CHAPTER 14

# WHISPERING DOWN THE LANE

Early in basic training, the American army used to employ an experiment as a teaching device. Seven to ten soldiers would be arranged in a large circle out of earshot of each other. The remainder of the unit would be concentrated at a point on the circle. The officer in charge of the experiment would then give a simple message to the soldier at that point which would be heard by the "audience" but by none of the other soldiers on the circle. The first soldier would run to deliver the message to the next man on the circle who would pass it along to the third, and so on until the circle was complete. The last soldier would repeat the message, as he thought he had received it, to the officer in the hearing of the "audience." There was normally little resemblance between the message after it had completed its circuit and the original text. The moral that the army drew from this was that messages should be written rather than oral.

For the analysis of this book we must discuss the problem raised by this experiment in more detail. In the first place, careful selection and training of personnel would, no doubt, secure somewhat improved results over that achieved through the use of untrained recruits. But the basic principle is certainly correct. The method *is* highly inefficient as a means of transmitting information. Moreover, the amount of error ("noise" in communications-theory terminology) would increase exponentially with the increase in the number of persons in the transmission chain and with the complexity of the message transmitted.

It should be noted that the cause of this phenomenon is not really the use of oral rather than written transmission. There are probably some errors of simple mistake in understanding, but the main distortions arise within the brains of each man. The man hears a message, mentally interprets its contents, and selects the important points for repetition to the next man. Through a series of such operations, the original message becomes something entirely different. If the message should be transmitted by means of a written note obviously there would be no distortion if each man simply made an exact copy. But if each man should receive a written note, discard it, and then run to the next man and write out the note again in his own words, roughly the same pattern of distortion could be predicted.





## THE STANDARD VIEW OF BUREAUCRACY

All of this may appear to have little relevance for our subject of hierarchical organizations. In fact, the experiment does have little or no relevance for the way in which hierarchies actually operate. The experiment is useful in refuting the popular view of the way in which a bureaucracy works. The "normal" or standard version of bureaucracy seems to be something like the following: The lower levels of the structure receive information from various sources. This information is then passed along upward through the pyramid. At the various levels, the information is analyzed, collated, and coordinated with other information that originates in separate parts of the pyramid. Eventually, the information reaches the top level where the basic policy decisions are made concerning the appropriate actions to be taken. These decisions on policy are then passed down through the pyramid with each lower level making the administrative decisions that are required to implement the policies sent from on high. This descriptive scheme has not, to my knowledge, been used by any serious student of bureaucratic hierarchies, but it does seem to be the version held by the "average man," and by most bureaucrats themselves.

The army experiment discussed at the outset of this chapter disproves this theory of bureaucracy. Let us consider a hierarchy in which H is at the lowest level; he reports to G, who in turn reports to F, who reports to E, who reports to D, and so on to A, who is the ultimate sovereign of the particular system. If H sees something that he feels is worth reporting to G, who in turn thinks that the item is important enough to report to F, and so on up the line until it reaches A for a decision, the experiment indicates that the version of the information that reaches A must be materially different from that which H perceived. Suppose that A, on the basis of the "information" that he gets, makes a decision, then issues an order to B, who passes it along to C, and so down the line, until it finally reaches H for implementation. The order will also have undergone major changes during its transmission. Consequently, H will receive from his superior, in final consequence of his original observation, a distorted version of an order based on a distorted version of his original observation. This result can, of course, be altered by converting all of the bureaucrats between H and A into mere postmen who serve simply to transmit reports and orders verbatim. I shall return to this point presently.

The degree of distortion that would arise under such a bureaucratic system would probably be so great that neither the original report nor the issued order would be recognizable in any sizeable organization. This would be true due to the complexity of the information, and of the orders, transmitted and

also because of the particular problems in transmission. The members of a hierarchy do not, in fact, think of themselves as mere messenger boys, faithfully transmitting the reports of their subordinates. G would, in our example, not be likely to simply pass along H's report accurately. He would consider it a part of his duty, because of his superior experience and training, to extract the fundamental aspects of the information from H's report, and to add some comments of his own. In addition he could be receiving, at the same time, information from the peers of H that would have to be coordinated with that of H before the preparation of G's report to F. As a result of this structure, reports are transmitted upward under what may well be the worst possible of circumstances.

The same general conclusions hold with respect to an order issued from the top, by A in our example. B is, presumably, only one of several direct subordinates to A. B will have then to decide what parts of the general policy directives issued by A affect his particular division of the hierarchy. He will prepare orders and pass along to his inferiors, $C_1$, $C_2$, and $C_3$, only those parts of A's overall directive that he considers relevant. But to this directive he will add his own detailed administrative instructions. $C_1$ will do likewise with regard to passing the orders to $D_1$, $D_2$, and $D_3$. When it finally reaches H, at the lowest level, the order will have undergone significant changes. Note also that, in the case of orders issued from the top, the distortion is likely to vary within the organization. Thus, an order received by $B_1$, $B_2$, $B_3$, from A will be passed on in slightly different form by each of them. By the time the general directive reached the lower levels, there might be major differences among the versions received by comparable bureaucrats in different parts of the same organization. Uniformity could not be expected from a bureaucracy that attempted to operate in this fashion.

### BUREAUCRATS AS POSTMEN

Let us consider, in contrast, a hierarchy similar to that used for illustrative purposes above except for the fact that all officials between the highest and the lowest levels interpret their duties to be those of mere postmen; the intermediate level officials merely transmit verbatim texts of information upward or orders downward in the chain of command. This system would be similar to replacing all of the intermediate level officials by mechanical transmission devices. If each official has three subordinates of lower rank reporting directly to him, with the chain running from A to the H level, there would be something over 2,000 H's at the lowest rank. A, the single sovereign at the apex of the



pyramid, would have to deal more or less directly with this whole mass of bureaucrats. Obviously the single human being, unless he be possessed of superhuman powers, cannot absorb all of the information that 2,000 inferiors would obtain and pass along. This should be sufficient to indicate that the replacement of live bureaucrats at the intermediate levels with transmission machines, human or non-human, will not make the hierarchical system work any better.

Since the errors in transmission will be so large in the first model, and since the capacity of leaders will be so limited in the second, there remains only the possibility of combining elements of both of these organizational forms. We might suppose that each official culls from the reports he receives that information which he deems proper for his superior to have, taking into account duplications and also the capacity of the sovereign to digest information. For the material that is submitted upward suppose that verbatim transmission should be the rule. This system might serve to avoid the distortion that is implicit in permitting intermediaries to interpret both reports and orders, and at the same time it might avoid the hopeless clogging up of the arteries of the hierarchy.

Two objections may be raised to this compromise system, the first of which is perhaps trivial. It is commonly stated that organizations, especially those that specialize in securing information, secure a multitude of individual and particular facts, and then, from these parts, build up a correlated "picture." This procedure would be almost impossible under the compromise system discussed above. If the facts gathered by low-level personnel should be individually unimportant they would be dropped out in the lower stages and hence never correlated.

The second, and more important, objection to the compromise sort of structure considered here turns on the contributions of the various levels of the hierarchy to the final results of the combined operations. If each official has three inferiors, the number used above, and there are eight levels from A to H, there will be 2,000 H's, over 600 G's, over 200 F's, etc. If we assume the compromise system in operation, the H's, who directly collect the field reports, will collect only an amount sufficient to occupy the G's (collecting information will always require more time than reading it and evaluating it). At the lowest level, therefore, enough information will be collected by the whole organization to occupy the time of 600 persons. By a series of operations in which two-thirds of the information held at each level is discarded and the remainder passed along up the chain, this total information is

eventually winnowed down to that which can efficiently occupy the time of only one man. The great bulk of the field information originally collected is discarded and no use is made of it. This, quite naturally, raises the question as to the wisdom of collecting this excess information in the first place. If the organization were truncated below the fifth step instead of the eighth, for example, undoubtedly the E's in the system would know less than they would in the larger hierarchy. But would A be in any less favorable position in making the basic decisions for the whole organization?

We are once again driven to conclude that the objective of an organization should be, not the referring of information to and expecting decision from persons at the top of the administrative pyramid, but rather the obtaining of decisions from persons who are not themselves at the apex. The head of a hierarchy, the sovereign, has, as his principal problem in organizational efficiency, arranging the structure so that his inferiors reach decisions which he would have reached if he should have possessed as much information about the particular situation requiring decision as they do. The sovereign should not attempt to centralize decision making directly, but rather to influence his inferiors to make decisions that fit into the grand design of the organization, or, more simply, into his desires.

# CHAPTER 15

# A MENTAL EXPERIMENT

In the last chapter, the "standard" theory of bureaucratic operation was criticized. This completed, I am obligated to propose a substitute theory. The theory of organization that will be developed is basically normative. It is a theory that attempts to tell *how to make bureaucracies work.*

## THE DECISION TO START AN ORGANIZATION

We may begin by considering a person, call him A, who is busily engaged in activities that he judges to be both desirable and important. The particular type of activity need not be specified here. He may, for example, be a wealthy man who is devoting his life to giving away an accumulated fortune in the "best" way, or he may be a dictator. In any case, assume that, recognizing that his own faculties are limited, this person decides to establish an organization to assist him in accomplishing his goal.

As a first step, we assume that A hires B as his assistant. While there may exist situations in which A would exercise extremely close control over all of the activities of B, these are rare. Normally, the man who has decided to create an organization and who begins by hiring a single assistant will want to devote only some part of his own time to controlling and supervising the assistant. The sovereign will have other things to occupy his mind, or he may be simply lazy. The point of transferring some of his functions to an assistant is to enable him to give more time to other matters. This suggests that, in our model, A is likely to devote considerably less than his full time in controlling the activities of B. For simplicity, let us suppose that the time not spent in controlling B is to be devoted to controlling other assistants, $B_2 \ldots B_n$.

## ORGANIZATIONAL SIZE

One of the first organizational or structural problems that confronts A will be the determination of the number of direct subordinates to hire. The funds that he has available for hiring these assistants will be highly relevant here, since such funds always are limited. If, for example, A should be willing to devote $20,000 for the personnel expenses of the particular organization that he is forming, he might find that he could hire two men at $10,000 each or ten low-grade employees at $2,000 each. Obviously, there will be major