passing up and down a vertical channel, concluded Burns, is an oversimplified view which denies the existence of a complementary lateral system rendered necessary by problems and difficulties internal to the group [43].

Specialization of function in large organizations has frequently been hypothesized as a cause of poor (or even a complete lack of) communication between company departments. Opinion Research Corporation has gathered evidence of this deficiency in two different organizations. Fifty-eight percent of a manufacturing concern's salesmen reported that they did not get needed information about other departments of the company. Fifty-seven percent of the technical staff of an electronics company reported that the exchange of information between operating management and research management was poor or only fair [10].

Walton studied communication between 62 top research scientists and 49 top development engineers attached to a U. S. Naval Ordnance Test Station in California. The scientists responded to the following incomplete sentence: "When I discover a finding of possible use to the Development people, I usually. . ." Only 53 percent would report the findings to the engineers directly (15 percent said they would report to their supervisors). The engineers responded to a similar sentence: "When I run into a technical problem calling for considerable basic or applied research, I usually. . ." Only 33 percent would call on researchers directly (8 percent said they would call on the researchers through their supervisors). Significantly, both groups were motivated to communicate their findings in the open literature. Walton concluded that the barrier to communication between these groups was not related to channels or clarity, but to motivation. Horizontal communication, one might infer, does not lead to "rewards" that communicating vertically (or even externally, as in the case of publishing in the open literature). Walton placed the blame for this situation upon management. As the major dispenser of rewards and punishments, management must, urged Walton, shoulder the major responsibility for determining what things are "worthwhile" for the employee to do [44].

Perhaps the most provocative study of horizontal communication was conducted by Simpson. He interviewed eight supervisors, representing three hierarchical levels, in the spinning department of a synthetic textile mill. Each supervisor was asked: "About how often do you talk with _____ on business?" The results were classified in terms of the frequency of vertical communication as opposed to horizontal communication. He found that a preponderance of the communication activities of four of the five first line supervisors was classified as being horizontal. These activities were typically of the problem-solving and coordinative kind. Very few of the communication experiences were characterized as being directive, or results-reporting. In discussing the implications of his research, Simpson hypothesized that mechanization reduces the need for close supervision (vertical communication) because machines, rather than foremen, set the pace for the workers; but automation (that is, extreme mechanization) increases the need for vertical communication [45].

Implications for Communicators

There is little to summarize under the heading of horizontal communication. Managers should be alert for communication failures among highly specialized departments and agencies. Managers should also carefully examine vital horizontal channels in light of the organizational system of rewards and punishments. Finally, it seems safe to conclude that the meager research on this topic would support Simpson's thesis that writers on formal organization have overemphasized vertical communication and underemphasized horizontal communication — the way in which work problems are ironed out and work-flow processes are coordinated.

COMMUNICATION, SUPERVISION, AND HUMAN RELATIONS

How does an effective supervisor communicate? What effect, if any, does supervisory communication have upon the morale of his workers?

Mellinger hypothesized that a communicator, B, who lacks trust in the recipient of his communication, A, tends to be motivated to conceal his own attitudes about an issue, X, in communicating with A. The accuracy of A's perceptions is impaired accordingly. It is suggested, further, that concealment may be accomplished by communications which are evasive, compliant, or aggressive. Thus, a distrusted A may be led to overestimate agreement in others. Data were gathered in a large organization devoted to medical research (the subjects were drawn from a group of 330 professional scientists); Mellinger's hypotheses were supported. In other words, when people do not trust one another, an increase in communication does not necessarily lead to greater understanding [11].

It was evident as early as 1949 that supervisors tended to underestimate their own importance to the company chain of communication [6]. Several studies tried to determine the amount of time a supervisor spent in communication. For example, Piersol studied the oral communication activities of foremen and assistant foremen in a mid-western corporation. Using what he called the "shadow technique," Piersol observed supervisors from a distance of several paces and recorded all of the conversations. He found that approximately 50 percent (four hours) of the supervisor's work day was spent in some form of oral communication activity (speaking or listening). He projected that the amount of time spent in writing, reading, and preparing for communication tasks would probably add a considerable amount of time to the 50 percent figure. The task category in which the supervisors spent most of their oral communication time was in maintaining quality and quantity of production [46].

Walker, Guest, and Turner conducted a case study of the foreman in an automobile assembly plant. They found that the dual function of foremen — as representatives of management and employees — is primarily one of communication. As a member of management he interprets company policy to his workers, transmits orders, hires, and fires. But at the same time he transmits the needs, complaints, and attitudes of his men to management. Walker, Guest, and Turner found that the successful foreman views his subordinates as individuals and as members of a social group. They further found that the foreman spent up to 80 percent of his work time in communication [47].

Does a foreman's effectiveness in keeping employees informed contribute to high morale? As mentioned in an earlier chapter, Brown and Nietzel studied three levels of supervisors in a Michigan utilities company. They asked the supervisors to estimate the extent of their authority, responsibility, and delegation of authority. These were compared with the estimates of each person's supervisor; the difference was called a "disparity score" and taken as a measure of incomplete or unsatisfactory communication. The researchers then compared the disparity scores with the results of a morale survey and found a negative relationship between the two. In other words, the higher the disparity score (poor communication) the lower the morale. This was especially true for the relationship between the responsibility disparity scores and morale [12].

Ian Ross made the common sense observation that subordinates often are reluctant to ask supervisors for help when they need it, because this might be construed as a threatening admission of inadequacy [39].

The "communication attitudes" of supervisors has been attacked by numerous researchers. Funk, for example, sought to determine the relationship of attitudes toward communication and the rated productivity of over 200 foremen in five departments of a heavy industrial plant. The subjects were divided into "high" and "low" groups by their superiors' ratings; the criterion was the productivity of their units. A dichotomous-choice communication attitude survey was administered to half of the subjects; the items were analyzed and a refined instrument was administered to the remaining half.

Funk found that compared with the low-production-rated foremen, the "highs" had more favorable attitudes toward communication aspects of their jobs, toward their workers, and toward communicating with their workers [48].

Pelz began a study in 1948 in the Detroit Edison Company. Some 8000 non-supervisory employees filled in a paper and pencil questionnaire. All supervisory personnel were given a personal interview. Forty "high-satisfied" and thirty "low-satisfied" groups were selected; their supervisors were then compared.

Each supervisor was asked about his "influence" with superiors: (1) the amount of "voice" he had in his superior's decisions; (2) the amount of autonomy he had with respect to his superior (as indicated by the frequency of contacts with his superior; and (3) his salary (a general indication of his status and responsibility).

He found that under influential supervisors an increase in "siding with employees" was accomplished by a general rise in employee satisfaction. Under non-influential supervisors the same behavior produced not a rise, but a drop in employee satisfaction. Under high-influence supervisors, in 19 times of 28, Pelz found that "siding with employees" and "social closeness" were accompanied by some rise in employee satisfaction. But under low-influence supervisors, these behaviors were accompanied by a rise in satisfaction only 8 times out of 28; a loss in satisfaction was the more common result. Pelz concluded that the supervisory behaviors of "siding with employees" and "social closeness to employees" will tend to raise employee satisfaction only if the supervisor has enough influence to make these behaviors pay off in terms of actual benefits for employee [49].

Kelly administered a battery of tests to a group of industrial supervisors. When the group was given a "surprise" listening test following a talk, their listening comprehension was less related to general mental ability than when they knew in advance that they were to be tested.

Differences based on personality factors between the two methods of testing for listening comprehension were not significant; however, only the "surprise" listening test yielded any significant differences in personality factors between good and poor listeners. Good listeners tended to be more participative, ready to try new things, and emotionally stable [50].

A tool for identifying "successful" supervisors has been developed. A preliminary validation report on the Purdue Basic Oral Communication Form was published by Pace and Simons as a result of their separate studies. The essence of the technique is a trained interviewer's rating of a respondent's communication behavior. The form, originally constructed by W. C. Redding and revised by Pace [51] and Simons [52], was used in studies of hotel supervisors and door-to-door sales representatives; the raters were able to discriminate between "successful" and "less successful" personnel in the two different business organizations [53].

The development of the semantic differential by Osgood and his associates has stimulated quantitative research into the "semantics" of industrial communication. Weaver, for example, quantified what he called a "semantic barrier" to communication between management and labor groups. By use of the semantic differential Weaver found significant semantic distance between management and labor groups on concepts used in communication between the two groups [54].

Korman used the same research technique, however, to demonstrate that such semantic barriers are not limited to different frames of reference between various levels within management as well. He found significant semantic distance between top, middle, and lower management of one firm on such concepts as incentives, communication, quota, cooperation, and budget [55].

A more qualitative, or clinical, approach to the "semantics" of industrial communication was taken by Lombard. Working with a General Semantics orientation, Lombard made a six-month study of twenty girls who sold children's clothes in a large department store. Lombard used interviews and direct observation to gather data. The major problem diagnosed by Lombard in Department X was a deficiency in the capacity of sales girls and executives to communicate with one another about changes in behavior. Before this case study, wrote Lombard, communication was conceived as a minor matter concerned chiefly at a verbal level with merchandise, costs, volume, and the like. The problem Lombard pointed to was at the behavior level, i. e., problems created because the executives had the task of evaluating the effectiveness of the salesgirls. Communication among them was thus a complex process and involved their assumptions, perceptions, and feelings about what the behavior of themselves and others ought to ɔ]. be [56].

With a similar point of view, Nilsen studied communication in three different organizational settings. Through management interviews he determined the nature of the organizational structure and personnel relationships; through employee interviews (and limited administration of a written questionnaire) he determined the reactions and attitudes of first-line supervisors and employees toward communication practices. These techniques were supplemented by direct observation. His major conclusions were:

1. There was a general lack of awareness of communication as a problem to be studied. In none of the units had any attempt been made to analyze the communications of the organization.

2. The surveys revealed the need for careful study of the communications within a given organization to discover the specific problems of that organization.

3. The surveys revealed that the individual's need for recognition or "ego-enhancement" is one of the most important and pervading factors in the communication problems of a business organization.

4. Another one of the outstandingly important factors in communication problems is the set of assumptions made by the people communicating. Of greatest importance appears to be the assumption of understanding or adequate knowledge which forestalls the inquiry that might lead to better understanding.

5. The techniques of communication are of less importance to effective communication in industry than are the concepts which the speaker and listener have of each other.

6. An important function of communication in industry should be to avoid where possible and alter where not, the many misconceptions and misunderstandings that inevitably arise in the day-to-day work situation.

7. Employees vary greatly in their awareness of a lack of communication with management, in their conscious desire for "participation," and in their desire for information about the company.

8. Group meetings held only when specific problems have arisen often tend to put members on the defensive and adversely affect such meetings.

9. Communication problems need to be analyzed and dealt with as a part of the larger problem of human relations [57].

Ronken and Lawrence made a case study of radical change in a factory (called the Amicon tube project). "Resistance to change" was found to originate in communication difficulties. A change of such a radical degree was also found to disrupt the social systems and routines which facilitate communication. Problems of "technological change" were found to be problems in communication resulting from incompatible frames of reference. It seems to follow, concluded Ronken and Lawrence, that the administrator needs primarily to be concerned with facilitating communication in the organization [48].

As an antidote to the findings of the rather "clinical" case studies just described, it would seem appropriate to conclude this section with an "anti-communication" case study conducted by Roy. He worked as a drill operator in the machine shop of a steel-processing plant. Through this "participant-observation," Roy found that the machine operative of one shop received surreptitious assistance from five service groups in a subversion of formally instituted rules and procedures. This informally organized intergroup "ring" was able to frustrate a series of managerial attempts to effect new designs of production control.

This was not a problem of faulty communication between an economically rational or logical management and nonrational or nonlogical work groups, concluded Roy. The operatives and their allies resisted management "logics of efficiency" because application of those "logics" tended to produce something considerably less than "efficiency." [49] (Could it not, however, have been faulty upward communication that contributed to the formulation of management plans that were removed from reality?)

Implications for Communicators

A supervisor must realize first that upward communication from his subordinates will likely be affected by several variables, perhaps the most important of which is interpersonal trust. That is, if his subordinates do not have a great deal of trust in him, they will conceal, distort, and omit — especially if the subordinate is highly ambitious.

It also seems evident that the supervisor underestimates the importance of communication in his daily performance; more than half of his work day is devoted to communication activities. And the first-line foreman — who has the dual function of representing both management and the worker — is primarily a communicator. A favorable attitude toward these communication tasks seems to contribute to effective, or "successful," supervision. Perhaps the proper awareness and attitudes can best be achieved through training.

MEASURING AND DATA-GATHERING INSTRUMENTS IN INDUSTRIAL COMMUNICATION*

The purpose of this section is to provide the researcher and the practicing communicator with references to objective means of measuring the operation

*This section appeared in slightly different form in The Central States Speech Journal, Vol. XV, No. 2 (May 1964), pp. 112-116.

and consequences of an organizational communication system. The chapter focuses on recent innovations and not such standard research techniques as content analysis, the semantic differential, or the various readability indices.

The first interest of researchers in this field has been to measure objectively the degree of effectiveness-ineffectiveness of organizational communication systems. Perhaps the earliest attempt was a study conducted at the University of Minnesota by Funk and Becker. A 50-item, multiple-choice instrument was devised to test employee knowledge of organizational policies and general information. Thirty-three of the items were found to discriminate between well- and poorly-informed employees, and were assumed to reveal the extent to which organizational policies had been assimilated by employees as well as disclosing areas of ignorance [7].

This "Funk and Becker type of test," as it is known, has been used frequently since 1952 (see, for example, D. A. Level, Jr., "A Case Study of Human Communication in an Urban Bank," unpublished Ph.D. Dissertation, Purdue University, 1959; and Dallis Perry and T. A. Mahoney, "In-Plant Communication and Employee Morale," Personnel Psychology, VII (1955), pp. 339-346). Dahle's well-known experimental study of five methods of transmitting information employed a variation of this kind of test in that he used a 10-item (multiple-choice) test designed to measure comprehension of a specific message, rather than of more general organizational policies and information [23].

Another measurement approach was taken by Browne and Neitzel. They reasoned that three of the more important topics of communication between a supervisor and his superior were reponsibility, authority, and delegation of authority. Their subjects were asked to respond to a set of R, A, and D scales developed by Stogdill and Shartle. As the measure of communication, a disparity score was used which represented the differences between the individual's estimates of R, A, and D for himself and the estimates of his superior in the case of R and A; and the estimates of his assistants for D [12].

Both the Funk-Becker test and the Browne-Neitzel disparity score are used primarily to measure downward communication. Several techniques have been devised to measure upward communication. Tompkins had officials at various levels in an international labor union predict rank and file responses to a semantic differential and to a Funk-Becker type test. The difference between predicted and actual responses was taken as a measure of upward communicative effectiveness-ineffectiveness [34].

Read's study of upward communication in three industrial hierarchies considered the accuracy of upward communication. It was based on the degree of agreement between superiors and subordinates on the relative degree of difficulty facing the subordinates in five different areas: (1) coordination and communication; (2) budget and costs; (3) pressures and deadlines; (4) technical problems; (5) administration and supervision. Both superiors and subordinates were asked to rank-order these problems in terms of difficulty, from the subordinate's point of view, and the resulting data were analyzed by means of Kendall's tau. Thus, a high correlation was taken as a manifestation of effective upward communication [38].

Various techniques have been developed to describe informal channels of communication. In his study of management grapevine, Davis developed "ecco analysis" (episodic communication channels in organization), a method of analyzing communication patterns in an organization. The data-gathering instrument was a questionnaire; respondents designated how much of a given message they had received, if any, and how it differed from that duplicated on the questionnaire. In addition, the subject reported the initiator (source) and the medium through which he received the message [60].

A number of techniques have been used to record the communication activities of supervisors and executives. Piersol, for example, used the "shadow technique" to record the communication activities of foremen and assistant foremen in a midwestern corporation. The researcher spent two days with each of sixteen supervisors. Observing constantly from just a few paces away, he was able to record and classify all oral communication behavior of the subjects [46]. Burns attempted to collect similar data on executives; a self-recording technique was used by four departmental executives in a British engineering factory. These executives made systematic records of their activities and interactions according to ten subject divisions — the records being kept over a five-week period [43]. Sanborn devised a "communication log" by which he attempted to record and classify all communication behavior of executives in a nationwide retail sales organization [61].

Considerable energy has been devoted to the construction of techniques for diagnosing communication illnesses on an organizational basis. For example, the National Society of Professional Engineers

designed a questionnaire to perform a "communication audit." This instrument was modified by Odiorne for use in a research and development firm in the electronics industry. As modified, the questionnaire was made up of 16 items, yielding data primarily on effectiveness of media and channels in reaching selected personnel at lower levels [9].

Ross hypothesized a technique for locating communication breakdowns as a result of his research in the General Telephone Company of Indiana. He proposed locating trouble spots by use of a questionnaire among supervisors; the questionnaire would gather data on frequency of media used (oral vs. written) and the primary directional orientation (up, down, horizontal). Ross proposed focusing on "irregulars," those supervisors who differ (in terms of directional orientation and media preference) from the majority or norm in day-to-day communication behavior [62].

Funk designed a dichotomous-choice questionnaire for the purpose of a communication attitude survey. "High" and "low" rated foremen were asked for their attitudes toward communication tasks [48]. Obviously, any morale or attitude survey should provide evidence, if not "feedback," of the success or failure of the organization's communication system.

Several measurement instruments have been constructed for specific purposes; they do not lend themselves to ready classification. Freshley, for instance, constructed a test to probe attitudes, feelings, or sentiments of management personnel toward communication [63]. Kelly, dissatisfied with the standard listening tests, devised a "surprise" listening test (Purdue Listening Inventory) which was used in research on supervisors in one of the country's largest corporations (50).

A preliminary validation report on the Purdue Basic Oral Communication Form has been published by Pace and Simons. The essence of the technique is a trained interviewer's subjective, gestalt impression — recorded in a quantitative manner — of a respondent's communication (content-free) behavior. The form, originally constructed by W. C. Redding and revised by Pace and Simons, was used in studies of hotel supervisors and door-to-door sales representatives; the raters using the forms were able to identify "successful" and "less successful" personnel in two different business organizations [53].

In a study of supervisors in seven Indiana manufacturing plants, Colby and Tiffin correlated reading-test scores with age and years of schooling in order to determine multiple correlation coefficients. As a result, the findings enabled the researchers to predict the reading ability of supervisors from age and years of schooling [28].

This brief review suggests that researchers in industrial communication have an increasing number of tools with which to work. Most of these methodological efforts have been directed toward the analysis of vertical (as opposed to horizontal) channels of communication. Most of the instruments are in need of refinement, but the state of the field would seem to be the better because of the innovations of the past decade.

INFORMAL CHANNELS OF COMMUNICATION

How can one distinguish between formal and informal channels of communication? By custom, formal refers to those rationally specified channels that connect the boxes on organization charts. Formal messages supposedly flow through these channels, and thus acquire legitimacy and authenticity. Informal channels, on the other hand, are not rationally specified. They develop through accidents of spatial arrangements, personalities, and abilities of the persons in the boxes. Let's lift the bikini and take a peek.

Several studies have yielded provocative findings on the "key" members of informal networks. Jacobsen and Seashore, for example, studied the communication patterns in a federal agency; they held interviews with all 200 employees — everyone above the secretarial-clerical level — of an organization involved in high-level technical and professional work. The subjects were asked to give the names of people with whom they had contacts that cut across group structures. They were found at all levels of the organization. According to Jacobsen and Seashore, the "liaison" members were able to influence significantly the informal system and control communications to and from various groups [64].

Similar results were found in a more thorough study by Davis. Using what he called "ecco analysis," Davis charted the flow of so-called "grapevine" messages in the Jason Company, a manufacturer of leather goods employing 67 people in the management group. Briefly, the approach was to learn from each communication recipient just how he first received a given bit of information; Davis then traced it back to its source and thus plotted the sequence of message transmission. The findings were verified and

developed further by means of data secured from other communication recipients.

Davis predicted that the data would fall into one of four patterns (as indicated in the diagram): (a) the single-strand chain — A tells B, who tells C, who tells D, and so on; (b) the gossip chain — A tells B, C, D, and everyone else; (c) the probability chain — A communicates randomly, perhaps to F and D, according to the principles of probability (with further transmission occurring in the same manner); (d) the cluster chain — A tells three selected others, one of whom tells two others, and so on. It was this chain, the cluster, that Davis found to be the predominant one in the Jason Company. For example, the next diagram depicts a specific message, and note that it originated outside the bounds of the organization.

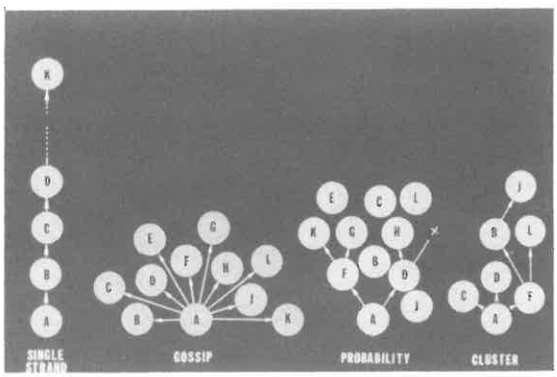

FIGURE 4. TYPES OF COMMUNICATION CHAINS

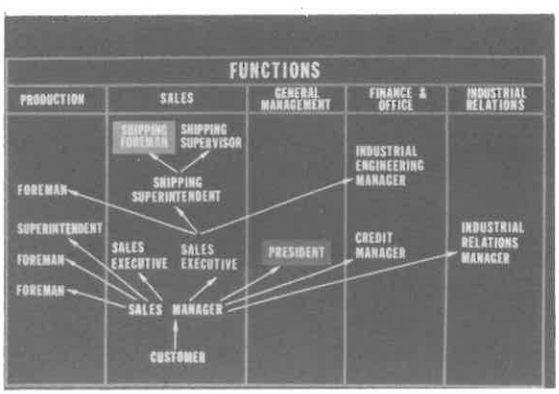

FIGURE 5. COMMUNICATION CHAIN FOR A QUALITY CONTROL PROBLEM

The people who make the cluster function are, of course the same "liaison" individuals identified by Jacobsen and Seashore. Some recipients acted merely as passive receivers. For example, in the quality control problem, 68 percent of the executives received the information, but only 20 percent transmitted it. Different kinds of information were found to be passed through different liaison persons. Other individuals, however, were invariably communication "isolates"; they received and transmitted information poorly or not at all [65].

Walton studied four sub-units of one of the government's largest research and development laboratories. These units were (1) electronic data processing branch; (2) personnel department; (3) experimental models shop; (4) the propellants division. In the first phase of the study he administered a questionnaire asking, "With whom would you in fact communicate . . ." under eight different circumstances. In the second phase the subjects kept a two-day communication log. In the final phase the subjects were asked, again by questionnaire, to predict group responses.

Walton's theoretical construct was that an organization is primarily a communication network dominated by what he called "Centrals" (similar to the "liaison" individuals found in the two previous studies) toward which messages are drawn. He hypothesized that such persons possess one or more of the following qualities: sociability, authority, power, and expertise. Walton further hypothesized that the "Centrals" were (1) more skillful at perceiving motives and values; (2) more satisfied with their job; (3) conscious of greater "voice" in the organization; (4) more frequently senders of action messages and receivers of information messages; and (5) more at ease in the communicative contacts than persons on the periphery of the communication network (called "Peripherals").

The data supported the hypotheses that Centrals possessed authority, power, and expertise, but not sociability. Sociability was found to be much more widely diffused than the other three (and in looking over Walton's data, I am convinced that the expertness factor is the most significant one). Common ground was found for Centrals and Peripherals in perceiving motives, in receiving information messages, and in being at ease in communicative contracts. The differences were that Centrals sent more action messages and felt they had more voice in organizational affairs [66].

Allen and Cohen of M. I. T., apparently unaware of the research I have just reviewed with you, also studied the flow of communication in a small research and development laboratory. They asked each subject to name individuals with whom he regularly had technical discussions, and those from whom he received special information that influenced the course of his last complete research project. The individuals rated high and low on these sociometric measures were then compared on the extent to which they used various information channels. Those members of the laboratory who were highly chosen for technical discussion had more exposure to literature sponsored by scientific or professional engineering societies and more exposure to oral sources outside the laboratory. Allen and Cohen called these people "gatekeepers" and concluded that the flow of information is analogous to the two-step flow of mass communication — which posits that we are not so much influenced by mass media as we are by people who attend the mass media. Friends in primary groups tend to divide up topics for specialization — some influence us on sports, others influence us on politics, and so on [67].

We can safely conclude, I believe, that organizational communication follows the cluster pattern, composed of Centrals and Peripherals, and that vital organizational inputs are made by the two-step flow of communication (Fig. 6).

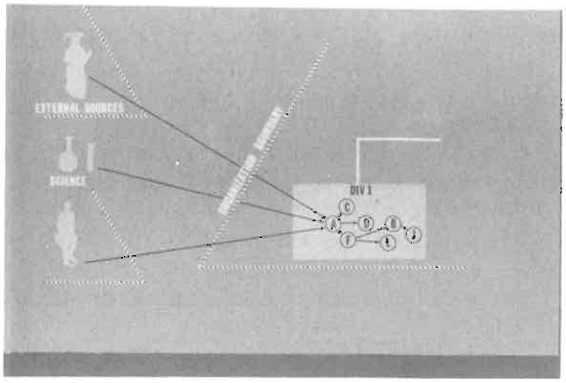

FIGURE 6. TWO-STEP FLOW OF ORGANIZATIONAL COMMUNICATION

CONCLUSIONS

In conclusion, I should like to draw together some diverse theories and studies, and suggest a general theory of communication-persuasion -- a theory which can account for psychological and sociological variables (including both mass communication and organizational communication).

At the psychological level, let us turn to the best treatise ever written on persuasion: Aristotle's Rhetoric. Aristotle hypothesized that the most potent factor in persuasion is what he called ethos, that is, the listener's "image" of the speaker. Aristotle further hypothesized that the speaker would have a persuasive image if he were perceived as a man of sagacity, high character, and good will.

A group of Yale psychologists (who apparently neglected the classics) came up with a similar concept: credibility. They further hypothesized that the three constituents of credibility are expertness, trustworthiness, and the intentions of the speaker toward his listener [68]. These again appear to be more or less synonymous with Aristotle's terms.

Moving to the sociological level for a moment, we re-examine the two-step flow of communication (a misnomer in that the theory applies to the diffusion of influence, or persuasion, rather than information). Sociologists found that mass media do not affect the mass of people directly. There are people called "local influentials" who attend to the mass media (books, magazines, journals, radio, television, etc.) more regularly than others. More recent research in this area suggests that the two-step flow is an oversimplification in that there are "local influentials" who influence other influentials [69].

To bring all of this together, let me say that when you try to review, in an orderly manner, this later, more sophisticated model of mass communication, you come up with something looking quite similar to the cluster model of informal communication defined by Davis and referred to earlier in this paper.

Who are the key links in this cluster model of communication-persuasion? I would suggest that they possess ethos or credibility. On matters that cannot be immediately verified in reality, we rely upon people who have more expertness than do we. Thus, an ambiguous psychological situation is resolved for us.

How do they gain this expertness? They attend to the mass media (education, books) more diligently than we do. Furthermore, they have personal contacts (that we lack) with people of even greater expertness. Thus, society as a whole may be viewed

as a vast network (or rather, networks) of such relationships that enter all human organizations. There are many, many steps of influence. Making this even more complex is the fact that these networks are topic-oriented and have a high degree of specialization, for example, the topics are as diverse as fashions, rocketry, politics, finance, sports, human behavior, etc.

Therefore, the similarities in the findings of Allen and Cohen, Davis, Walton, Jacobsen, and Seashore may be viewed as an indication that informal organizational communication is but a special case of the larger network: society. Psychologically, we are all able to resolve ambiguous, unverifiable issues by turning to the topic influential of our network. Fortunately, these are people we perceive as being trustworthy experts with good intentions toward us [70].

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A LARGE INDUSTRY LOOKS AT COMMUNICATION

By

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Mr. Douglas is Assistant Director of Management and Employee Communication of the Boeing Company in Seattle, Washington. In this article he describes his firm's concept of communication, the various media employed in communicating according to this concept, and, finally, the type and caliber of leadership needed to direct such a program, in the effort to reach its fullest potential for effective communication.

During our meetings for the next two days you will hear a great deal of reference to the two terms, communication and communicator. Both of these terms are used in such a broad sense that they have created a certain amount of confusion. Sometimes during a seminar one gets the feeling that there's no communication, or that there are no communicators.

You can rest assured that there is always a great deal of communication going on — naturally this takes communicators. It took communication to get us here. Walt Wiesman and Dr. Tompkins had to know just how to phrase their messages to make this program look attractive and beneficial both to us and to our superiors. And, the fact that there was communication is proven by our attendance.

Actually, everything we do and say is, in a way, communication. The clothes I am wearing, the color of my suit, of my necktie, the grey of my hair — all of these things communicate something to each one of you, and to each one of you the message may be different. The way you look and act when you go to work in the morning, the things you say or don't say — all of these communicate a message to the people around you. The main question is how good a communicator are you, are you delivering the message you want to deliver?

This reminds me of a news story that was in one of the Portland papers a short time ago. It was about a fan dancer that had been pulled into court for indecent exposure. She pleaded to the judge that she was a communicator, that she had a special message for the boys in the front row and the law as interfering with her freedom of expression. The judge received her message and released her so that she could go about her work as a communicator.

Now we of The Boeing Company have a little different view of communication than does the fan dancer. We do not view it as being entertainment or a program. Rather it must be a way of life. In our communication efforts there has to be a definite purpose — that purpose is to increase the efficiency and productivity of the company. To achieve this within an organization, there must be a disposition to communicate — an attitude that effective communication does lead to an effective company. We hope through better communication to achieve three basic things within the ranks of our management:

1. A coordination of activities with related functions. We want engineering, manufacturing, personnel, materiel, to be talking to one another.

2. The proper assignment of people.

3. The motivation of the work force, with there being an understandingof the target and goals of the company, its divisions, and of the work group.

Again, we believe that communication must be tied in with the effectiveness of the company or there is no basic reason for it.

I'd like to give you a brief picture of our organizational structure, and then of some of the media we use.

We recently organized within our company's headquarters, the Office of Management and Employee Communication. This office reports to the vice-president of Industrial and Public Relations. Our communication office, although not included in its title, is at the same level as IR, PR, Labor Relations and Public Affairs.

At the division level — and we have five major divisions in the company — we have management and employee communication offices. Some divisions have these as a part of IR, or PR, and others as a separate function. Staffs are from three to seven in the divisions — and at headquarters we have 13.

Personnel in these organizations have been largely trained as journalists — but finding that we must broaden our skills — they must be people who have a management concept, basically managers. We also need people who are movie specialists, social scientists, people with an understanding of economics and political affairs as well as those who have a knowledge of organizational structure and systems management.

Recently we had several positions open in our communications staff in some of our branches and divisions. Before I went out searching for talent I asked several of our staff members to write their description of what they though today's communication manager should be. I would like to read one of those descriptions to you:

"I believe the 'ideal' communication director or manager is not too different from the ideal director or manager of any other major function.

"He should be a man of proven competence in his field or a related field. He should have a working knowledge of communication philosophy, practices and techniques — although he need not have been a practitioner.

"He should be a 'learner,' who remains alert for new ideas and is eager to innovate. He should not only be capable of anticipating change, but also of responding to it.

"He should have a broad knowledge of and interest in business and industry. He should understand the effects on the company of relations with the government, customers, labor unions, and the various communities in which the company does business, as well as the effects of competition, costs, and even such areas as international affairs.

"He should possess the somewhat intangible qualities of leadership — the ability to motivate, rather than manipulate, the ability to earn cooperation, rather than enforce it, and the ability to gain respect from his associates at the various levels for his positions and his decisions. He should have the desire to hire potential future communication managers and actively assist in improving their potential.

"In short, the ideal communication executive should possess sufficient knowledge and experience to be received as an expert in the communication field and the appropriate personal qualities to enable him to gain and maintain the rapport necessary to accomplish his mission."

We are still looking for a man or woman who can meet these standards.

Boeing has always placed a good deal of emphasis on employee communication during the past. Our emphasis on management communication has been much more recent, and it has developed from a basic need. As the company has expanded and grown more complex, the need for more adequate management communication became much more apparent.

Because of this, we have been devoting a great deal more time to management communication — by management I mean all supervisors. We honestly believe that if we can lick the problem of internal management communication, we can and we will have good employee communication. If we shoot over the heads of the line management at the employee, however, we are much more apt to miss the target. The target, that is, the employee, is far more remote from us than he is from the first line manager.

We felt that two things were essential in developing the management communication program.

First, we needed a good statement of management policy.

Second, we needed the involvement of top management in the program.

Our policy is based on a belief that prompt, effective internal communication is essential to making sound judgments at all levels of management and must be an integral part of the management process.

Therefore, it is our desire to achieve an environment in which communication takes place freely within

and between organizations, as well as upward, downward, and across all levels of management, as needed to assure the most effective operation of the company.

The principles implicit in this policy are that, to the extent practicable, members of management will be provided with timely and pertinent information concerning the business objectives, policies, and programs of the company and the divisions. Wherever possible they will be informed first through established internal media rather than through external sources of important news affecting them. Pertinent information regarding governmental and economic factors affecting the operation of the company will be given them.

It is our hope and desire that the employees look to their supervisors as the primary source of information affecting them, their jobs, and the company.

It is also our intent to develop an attitude whereby the suggestions and opinions of all members of management are welcome, and means made available for communicating these upward.

Now, I also stated that we were in the communication process. We feel that complete and true communication can only exist when top management gives wholehearted support to the idea and participates in the effort. When executives do this, they will not only make use of established media but they will communicate the will to communicate.

I feel that as communicators or as editors, one of our basic jobs today is to establish an environment or climate that promotes communication. Once this is done much of the communicator's work is taken care of. In an effort to establish this climate at Boeing and to get management to participate in the communication process, we began to set up media for top management to use so that other managers could see examples being set.

Now, as I have been discussing the role of the communicator, you may be wondering just how this applies to you, the individual editor. Well, for one thing I feel that the communicator's job is far bigger than the individual publication. You should look at your job as one that works with many media, but it should not be media-oriented. The media, or publication, is only a tool to be used in achieving specific objectives. You should analyze your own company in communication efforts to see just what tools are needed to develop a communication environment and to serve as tools in achieving operational efficiency of the company. Now, let's take a look at a few of the media we used.

1. We endeavored to develop a media or program that would specifically involve top management. We developed what we call our corporate management meetings. These meetings are carried by phone line to 13 locations across the nation, and are aimed at the top 3 percent of our management force. Similar slides or movie clips are shown simultaneously at all locations. Content of the meetings range from the president discussing a business philosophy or policy to an actual problem. Department heads or vice presidents will disucss new programs or projects undertaken; specific financial commitments and targets are also discussed.

2. A black and white motion picture is made of our corporate management meetings so that the material can be shown to lower echelon management audiences after having had highly proprietary information removed. The film can also be shown at remote company locations that are not connected with our telephone network.

These two programs have demonstrated to our top managers that the company has a sincere desire to communicate on a corporate-wide basis.

3. We began a bimonthly magazine aimed at all supervision. It is titled BOEING MANAGEMENT PERSPECTIVE. It contains articles bylined by the president on down to those bylined by middle management. The reception to the magazine has been remarkable. In fact, just the other day our executive vice-president told us that he was amazed at the impact the publication had on middle management. Our own system of two-way communication tells us it has the same impact on lower echelons of management.

4. We have a management newsletter that comes out on a "as needed basis," usually, at least once a week. We have both division editions as well as one from headquarters.

5. Following our establishment of a communication environment, our division managers started having semiannual to quarterly meetings with all of their supervisors. This has now filtered down to where the branch managers are following the same example. Some of our branch managers and division managers have gone so far as to have meetings with all employees on an annual to semiannual basis. Now, it should be noted that all of these meetings we referred to are held on company time.

6. We are using special motion picture film reports not only of our corporate management meetings, but of various topics aimed at the employee or the manager. Whereas it is often difficult to find suitable locations for employees to see films, some of our managers are now using these as part of their staff meeting aids.

7. Several of our division managers are finding it advisable to use letters both to supervisors and to employees. These are mailed to the home.

8. We favor attitude studies as one of our media for upward communication. We hope to develop soon a continuous program so that we will have a constant reading on the changes of attitudes on key issues.

9. As a means of upward communication, we have begun a series of interviews on key topics, and we are giving the resumes of these interviews to the president. The president, in turn, has deemed it advisable to pass these summaries on to all of our officers and to the board of directors. The topics can be on such things as the change factors that will have an impact on the company in the next 10 years, and the resistances to change; or specific views on cost management.

We are finding that management has a keen desire for more upward communication. We are far from having developed a very suitable means of upward communication to date. But, again we are trying to establish an environment for it. One of the things that we are doing in this line at present is conducting a research study on the flow of information through staff meetings. Among other things, we want to find out what the climate is as well as the practice for upward communication through the line organization.

10. Now, naturally, we do have our employee newspapers. In the Seattle area we have a BOEING NEWS weekly for all employees. Our major divisions across the country also have a tabloid newspaper issued either on a weekly or biweekly basis.

I noticed a strange thing happening, especially in the Seattle area — employees want more individual recognition and local news than can be provided in an area-wide paper. As a result we are seeing a multitude of local, shop, and department papers being issued either on a monthly or biweekly basis. And our local branch managers are also wanting a monthly newspaper so that they can speak directly to their own employees. We are going to have to continue looking at the role of the employee newspaper in fulfilling the needs and objectives of the individual employees as the company grows larger.

Now the things we have mentioned above are formalized media with which our communication offices play a part in producing and directing, but we still feel the main communicator is the first line supervisor. Only he can tell the employee the things he really wants to know; that is, what is my job? what are my responsibilities? how well am I doing? and what's my future? No formal publication or film can speak directly to the employee on these points of interest. We must continually work with the supervisor in having him recognize his important role as a communicator.

Now it must be recognized that there is no canned approach to communication. What looks well for Boeing may not be suitable for another company or an organization. Your programs must be tailored to suit the personality and the needs of your organization. The success of your efforts will be closely tied with the outlook and the attitude of top management.

In our working with top management we are finding that they have more and more interest in what we choose to call "operational communication," or perhaps you could use the term "total communication." In the past, many companies, including our own, have put almost all their communication effort on attitudinal communication, that is, communication aimed at changing the attitude of an employee. Now both we and our managers recognize that this is but one segment of the communication job that must be done.

We choose to view communication as having three sections. The first is organization communication. Within this package are program or contract definitions defining the job to be done. From this comes our instructional communication. This is a communication that gives work instructions, sets goals and objectives for the work group, and has control rooms to track how the job is going. The third phase is the attitude communication. Naturally, a good share of your job performance depends upon the attitude of the work force or the individual employee as to how he receives his work instructions and how well he accepts the goals and objectives of the group. But regardless of how good his attitude is, if he does not receive proper instructions or data, he does not know his responsibility and he cannot perform his work officially.

Our managers are recognizing more and more that they must view total communication if they are to increase their job efficiency. And, we are recognizing that we must put more of our effort in the instructional communication field if we are to perform a true service to the company.

THE NATIONAL CENTER OF COMMUNICATION ARTS AND SCIENCES: A MAJOR NATIONAL ENTERPRISE

Dr. Fest, currently on leave of absence from the University of Colorado where he is Chairman of the Department of Speech, is temporary Program Director of The National Center of Communication Arts and Sciences. He outlines here the purposes and services provided by the National Center of Communication Arts and Sciences. Ideally, according to Dr. Fest, the Center will serve as a bridge between communication theory and all major organizations in need of services designed to organize and distribute information.

By

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University of Colorado
Program Director, The National Center of Communication Arts and Sciences

CONCEPT

The National Center of Communication Arts and Sciences is a nonprofit corporation formed by business organizations, academic institutions, and governmental agencies for the purpose of providing a totally new resource for the rapidly developing technology of communication. The Center will be the central clearinghouse on the new methods by which information is systematized, facts are stored and retrieved, better teaching and training are accomplished, the distribution of knowledge is made practical and efficient, creative thinking is stimulated, attitudes and opinions are influenced, and human actions are motivated.

The Center is designed to be the bridge between communication theory and the world of business, industry, government, and education.

STRUCTURE

Under the statutes of the State of Colorado, the National Center of Communication Arts and Sciences was incorporated as a not-for-profit organization on March 4, 1965. The affairs and general management of this organization are under the control of a Board of Governors and elected officers.

RESPONSE

There is a keen and growing awareness of the increase in number and importance of the communication problems with which man must deal. This awareness has contributed to a swift and positive response to the total Center concept. Leading organizations, institutions, and individuals in the area of communication have endorsed the Center. In addition to a host of domestic inquiries and offers of support, numerous requests for both information and service have been received from abroad. Several productive, working relationships have already been established and additional ones are being arranged.

SOURCES OF SUPPORT

The Center is presently receiving substantial assistance, ranging from basic ideas to more tangible support in the form of people and dollars. These come from both local and national governmental agencies, educational institutions, foundations, private industry, municipal organizations, and the professional community.

Approximately $100,000 in funds, supplies, equipment, and manpower have been received to date for this undertaking.

GENERAL FUNCTIONS

The general functions of the Center are best understood in terms of its relationship to other organizations, and the ways in which these relationships can be translated into action programs.

Fundamentally, the Center concept rests upon the fact that a critical and widening gap exists between the quantity and complexity of communication flooding today's society and man's ability to manage this in a satisfactory manner. The problems of organizing and distributing information are increasing at an alarming rate. This affects man's economic, political, eductional, cultural, and spiritual activities. To date, the problem has been acknowledged, but no unified way has been developed to provide adequate research on the specific problems.

There are numerous universities, governmental agencies, and privately funded organizations working on specific phases of communication problems. No channel exists for the coordination of these efforts, however. Unnecessary duplication of work in communication research exists, and important new successes remain unpublicized and relatively unavailable. The Center will not duplicate the work going on; it will make it accessible so that its benefits can be quickly applied.

Thus, the Center is a unique, coordinating facility. It identifies, organizes, and makes available the basic information concerning the software aspects of communication. It identifies and encourages needed research, undertaking special programs and projects that are found necessary and feasible. It translates theory into pilot developments first, and later into practical applications in business, industry, education, government, and all other significant areas of man's life. Most of the work will be carried on under contractual arrangements or on a continuing, free-for-service basis.

SPECIFIC FUNCTIONS

1. The Clearinghouse Function: Basic to the Center's operation is a comprehensive, computerized data base that can provide information to users on a fee basis. This requires development of a system for identifying, classifying, and abstracting research studies, articles, and developments in the theory and application of communication software.

2. The Laboratory Demonstration Function: There is a great need to explore communication control and improvement problems at an imaginative and sophisticated level. Much development to date, including automated systems, reflects the limitations of conventional concepts and traditional processes. Exciting and rewarding frontiers must be explored and the findings applied to present problems. Examples are found in the restructuring of business and industrial communication philosophies and systems. Some startling developments warrant attention, such as the chemical transfer of learning capacity, the direct electrical communication with the brain and the resulting extension of human potential, the increasing of listening ability (and thereby the learning and training efficiency) by application of compressed and expanded speech (the possibilities for the blind are most promising), and the applications of inexpensive disc or tope packaging of audio-visual materials for entertainment and instruction. (This latter development could modify the entire television industry as well as the training programs in business and industry).

A project of great merit and potential has been developed in the area of communication in religion. Unique in concept and ecumenical in support, this idea has attracted the attention of both the National Council of Churches and the World Council of Churches.

Related, but at a different level, there is the problem of communicating with peoples of emerging societies. There is need for experimentation and application of more effective communication concepts and systems for transmitting the philosophy and values of our culture and in turn understanding the culture of others. Increases in agricultural efficiency for food-deficient nations and programs for population management are in a large part cultural and communication problems. Exploratory discussions are now underway between the Center and two groups working in Central and South America.

3. The Bridging Function: Students of economic development and innovation agree that the major barriers to such progress are learning about and accepting new ideas. Many practical ways exist for improving our daily enterprises, but the means of communicating this information easily and effectively have not been developed. The average business man, professional person, and educator finds it impossible to keep abreast of developments in his field. He cannot readily acquire essential information related to or dependent upon the communication aspects of his work.

4. The Forum Function: A number of major issues in the field of communication confront our society. Some of these involve legislation. Others are in the private sector. Additional ones will emerge as our world becomes more interdependent and complex. Examples include revision of copyright laws, the role and effect of the scientist as a communicator to both government and laymen, the problems of security and surveillance of information, the control and use of communication satellites, and the complex problem of communication within and between governmental levels and agencies. The Center will plan and conduct national and international forums and symposia on carefully selected communication problems. These meetings will feature leading authorities in the special areas. Proceedings will be published and the events will be generally self-supporting, based upon registration fees and royalties. A pilot forum was held during the winter of 1966 and other symposia are planned for 1967 and 1968.

5. The Consultation-Training Function: This service develops from several of the foregoing functions. The consultation-training function would be related to new and highly sophisticated communication concepts, methods, and systems. Similar concepts are being evaluated relating to the cooperation with a Latin American communications institute emphasizing the application of television.

6. The Management Function: The Center staff and associated professional personnel will have certain special communication experience, knowledge, and skills. These professional services will be available on a contractural basis for assistance in planning and conducting communication events such as conferences, symposia, and continuing work meetings. Certain communication events will be held in Center facilities. In addition, the Center will provide advice regarding location, arrangements, personnel, procedures, publications, and related matters for communication events. Such services will be revenue-producing for the Center.

7. The Publication Function: An essential service, and also a source of revenue, will be the publications resulting from Center work. Periodic newsletters and announcements will advise member organizations and clients of on-going and projected activities. Special reports will present the results of research and application studies. These will be for specific clients and for general distribution. A regular journal aimed at both the scholar and the client-consumer will be established. Finally, as development warrants, monographs and books will be available.

8. The Professional Support Function: An increasing number of professional societies are seeking skilled management for their national offices and supervision for their publications. An agreement on general principles has been reached with the National Society for the Study of Communications under which the Center looks forward to assuming such responsibilities on a fee basis. Other societies in the general field should find such arrangements attractive while the Center provides a much needed service.

Mr. Wiesman, Conference Chairman, has been the Internal Communication Coordinator for MSFC since the establishment of that position in 1965. Attention to current academic developments in the area of communication research, supplemented by a 'practitioner's' experiences as consultant and civil servant, has led him to developing the 'wall-to-wall' concept of communication described here. He also reports on the status of his 'Five Year Plan' for internal communication at the Marshall Center. Well into the program, Mr. Wiesman is currently directing the third year of that plan.

A GOVERNMENT AGENCY LOOKS AT COMMUNICATION

By

Walter Wiesman
Internal Communication Coordinator
Marshall Space Flight Center, NASA
Huntsville, Alabama

My presentation is a report on what we have done at the Marshall Center during the past two years. An appropriate subtitle for my paper might be, "Wall-to-Wall Organizational Communication." Let me leave no doubt that, even after only two years, my views are liberally sprinkled with perfect 20/20 hindsight.

We are a pretty sophisticated organization always trying to remember that "our management concepts must be as progressive as our products." It was this thinking which led to the start of our internal communication program in July 1965 — at least a program with the dimensions I am about to present. As many of you know, I had been exposed since 1956 to certain activities in the field of employee communication. We had organized such programs for the first time in 1957 for the former Army Ballistic Missile Agency. We had learned from many colleagues in industry and government. We had detected the growing interest of the academic community. But, we had also come to realize that many well-meaning people had a much too narrow idea as to what this field is all about. Thus, we had an advantage for our 1965 start by having been exposed to sufficient experiences across the board. We accepted organizational communication in a "totality" seldom identified by practitioners. Based on general conclusions drawn from research mixed with candid confessions by many practitioner-colleagues and our own experiences, we established the following definition and assumptions as the basis for our program.

1. Internal (organizational) communication is the total influence of any number of factors — human and material, internal and external, tangible and intangible — on any or all members of a workforce. In short — people, things, and events constantly have a communicative effect in creating impressions and reactions.

2. Much of what contributes to this total effect is not known to management. Other factors, although known, are beyond the control of management. Communication cannot be "managed" in the usual meaning of this term.

3. Certain tangible facets can be identified, planned, functionally assigned, and coordinated. Some of the less tangible aspects can be predicted, analyzed, and, for better or worse, must be coped with by management in terms of their potential impact.

4. Fullest understanding of the complexity of inter-personal communication and active involvement in the communicative process by supervisors on all levels are the prime requisites for effective internal communication.

5. The planning, conduct, and coordination of an internal communication program involves the knowledge and application of principles and practices related to a variety of communication arts and sciences, social and behavioral sciences, and other man-oriented disciplines.

6. Internal communication must have full-time professional staff attention, is never completed, and seldom provides a final answer.

Let me stress that we looked at our program not primarily as an information effort but rather a somewhat advanced form of good employee relations. We did not speak of such things as a "happy workforce." Neither did we suffer under the illusion that a lofty statement from top management about the goals of our program would automatically assure communication. We said very little about our intentions, but acted instead. If, in retrospect, I appreciate one factor most of all, it was management's willingness to give me the job, establishing very few limitations, and then leaving me alone!

We knew that we would need a time table, specific goals, and an organized effort with meticulous attention to detail. We established:

Broad Areas of Effort in a Five-Year Plan

Fiscal Year	
1966	Downward-directed information through mass media for mass audiences.
	Identification of internal contributors and their planned involvement.
1967	Attention to "group" audiences.
	Identification of external contributors and their planned involvement.
	Communicative support for internal programs requiring employee understanding, acceptance, and participation.
	Program evaluation through selected contacts in line and staff elements.
1968	Attention to "individual" audiences. (Personal recognition)
	Personal involvement of top and upper-middle managers.
	Stimulate supervisory awareness of complexity of inter-personal communication.
	Monitor upward communication through contacts with "group" audiences.
	Program evaluation by summer consultant.
	Identification of future research areas.
	First major internal research project by doctoral candidate.
1969	Personal involvement of middle and lower managers.
	Second major internal research project.
	Follow-up to first internal research project.
	General employee opinion surveys.
1970	Follow-up to second internal research project.
	Follow-up to employee surveys.
	Continuation of internal research projects.
	Continuation of various employee surveys.

This plan was not by far this specific in 1965. We started feeling our way around to see which goals might be feasible over a certain period of time. The "human dynamics" were a much greater factor in these considerations than our ability to create new information media. Acceptance and involvement became two principal factors in shaping our plan. The current version was revised only last month. We are now on target with our third year, having started on July 1, and are adding new dimensions to the program.

We are undergoing our first evaluation by an independent summer consultant. Dr. Phillip Tompkins from Wayne State University has been with us since late June. In addition to his general evaluation of our concept and approach, he is in the process of interviewing some 50 members of top and upper-middle management to identify communication challenges and problems. This will help establish internal communication research projects to be conducted by doctoral candidates to be employed by us. The first one, Mr. Gary Richetto from Purdue University reported to Huntsville this week and is going through a thorough orientation as the first phase of his 10-month employment period. Of course, these candidates will also work on the day-to-day practical aspects of the total program.

It may be of interest at this point to emphasize that, except for my secretary, I have had no staff. Neither do I supervise any kind of office or department. I am an assistant to the Chief of our Manpower Utilization and Administration Office, a function similar to an Industrial Relations Office. We agreed from the start that my job was to "coordinate," not to "manage." Indeed, we would have violated our assumption that communication really cannot be managed.

At the beginning of our third year, I see my task more clearly than ever as a stimulator. I identify communicative opportunities, challenges, and problems. I explore new avenues for communication. I explain to employees, supervisors, and many other "contributors," their part in our total effort. I get human beings involved.

There are two things that we did not do. We did not reorganize to accomplish better communication. Organizational structure makes little difference. People have their own informal channels to get the job done and to obtain information. In the proper climate, this will always be effective regardless of what an organization chart shows as a formal structure. Next, we did not consolidate certain existing information functions in one office. Again, we would have violated the premise that numerous individuals and functions contribute to a complete program and that bringing them all under one organizational roof is out of the question. As just one example, we left the Marshall Star, our employee newspaper, in our Public Affairs Office where qualified and capable journalists are editing this weekly as part of the News Branch's function.

It may be quite appropriate at this time to include in this paper the exact wording of my list of assignments in general as well as specific terms. This constitutes an accurate reflection of my work during the first two years of the program.

General Assignments

Identifies all aspects, internal and external, influencing internal communication.

Develops a variety of internal communication media, systems and devices, and plans and coordinates feed-back methods and channels.

Assists and advises managerial personnel, staff specialists, and program coordinators in finding solutions to communicative challenges.

Maintains relations with counterparts in government, industry, and education.

Specific Tasks

Coordinates and refines existing internal communication media systems and devices.

Develops and plans application of additional media, systems, and devices.

Identifies methods and sources for feedback and assures coordination of two-way information flow.

Maintains relations with administrative officers of all organizational elements, resident managers, a random sampling of supervisors, and representatives of employee groups for continuous review of program.

Maintains relations to internal elements involved in communicative functions such as Administrative Services, Graphic Engineering, Photographic Branch, Historian, Public Affairs, Scientific and Technical Information, Library, Managerial Data Centers, and Computation Laboratory, to explore potential contributions to internal communication program.

Maintains relations to certain staff elements such as Public Affairs, Legal, Medical, Labor Relations and Inspection, to apply their professional observations and advice in the interest of the program.

Coordinates with members of the Manpower Office communicative aspects of all program elements, specifically in the areas of employee orientations, professional staffing, incentive awards, equal employment, management-employee cooperation, emergency planning, community relations, and personnel policies.

Assists program coordinators for Cost Reduction, Data Management, Manned Flight Awareness, MARS, NASA Exchange, Safety, Security, and similar programs requiring employee understanding and participation, on communicative aspects of their functions.

Maintains relations with universities recognized for their work in the field of organizational communication, with professional associations, such as the Industrial Communication Council, The National Society for the Study of Communication and the Speech Association of America; and the National Center of Communication Arts and Sciences.

Maintains relations with counterparts in NASA Headquarters, other NASA Centers, the U. S. Civil Service Commission, and other Federal agencies.

Maintains relations with counterparts in industrial contractor organizations working with MSFC.

As evident from this list, I have a great number of contacts, allies, and contributors throughout our organization — all the individuals, functions and organizational elements making some sort of informative or communicative contribution to our program. We get most of our mementum from the "spin-off" effect of their efforts. Many such activities serve an entirely different basic purpose, such as public information, historian, motion picture and photographic, models and displays in graphics engineering, library, computer data systems, and others. But they all produce information which, either slightly modified or mostly directly, can serve internal communication. With the exception of some modest employee and managerial newsletters which I publish, all our information efforts have been satisfied more than amply by the spin-off from existing functions. Indeed, we have arrived at a point where we can afford to be quite selective about our media.

We have, with the same spin-off concept in mind, also identified a number of "external" contributors. We can count on such prime sources of information as NASA Headquarters, the Civil Service Commission, other Federal agencies, state and community agencies, both public and private, educational organizations, professional associations and any group or individual with a potential impact on employee and community relations. Again, we have found that there is more information available than our employees could possible absorb. Most of the publications and other media are available without cost or at "wholesale" prices — in any case a good deal less expensive, and better produced, than we could do on our own.

The only other major feature we installed was a standardized bulletin board system. We use 4 ft by 8 ft boards covering a wide variety of information categories from the mandatory, such as position vacancy announcements all the way to personal want ads on 3 in. by 5 in. cards. We have nearly 180 such boards in all locations in Huntsville, our Michoud Assembly Facility in New Orleans, the Mississippi Test Facility, and three larger resident manager offices in industrial plants at the West Coast. The layout for these boards was planned through consultation with many members of staff and line elements. Once the boards had been installed in locations determined by operating management, the maintenance of the boards was put into the hands of the line elements occupying these buildings. It has worked well. We also furnish, at the expense of the government, bulletin boards to recognize unions in locations where organizational elements have strong union membership. The maintenance of these boards is left to the unions.

Another important feature of the program is the identification of "types of audiences." While most general information media are directed toward mass audiences, there is much greater communicative effectiveness in reaching "group" audiences composed of employees with certain interests or characteristics. This could be managerial status, longevity, discipline, groups such as co-operative students, summer faculty, or any other group, large or small, with some affinity.

We have been making extensive use of computer-produced mailing labels with either office or home addresses for such groups. Thus, we can reach certain managerial levels through a quarterly mailing to their homes, special professional employee categories with selected reprints, and co-operative students with student-edited newsletters while at work or back in school, just to mention a few typical examples of group audiences. We are far from having explored all the opportunities among such groups.

Then, of course, there is the "individual" audience, the personal recognition of a single employee. Birthdays, attainment of advanced degrees, granting of patents, election or appointment to state or national office in a professional association are the typical events to be noticed by management and used as an opportunity to communicate. While this sort of recognition is by no means novel, the challenge lies in how much all levels of supervision must be constantly stimulated to devote time to the "human side" of their function. Setting the time aside to do this sort of communicating, whether verbally or in writing, presents a never-ending problem involved in the growing technical and managerial complexity in an agency such as the Marshall Center. Yet, there is simply no substitute for the personal involvement of supervisors.

The next major program phase is to obtain feedback related to program evaluation from a variety of contacts representing line management, employees, unions, and certain "observers." Many of these

contacts are also among the earlier mentioned "contributors." I visit between 70 and 80 individuals twice each year for this purpose. They do not come to me. I see them at their place of work. It may take 15 minutes over a cup of coffee and the old "what's new?" with no great issues to be discussed. But it may also develop into a couple of hours of intensive discussion on the application of a new idea or an evaluation of observations resulting from employee feedback. The most important factors are the regularity of contact and keeping the channels open. And, that I take action, if required, as a result of the visit.

Another program element is the communicative support furnished those programs which depend for their success on employee information, understanding, acceptance, and participation. These programs are mentioned in my previously cited list of assignments. Quite a few of these functions are technically oriented and motivational factors go beyound the standard approach of the past by having one week per year set aside for some big observance and by selecting "Miss Heavenly Body" to emphasize the importance of the event. Programs such as safety, cost reduction, reliability, and equal employment require year-round intensive efforts. Meaningful and consistent communication must maintain employee interest at a high level. All these fields are wide open for a planned and organized approach to communication.

The last major program element, but by far the most important and delicate one, we call "Supervisor Stimulation." It is a concerted effort to create in all supervisors and awareness of the complexity of interpersonal communication and of the need for them to become active participants in the communicative process. We accept that even the best media and information devices are virtually useless without managers at all levels giving the program true meaning through their personal involvement. This effort is infinitely more than just training.

How many times can we get supervisors, particularly the higher echelons, back into class for still more training? Private consultation and mailings of select items can accomplish more than having them sit through scholarly presentations on some far-out, and for our purposes somewhat unrealistic, communication theory. Most of these men have been around long enough to know what they should do. They also have many answers to communication if they but put their minds to the task. Challenging and polite prodding, stimulation if you please, is part of our permanent effort, and we do not ever expect this need to diminish. It is probably quite similar to the revival concept. We all know what we should do but we need some reminders from time to time. Again, this stimulation can be accomplished on a year-round basis through imaginative and honest communication matched by a positive climate created by top management.

These, then, are some of the major dimensions we see in organizational communication. We do not imply that our organization is the only one having identified and tackled what will hopefully lead to a wall-to-wall internal communication program. But we know that we do not yet have too much company. We cannot stress strongly enough the need for simplicity and for making the most of the human and material resources available in any organization. At the risk of redundancy, I also emphasize once more the need for personal involvement.

Two key factors are required to get underway. The first one is for top management to be willing to accept communication as part of its permanent responsibility. Not just in words, but in deeds by creating an atmosphere in which all the things we have done, and have planned for the future, can be done. Secondly, for the professional communication specialist to realize his personal limitations in terms of knowledge and physical effort. And to be smart enough to call on a lot of qualified people to do what is their part in the first place. His main task is to "keep the pot boiling." If necessary, to be the gadfly, to be the conscience of management. He must be fully emersed in the dynamics of people without getting discouraged over the fact that we have so few and limited answers in this field.

One last note. Friends and colleagues in industry and the academic life have often expressed their amazement that we have done all this in a government agency. I am only too painfully aware of the public's image of government red tape, cumbersome procedures, complex language, and outdated management methods. Well, I differ strongly with the public! Without belaboring the point, let me offer a most basic observation after 22 years in the federal service, which, by the way, I would not trade for any other job.

There is no law, regulation or procedure saying that we may not be progressive in the way we manage the American People's affairs. Indeed, we have had the greatest encouragement for years to apply the most advanced concepts — and the means to back it up. But, just as in many an industry or university,

it is the human element which determines just how progressive we want to be. This rate of progress is in direct proportion to the advanced concepts accepted by people. I suggest that our great challenge is not so much to change the system, but to change people. Once we have succeeded in that, whatever systems do not suit our purpose will fall very quickly.

A CONFEREE'S OBSERVATIONS AND IMPRESSIONS

By

Raymond E. Carter
The University of Kansas

Mr. Carter is presently a member of the faculty of the University of Kansas at Lawrence, Kansas. A very active participant in the conference, he offered the following responses and observations to both presentations and group discussions during his three day visit to the Marshall Center. We are indeed grateful to Mr. Carter for his detailed analysis and evaluation of our first conference in the area of organazational communication.

FOREWORD

On August 8th, 9th, and 10th, 1967, approximately sixty men participated in a program of activities designated by the sponsoring organization as a "Conference On Organizational Communication." This conference was conducted under the auspices of the NASA George C. Marshall Space Flight Center at Huntsville, Alabama. Its planning, implementation, and performance were assigned responsibilities of the Manpower Utilization and Administration Office at that facility under the personal direction of Mr. Walter Wiesman, Internal Communication Coordinator.

It was my privilege to participate in this conference as the designated representative of The University of Kansas and of its Department of Speech and Drama.

The proceedings of this conference were recorded. It is my understanding that a detailed report, based on a review of this record, is to be forwarded to each of the conferees at a later date and that it will be accompanied by a copy of the official roster and the summary observations of the sponsors. These arrangements seem to preclude the present need for any detailed or comprehensive review of its program. The reporting function of this paper will thus be cursory in nature and restricted to a brief overview of the structure of the conference and a capsule summary of program components.

This will permit directing the major emphasis of this paper toward a selection of observations and impressions abstracted from my personal conference notes and some expansion of their implications and applications in the field of organizational communication.

STRUCTURE AND COMPOSITION

Most of the conferees were drawn from three different areas of practical application by a process of selective invitation. For the first two days the conference was conducted on a unit basis. During this period all programs and activities were presented without reference to differences or distinctions in interest, background, or orientation. For most of the third day, however, the total conference enrollment was dispersed into three separate subgroups approximately equal in number. The conference was reconvened as a unit during the final session of the afternoon on this day for summary remarks and concluding observations.

These three areas of practical application were represented by conferees drawn from these different but related sources: (1) National Aeronautics and Space Administration personnel with internal communication responsibilities, (2) their professional counterparts among firms in the business and industrial community currently holding prime contracts for missile stages, and (3) similarly functioning personnel representing firms holding support contracts in the space and missile program. Physical accommodations provide for the individual meetings of these three subgroups were equivalent in quality and convenience, and facets of communication problems which related to these subgroups in meaningfully different ways received carefully equal attention during the general sessions.

In addition to these three primary subgroups of conferees, there were four representatives from the academic community in attendance. They were assigned coordinating roles with the two contractor subgroups during the divided third day sessions. The general conference coordinator served this function for the NASA subgroup. Those functioning in this capacity were invited to summarize their observations and impressions before the final session of the conference.

The delegates representing NASA were drawn from the host Marshall Space Flight Center and its subordinate Michoud Assembly Facility at New Orleans, Louisiana; from the Manned Flight Center at Houston, Texas; from the Kennedy Flight Center launching facility at Cape Kennedy, Florida; from NASA Headquarters at Washington, D. C.; and included one representative from the United States Civil Service Commission.

One of the other subgroups within the conference was composed of the representatives of prime contractors. A prime contractor was described as a firm that has entered into a direct contractural relationship with the Marshall Space Center in which it assumed overall responsibility for the production of one or more of the basic components or 'stages' of a missile project or space exploration program. The prime contractors and their related subcontractors thus can be thought of as the firms directly producing the space vehicle designed ultimately to leave the launching pad and physically to go into orbit. The men representing these firms were those normally responsible for internal communication within their organizations. Phillip K. Tompkins, Associate Professor of Speech at Wayne State University and Summer Consultant at the Marshall Space Flight Center, and Jack Healy, Assistant Professor of Speech at California State College of Long Beach, met with this subgroup as advisors, consultants, and observers.

The third conference subgroup was composed of internal communication oriented personnel from firms functioning as support contractors in the space and missile industry. A support contractor was defined as any firm that has entered into a contractural agreement with either the Marshall Space Flight Center or one or more of its prime contractors or subcontractors for the provision of ancillary services, supplies, or facilities that contribute to the production of a space vehicle without becoming a physical component of that vehicle. Dr. Thorrel B. Fest, Chairman of the Department of Speech at the University of Colorado, — currently on leave to serve as temporary Program Director of The National Center of Communication Arts and Sciences — and the writer were invited to meet with this subgroup as observers and coordinators.

PHYSICAL FACILITIES

Enrollment, housing, first evening hospitality hour, and second evening conference dinner were all at the Sheraton Motor Inn in Huntsville, Alabama. Private but informal group luncheons were arranged each day at the Redstone Arsenal Officers Club. All other conference meetings were held in the administration building of the Marshall Space Flight Center. NASA bus and individual transportation facilities were available as needed.

A detailed description of the physical facilitites provided for the comfort and convenience of this conference could well and profitably be made the subject of a separate report. The auditorium and each of the conference meeting rooms were equipped with audio and visual aids of excellent quality and of every known type. The walls in one end of each of the conference rooms were gigantic blackglass projection screens for anything from lecture notes and charts up to and including open or closed circuit television. The projection facilities were completely hidden but available instantaneously and without apparent effort or prior planning.

As a capsule summary and global evaluation the physical accommodations and facilities for the conference can best be described as superb.

PROGRAM

Variations in arrival schedules necessitated devoting the first morning of the conference to enrollment and informal visitation. Each conferee was given a packet of material at enrollment which included a description of the history and current projects of the space exploration program. This packet also supplied some detailed information about the organization of the National Aeronautics and Space Administration, including some insights into its interrelationships with private business and industry and with other governmental agencies. The role of NASA in the overall space exploration program was identified in terms of the functional and structural relations among its several subordinate facilities.

Finally, a detailed breakdown of the host Marshall Space Flight Center was given along organizational lines in which staff and line officers were identified by name, rank, title, function, and department.

After enrollment, the remainder of the first day of the conference was devoted to an extensive tour of selected areas within the Marshall Space Flight Center. This tour was by bus and under the personal guidance of the conference director. At each stop we were met by the ranking departmental representative and given an extensive briefing on the specific functions and responsibilities with which they were concerned and the nature and manner of their coordination into the total space program. Some reference will be made later to my impressions of this tour, but for now it may be noted that this was substantially more than a cursory or courtesy activity or both.

The formal program activites of the second day of the conference all took place in the auditorium of the administration building at the Marshall Space Flight Center. As on the initial day of the conference, there was no reference to differences or distinctions among the backgrounds or orientations of conference participants. The structure of the conference remained unitary during this period.

The initial feature of the program on the second day of the conference was the keynote address. It was delivered by Brigadier General Edmund F. O'Connor, Director of Industrial Operations at the Marshall Center. In addition to extending a cordial welcome, General O'Connor emphasized the fact that a clear recognition of the importance of communication has been basic to our national defense from the time Paul Revere relied on lanterns hung in the belfry of old North Church to the present, and predicted that it will become rapidly and increasingly even more important in the foreseeable future. He acknowledged an awareness of communication problems within his organization and itemized several of its unique structural and functional characteristics that contribute to the development of communication problems in special and unusual ways.

The second speaker of the morning was Phillip K. Tompkins, Ph.D., who has been more fully identified previously in this paper. The announced subject of his address was "Organizational Communication: a State-of-the-Art Review." Dr. Tompkins restricted his coverage to empirical research studies conducted in the fields of business and industry, specifically excluding all reference to any studies using test populations of students. This was an excellent and extensive development and overview of work done in the field and I hope a detailed resume will be made available in the conference report. Studies by Baker, Mahoney, Stryker, Piersoll, Dahle, Reed, Jacobson, Seashore, Walton, Allan, and Cohen are reflected in my notes and the presentation was not paced to permit detailed stenographic recording by an amateur. Several meaningful emphases were made in this very substantive presentation, but those that have been retained most vividly in my memory are the importance of recognizing and understanding the difference between the theoretical lines of communication established on a formal chart of the structure of an organization and the actual communication channels used in its effective operation; and his identification of the gap between science, on the one hand, and research and development on the other, as the most serious problem today in organizational communication.

The third speaker of the morning was Mr. James R. Douglas, Assistant Director of Management and Employee Information for The Boeing Company of Seattle, Washington. The subject of his address was "A Large Industry Looks at Communication." Mr. Douglas emphasized the need for a continuing reevaluation of organizational structure, function, and objectives as essential to the understanding of the communication needs and problems of any organiation, pointing out that changes in types and ratios of personnel contribute in meaningful and important ways to variations in communication patterns and problems within organizations. Changes within the Boeing company were used to illustrate the dramatic nature of some of these changes. The fact was cited that ten years ago Boeing had two Ph.D.'s in its entire organization, whereas they had hired 98 of them during the month of July alone, this year. He noted, also, that the ratio of 60 'blue collar' workers to 40 'white collar' workers existing in The Boeing organization ten years ago was now exactly reversed and that the trend was increasing rapidly in that direction. To me his most interesting observations were his very quotable reflection that "You just can't mass produce organizational communication," and his advice that a communication manager who tries to be a communicator rather that a catalyst for the communication of others is a communication roadblock, in reality, and a failure at his job — which is properly and purely a support function.

Some of the additional titles and qualifications of Thorell B. Fest, Ph.D., have been set forth earlier in this paper. He delivered the final address of the morning session on this day. The title of his address was "The National Center of Communication Arts and Science: A Major National Enterprise."

Dr. Fest used Brooks Institute findings to support the existence of an 'information explosion' and the Midwest Research Institute observation that "... present trends indicate that more will be published in the next decade than has been produced since the beginning of our literate history..." as proof of an approaching condition of 'knowledge affluence' while quoting Dr. Charles Kimball of the latter institution as reporting that "The greatest single bottleneck to scientific progress is communication." Recognizing in this combination of factors the bases of an incipient communication revolution, many individuals and institutions with a serious interest in communication as an academic or professional field, or both, have banded together to form and to support the nonprofit organization indicated in the title of his address. It is the purpose of this organization to provide direction and opportunity for those attempting to update and modernize our current communication philosophy and technology, and to create guide lines and inspiration for those attempting to anticipate and to prepare for the communication needs of the future.

The entire afternoon program for the second day of the conference was set aside for speakers representing the Marshall Space Flight Center. The first and major of these addresses was given by the conference coordinator, Mr. Walter Wiesman. His address was titled "A Government Agency Looks at Communication." Based on the concept of managerial function within organizations as being the responsible and effective manipulation of money, materials, machines, and manpower, he suggested that, in a communicative sense, manpower cannot be 'managed' with the simplicity, certainty, or predictability of the other three ingredients of organizational activity.

He discussed problems in, and differences between, the instructional and the motivational aspects of organizational communication. Mr. Wiesman asserted that "... internal communication in the organizational setting is still very much like an iceberg — about one-tenth tangible and detectable with nine-tenths intangible and hidden." One of the interesting problem areas in organizational communication that was pinpointed in this development was the inherent difficulty men find, during the process of advancing in managerial responsibilities, in releasing enough time from their former professional activities to permit the time commitments requisite for the continually increasing demands for communication.

Each of the speakers in the remaining portion of the afternoon program was an important official in one of the Marshall Space Flight Center departments closely associated with the contractors represented in the conference. They discussed their particular MSFC/contractor areas of common interest in substantial detail and indicated existing and potential communication problems inherent in these areas of interaction with a great deal of both openness and specificity.

The first of these speakers was Mr. Ben W. Ridgeway from the Marshall Space Flight Center Purchasing Office who discussed "Incentive and Award Fee Contracts." Mr. Ridgeway identified the primary functions of his department as the procurement, negotiation, and evaluation of contracts essential to the implementation of the space program. He indicated his belief that most of the communication problems developing from relationships between his department and contractor organizations stemmed from contract performance evaluation. The necessity for evaluating functionally integrated contract performance across multiple lines of autonomous organizational structure was cited as basic to these problems.

Mr. Branch R. Fleming from the MSFC Configuration Management Group introduced concepts and specialized problems in organizational communication that have developed a special meaning and importance in the space industry. This uniquely designated department is concerned with problems inherent in the conformity or changes, or both, in physical characteristics of interfacing items of component hardware in space vehicles. The basic problem here is motivation. It has been difficult to communicate the absolute necessity for this stringent control of all changes, however minor, and the complete prohibition of all unauthorized changes in <u>any</u> of the design characteristics of <u>any</u> component parts. Again an important factor contributing to the communication problems of the Configuration Management Group was shown to reside in the necessity for communicating this vital and functionally integrated information across structurally autonomous and discrete lines of contractor, subcontractor, and support contractor organizations.

Mr. Winfred G. Stevens of the MSFC Data Management Group described the responsibilities of his group as being "... the organizing, planning, measuring, and controlling of the identification, preparation, and dissemination of data." Mr. Stevens touched briefly on a vast number of communication problems inherent in the burgeoning area of massive data processing. One of the particularly timely problems now confronting him was described as the

reevaluation of the lower limits of the dollar value of a contract to which the concepts of automated data processing should be applied. Closely related to this is the weighting of 'sensitivity' and 'importance' in determining the wisdom and advisability of instituting or continuing automated data processing in instances of marginal applicability from the standpoints of efficiency and economy.

The MSFC Cost Reduction Office was represented by Mr. John E. Miller. He said that his problems were about as typical as communication problems could be and could be summarized as difficulty in "... getting the right word to all of the right people at the right time." The heart of the Cost Reduction program of NASA is an incentive award consisting of a portion of resulting savings being awarded to the individual initiating a cost reduction suggestion and an additional portion of these savings reverting to the firm or organization within and through which the suggestion originated. Complicating factors include a certain minimum of 'red tape' in filing and supporting claims, the nuisance of possible later audits and reviews of award presentations, and the fact that similar suggestions coming from organizations of different sizes frequently result in what appear to be unfair differences in reward for ideas of basically identical merit.

For some reason the representative of the MSFC Manned Flight Awareness Staff, scheduled to address the conference on "Quality — Reliability — and Safety," was not able to do so and some of his fellow departmental administrators volunteered a few observations relating to some of the problems in this area. One of the most interesting, to me, was a reference to a survey that indicated that at least some of the craftsmen performing important operations in the production of vital items of component hardware for some of the stages of a current missile project were not aware of the intended use nor extreme importance of the items upon which they were working. Again the now familiar problem of the total number of links in the communication chain between this NASA control group and the craft level of a subcontractor organization, and the sometimes nebulous and obscure nature of some of these links, achieves a status of extreme importance warranting close study and careful examination.

Mr. Roy E. Wood of the NASA Inspection Office is responsible for security functions, investigation of possible conflict of interest reports, and other areas of ethics and propriety at the Marshall Space Flight Center. Although he is based at MSFC, he reports directly to administrative headquarters for NASA at Washington, D. C., in order to be completely unrestricted and beyond local influence in any investigation that might be indicated in the Huntsville area. Mr. Wood was prevented from meeting with the conference on the basis of his original schedule, but was able to visit with each of the three subgroups on the following day.

On the third and final day of the conference, the three previously mentioned subgroups met separately for all of the morning and the first half of the afternoon. They were advised that each of the department heads who had spoken to the conference on the preceding day and several of their key assistants were available on a standby basis for consultation or interrogation, or both, at the pleasure and request of the individual subgroups. No effort was made to induce either the inclusion or exclusion of any of these men from subgroup deliberations. The only control exerted was the necessary resolution of temporal problems created by simultaneous requests from more than one subgroup, which was accomplished by the conference coordinator.

I have no knowledge of the extent to which these gentlemen were involved with the other subgroups, but all of them were integrated deeply and extensively into the deliberations of the support contractor representatives with whom I met as an observer.

Total attendance in the conference room provided for this subgroup varied between the extremes of 17 and 24. The two academic observers and most of the support contractor representatives were regular in their attendance. The variations in total attendance seemed to result from an evolving awareness of the need for conferring simultaneously with two or more of the NASA representatives on matters of multiple departmental relevance.

At the suggestion of the conference coordinator, one of the representatives of one of the support contractors functioned as the chairman of this group. By tacit agreement the two academic representatives functioned primarily as interested observers.

During the last half of this final afternoon the conference was reconvened as a whole for the purposes of effecting some terminal focus and making significant observations. Each of the academic representatives was asked to comment on his observations and to bring before the conference any comments and impressions of relevance and importance. Unfortunately both Dr. Fest and I were forced to

depart from this session without hearing any of the other commentaries, and without being able to devote adequate time to presenting our own, in order to meet an airline schedule.

OBSERVATIONS AND IMPRESSIONS

In retrospect, the most significant aspect of this conference was its basic orientation. This was embodied in an undergirding philosophy, expressed informally many times during the conference, and clearly stated by each of the speakers representing the host organization. From the keynote speaker through the last departmental representative these men indicated that NASA was beset with communication problems that were serious and not being resolved to their satisfaction. They indicated this in many different ways, but with uniformly obvious sincerity. It was acknowledged quite frankly that one of the important objectives deliberately sought in organizing and sponsoring this conference was the securing of all of the helpful suggestions from qualified experts in the communication field that they could possible get.

This orientation seems diametrically, and refreshingly, opposed to that of all other similar conferences dealing with closely related subject matter that it has been my privilege to attend. Typically these have been campus or research center based, or both. Universally, the sponsoring organization has seemed to be suggesting its awareness of the communication problems of potential participants and its willingness to supply them with all of the expert theoretical advice they were willing to accept and able to absorb.

The point intended here is not to make a value judgment, nor to suggest an inferiority/superiority relationship, but rather to observe that conference programs developing from such widely divergent philosophies and inspired by such different objectives tend predictably to digress toward the opposing poles of theory and pragmatism on a practicality continuum.

Other conferences that I have attended seem to have used the description of a few problem situations to provide a setting for the development of increasingly theoretical constructs. The unique character of this conference rested in its use of some selective introductory theory as a point of departure for an increasingly pragmatic approach that bordered on group consultation in the final workshop sessions.

Upon reflection I am even more deeply appreciative of the opportunity to have participated in this conference than I was during the conference itself. This observation stems from my present awareness of the extremely limited probability of this conference's being repeated in its essential details. Such a recurrence would be dependent on the highly improbable repetition of the following combination of fortuitous circumstances which engendered this conference:

1. A number of important problems arose within one of the newest and largest departments of our federal government.

2. Several of these problems proved to be difficult of resolution and were under consideration simultaneously by the chief executive officer of this department.

3. Despite the variety in sources and outward manifestations among these several problems this executive officer had the discernment needed to analyze the nature of these problems accurately and the perspicacity required to recognize the commonality of communication involvement at their several bases.

4. He also had the foresight and courage necessary to understand the wisdom of insisting on striking for the communicative bases of these several problems rather than accepting a superficial treatment of the symptoms and temporary amelioration of their present harmful effects.

5. This executive officer was aware of the previously established staff position of Coordinator of Internal Communication within his organization and knew that it was currently filled by a man qualified by professional training and experience to deal with questions and problems of organizational communication.

6. The chief executive officer elected to charge this staff officer with the responsibility for investigating these problems and delegated to him the authority requisite for the implementation of measures and procedures designed for their correction.

7. The staff officer thus charged with this responsibility had the ability, imagination, and enthusiasm needed to rise effectively to meet its challenge.

8. One of the decisions arrived at in carrying out this assignment was to organize and conduct the conference being described in this paper.

Several unusual features of the NASA and MSFC organizations emerged from the conference program as it developed. Some of these unusual features having particular relevance to this paper are functional, whereas others are structural, in nature. Most of these features become unique and of particular importance primarily to the extent that they tend to compound themselves as problem areas and activities in their dynamic interrelationships within the total space and missile program. Few of these problem areas are of major importance when considered in isolation, but they are collectively so numerous and potentially so mutually and dynamically enhancing that they must be thought of as unique, serious, and important when considered in simultaneous combination.

It was pointed out that the National Aeronautics and Space Administration is second among all governmental agencies in the United States in size of total budget, being exceeded in this characteristic only by the truly gigantic Department of Defense. In turn the Marshall Space Flight Center is the largest among the several facilities comprising the NASA complex. It is important to note, however, that approximately 95 percent of the huge MSFC budget is expended through contracts with private industry. Thus but 5 percent of this large budget remains available to support the control functions necessary to insure the proper performance of that portion of the total space program for which the MSFC is responsible. The authority for the implementation of this vast program is thus delegated by contractual agreements to a large number of autonomous external organizations, with the MSFC's over-all responsibility being exercised primarily in coordinating and control functions.

The existence of large numbers of important subcontractors and support contractors upon which each prime contractor is dependent has been established earlier in this paper. There seems to be little need, at this time, for extensive amplicification of this earlier description. It will suffice to mention that the intricate functional interdependence of these complexes of structurally autonomous contractors extends the length and complicates the nature of lines of communication between central control and the craftsman actually producing some item of component hardware in the shop of a contractor or vendor. Similar observations would be equally germane, of course, with reference to communication between and among many other positions in the several organizational structures involved in the total program.

The size of its budget introduces another consideration fraught with communication implications. Like all governmental units, NASA is dependent for its financial support and budgetary control upon congressional appropriation. It was pointed our during the conference that "... one of the hard but inescapable facts of life in the administration of any government agency is that political interest in and attention to its activities is always in direct ratio to the amount of its total budget."

This can be demonstrated at a very elementary level. Every time two senators are elated by the assignment of an important NASA contract to some firm in their state there are 98 others, most of whom probably feel that some other arrangement would have been more satisfactory. The same general principle applies at a sharply increased ratio in the other legislative body, and therein lie both the generation and the incubus of NASA's economic support.

The demonstrated extensive interest of the general public in the affairs and activities of NASA probably can be attributed less to this budgetary dimension than to the newness of its program and its identification with the glamour and excitement generally associated with space exploration. The end products of NASA operations — the launching, orbiting, and landing of missiles — have been observed more closely and with greater interest by more people than any other series of historical events. Under these circumstances it was natural that an unbroken sequence of successes under such close scrutiny would result in generally unquestioning public acceptance and approval of NASA programs and activities. It is a logical sequel, or at least a predictable trait of human nature, that one equally well publicized mission with a tragic ending would alter communication between NASA and the general public in important ways.

Other questions relate with greater specificity to the Marshall Space Flight Center and to the satellite contractor and vendor organizations falling within its geographic or economic spheres of influence or both of them. In addition to those problems previously ascribed to the entire NASA organization, a few were noted during the conference which seemed to bear a more local flavor.

More recently than the last decade, Huntsville, Alabama, has experienced the dramatic, and at times

traumatic, transition from a small town in a predominantly agricultural area to the hub of a major residential and industrial metropolitan complex. In this transition we thus find concentrated, both temporally and spatially, all of the communication problems usually associated with abnormal community growth and population explosion combined with and added to those inherent in a new and burgeoning industry being artificially accelerated in its growth and development by the exigencies of circumstances completely external to its control.

With previous aerospace experience almost nonexistent, those who possessed backgrounds including related training or experience or both found themselves and their services in great demand. Under these circumstances a substantial, and at times excessive, amount of labor turnover might have been anticipated. Indeed some labor turnover has occurred from this type of combined job shopping and convert proselyting, and to the extent that it has occurred special types of communication problems have arisen within the aerospace program. Other circumstances have arisen which have tended to neutralize this condition of imbalance between labor supply and demand. The Marshall Space Flight Center and the Army combine to employ far more than 50 percent of all professionals in the Huntsville area and both agencies have low incidences of personnel turnover directly attributable to the advantages of tenure in established Civil and Military Service programs. In addition, many of the major contractors in the area are firms with very steady work forces developed in other applications that have been adapted to the new aerospace industry and assigned to various aspects of the missile program. Among the 'professionals' in the employ of MSFC, the Army and the larger and major contractors, the labor turnover has been responsibly estimated at less than 5 percent per annum.

The totally new aerospace program has depended for its rapid development, however, upon the creation of many new firms and organizations of all sizes. Some of these were created by the merger of previously existing entities, some from the fragmentation of others, and some have been established as entirely new ventures to serve some specialized and newly developed need in the space and missile program. Some of these rapidly changing organizational situations during this developmental period of flux seem to have contributed to substantially higher rates of labor turnover, reaching proportions as high as an estimated 33 1/3 percent per annum, at times, within the non-professional craft and labor groups of some of the smaller subcontractor and support contractor organizations. One support contractor representative noted, for example, that some of his craft employees performing important technical operations in the production of sophisticated testing devices were now working for their fourth employer this year without having moved from the same work location or having altered their basic program of activities.

Effective internal communication, whether it is to occur within an industry, a program, a project, or a subordinate but autonomous organization, depends importantly on an adequate espirit de corps and an established and reciprocal employer-employee allegiance at all levels. The development of these attributes requires time and favorable circumstances. There seems to have been substantial evidence developed from this conference to indicate that these highly desirable attributes are emerging quite effectively throughout most of the Marshall Space Flight Center sphere of influence within the NASA program. I believe that one of the most valuable results of this conference could and should be the pinpointing of those few remaining areas within the total program where effective espirit de corps and employer-employee allegiance have not been permitted to develop. These areas seem to emerge from the conference as potential, and in some cases existing, communication problems.

Beginning with the interface of support contractor representatives and Marshall Space Flight Center personnel on the final morning of the conference, communication problems which previously had been indicated only on broad and general bases rapidly began to be identified with a great deal of specificity and to be described in substantial detail. It was interesting to me to observe that the more specific and elaborately detailed the identification and explanation of the problems which were important to these support contractor representatives became, the more obviously communication centered were their bases and inceptions. For example, the representative of the Department of Configuration Management was aghast at the universal lack of knowledge or awareness among these contractor representatives of the existence of a complex of five different levels of Configuration Control Boards designed to review denied contractor appeals for configuration changes on an appeal basis.

This type of hiatus is readily resolved when adequate information is communicated to the proper receivers, but other indications of communication voids in critical areas that do not yet have existing means of resolution were indicated. An example of this type of problem is indicated in this universally

supported observation by one support contractor representative: "Weighting factors in award fee evaluations are neither constant, consistent, nor communicated to the support contractors."

Several other similar types of communication problems were identified during this program. Without attempting to be exhaustive, a brief list of a few typical problems will permit some general understanding of the nature of this conference subgroup meeting and the degree and direction of its involvement with problems of communication. The following partial list is copied from my conference notes:

"There is a critical lack of uniformity in sematic interpretation of standards in communication with and contract evaluation by NASA monitors assigned to contractor premises."

"There are inadequate feed-back channels for monitor criteria complaints."

"There is a real need for improving and extending the cost reduction incentive program at the contractor-employee level."

"There is unfair and improper competition between NASA and the contractor organizations for cost reduction incentive awards."

"There is a serious negative motivational aspect to unwarranted and duplicative audits of previously approved cost reduction incentive awards."

The participants in this conference constituted a group characterized by marked heterogeneity in many of its aspects. They were drawn from homes and offices widely dispersed over an area boxed in roughly by New Canaan, Connecticut; Seattle, Washington; Long Beach, California; and Daytona Beach, Florida. Age representation was well distributed over a spectrum ranging from the extremes of bright-eyed youthful executives to hard-bitten old-timers approaching forced retirement. Employer allegiances represented among the conferees ran the gamut from governmental bureaucracy through the business and academic communities to include one private management consultant.

Exceptions to this generally heterogeneous character of the conference are to be noted specifically in the areas of the sexual composition of the group, and the homogeneity of the specialized interests, professional emphases, and orientations of its participants.

Beyond the strictly clerical function of initial day enrollment, this conference was an exclusively masculine operation. I have no reason to suggest that this situation was either 'wrong' or 'right', but to me it was somewhat surprising. The academic area of Organizational Communication is one of recent origin. The National Aeronautics and Space Administration is a youthful giant among governmental agencies. The space industry and the technology upon which it is founded were unheard of until recent years. In fact the growth and development of each of these three areas postdates the beginning of the current emphasis on equality of opportunity along sexual, racial, ethnic, and religious lines hopefully provided by legislation and insured by executive decree. Why there seems to be less evidence of feminine participation in these areas than in other older but otherwise comparable fields suggests itself as potentially an interesting study in communication admittedly beyond the compass of this paper.

The other area of homogeneity among the participants in this conference was built into the design by the process of selective invitation. Each person involved in the conference had a specialized and professional interest in the field of Organizational Communication.

If forced to evaluate the conference on a global basis I could only rate it as excellent. For me it represented a new concept in blending the theoretical and the pragmatic. I have not participated previously in a program where a sharing of communication concepts and theories among a group of qualified specialists in the field was accomplished simultaneously with the interface of normally interacting counterparts in several organizations who previously had been aware of one another primarily in an official, routine, and impersonal manner.

If pressed for adverse comment, I could only note that I have now sat through yet another conferenence in which a group of high level people have discussed organizational communication on the premise that it is something that stops at least at the level of lower management. The labor, craft, hourly wage group that physically performs the work and constitutes industry's numerically greatest contact with the exterior community was mentioned only collectively in the impersonal third person plural. Even in this frame of reference this important segment of effectively functioning organizational communication was almost completely ignored during the entire conference.

I felt that the purpose of this conference was worthy, its planning and direction superb, and its results rewarding. In essence it was both a conference and a program of group consultation for which we were prepared by the extensive tour and briefing which constituted the program of the initial day.

I left this conference tremendously and favorably impressed by the host George C. Marshall Space Flight Center, by the National Aeronautics and Space Administration, and by the aerospace industry as an integrated complex of interacting autonomous organizational structures. I was amazed at the variety and extent, and intrigued by the intricacy, of the communication patterns and problems inherent in our massive and dynamic programs of missile production and space exploration.

Where else could you find such vast and crucially important needs for effective functional communication across the barriers of structural autonomy?

Where else in our economy have we attempted this type of massive and complicated cooperative effort in the absence of preestablished organizational structures with existing channels and patterns of communication?

When in history has any program of comparable magnitude and importance been subjected to the temporal pressures for acceleration that have characterized our projects in space exploration?

APPENDIXES

APPENDIX A. PARTICIPATING ORGANIZATIONS

GOVERNMENT AGENCIES

NASA Headquarters
NASA Kennedy Space Center
NASA Lewis Research Center
NASA Marshall Space Flight Center
United States Army Missile Command
United States Civil Service Commission

UNIVERSITIES

California State College
University of Alabama
University of Kansas
Wayne State University

National Center of Communication Arts and Sciences

MSFC PRIME CONTRACTORS

Boeing Company
Chrysler Corporation
Douglas Aircraft Company

MSFC SUPPORT CONTRACTORS

Brown Engineering
Computer Sciences Corporation
General Electric
Hayes International
Management Services Incorporated
Radio Corporation of America
Rust Engineering
Spaco, Inc.
Sperry Rand Company
Vitro Services

APPENDIX B. PROGRAM

CONFERENCE ON ORGANIZATIONAL COMMUNICATION

AUGUST 8-11, 1967

NASA, Marshall Space Flight Center
Huntsville, Alabama

TUESDAY, AUGUST 8

Briefing and tour for out-of-town participants

The Sheraton Motor Inn will serve as headquarters for out-of-town participants. Please return the enclosed room reservation form directly to the Sheraton.

Registration will begin at 11 a.m. in the Sheraton lobby.

12:30 p.m.	Bus pickup at Sheraton
1:00 - 4:00	Briefing and tour — Marshall Center
4:15 -	Return to Sheraton
6:30	Get acquainted hour — Sheraton

Please return registration form for tour and social events to address listed on form.

WEDNESDAY, AUGUST 9

8:00 a.m.	Bus pickup for out-of-town participants at Sheraton
8:30 - 12:00	Morris Auditorium — Building 4200

Keynote Address

Brigadier General Edmund F. O'Connor
Director, Industrial Operations, Marshall Center

"Organizational Communication: A State-of-the-Art Review"
Phillip K. Tompkins, Ph.D., Associate Professor, Wayne State University,
Marshall Center Summer Consultant

Coffee Break

"A Large Industry Looks at Communication"
James R. Douglas, Assistant Director, Management - Employee Information,
The Boeing Company

"The National Center of Communication Arts and Sciences: A Major National Enterprise"
Thorrel B. Fest, Ph.D., Chairman, Department of Speech, University of Colorado; Program Director, The National Center of Communication Arts and Sciences

12:00 - 1:30 Lunch — Redstone Arsenal Officers Club
Bus transportation provided for out-of-town participants

1:30 - 2:15 "A Government Agency Looks at Communication"
Walter Wiesman, Internal Communication Coordinator
Marshall Center

2:15 - 4:00 Review of MSFC/Contractor Common Interest Areas

Incentive and Award Fee Contracts
Ben W. Ridgeway, MSFC Purchasing Office

Coffee Break

Quality - Reliability - Safety
MSFC Manned Flight Awareness Staff

Configuration Management
Branch R. Fleming, MSFC Configuration Management Group

Data Management
Winfred G. Stevens, MSFC Data Management Group

Cost Reduction
John E. Miller, MSFC Cost Reduction Office

Conflict of Interest
Roy E. Wood, NASA Inspection Office

In addition to registered conferees, all or most of the Wednesday program will be attented by representatives from various Marshall elements, other government agencies, industries, and universities. There is no requirement for these "Wednesday Visitors" to register for the conference!

6:00 - 8:00 Social hour and Dinner — Sheraton

THURSDAY, AUGUST 10

8:00 a.m. Bus pickup at the Sheraton

8:30 - 12:00 Work sessions for the following groups:

NASA and Civil Service Commission	- Room 223 — Bldg. 4200
Prime Contractors	- Room 329 — Bldg. 4200
Support Contractors	- Morris Auditorium

12:00 - 1:30 Lunch — Redstone Arsenal Officers Club
Bus transportation provided

1:30 - 4:00 Continue work sessions
Support contractors switch to Room 409 — Bldg. 4200

4:00 Return to Sheraton

No functions planned for the evening

Thursday work sessions will be devoted mainly to explore the MSFC/Contractor common interest areas. Specialists from the Marshall Center will be available to meet with the groups. NASA representatives will explore additional opportunities for intra- and inter-agency communication. Civil Service Commission representatives will participate in the NASA sessions.

FRIDAY, AUGUST 11

8:00 a. m. Bus pickup at the Sheraton

8:30 - 11:30 "Swap Sessions" for participants of all working groups
Room 409 — Building 4200

Review of conference and evaluation

11:45 Return to Sheraton

Attendance at work sessions on Thursday and Friday will be limited to registered representatives from NASA headquarters and centers, prime contractors, local support contractors, Civil Service Commission, and Marshall elements directly involved in contractual interests.