

ADMINISTRATIVE BEHAVIOR

A Study of Decision-Making Processes
in Administrative Organization

By

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"And certainly there were many others
. . . from whom I had assimilated a
word, a glance, but of whom as indi-
vidual beings I remembered nothing;
a book is a great cemetery in which,
for the most part, the names upon the
tombs are effaced."

Marcel Proust
Time Regained

PREFACE

This study represents an attempt to construct for myself tools which I could use in my own research in the field of public administration. It derived from my conviction that we do not yet have, in this field, adequate linguistic and conceptual tools for realistically and significantly describing even a simple administrative organization--describing it, that is, in such a way that our description can provide the basis for a scientific analysis of the effectiveness of its structure and operation. I have read few studies of administrative organizations wherein I felt that the real flesh-and-bones of the organization was caught and set down in words; I have encountered even fewer in which I was convinced that the conclusions as to the effectiveness of the organization or the recommendations for its improvement could be deduced from the evidence presented.

Perhaps these doubts are personal to myself, and represent an undue scepticism. If they are shared by others in the field of administrative research, they constitute a serious indictment of our science, and of ourselves as scientists. An experiment in chemistry derives its validity--its scientific authority--from its reproducibility, and unless it is described in sufficient detail so that it can be repeated, it is useless. In administration we have as yet only a very imperfect ability to describe what has happened in our administrative "experiments"--much less to insure their reproducibility.

Before we can establish any immutable "principles" of administration, we must be able to describe, in words, exactly how an administrative organization looks, and exactly how the organization works. As a basis for my own studies in administration, I have attempted to construct a vocabulary which will permit such description, and this volume records the conclusions I have reached. These conclusions do not constitute a "theory" of administration, for except for a few dicta offered by way of hypothesis, no principles of administration are laid down. If any "theory" is involved, it is that decision-making is the heart of administration, and that the vocabulary of administrative theory must be derived from the logic and psychology of human choice.

I am publishing a preliminary draft of the study at this time for two reasons. First, I wish to have the benefit of the criticism and comments of co-workers in this field, for I am not unaware of the crudities of the study in its present form. Second, I hope that other persons besides myself will be interested in applying the scheme suggested here in their own analysis of administrative organization. Such applications will provide the only real test of its validity and usefulness.

Some of the ideas set forth herein have already been published in an article entitled "Decision-Making and Administrative Organization", in the Public Administration Review, Winter 1944.

In a study of this kind, it is particularly difficult to acknowledge the sources of my ideas. In truth, thanks are due not so much to any individual as to that great faculty which made of the University of Chicago during the years I studied there a very nettle-field of intellectual stimulation. Two men I must mention, however--Clarence E. Ridley and the late Henry Schultz--whose intellectual honesty and scientific tenacity taught me that the pursuit of science is no less a matter of moral qualities than of intellect.

Of books, three have proved especially helpful--Chester I. Barnard's The Functions of the Executive, Edward C. Tolman's Purposive Behavior in Animals and Men, and Talcott Parsons' The Structure of Social Action. After I had completed a first draft, MacMahon, Millett, and Ogden's study of The Administration of Federal Work Relief appeared, and I found their approach to administrative analysis so closely akin to that suggested in the present study that I was able to make much use of their material for purposes of illustration.

A thesis committee at the University of Chicago under the chairmanship of Leonard D. White suggested many valuable improvements in earlier drafts of this study. Finally, a very great measure of thanks must go to my friends and to my wife, who during the past six years have had to discuss the theory of administrative decisions with me in season and out.

Herbert A. Simon

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CHAPTER I

INTRODUCTION—THE ADMINISTRATIVE PROCESS¹

Administration is usually discussed as the art of "getting things done."² Emphasis is placed upon processes and methods for insuring incisive action. Principles are set forth for securing concerted action from groups of men. In all this discussion, however, not very much attention is paid to the choice which prefaces all action—to the determining of what is to be done rather than to the actual doing.

It is with this problem—the process of choice which determines action—that the present study is concerned. To understand the nature of choice, and its relation to administrative processes, a number of questions will have to be answered in the course of the study:

1. How can a behavior system in which choice plays a central role be described and analyzed?
2. How can rationality of choice be defined, and how can rational be distinguished from nonrational choice?
3. What is the nature of the choice-process from the psychological standpoint?
4. What are the criteria of "correctness" for administrative decisions?
5. How does administrative organization affect and influence choice?
6. From (4) and (5), what administrative arrangements are conducive to "correct" choices?

¹This chapter is based on a manuscript prepared for the Institute for Training in Municipal Administration and incorporated in part in Chapter I of The Technique of Municipal Administration, (Chicago: The Institute, 1940).

²Luther Gulick, "Science, Values, and Public Administration," in Papers on the Science of Administration, ed. by Luther Gulick and L. Urwick (New York: Institute of Public Administration, 1937), p. 191.

Some of these questions will be answered with much greater completeness and assurance than others. The first, second, and fourth questions dealing primarily with the rational aspects of choice, offer the least difficulty. Answers to the third and fifth questions must, at the present state of our psychological knowledge, be highly tentative. The present study will achieve very little more toward the solution of the sixth, and final, question, than to set forth a framework which can guide further research, and to suggest a few hypotheses for verification. It is the thesis of this study that the construction of a satisfactory administrative theory waits upon the solution of this final question.

Deciding and Doing

That any practical activity involves both "deciding" and "doing" is perhaps a commonplace observation. But it has less commonly been recognized that a theory of administration should be concerned with the processes of decision as well as with the processes of action.¹ Principles of administration abstract from the particular objectives of any specific organization, and, if valid, are applicable generally to any group of men organized for purposive action. It is irrelevant from the standpoint of administrative theory whether the purpose of the group be fire-fighting, teaching, manufacturing shoes, or playing football.

¹See, however, three recent contributions to the decision problem: Chapter I of Technique of Municipal Administration; C. I. Barnard, The Functions of the Executive (Cambridge: Harvard University Press, 1939); Edwin O. Stene, "An Approach to a Science of Administration," American Political Science Review, XXXIV (December, 1940), 1124-1137.

It is fallacious to conclude, however, that because administrative theory abstracts from the content of the decisions in the organization with which it is concerned, that it can also abstract from the process of decision. The process of decision does not come to an end when the general purpose of an organization has been determined. The task of "deciding" pervades the entire administrative organization quite as much as do the tasks of "commanding" and "doing"—indeed, it is integrally tied up with these. If a general theory of administration is possible at all, then it must include principles of organization which will assure correct decision-making, just as it must include principles which will assure effective command and effective action. Moreover, these principles will have to be stated so as to apply to organization in general, without reference to the particular objectives of any specific organization.

Making Decisions

The term "decision" usually implies conscious deliberation. As will become abundantly clear, "conscious-unconscious", "deliberate-non-deliberate" are qualities admitting of every variation in degree. It will not be possible to draw any distinguishable line separating "decision" in the narrower sense from the broader concept of "choice." What is more, any such unrealistic restriction of the problem would involve an omission of some of its most significant elements. Consequently, the term "decision", as used in this study, will refer to any process whereby one behavior-

alternative is selected to be "acted out," from all the alternatives which are accessible to choice.

A simple illustration will show how all-pervasive is the process of deciding or choosing. The typist, sitting before her machine, is physically able to strike any one of forty-two keys, and each stroke of the typewriter involves a selection of one from these forty-two alternatives. Actually, the total field of alternatives open to her is vastly broader than the choice among the forty-two keys, for instead of striking a key, she might move an arm or a leg, stand up, turn her head, utter sounds, or engage in any one of an almost infinite variety of behaviors. Decision, the process of selecting one from this vast set of possibilities, includes both conscious and unconscious, rational and nonrational elements, and has as its outcome determinate behavior.

Selectivity

The first point to be noted about this process of choice is that it is seldom, if ever, purely "random". Occasionally perhaps a coin is flipped, or a lottery held (the Selective Service Act, for example), but even in such cases the admissible alternatives are first narrowed down to a few "plausible" ones, and it is only among these admissible alternatives that choice is indifferent. A person may flip a coin to choose between two movies for an evening's entertainment, but he is less likely to use this method for choosing

between a train for New York and a train for New Orleans. A first characteristic of decisions, then, is that they are selective.

Integration

Reverting to the illustration of the typewriter, it will be observed that the typist's decision as to her first stroke will not be independent of her decision as to the second stroke. If the first stroke is a "q," the second will almost inevitably be a "u." Decisions, then, are integrated, at least partially, one with the other. This integration usually follows from the fact that decisions which are close to one another in point of time are usually members of a general plan.

Another type of integration, or rather limitation, of decisions arises from their relation to physical laws. If a man decides to be in San Francisco at 10:00 a.m. of a certain day, and if he carries out that decision, he eliminates for himself the alternative of being in Chicago at 10:05 a.m. of the same day. Thus, a decision not only selects one out of a set of alternative behaviors for a specific time; but in so doing it limits to a greater or lesser degree the alternatives which are available for subsequent behavior. It is "four-dimensional" in that its consequences extend over time as well as space.

Precisely how does the integration of decisions come about? In addition to the physical limitations mentioned in

the previous paragraph, the integration results from purposiveness. Choice is ordinarily deliberate with respect to ends and means—those behaviors are selected which are appropriate means to desired ends.

Value and Fact

The minute decisions which govern specific actions are inevitably instances of the application of broader decisions relative to purpose and to method. The walker contracts his leg muscles in order to take a step; he takes a step in order to proceed toward his destination; he is going to the destination, a mail box, in order to mail a letter; he is sending a letter in order to transmit certain information to another person, and so forth. Each decision involves the selection of a goal, and a behavior relevant to it; this goal may in turn be mediate to a somewhat more distant goal; and so on, until a relatively final aim is reached.¹ In so far as decisions lead toward the selection of final goals, they will be called "value judgments;" so far as they involve the implementation of such goals they will be called "factual judgments."

Unfortunately, problems do not come to the administrator carefully wrapped in bundles with the value elements and the factual elements neatly sorted. For one thing, goals or final objectives of governmental organization and activity may be formulated in very general and ambiguous terms—"justice," "the general welfare," or "liberty." Then, too, the objectives as defined may be merely intermediate to the attainment of more final aims. For ex-

¹In Chapter III, this distinction between mediate and final goals will be elaborated, and its necessity shown.

ample, in certain spheres of action, the behavior of men is generally oriented around the "economic motive". Yet, for most men, economic gain is not usually an end in itself, but a means for attaining more final ends: security, comfort, or prestige.

Finally, the value and factual elements may be combined, in some cases, in a single objective. The apprehension of criminals is commonly set up as an objective of a municipal police department. To a certain extent this objective is conceived as an end in itself, that is, as aimed toward the apprehension and punishment of offenders against the law; but from another point of view, apprehension is considered a means for protecting citizens, for rehabilitating offenders, and for discouraging potential offenders.

The Hierarchy of Decisions—The concept of purposiveness involves a notion of a hierarchy of decisions—each step downward in the hierarchy consisting in an implementation of the goals set forth in the step immediately above. Behavior is purposive in so far as it is guided by general goals or objectives; it is rational in so far as it selects alternatives which are conducive to the achievement of the previously selected goals.

It should not be inferred that this hierarchy or pyramid of goals is perfectly organized or integrated in any actual behavior. A governmental agency, for instance, may be directed simultaneously toward several distinct objectives: a recreation department may seek to improve the health of children, to provide them with good uses for their leisure time, and to prevent juvenile delinquency, as well as to achieve similar goals for the adults in the community.

Even when no conscious or deliberate integration of these goals takes place in decision, it should be noted that an integration generally takes place in fact. Although in making decisions for his agency, the

recreation administrator may fail to weigh the diverse and sometimes conflicting objectives against each other in terms of their relative importance, yet his actual decisions, and the direction which he gives to the policy of his agency will amount in practice to a particular set of weights for these objectives. If the program emphasizes athletics for adolescent boys then this objective is given an actual weight in practice which it may, or may not, have had in the consciousness of the administrator planning the program. Hence, although the administrator may refuse the task, or be unable to perform it, of consciously and deliberately integrating his system of objectives, he cannot avoid the implications of his actual decisions, which achieve such a synthesis in fact.

The Relative Element in Decision.—In an important sense, all decision is a matter of compromise. The alternative which is finally selected never permits a complete or perfect achievement of objectives, but is merely the best solution which is available under the circumstances. The environmental situation inevitably limits the alternatives which are available, and hence sets a maximum to the level of attainment of purpose which is possible.

This relative element in achievement—this element of compromise—makes even more inescapable the necessity of finding a common denominator when behavior is aimed simultaneously at several objectives. For instance, if experience showed that an organization like the Work Projects Administration could at one and the same time dispense relief and construct public works without handicapping either objective, then the agency might attempt to attain at the same time both of these objectives. If, on the other hand, experience showed that the accomplishment of either of these objectives through the organization seriously impeded

the accomplishment of the other, one would have to be selected as the objective of the agency, and the other sacrificed. In balancing the one aim against the other, and in attempting to find a common denominator, it would be necessary to cease thinking of the two aims as ends in themselves, and instead to conceive them as means to some more general end.¹

An Illustration of the Process of Decision.—In order to understand more clearly the intimate relationships which exist in any practical governmental problem between judgments of value and fact, it will be helpful to study an example from the field of municipal government.

What questions of value and fact arise in the opening and improvement of a new street? It is necessary to determine: (1) the design of the street, (2) the proper relationship of the street to the master plan, (3) means of financing the project, (4) whether the project should be let on contract or done by force account, and (5) the relation of this project to construction which may be required subsequent to the improvement (e.g., utility cuts in this particular street). These are questions for which answers must be found—each one combining value and factual elements. A partial separation of the two elements can be achieved by distinguishing the purposes of the project from its procedures.

On the one hand, decisions regarding these questions must be based upon the purposes for which the street is intended, and the social values affected by its construction: (1) speed and convenience in transportation, (2) traffic safety, (3) effect of street layout on property

¹From the description by MacMahon, Millett, and Ogden of the WPA during its planning stage, it would appear that thinking about this integration was at a rather primitive level in the organization at the time the basic decisions were made. Arthur W. MacMahon, John D. Millett, and Gladys Ogden, The Administration of Federal Work Relief (Chicago: Public Administration Service, 1941), pp. 17-42.

values, (4) construction costs, and (5) distribution of cost among taxpayers.

On the other hand, the decisions must be made in the light of scientific and practical knowledge as to the effect particular measures will have in realizing these values. (1) The relative smoothness, permanence, and cost of each type of pavement will be investigated; (2) alternate routes will be studied from the standpoint of cost and convenience to traffic, (3) the total cost and distribution of cost will be computed for alternate methods of financing.

The final decision, then, will depend both on the relative weight that is given to the different objectives and on knowledge as to the extent to which any given plan will attain each objective.

This brief account will serve to indicate some of the basic features of the process of decision. These features will be further elaborated in this study, and their implications for the theory of administration examined. Meanwhile, let us turn equally brief attention to the relation between the study of decisions and the traditional analysis of the administrative process.

Decision-making in the Administrative Process

Administrative activity is group activity. Simple situations are familiar where a man plans and executes his own work, but as soon as a task grows to the point where the efforts of several persons are required to accomplish it, this is no longer possible, and it becomes necessary to develop processes for the application of organized effort to the group task. The techniques which facilitate this application are the administrative processes. Two principal aspects of administration may be distinguished.

First, the administrative processes divide up the whole task

to be accomplished and allocate various portions of it to the members of the group.

Second, the administrative processes secure the coordination of the activities of the individual members.

It should be noted that the administrative processes are decisional processes: they consist in segregating certain elements in the decisions of members of the organization, and establishing regular organizational procedures to determine these elements and communicate them to the members concerned. If the task of the group is to build a ship, a design for the ship is drawn and adopted by the organization, and this design limits and guides the activities of the persons who actually construct the ship.

The organization, then, takes from the individual some of his decisional autonomy, and substitutes for it an organization decision-making process. The decisions which the organization makes for the individual ordinarily (1) specify his function, that is, the general scope and nature of his duties; (2) allocate authority, that is, determine who in the organization is to have power to make further decisions for the individual; and (3) set such other limits to his choice as are needed to coordinate the activities of several individuals in the organization.

Decisions as to broad policy are generally laid down toward the top of the organization. Within the framework of policy, administrative officers make further decisions dealing with execution. In turn, the persons who are given the task of carrying out these decisions usually need, in the process of execution, to make further decisions. The task of making decisions becomes thereby a larger or small part of the task of each member of the administrative organization.

The simple function of paving a street will again serve as an example. The city council may determine whether or not it shall be paved,

how the cost will be met, and perhaps the general type of construction. The chief administrator or one of his staff agencies will determine the specifications for the materials, what concerns will furnish them, etc; the city engineer or his assistant will in all likelihood determine the grade of the pavement; the superintendent of construction will determine how the job can best be done, and will select equipment, foremen to supervise the work, etc.; finally, to the foremen will be left the responsibility for deciding on the details of construction and convenience to adjoining property owners during the actual progress of the work.

Specialization

The administrative organization is almost always characterized by specialization—particular tasks are delegated to particular parts of the organization. Such specialization increases the effectiveness of the organization in many ways, but it also creates a need for coordination. Coordination, in turn, is often achieved by a hierarchical or pyramidal structure of responsibility and authority. This structure is seen to best advantage in the army, where divisions are divided into brigades, brigades into regiments, regiments into battalions, and so forth.

Within this hierarchy, too, there is specialization, so that one unit is responsible for, and has authority over, a particular portion of the task. Since the work of the official at any given point in the hierarchy, and the types of decisions he must make and execute, are relative to the particular task that has been assigned to him, it results that decisions on broader issues tend to be concentrated toward the top of the hierarchy.

Administrator and Operative

Since the administrator is trying to accomplish things through the efforts of a group, his decisions and activities will be directed toward motivating persons below him in the hierarchy toward effective action. In fact, it can be said that the sole function of the non-operative personnel is to influence the behavior-choices of the persons who do the actual "work" of the organization. Only if this influence results in more effective choices on the part of the operatives can the existence of non-operative persons be justified from the standpoint of the group's effectiveness. A theory of decisions, then, is fundamental to the entire work of the non-operative group.

The officials and employees at different levels of the hierarchy may generally be distinguished by the type of work they do.¹ The breadth of issues involved in decisions will decrease toward the lower levels of the hierarchy. "Administrators," in addition to broad decisions, will be concerned with the coordination of the structure below them; at a lower level, "supervisors" will make decisions on somewhat narrower issues, and will direct and coordinate by direct oversight; at a still lower level, "operatives" will decide and execute, but will usually not be responsible for the work of any subordinates. Thus the hierarchy will be characterized by "vertical" as well as "horizontal" specialization.

It is not always possible to pair off neatly the functions delineated here with the persons who perform them. Generally speaking, the larger the organization the easier it is to make such a pairing. In the federal government there are persons who are almost exclusively engaged in the

¹I believe that I am indebted to Mr. Lyman S. Moore for the basic idea expressed in this section.

function of administration, others in the function of supervision, and of course there are hundreds of thousands who are almost entirely "operatives." In a small city, on the other hand, the chief administrator decides, supervises, and operates, and the problem of functional allocation is related to the distribution of his own time and the division of his own thinking rather than to any assignment of employees in a complex organization.

Even in the larger organizations it should not be thought that all functions of administration take place at the very top, those of supervision directly beneath, and those of operation at the bottom. The functions of administration filter down through the organization from the chief administrator to the foreman of the road gang and even, in a sense, to the members of the gang themselves. Of course at the top these functions appropriate the largest proportion of the employee's time and this proportion diminishes steadily down through the organization. In Sheldon's words: "At various points in an organization there must be centres of coordination and where that is exercised the function of Administration may be said to be in operation. . . . It is the function which, both at the top of the organization and in the various divisions. . . . controls and coordinates the activities of all contributory functions."¹ The last one of these "centres of coordination" may be in the mind of the laborer on the road gang who plans, organizes, coordinates, controls, and reports his own activities.

The Work of the Administrator

How does the analysis of administration, just presented, in terms of "deciding" and "doing" compare with accepted breakdowns of administrative activities? Current lists of administrative activities include: planning,

¹Oliver Sheldon, The Philosophy of Management (London: Sir Isaac Pitman & Sons, 1930), pp. 54-55.

organization, staffing, finance, purchasing, command, coordination and control.

Planning is almost entirely a matter of decision. The term refers to the deliberation which goes into comprehensive decision-making prior to action. Planning may have reference to the content of the organization's work, or to the plan of organization itself. In the latter case, it merges into the second function of organization.

The task of organizing is a task of making decisions about the decision-making process itself. It is the task of determining what the specialized functions will be of each member of the organization, and the allocation of authority—the right to make decisions—among members of the organization.

The relation of staffing to the decision-making process is less obvious. As will become clear in later chapters, however, there is an intimate relationship between the training and ability of personnel recruited for an agency, and the proper allocation of decision-making functions in that agency.

Finance and purchasing are, in a sense, a specialization for the procurement aspects of an agency's work, and have no particular relation to decision-making processes. One aspect of finance is of central importance, however. The social values of governmental services must be balanced against each other and against the money costs of providing these services and consequently financial considerations will be intimately involved in all budget decisions.

Command is a function which makes possible a specialization of the decision-making process itself. It permits the communication of a decision from one point in the organization, where the decision was reached, to another point where it will be acted out. All the advantages which

inhere in the specialization of activities can thereby be attained for the decision-making process.

In any group effort an individual must make many decisions which depend for their effectiveness upon what other members of the organization are doing. Coordination is the function of maintaining these necessary relations among the activities of different members of the organization. It might be said that coordination is the active modification of organization in the day-to-day work of administration

Control is the examination of the work of the organization by its administrative staff. The functions of control are to determine that commands have been carried out, and to provide a check on operations which will be a basis for modifications of future decisions. A common medium of control is a system of internal reports which inform the administrator whether activities are being carried on according to plan or the plan is being changed to fit a changing situation.

This brief sketch of the functions of administration will serve to indicate the important extent to which these functions involve decisional processes. The present study will not use these particular categories however, but will undertake a direct analysis of the process of decision itself. If some of these categories reappear in later stages of the study it is because they are quite as appropriate to an analysis of decisions as to a general analysis of administrative processes.

The present study is frankly and unavoidably abstract and "theoretical." There are taken up, particularly in the first four chapters, a number of topics which may appear to have only a remote connection with administration. I hope that the reader will withhold judgment on their relevance until he has read the entire work, for these matters were included in the study by the author only when he had thoroughly convinced himself

that no sound or scientific--or practical--administrative theory was likely to be constructed unless it were built up solidly from these "bed-rock" considerations. Some brief indication may be given at this point, by way of assurance to the reader before he begins work on the first chapters, of the manner in which the subjects discussed in these chapters bear on current problems of administrative theory.

1. Policy and administration. Administrative theory has long been struggling with the distinction between matters of "policy" and matters of "administration," and with the proper allocation of decisions of these two categories in the administrative structure. Chapters 2 and 3 seek to show that the policy-administration dichotomy is related to a more fundamental value-fact dichotomy which pervades all processes of decision-making.

2. Authority. The concept of administrative authority is fundamental to administrative theory. Preliminary to an analysis of this concept in Chapter 5, it is necessary to understand the logical and psychological relations that can subsist between the decisions of two persons. Chapters 3 and 4 attempt to provide this basis for the discussion of authority.

3. Efficiency. Controversy centers around the question of whether efficiency is the administrator's goal. Again, solution of this controversy requires precise definition of the terms involved. In order to understand exactly what the term "efficiency" means, it is necessary to avoid the usual terminology of "means" and "ends," and to construct a new vocabulary for discussion human choice. Chapter 3 seeks to establish this vocabulary with a view to avoiding the ambiguity and inaccuracy which are prevalent in discussions of administrative efficiency.

4. Specialist versus Generalist. The question of why a specialist behaves like a specialist has never received a satisfactory answer. Chapters 3 and 4 seek to present some suggestions as to logical and psychological factors which in Chapter 7 will be applied to the problem of the specialist.

These four topics are illustrative of the range of matters covered; and their citation here will perhaps give the reader patience to follow the argument of the study through the rather abstract and difficult passages of Chapters 2 to 4 with some hope and expectation that he will come to a discussion of administrative theory, as such, in the succeeding chapters.

Plan of this Study

With these introductory remarks in mind, we may outline the course which we intend to follow in this study of the theory of decisions.

In Chapter II, we shall try to discover what is meant by a "correct" decision. We shall show that the correctness of a decision is purely relative—depending upon the set of values in terms of which the consequences of choice are judged.

In Chapter III, we shall look into the anatomy of the process of choice or decision. We shall see what it means to select a particular course of action from among a set of alternatives. We shall define what is meant by objectively rational behavior.

In Chapter IV, we shall discuss the psychology of decision. We shall contrast the psychological processes of choice with the processes which would be required to meet the demands of rationality. We shall see what role social institutions play in the decision-making process, and how they help overcome the mental limitations of the individual.

In Chapter V, we shall inquire how the decision-making process can be specialized—how decisions made by one person can influence the choices of another. We shall study the mechanism of authority by means of which this specialization can be accomplished.

In Chapter VI, we shall return to the notion of "correctness." We shall find that a "correct" decision is one which satisfies the administrative criterion of "efficiency." We shall see that efficiency, like correctness, is a relative term, and depends upon what social values are given weight as criteria of choice.

In Chapter VII, we shall develop one aspect of the psychology of administrative decisions by examining the mechanism of "identification." We shall see how this mechanism substitutes institutional for personal criteria of decision.

In Chapter VIII, we shall complete the discussion of organizational influences upon decision—taking up those aspects of the psychology of decision not developed in the chapters on authority and identification.

In Chapter IX, we shall apply our analysis to a critique of current theories of administration. We shall set forth a terminology and a frame of reference for the significant analysis of administrative situations. We shall submit some tentative "principles" of good administration.

CHAPTER III

THE LOGIC OF ADMINISTRATIVE DECISIONS

In the last chapter it was seen that decisions are compounded of two contrasting elements—the factual and the ethical; the present chapter will examine in detail the intimate structure of decision, and will analyze further the fundamental role played by fact and value. Although the present chapter is indispensable to a rigorous treatment of the subject of this study, the reader who wishes to postpone questions of rigor may prefer to omit all but the concluding summary of the present chapter until he has studied the remainder of the book.

Little will be said in this chapter about what goes on in the mind of a person making decisions—treatment of the subject from a psychological standpoint will be reserved for Chapter IV. The present chapter will be concerned with the objective environment of decision—with the actual consequences which follow on choice. Choice, in so far as it is rational and cognizant of its objective conditions, involves a selection of one alternative from among several. The alternatives differ with respect to the consequences which flow from them, and an analysis of decision-making in its objective aspects will refer primarily to these variable consequences of choice.

Although this emphasis upon consequences will give the present chapter a definitely "rationalistic" bias, concentration on the rational aspects of human behavior should not be construed as an assertion that human beings are always or generally rational. That misconception, which permeated utilitarian political theory and a large part of classical economic theory, has been decisively refuted by modern developments in psychology and soci-

ology.¹

Since "good" administration is behavior which is realistically adapted to its ends, just as "good" business is economic behavior accurately calculated to realize gain, a theory of administrative decisions will of necessity be somewhat preoccupied with the rational aspects of choice. Later chapters of this study will pay more attention to the actualities of administrative behavior. The present chapter bears the same relation to these realistic analyses that a discussion of business principles and theories bears to a description of economic institutions and actual market behaviors; that is, it is not a description of how administrators decide so much as a description of how they would decide if they were good administrators.²

Means and Ends

Fact and value appear to be related in some manner to "means" and "ends," respectively, and since the latter are rather more familiar terms than the former, perhaps the analysis can best be initiated by studying the role of the means-end relationship in decision.³

¹The naive utilitarian view is nowhere more strikingly set forth than by Jeremy Bentham, op. cit., pp. 1-7, passim. On the other hand, rationalism is implicit rather than explicit in Adam Smith. See An Inquiry into the Nature and Causes of the Wealth of Nations (New York: E.P. Dutton co. 1914), pp. 12-15. The criticism of rationalism has perhaps been most strongly urged by the Freudians, but is a matter of general acceptance among almost all modern schools of sociology and psychology. See, for example, Harold D. Lasswell, Psychopathology and Politics (Chicago: University of Chicago Press, 1930), pp. 28-37; Sigmund Freud, "The Unconscious," Collected Papers (London: L. and V. Woolf, 1925), Vol. IV, pp. 98-136; Vilfredo Pareto, The Mind and Society (New York: Harcourt Brace and Co., 1935), passim.

²Appendix A discusses at greater length the distinction between a practical science of administration--the study of what administrators "ought" --and a sociology of administration--the study of what administrators "do".

³Talcott Parsons analyzes social action systems with the help of these same terms in The Structure of Social Action (New York: McGraw-Hill Book Company, 1937), pp. 44, 49, 228-241.

A simplified model of human decision-making is provided by the behavior of a white rat when he is confronted, in the psychological laboratory, with a maze, one path of which leads to food.¹ In his first run through a new maze, the rat may choose his path more or less at random, for when he reaches a branching of the road, he has no criterion for choice between the left-hand and the right-hand path; after he has run the maze several times, he tends to choose more frequently that path which leads most quickly to the food.

In this gradual orientation of the rat's behavior, two elements are present: first, one end-point of the path (the point where food has been placed) seems more desirable to the rat than other end-points; second, certain behavior alternatives are seen to be conducive to the attainment of this end-point. The first of these two elements is the rat's goal or end; the second--the particular path he chooses is his means.

The term "rationality" applies only to the second of these two elements. The analysis accepts the goal as given, and considers only how behavior is modified by knowledge--knowledge as to the appropriateness of particular behavior-alternatives to the desired goal. In terms of Chapter II, ends have to do with the values involved in choice; means have to do with the facts and only through the latter does knowledge become relevant to choice.

When a human being is confronted with a choice, his behavior like that of the white rat, is determined by (1) his ends, and (2) his expectations as to the consequences which will flow from the choice of each alternative --that is, knowledge of the appropriateness of the means. Behavior is termed "rational" when it is appropriate to the desired ends.

¹The rat in the maze has been comprehensively studied by Edward C. Tolman, Purposive Behavior in Animals and Men (New York: The Century Company, 1932). This discussion of means and ends follows closely Tolman's formulation.

The Hierarchy of Ends

Even at the physiological level, means-end relationships serve to integrate behavior. At this level muscular tensions are coordinated for (as a means of) the performance of simple physiological acts—walking, reaching and grasping an object, turning the eyes toward an object. In the adult, these simple movements are largely unconscious and automatic, but the child must with great difficulty learn them and this learning, though not at a reflective level, is not at all unlike the learning of an adult in a means-end situation.

But the taking of a step, the grasping of an object, is usually itself a means to a broader end. An end may be sought, therefore, not for its own sake, but as a means to a more distant end. The clearest way of determining which ends are sought for their own sake, and which for their usefulness as means to more distant ends, is to place the subject in situations where he must choose between conflicting ends.

The fact that goals may be dependent for their force on other more distant ends leads to the conception of a hierarchy of goals—each level to be considered an end relative to the levels below it and a means relative to the levels above it. Under this conception, rationality can refer to ends as well as means—to all ends, that is, save those on the highest level of the hierarchy. In this context, again, rationality refers to the appropriateness of means to ends, since the desirability of the final goals themselves is not a factual question.

Through the hierarchical structure of ends, behavior attains integration and consistency, for each member of a set of behavior alternatives can be weighed in terms of a comprehensive scale of values. In actual behavior, a high degree of conscious integration is seldom attained. Instead of a single branching hierarchy, the structure of con-

scious motives is usually a tangled web, or more precisely, a disconnected collection of elements only weakly and incompletely tied together and the integration of these elements becomes progressively weaker as the higher levels of the hierarchy—the more final ends—are reached.

A perfectly rational and integrated behavior pattern is represented in Figure 1, where the vertical lines mean "in order to;" that is, A is selected in order to attain E, which is a means toward N, and N toward W. An incompletely integrated behavior pattern is represented in Figure 2; here a common denominator is lacking whereby the claims of E can be measured against the claims of F.

Figure 1

An Integrated Hierarchy of Motives

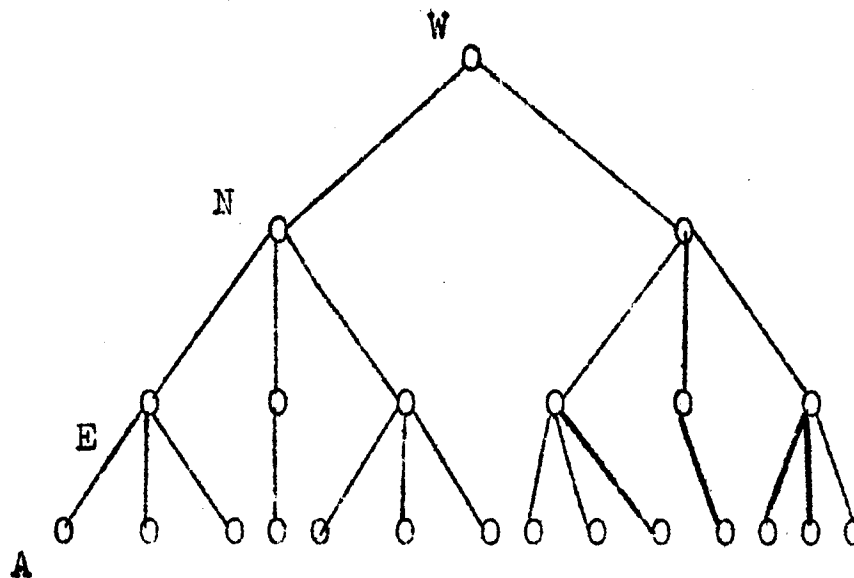
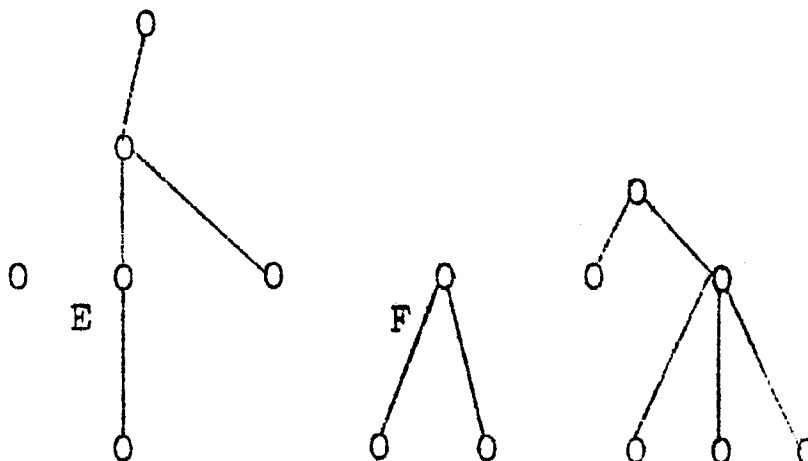


Figure 2

An Incompletely Integrated Hierarchy of Motives



As a matter of fact, reality imposes on behavior a consistency even when integration is not consciously achieved in the system of motives. It is empirically impossible to "have one's cake and eat it, too." If E and F are conflicting claims--claims impossible of realization at the same time--then the realization of E precludes the realization of F, and a choice will have to be made in fact, whether a choice is made consciously and rationally or not.

In an integrated behavior pattern, conflicts of values are resolved by referring them to a common value at a higher level in the hierarchy: for example, if one's job, and one's professional reputation are both intermediate objectives directed toward achieving economic security then any conflicting claims of a job and reputation can be resolved in terms of their implication for security.

Anyone can verify for himself that the means-end schema is a prevalent mode of human thought and decision. Very often it provides also the framework for administrative organization, for function and purpose are frequently the central integrating concepts around which a departmental organization is built.

Limitations of the Means-End Schema

The means-end schema fails to provide an entirely satisfactory description of rational choice, however. To understand why this is so, it will be helpful to experiment further, in imagination, with the behavior of the rat in the maze.

Experiment 1. The rat's end presumably is food for he soon learns to select the path which leads most quickly to the food. Now suppose his problem to be somewhat more complicated. Two paths are laid out, both leading to the food (Figure 3); in the left-hand path, a metal grill is installed at A, so that the rat receives a shock in passing that point. The

rat will learn to take the right-hand path.

Experiment 2. Now suppose the right-hand path is blocked at B. If the rat is sufficiently hungry, he can be taught to take the left-hand path in spite of the grill, by denying food unless he crosses it.

Experiment 3. Finally, suppose that if the rat pursues the right-hand path to B, he is not denied food, but merely required to wait for an hour before the food is given him. Under these circumstances whether he will learn to wait for the food, or whether he will learn to cross the electric grill will depend on his degree of hunger.

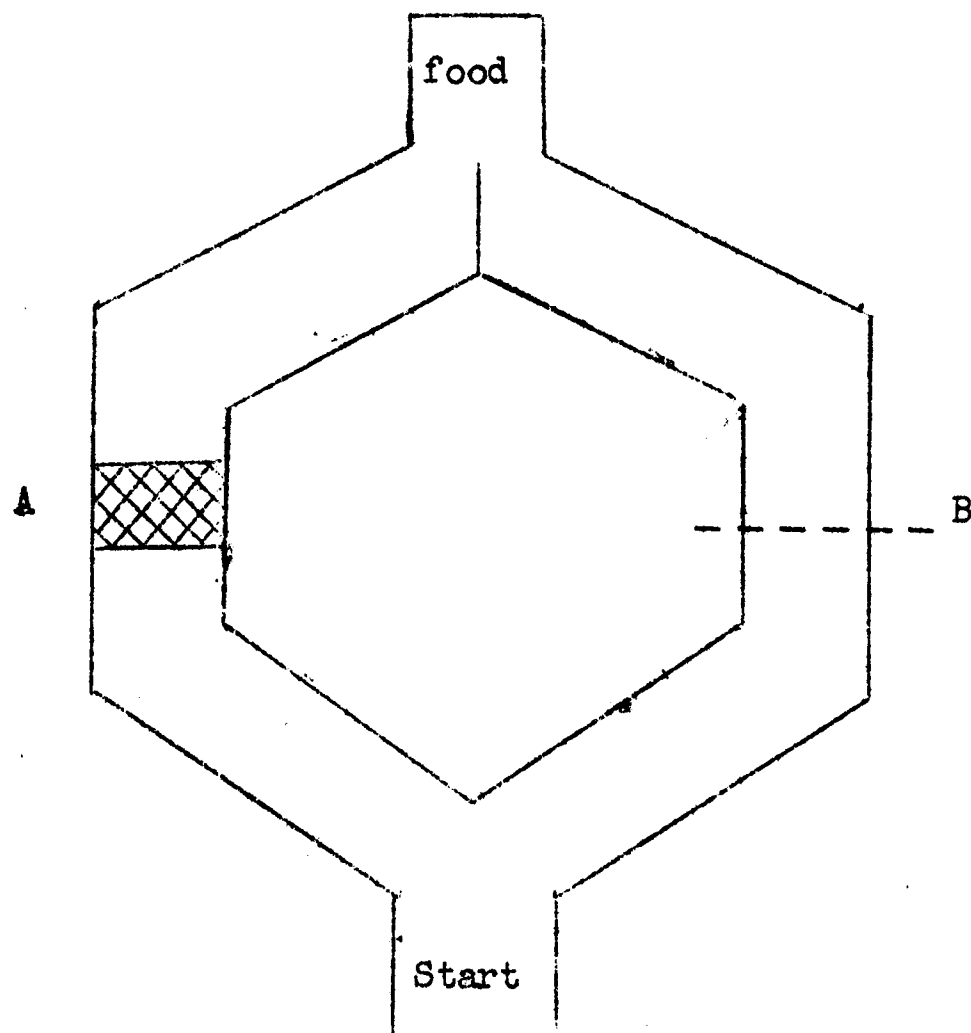
In order to describe this last experiment, the means-end scheme must be considerably elaborated. Although food is still the rat's end, and the path his means, his choice is now not between food and no-food, but between food-now and food-later. Furthermore, the path to food-now is no longer purely means, for it has acquired a negative end-character by virtue of the grill.

This illustrates two ways in which the means-end scheme is complicated. First, in order adequately to describe the process, it is not sufficient to specify the ends which are being sought by the choice of a particular behavior alternative but also the alternative ends which would be reached if another behavior alternative were chosen. That is, it is not enough to say that the rat seeks food, for both paths lead to food; it must be added that he prefers food-now to food-later.

Second, in actual situations a complete analysis into means and ends is usually impossible, for the alternative means are not usually valuationally neutral. Presumably, a particular mean is selected purely because of its appropriateness to the desired end and the mean itself is not desired for its own sake. In the case of the paths, however, the presence of the electric grill gave path A a distinctly negative value, and, other things

Figure 3

A Hypothetical Maze



being equal, the rat would choose path B.

These problems arise because the means-end schema fails to deal adequately with the time dimension. Time, however, is an indispensable element in the analysis of the schema of action.¹ If we consider an end as a state or condition to be realized, then only one state may be realized at one time, but many states over a period of time, and choice is influenced not only by particular ends, but also by expectations of what ends may be realized at different times. Choice imposes two problems. (1) If a particular end is to

¹See Talcott Parsons, op. cit., p.45. Parsons points out that contrariwise, the action schema may dispense with the notion of spatial dimensions.

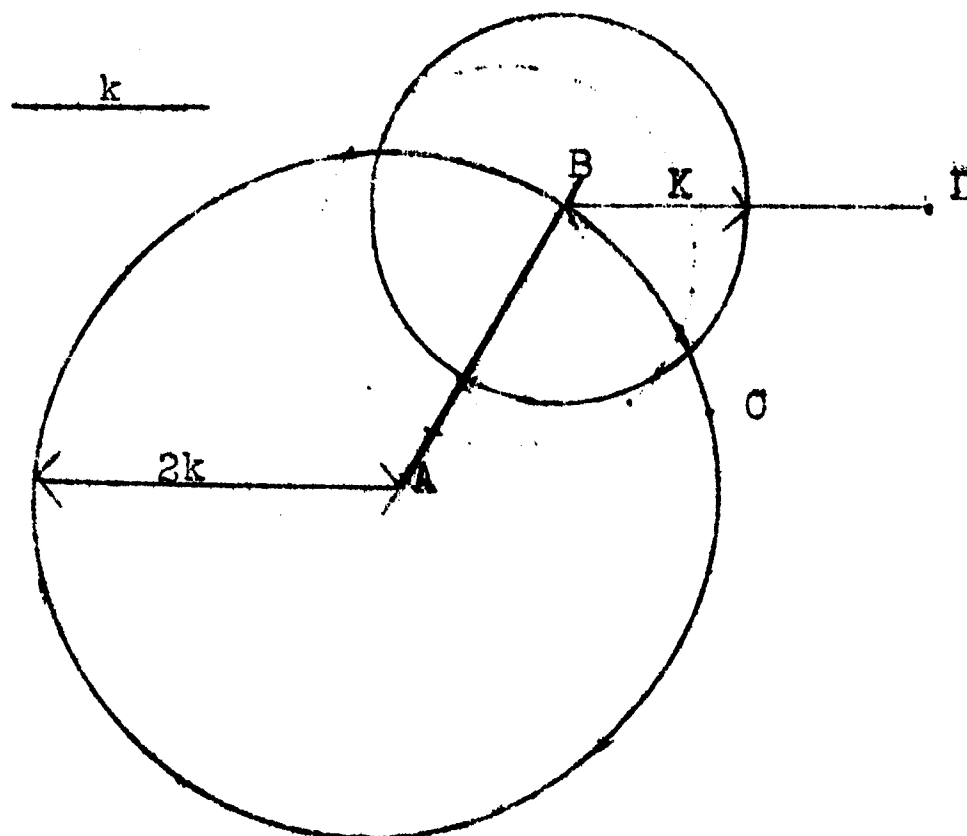
be realized at a given time, what alternative ends must be relinquished for that time? (2) If a particular end is to be realized at a given time, how does this limit the ends which may be realized at other times?

This may be illustrated by a model. Suppose a person to be placed at point A (Figure 4), at time T_0 , with several goals B, C, and D, at a distance from him. If he cannot travel more than the distance k in one unit of time, then in order to reach B at T_2 , two units of time later, he must relinquish the possibility of reaching C at T_2 , and he must relinquish the possibility of reaching D at T_3 , one unit of time later than T_2 .

A third objection to the means-ends schema is perhaps even more cogent than the two which have been illustrated. Not only is it difficult—as pointed out in the second objection—to discover means which are unalloyed with a value element, but it is equally difficult to discover ends which are really final, that is, pure matters of value. It is not too difficult to test whether an end is really final. If no situation can be conceived which would modify or limit the desirability of the end, it is truly final; for if it were mediate to some other end, a situation could be

Figure 4

A Hypothetical Means-End Problem



conceived where attainment of the former end would be incompatible with attainment of the latter. The reader can decide for himself whether it is an easy matter to define an end which is really final, but which does not at the same time suffer from the complete ambiguity of such terms as "good" and "justice." The moment an attempt is made to supply these concepts with content, an uninvited factual means-element creeps into the formulations.

Decision then involves not merely the attainment of goals by neutral means--the means-end-schema--but a choice among the alternative values which are realizable--the alternative possibilities.

The Nature of Possibility

On the basis of our discussion, the means-end schema appears inadequate for a theory of rationality, for it gives insufficient recognition to the time variable in purposive behavior, it does not eliminate the possibility that two rational decisions may be inconsistent with each other, and it does not achieve a successful separation of the factual elements in decision--the rational adaptation of means to ends--from the ethical elements--the choice of values. A theory of decisions in terms of alternatives and possibilities meets all these objections.

Logical Possibility

Perhaps possibility can most easily be explained by explaining what it is not. A set of circumstances or state of affairs is logically impossible if it is self-contradictory.¹ For instance, "this is red, and this is green," where "this" refers to the same point in space at

¹Cf., Aristotle, *Metaphysics*, Bk. V, chap. xii, ll. 23-24: The Basic Works of Aristotle. "The impossible is that of which the contrary is of necessity true."

the same time in both cases, describes a logically impossible state of affairs. Any state of affairs which is not logically impossible, is logically possible.² Thus, "at midnight I was in Chicago, and at midnight I was in New York" is a logical impossibility, while "at midnight I was in Chicago, and at one minute past midnight I was in New York" is a logical possibility.

²In fact some extremely complex epistemological problems are concealed in this formulation. The definition of logical possibility in this study corresponds closely to Wittgenstein's. See Ludwig Wittgenstein, Tractatus Logico-Philosophicus (London: Kegan Paul, 1922), secs. 2.201, 4.25 to 4.403, and 5.525. Wittgenstein's analysis (and probably the analysis in this study) assumes that there are elementary propositions and mutually independent atomic facts into which the world can be divided. (Ibid., sec. 2.) For unless this is assumed, it is impossible to prove logically that two existential propositions are not logically incompatible with each other. But this assumption of atomicity seems to run counter to modern psychological theories of perception which deny the existence of "raw percepts." The issue is discussed by J. Weinberg in An Examination of Logical Positivism (London: Kegan Paul, 1936), pp. 69-83, 179, and in "Are There Ultimate Simples?" Philosophy of Science, II (1935), pp. 387-399. See also Bertrand Russell, An Inquiry into Meaning and Truth (New York: W. W. Norton and Co., Inc., 1940), passim, but especially chaps. xix and xxii.

The treatment of logical possibility in this study can be formalized by the use of Sheffer's stroke-function, " p/q ," which reads "p is incompatible with q." Then any proposition "p" which is a conjunction of atomic propositions represents an impossibility if the proposition " p/p " can be demonstrated. See A. N. Whitehead and Bertrand Russell, Principia Mathematica (2nd ed., Cambridge: University Press, 1925), I, "Introduction to the Second Edition," xvi-xix, and the references there to papers by Nicod and Sheffer.

The term "possibility" has received considerable discussion in philosophical literature. For a number of viewpoints see University of California Publications in Philosophy (Berkeley: University of California Press, 1934), Vol. XVII, while number. The papers by Marhenke and Savery are in general accord with the definitions of possibility suggested here. None of these papers shows the relation between possibility and behavior systems as developed here.

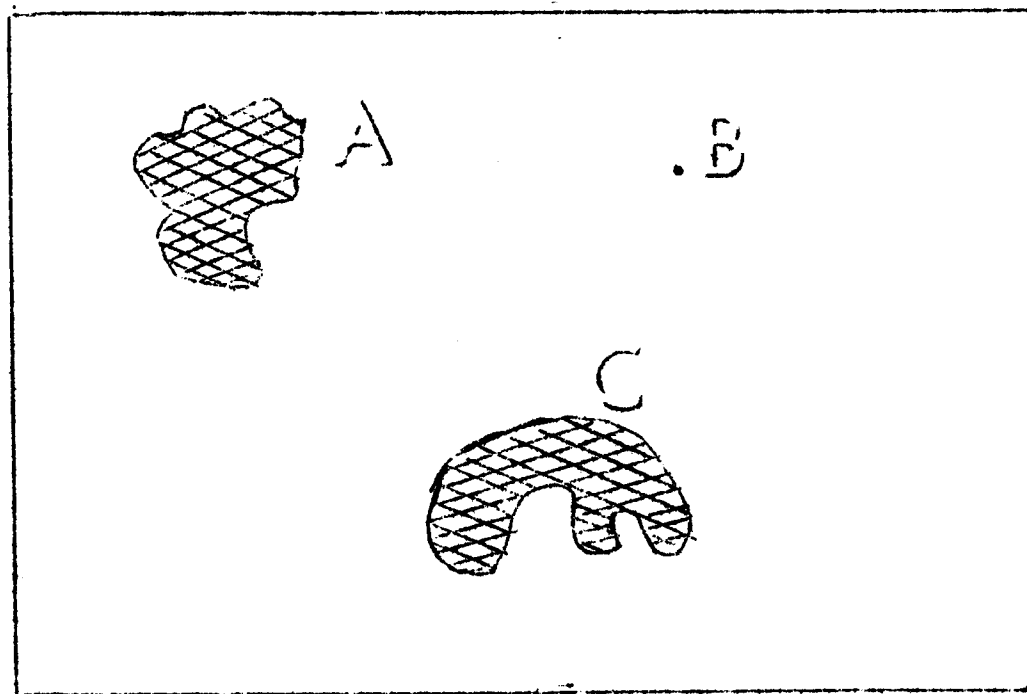
A set of propositions describes a comprehensive logical possibility when, if any proposition not deducible from the members of the set were added to it, the resulting set of propositions would describe a logical impossibility.

For illustration, we may take a simple world of space each point of which might at any time be occupied or unoccupied.¹ This world would be completely described by stating for each point in time which points of its space were occupied, and which unoccupied. Any such complete description is a comprehensive possibility. If the space consisted of n points, and time of n points, then there would be $2^{n \cdot n}$ distinct comprehensive possibilities. If the black portions, A.B.C. of Figure 5 represent the portions of the space which are occupied at T, then a comprehensive possibility would be represented by a series of such patterns, one for each point in time. The only limitation imposed by logic is that the same point could not be both occupied and unoccupied at a given time.

The real world is infinitely more complex than the hypothetical world we have constructed, but the idea of comprehensive possibility is the same in the real as in the hypothetical world. That is, a comprehensive logical possibility is any way which the whole world could be over time—barring only logical contradictions.

¹For instance, a chess-board on each of whose 64 squares there either is, or is not, a chessman at the end of each move. If a game lasted 60 moves, the number of comprehensive logical possibilities for the description of the board during that game would be $2^{64 \cdot 60}$, all of them distinct. If the number of different kinds of pieces which might occupy each square is taken into consideration, the number of comprehensive logical possibilities is increased to $12^{64 \cdot 60}$.

Figure 5

A Comprehensive Possibility at Time T_0 Empirical Possibility

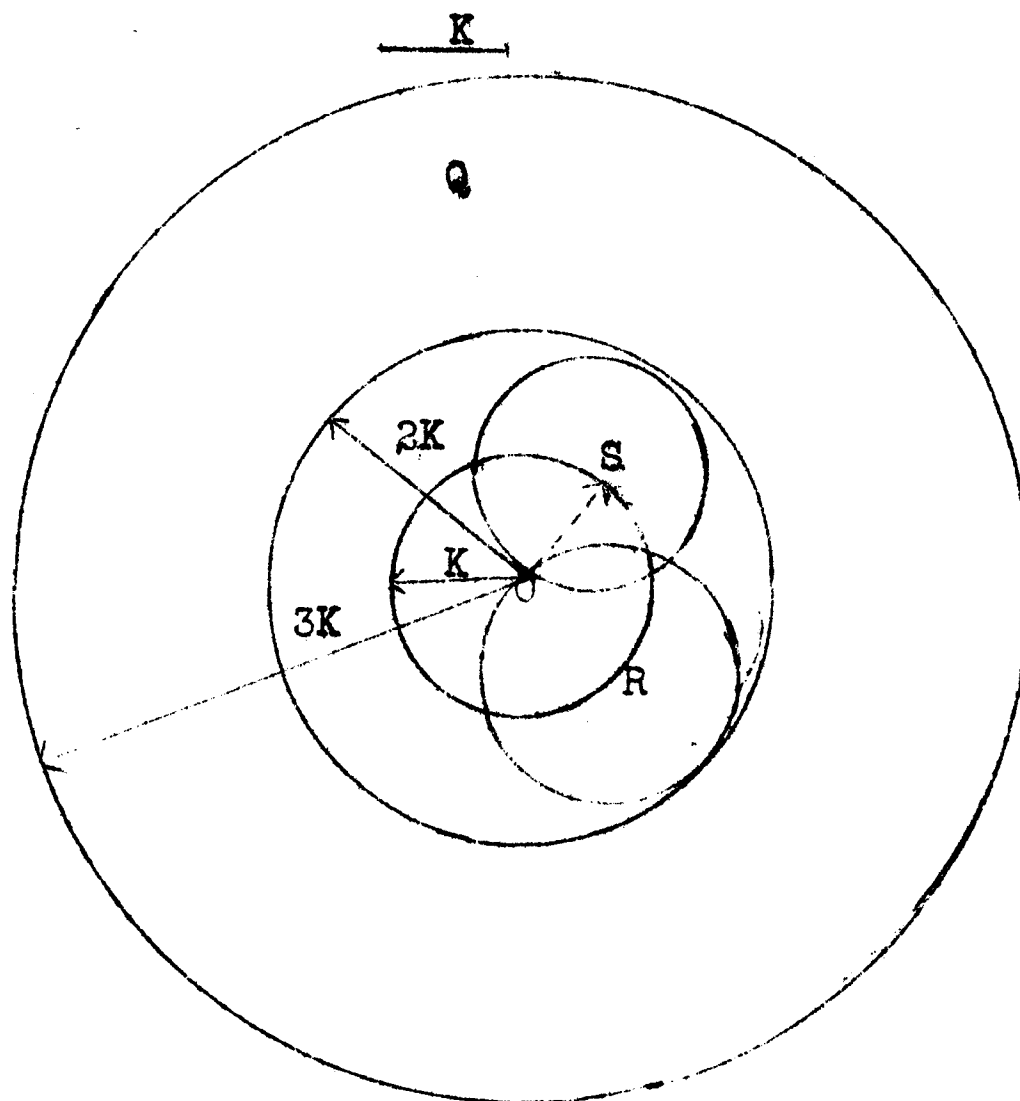
In addition to the limitations imposed upon possibility by the demands of logical consistency, there are also empirical requirements. It has been asserted that "at midnight I was in Chicago, and at one minute past midnight I was in New York" describes a logical possibility, but under present conditions it also describes an empirical impossibility. Thus, the empirical possibilities are a subset of all logical possibilities eliminating those which involve contradictions with empirical facts.

A set of propositions describes a comprehensive empirical possibility when, if any proposition not deducible from the members of the set were added to the set the resulting set of propositions would describe an empirical impossibility. To revert to our hypothetical world, we might impose the empirical limitation that only one point in space is occupied at any one time, and that the path described by this point be continuous over time. If the maximum velocity of the point, or object, is fixed, this further limits the empirical possi-

bilities.¹ Suppose the object be limited to move no farther than the distance k in one unit of time, and that its position at the time T_0 be taken at O (See Figure 6). Then its position at T_1 will lie within a circle of radius k and with center at O .

Figure 6

The Structure of Possibilities



Thus, although it would be logically possible for the point O to be occupied at time T_0 , and Q , outside the circle with radius k , to be occupied at T_1 , this logical possibility, and all others like it, would be ruled out by empirical limitations on the velocity of the object. At T_2 the object could lie at any point within a circle of radius

¹The chess-board would be correspondingly limited if it could be assumed empirically that all transformations would be in accordance with the rules of chess. For instance, not more than one square could be occupied by a white king at one time; the positions of the white king at move M_2 would be limited to the squares adjoining its position at M_0 ; etc. Thus the total number of comprehensive empirical possibilities would be considerably less than the total number of comprehensive logical possibilities.

2k and with center O, and at T_3 at any point within a circle of radius 3k, etc.

Let us review the situation one unit of time later, at T_1 .

Let us suppose that in this unit of time the object has moved in a straight line to the point S on the circumference of the inner circle about O.

What possibilities now remain for the object's position at time T_2 ? The possibilities for T_2 are represented by the set of points lying within the circle of radius k about the point S. It will be seen that this set of possibilities represents only a subset of the possibilities available for T_2 at the original time T_0 —for we have seen that this original set is represented by the circle with radius 2k about point O. The new circle about S lies wholly within the larger circle, covering only one quarter of its area.

Time and Possibility

This illustration serves to indicate the structure of possibilities through time, and the relation between possibility and realization. Only one of all the available possibilities for any given unit of time can be realized in actuality. If T_0 be the present or any past time, there can be only one position which the object actually occupies at that time.

This is the most fundamental empirical limitation imposed on possibility. All empirical possibilities have identical segments for the time stretch up to the present. Under this limitation, the set of comprehensive empirical possibilities will be relative to the time T_a which is taken as the present. If T_f and T_g be two points in time such that T_g is subsequent to T_f , then the set of comprehensive possibilities at T_g will be a subset of the comprehensive possibilities at T_f . This has already been illustrated by Figure 6.¹

¹Page 39, *supra*. The circle with radius k about S lies entirely within the circle of radius 2k about O.

It is to be noted further that an object which moves from O at T_0 to S at T_1 may lie anywhere within a circle of radius k about S at T_2 . If instead, the object had moved to R at T_1 , the possibilities for T_2 would be the points in a circle of radius k about R . Hence, the actuality which has been realized up to time T_f will determine the set of comprehensive possibilities which are available for the times subsequent to T_f .

If now we consider the possibilities available to the object at time T_f together with its behavior alternatives at time T_f , that is, the directions it may take, we see that to each of these possible directions corresponds a subset of the total possibilities available at T_f . These subsets are mutually exclusive and taken together exhaust the available possibilities at T_f .

We may describe this situation in anthropomorphic terms and conceive of the object as having the power to select its own path out of those available to it. The succession of choices which it makes results in the realization of one path out of all those possible.

Actually the object can make either a single choice or a succession of choices at each new instant.¹ A succession of choices over a time interval ($T_g - T_f$), selecting one of the behavior alternatives at each point in time through this interval, is designated a comprehensive choice for the interval ($T_g - T_f$).

For the moment, it will be assumed that a choice is made at the end of each unit of time (assuming finite units) for the object's path during the next unit. The set of comprehensive possibilities which remain after a given behavior alternative has been taken at T_f will be called the possibility set consequential on that behavior alternative.

¹The chess player may merely decide on his next move or he may lay out a whole plan of campaign.

If the object be at O at T_0 (Figure 6), it may move to S at T_1 , to R at T_1 , or to any other point in the inner circle at T_1 . Suppose the first alternative is taken; then the possibilities consequential on this alternative will be identical with the comprehensive possibilities for the object at point S at T_1 . If the second alternative were taken, the possibilities consequential on this alternative would be identical with the comprehensive possibilities for the object at point R at T_1 , etc.

As has been noted, the set of comprehensive possibilities consequential on S is mutually exclusive with the set of comprehensive possibilities consequential on R , although they may be identical except for a finite time segment.¹

Because of the importance of the time variable in choice situations, two further terms will be defined, both involving the notion of simultaneity. A simultaneous possibility is that portion of a possibility all the elements of which refer to a single instant of time. A comprehensive simultaneous possibility for the time T_a is that portion of a corresponding comprehensive possibility which refers to events at the time T_a .

Knowledge and Possibility

From the discussion thus far, it may be seen that the passage of time serves to narrow the field of possibilities. For human beings this result is also attained ideationally through empirical knowledge. It is the task of knowledge to select from the whole class of logical possibilities a more limited subclass of empirical possibilities, setting up certain functional relations among the variates which describe the possibilities. (We use "functional" and "variates" in a broad sense, and do not limit the discussion to quantitative knowledge.)

¹In chess the same position may be reached by a number of different permutations of moves.

No better illustration of this is afforded than by the science of astronomy. Kepler's great achievement was to devise a set of functional relationships which connected the positions of the members of a planetary system for all future points in time with the present configuration, so that for any given configuration there is a unique consequential possibility.

This is the ultimate goal of knowledge—to determine relations of known facts of past and present with facts of the future, so that a single possibility is consequential on the present. In most fields, of course, knowledge must be satisfied with a much more modest degree of attainment than it has reached in astronomy: it usually contents itself with discovering certain implications among the variates describing the possibility which reduce the number of their degrees of freedom. The physicist has discovered, for instance, that the temperature of a gas can be expressed as a product of its pressure and its volume ($T = KpV$). This law limits the possibilities for the simultaneous values of temperature, pressure, and volume. Thus, if appropriate units are selected, so that K is equal to unity, then 48, 6, and 8 is an empirically possible set of values for temperature, pressure and volume, respectively, while 48, 6, and 7 is an empirically impossible set.

Behavior and Possibility

When purposive behavior is injected into the possibility schema, certain complications ensue. Purposive behavior, as we have seen, is forward looking, aiming toward future goals, which are, in fact, determinants of the behavior. That is, those alternatives are selected which it is believed lead toward the goals.

It would appear, then, that in the case of purposive behavior, the future may determine the present, rather than the present the future. Such a relationship would violate the tenets of most deterministic systems, but would not, as has sometimes been supposed, make prediction impossible.

As a matter of actual fact, it is not the future, but expectation of the future which determines purposive behavior, and hence this problem need not even arise.

From the standpoint of the behaving subject, the problem is not to discover a single possibility consequential on the present, but to discover a set of possibilities one member of which is consequential on each of the comprehensive choices available to him. Since different consequential possibilities will be realized for any given comprehensive choice which is selected, the Consequential possibility may be considered a dependent variable which is a function of independent variates—the behavior alternatives.

For instance, the path an automobile follows depends on the behavior of the man at the wheel, and a mathematician could easily write the equation connecting the successive positions of the steering wheel over a stretch of time with the resulting path of the car. Each possible set of steering-wheel positions would represent a comprehensive choice; each path of the automobile a consequential possibility.

We may look at the situation from a somewhat more general standpoint. Consequential on any present situation are a set of comprehensive logical possibilities. Which of these possibilities will be realized will depend on (1) the environmental parameters which describe the present situation, and (2) the value of the behavior parameter (i.e., the particular comprehensive choice) which is selected. In the case of purposive behavior, the behaving subject forms certain expectations of the possibilities consequential on each alternative. These are based on (1) his knowledge of the laws connecting present environmental parameters with future sets, and (2) his knowledge of the actual values of the present parameters. The choice is made among these consequential possibilities.

The automobile affords an illustration of this point also: if a

driver wishes to proceed forward, he shifts into low gear; if backward, into reverse; but he must know which position of the gear shift lever corresponds to which gear (the environmental parameter). Thus, to achieve the same consequential possibility—to proceed backwards—he would have to move the lever into a different position with a Dodge of the twenties than with a modern Dodge.

For given fixed values of the environmental parameters the consequential possibility may be considered a single-valued function of the behavior parameter—for cars with the same gear shift, persons placing the lever in a particular position may always expect to proceed in the same direction. In other words, in a given objective environment, there is a unique possibility consequential on each comprehensive choice.

The implication might be drawn from this discussion that any rational choice between alternatives involves a complete description of the possibility consequential on each alternative and a comparison of these possibilities—that we would have to know in every single respect how the world would be changed by our behaving one way instead of another, and we would have to follow the consequences of behavior through unlimited stretches of time, unlimited reaches of space, and unlimited sets of descriptive variables. Under such conditions even an approach to rationality in real behavior would be inconceivable.

Fortunately, the problem of choice is usually greatly simplified by the tendency of the empirical laws which describe the regularities of nature to arrange themselves in relatively isolated subsets. In comparing two behavior alternatives, it is often found that their consequential possibilities differ in only a few respects and for the rest are identical. That is, the differential consequences of one behavior as against an alternative behavior may occur only within a brief span of time and within a limited area of description.

This fact provides both scientist and practitioner with a powerful aid to rationality, for the scientist can isolate these closed systems in his experimental laboratory, and study their behavior, while the practitioner may use the laws discovered by the scientist to vary certain environmental parameters without significantly disturbing the remainder of the situation.

Social Behavior and Possibility

Further complications are introduced into the system if more than one purposive organism is involved, for in this case, included among the environmental parameters of each behaving subject will be the behavior choices of the other subjects. That is, for each to determine uniquely the consequences of his action, he must know what will be the actions of the others, and included in this, what influence his action will have on the actions of the others. The system of behavior which results from this situation varies with the circumstances, and the subject can only be considered briefly.

Perhaps the purest form of a game of wits is one called "Heads and Tails." There are two participants. The first, out of the sight of his opponent, takes a coin, places it either heads or tails on a table, and covers it with his hand; the second tries to guess whether heads or tails is up. The first participant must decide whether he thinks the second will call tails, and must place the coin in the opposite fashion; the second participant must estimate whether the first will place it in the heads or tails position. Both of them cannot be right for if the first estimates correctly the second's choice, then the second will have incorrectly estimated the choice of the first, and vice versa.¹ The resulting behavior system will be of a highly indeterminate nature. For the instability of each of the behavior variates leads to instability of the other.

¹For an illustration from the literature of military science, see Col. J. F. C. Fuller, The Foundations of the Science of War (London: Hutchinson and Co., 1925), p. 183.

At the opposite extreme is a traffic situation involving two drivers, each of whom is observing the rules of the road and knows that the other is also. If they approach an intersection simultaneously, one on the highway, and the other on a side road, the one on the highway expects the other to come to a stop, and proceeds accordingly. Here the behavior pattern is stable, because the behavior of the second man, based on his expectations of the behavior of the first, does not cause the first man to alter his behavior.

Midway between these two examples is the case of two cars approaching an intersection where the rules of the road do not give a clear right of way to one or the other. If the first expects the second to proceed and the second does not expect the first to proceed, then a stable pattern results. But if both come to a stop, or if both start through the intersection, then the behavior will exhibit a series of alternations, accompanied by applications of the brake or accelerator, as the expectations of each concerning the behavior of the other change—the pattern will then be unstable.

The stable and unstable behavior patterns correspond closely to patterns of cooperation and competition, respectively. In a cooperative pattern, both participants prefer the same consequential possibility; hence, they will both act so as to realize that possibility. In a competitive pattern, the realization by the first participant of the consequence he prefers will thereby frustrate the other participant. The rule of the marketplace is to buy cheap and to sell dear, but these are mutually incompatible aims.

The illustration of automobiles meeting at an intersection shows that even a cooperative pattern may be unstable if each participant in the pattern is unable to predict what the other is going to do. In these cases, coordination of the behaviors of the two participants is necessary in order that they may realize the possibility which they both prefer. Here conflict of

aims is not in question, but imperfect knowledge.

Value and Possibility

Purposive behavior has been described as a choice among behavior alternatives upon the basis of the possibilities which are consequential on them. Thus far, consideration has been given to the use of knowledge in this process, and it has been found that knowledge is the basis for determining the functional relationship connecting the behavior variate with the consequences. In choice a second element is involved—that is, a process of determining preferences among consequences. This process may be termed valuation. To each comprehensive choice corresponds one and only one comprehensive possibility. Rational behavior involves a listing of the comprehensive possibilities in their order of preferences, and the choice of that behavior alternative which corresponds to the possibility highest on the list.

The System of Values.—Utility Surfaces

Since the values which are present in possibilities are both numerous and diverse, the individual in exercising his preference must weigh them and choose among them. The economists have developed a conceptual scheme for describing this process which is very similar indeed to our possibility schema.

The individual's choices among competing values may be described by a set of indifference curves. These curves indicate which sets of possible values are equivalent to each other or mutually "indifferent" to choice. To illustrate with the economist's favorite goods—nuts and apples—the indifference curves tell whether a combination of ten nuts and five apples is preferred by an individual to a combination of five nuts and seven apples, or whether the first combination is less desirable, or whether the individual is indifferent as between the two.

Empirical limitations upon possibility are introduced into the

economist's schema by the individual's stock of goods, and by the price structure. It is assumed that the individual starts with a specified number of nuts and apples, that he may exchange one for the other at a specified rate of exchange, and that he then attempts to select that possibility of exchange for which his preference is greatest.¹

Relation of Value, Experience, Behavior

Our analysis shows that the individual's relation to the outside world has three distinct aspects: the individual lives in, and perceives the world; he feels preferences for one set of anticipated consequences as compared with another set; in the light of his expectations and preferences, he acts upon the world to bring to realization the preferred consequences. In some situations the experiential, valuational, and behavioral aspects of the relationship are so closely bound together their separation, even in analysis, is difficult. In the act of chewing and swallowing food, the pleasure received is almost identical with the perception, and both of these are hardly to be distinguished from the behavior; in rubbing the skin where it has been tickled by a feather, experience, value and behavior are simultaneous.

Values are most easily distinguished in though from the chain of experiences which lead to them, and from the behaviors which are appropriate to produce these experiences, (1) when the three elements are separated in time, and (2) when the causal connection between the value and the behavior must be learned. First, it is characteristic of many kinds of activity that values do not cumulate from each moment's behavior, but are consequent on "complete" acts. In the rat's search for food there is a preparatory period of behavior (his maze-wanderings), followed by a consummatory period (eating). During the preparatory period, elements of value are almost absent, and hence there is a clear distinction between behavior and value.

¹ Henry Schultz, The Theory and Measurement of Demand (Chicago: The University of Chicago Press, 1938), pp. 12 - 35.

Second, experience of consequences may modify the initial valueless character of a behavior rather significantly. The consequences of specified behaviors may be learned, and an anticipatory value obtained from these behaviors even before the consummatory stage is reached. Pavlov's dogs, which had been conditioned to expect food after the ringing of a bell salivated when the bell was rung. In the human being at least, "mouth-watering" in expectation of food is associated with a distinct anticipatory pleasure.¹

The significance of the "means-end" relationship now becomes clearer. In the first part of this chapter it was shown that "means-end" does not correspond to "fact-value." What then is the connection between the two sets of terms? Simply this: A means-end chain is a series of anticipations which connect a value with the possibilities leading to it, and these possibilities, in turn, with the behaviors that produce them. Any element in this chain may be either "means" or "end" depending on whether its connection with the value end of the chain, or its connection with the behavioral end of the chain, is in question.

The means-character of an element in a means-end chain will predominate if the element is toward the behavioral end of the chain; the end-character will predominate if the element is descriptive of the consequences of behavior. If this be so, terms which are descriptive of the possibility consequential on a behavior may be taken as indicia of the value adhering to that behavior. While the economist talks of economic goods as the values which are the goals of economic activity, in actuality, of course, the economic goods are merely indicia of the existence of a state of affairs from which value can be obtained—the possibility of consuming the goods.²

¹Tolman, in fact, uses the term "pleasure" to refer specifically to the values inhering in anticipation as distinguished from the values adhering to consummation. Op. cit., p. 258.

²Frank Knight considers a major weakness of classical (Cont'd. P. 51).

The psychological act of evaluating alternative possibilities usually consists in measuring these possibilities in terms of certain value-indices which have been found in fact to be generally associated with the realization of the values themselves - money, for example, may come to stand as an index of the values which money can purchase. These value-indices involve an important factual element, for they presuppose that a possibility characterized by a high value-index will possess a correspondingly high value.

If the means-end relationship be defined in this way, it is clear why it does not permit a sharp separation of value from fact for the same behavior, or the same possibility, may have as consequence more than one value--it may be a member of more than one means-end chain. For instance, if a rat is confronted with a number of possible behaviors, some leading to food, some not, those leading to food will stand much higher in his preference than those not leading to food. In so far as this is true, a means-end relationship exists between his maze-wanderings and the reaching of food. Further study of his behavior would show that a possibility involving food-now is preferred to a possibility involving food-later. Similarly, short paths might be preferred to long paths, all other things being equal.

Each of these values would correspond to a distinct means-end chain. Possible behaviors would be recognized as means when they led to valued possibilities. The rat, confronted with two paths of equal length, chooses the one leading to food, and it is indifferent to him whether it is the right-hand or the left-hand path (i.e., the respective behaviors leading to the traversal of the right- or left-hand paths are not in them-

Cont'd. from Page 50. 2economics to be its failure to recognize economic gain as a purely intermediate link in a means-end chain, leading to "prestige" and "comfort"; and likewise its failure to recognize as an end valued for its own sake the very economic activity which leads to gain. See his Risk, Uncertainty, and Profit (reprint edition, 1935; Boston: Houghton Mifflin Company, 1921), pp. xii-xx.

selves valuationally significant, and take on value only as means). His selection of right or left is a behavior leading, if appropriate, to the desired food and hence its value-character is purely derivative, and arises from the fact that, empirically, the choice of one path or the other does lead to food.

We can now explain how the same behavior can belong to several—perhaps contradictory—means-end chains. Because the value adhering to one of these chains may be simultaneous with the behavior itself, the confusion, mentioned above, between the behavior and its values sometimes arises. The rat's willingness or refusal to cross an electric grill under varying circumstances can be explained in terms of the varying value content of the experiences consequent upon this behavior. One of these values—his dislike of the electric shock—will be realized simultaneously with the behavior, but this does not demonstrate the identity of the behavior and the value. The behavior must be considered the first link in each of two chains, one ending in the shock, the other in the enjoyment of food after the grill is crossed.

We must note, therefore, (1) that values may be encountered along the way to further values, and (2) that the preparatory behaviors in a complete act may gain values of anticipation—may become links in a means-end chain. If these two points are kept in mind, there need be no confusion resulting from the use of the means-end relationship for the analysis of behavior.

SUMMARY

The object of this chapter has been to explore the anatomy of decision with a view to establishing a terminology and a framework of analysis which permit a realistic investigation of administrative decision. To this end, the objective environment surrounding choice was examined. This environment was described as a set of possibilities.

The role of knowledge in the choice process proved to be two-fold: on the one hand, knowledge is the means of discovering which of all the logical possibilities are empirical possibilities; on the other hand, knowledge is the means of discovering which empirical possibility is consequent on each behavior alternative. The ultimate aim of knowledge, in so far as it is part of the process of choice, is to discover a single unique possibility which is consequent on each behavior alternative, although in practice this aim is of course only imperfectly attained.

Knowledge about the consequences of behavior was thus identified as a primary influence on choice. The second influence was found to lie in the preferences of the behaving individual for one possibility as compared with another. The problem of choice is one of describing possibilities, evaluating them, and connecting them with behavior alternatives.

It was found that means and ends do not completely correspond to facts and values, respectively, but that there is some connection between the two sets of terms. A means-end chain was defined as a series of causally related elements ranging from behaviors to the values consequent on them. Intermediate ends in such a chain serve as value-indices and using them, it is possible to evaluate possibilities without a complete exploration of the final ends, or values, inhering in them.

The notion of possibility casts considerable light on the patterns of inter-personal behavior. The relationship of the values of inter-acting individuals with the possibilities consequential o their point behavior determines whether the behavior pattern will be competitive or cooperative. It was seen that instability in the behavior pattern may result when the pattern is competitive or when each of the participants in the pattern errs in predicting the behavior of the others.

This chapter has barely touched on the psychological aspects of choice, and to these we turn next. We shall attempt to contrast the psy-

chological and the logical elements in the choice process. In later chapters of this study we shall use the analytic tools developed in this and the next chapter to study some of the concepts which are central to administrative decision: authority, efficiency, identification, influence, and communications.

The analysis is already beginning to suggest some very important practical issues. First, if there is no way of reducing the value questions involved in decision to factual questions, who is to make the value judgments which underly the administrator's decisions? In the course of this study, we shall see that this issue is intimately bound up with the question of democratic responsibility.

Second, if the consequences of choice can extend to unlimited distances in numerous directions, how can human rationality hope to cope with the complexities of decision? This problem will be a major concern of the next chapter, as well as of later portions of this study.

Finally, how are the decisions of individuals molded to the pattern of the organized group? How are the problems of stability, which arise when the decisions of several persons are inter-related, met in administrative organization? This topic will be pursued in Chapter V.

CHAPTER IV

THE PSYCHOLOGY OF ADMINISTRATIVE DECISIONS

We turn now from consideration of the objective consequences of choice to an analysis of how men do choose. The pattern of rationality described in Chapter III will provide a standard with which real behavior can be compared.¹

The material of this chapter will be presented in three parts. In the first part, the individual will be viewed at the moment of choice, and the rational and non-rational elements of his thought process isolated. The non-rational elements in choice may be described as its psychological environment, just as, in Chapter III, the factual consequences of choice were described as its logical environment.

¹ A fundamental difficulty which must be faced by any social scientist who wishes to use the products of psychological research in dealing with his subject is the existence of competing schools of psychology. Fortunately, most of the psychological topics which are relevant to the present study are not the subject of the controversies which rage among these schools. Acceptance of a "gestalt," "topological," "Functional," "behavioristic," or even "psychoanalytic" framework would certainly require alterations in vocabulary, but probably no very serious modification of the propositions set forth. Because it is one of the few psychological theories which is oriented around the concepts of choice and purpose, Tolman's analysis of Purposive Behavior in Animals and Men has perhaps contributed more than any other treatise to the terminology and viewpoint of this chapter. Especially refreshing is Tolman's operational approach to the definition of terms like "purpose," which previously had been viewed with extreme scepticism by the strict behaviorists.

For traditional psychological topics such as "habit," "attention," and the like, an analysis sufficient for the purposes of this study may be found in any of the numerous textbooks. As a matter of fact, most of the references here are to William James, The Principles of Psychology (New York: Henry Holt and Company, 1925, 2 vols) and to John Dewey, Human Nature and Conduct (New York: The Modern Library, 1930). The latter, again, proved especially helpful because its discussion was placed in a behavioral frame of reference.

Among the controversial subjects which the writer hopes he has been able to avoid are: instinct, the nature of consciousness, theories of learning. It has been very encouraging for him to find most of the materials which he needed lying within the psychologists' area of common agreement.

The second part of the chapter will examine how the psychological environment of choice is formed. It will be shown that this environment is the unifying element which fits a whole sequence of momentary choices into a consistent pattern. This environment, further, is itself a product of decision, and the broader possibilities of human rationality lie in the deliberate elaboration and improvement of the psychological environment.

The third part will bring together the individual decision and the influences forming its environment. It will view decision not as an isolated act of choice, but as part of a pattern of behavior first determined in broad outline and then elaborated in a series of interrelated decisions.

In the course of the discussion, the role of social institutions--and in particular, administrative organizations--in determining the psychological environment of choice will begin to emerge. With this development, we shall have begun the transformation of the picture of omniscient rationality presented in Chapter III into the realistic portrait of functionalized and institutionalized administrative behavior which we shall attempt to set forth in Chapter VII.

The Psychological Environment of Choice

A strict rationality would mold all behavior into an integrated pattern by viewing its consequences, prior to decision, in panoramic fashion. It would consider the whole complex of possibilities which may follow from choice, and then, with the system of values as criterion, single out one from this whole set of possibilities.

The integration of real behavior--in so far as integration is achieved--proceeds usually from the opposite direction. First, individual muscular movements are fitted into complete physiological acts, and then those acts, in turn, are combined into ever larger purposive patterns. Thus, if behavior is viewed over a stretch of time, it exhibits a mosaic character. Each piece of the pattern is integrated by its purpose, but these purposes

shift from time to time with shifts in knowledge and attention, and are held together in only slight measure by any conception of an overall criterion of choice.

Purposive Behavior in Man

Docility:—As was pointed out in Chapter III,¹ the simplest movement—taking a step, focusing the eyes on an object—is purposive in nature, and only gradually develops in the infant from its earliest random undirected movements. In achieving the integration represented by these simple movements, the human being exhibits docility. That is, he observes the consequences of his movements and adjusts them to achieve the desired purpose.²

Docility is most easily illustrated by the rat in the maze.³ The rat's first trips through the maze give him experience and knowledge of what situations he may expect to meet if he passes through one or the other of the maze passages. His first trips are more or less random, since he does not know what he may expect at the end of each passage. When his expectations have developed, however, his behavior in later runs shows a decidedly purposive character directing him into those passages which have shown themselves most productive of satisfaction.

Distinctive Characteristics of Human Docility. The rat's maze-learning is primarily of a trial and error character. That is, learning does not show itself until he has had an opportunity, by actually traversing it, to learn

¹P.27, supra.

²Tolman, whose treatment is closely followed in this discussion, defines docility as "that character of behavior . . . which consists in the fact that, if a given behavior-act in a given environment proves relatively unsuccessful, i.e., does not get the demanded type of goal-object at all or gets there only by a relatively long distance, it will, on subsequent occasions, tend to give way to an act or acts which will tend to get the organism to this demanded type of goal-object and will tend to get him to it by a relatively short route." Op. cit., pp. 442-443.

³Ibid., pp. 30-35.

the structure of the maze. The human being's power of abstraction, of observing regularities in nature of a very general sort, and of communicating with other human beings help him to shorten materially this learning process.

In the first place, he may be able to infer something about the character of the particular maze with which he is faced from a previous experience with other mazes (of the same sort). Likewise, he may traverse the maze ideationally rather than in actual behavior. He may in his mind trace the consequences of each behavior alternative and select one of them without actually trying any of them out. For example, an engineer may explore in his mind or on paper several plans for a sewer and may be able to determine quite accurately their respective results, without actually putting any of them to an actual trial.¹

In the second place, communication gives the human being a tremendous advantage over the rat in learning.² The housewife learning to cook does not base her attempts entirely upon experimentation, but uses a cook book, a description of the conclusions which other persons have reached on the basis of long experimentation in this field. Of course, she will probably modify her cook book recipes on the basis of her own success or failure.

In some kinds of purposive behavior, however, learning is dependent entirely on communication, and even the subsequent test of success or failure is not available to the individual. This is true of many professional

¹ As a matter of fact, the difference between man and rat in this respect is probably one of degree rather than kind. Tolman, for instance, shows that the rat has a considerable capacity for generalization. (*Ibid.*, pp. 187-190). Whether "insight" learning and "inventive ideation" involve completely new elements, or whether they can be reduced to the simpler forms of learning is a matter of controversy. See *ibid.*, pp. 183-232, and B. H. Bode, Conflicting Theories of Learning (Boston: D. C. Heath and Company, 1929).

² Tolman, *op. cit.*, pp. 235-241.

disciplines. In the field of medicine, for instance, the individual practitioner is seldom able to determine from what happens to his small group of patients the efficacy of particular modes of treatment. He must base his treatment on doctrine developed by medical scientists with special facilities for controlled research with respect to particular types of disease.

The function of research, and especially experimental research, is to adapt behavior to purpose when the consequences of behavior are not easily evaluated outside the controlled conditions of the laboratory.

In describing the extensions which take place in the conception of docility when it is applied to human beings, it should be pointed out that the ultimate source of purposive behavior is a recognition of the consequences which follow in particular behavior alternatives. The human being's advantage is that he does not have to determine these consequences separately for each particular decision with which he is faced. By the use of the experimental method, by communication of knowledge, by ideational anticipation of consequences a relatively little bit of trial and error can be made to serve as the basis for a wide range of decisions.¹ As a result a remarkable economy of thought and observation is achieved.

Habit: One other important mechanism assists in the preservation of useful behavior patterns, namely, habit.² Habit permits conservation of mental effort by withdrawing from the area of conscious thought those aspects of the situation which are repetitive.

In learning to play the piano, the student must pay close attention to each minute movement of his fingers, and to the relation of each mark on the score to each key on the instrument. Only through a gradual adjustment

¹ Cf. George H. Mead, Mind, Self and Society (Chicago: The University of Chicago Press, 1934), pp. 90, 98.

² Dewey, (Human Nature and Conduct, pp. 13-131, 172-181) early emphasized the important role of habit in social behavior. James, in his Psychology, contributed a classic chapter to the psychological literature on habit (chap. iv).

of his movements does he achieve the necessary coordination of eye with hand. Likewise, the student learning to speak a foreign language must become conscious of the movements of his mouth, the position of his tongue, lips and teeth in order to carry out the proper vocal behaviors.

When, by practice, a certain point in skill has been reached, it proves no longer necessary to give conscious attention to integrations at this lowest level. The mere conscious desire for the end of the action--the note to be played or the word to be spoken--brings about the act without further conscious will. When this step has been reached, habit or skill takes over the integration which was first achieved by attention and docility.

Habit performs an extremely important task in purposive behavior, for it permits similar stimuli or situations to be met with similar responses or reactions without the need for a conscious rethinking of the decision to bring about the proper action. Habit permits attention to be devoted to the novel aspects of a situation requiring decision. A large part of the training which goes to make a championship football team, crew, army battalion, or fire company is devoted to the development of habitual responses which will permit immediate reactions to rapidly changing situations.¹

Habit must not be thought of as a purely passive element in behavior, for once a habit has been established the mere presence of the stimulus tends to release the habitual behavior without further conscious thought. Pavlov's experiments with dogs,² in which he conditioned them to respond to a bell by associating it with the idea of food, well illustrate this point.

Since the appropriate stimulus tends to set off immediately the habitual response, it may actually require conscious attention to prevent the response from occurring even if changed circumstances have made it inap-

¹John Dewey, *The Public and Its Problems* (N.Y.: H. Holt and Co., 1927) pp. 159-161.

²P. Pavlov, *Conditioned Reflexes. An Investigation of the Physiological Activity of the Cerebral Cortex* (Oxford: *Twenty-Five Years of Objective Study of the Higher Nervous Activity (Behavior) of Animals* (New York: -Cont'd. Page 61.

propriate.³ We shall revert to this subject in discussing a little later the superabundance of stimuli which are capable of inducing behavior.⁴

The Limits of Rationality

Remarkable as are these procedures whereby human beings achieve an integration of behaviors, they fall far short of the criterion of rationality suggested in the last chapter. In actual behavior are to be found at least five non-rational or irrational elements:

(1) Valuation is involved in all behavior. Since, in itself, it is not subject to any norm of rationality, it must be considered a non-rational element.

(2) Rationality implies a complete knowledge of the possibility which is consequent on each choice. In fact, knowledge is always fragmentary.

(3) Since the consequential possibilities to be valued lie in the future, imagination must supply the lack of experienced feeling in evaluation. But the values themselves can be only imperfectly anticipated.

(4) Rationality implies a choice among all possible behaviors. In actual behavior, only a very few of all these behavior possibilities ever come to mind.

(5) Rationality implies that decision will follow upon a comprehensive review of the objective consequences of each behavior possibility. In actuality, individual stimuli directed into particular channels by habit and attention tend to set off behavior responses before consideration has been given to the possible alternative responses.

Valuation:—Even when behavior adheres strictly to the pattern of rationality, one intrinsically non-rational element remains. After the consequential possibilities following upon each comprehensive choice have been completely described, a preference must still be shown for one of these possibilities. In other words, values must be discovered in these possibili-

³Dewey, Human Nature and Conduct, p. 34; James, op. cit., p. 123.

⁴See p. 66 infra.

where its action is needed.

A captain, arriving at the scene of a fire, must decide at once whether one or more heavy fire streams should be used at the risk of water damage. The correctness of his decision will have a significant influence on the city's fire loss, and that correctness will depend on an extensive empirical knowledge of the characteristic behavior of fire.¹

This point has been developed in some detail in order to emphasize that it poses an extremely practical problem of administration--to secure an organization of the decision-making process such that relevant knowledge will be brought to bear at the point where the decision is made.

The human being striving for rationality and restricted within the limits of his knowledge has developed some working rules partially to overcome this difficulty. He uses rules which implicitly assume that he can isolate from the rest of the world a closed system containing only a limited number of variables and a limited range of consequences.

There is a story to the effect that a statistician once found a very high correlation between the number of old maids and the size of the clover crop in different English counties. After puzzling over this relation for some time, he was able to trace what appeared to him the causal chain. Old maids, it appeared, kept cats; and cats ate mice. Field mice, however, were natural enemies of bumble-bees, and these latter were, in turn, the chief agents in fertilizing the flowers of the clover plants. The implication, of course, is that the British Parliament should never attempt to legislate on the subject of marriage bonuses until it has evaluated the effect upon the clover crop of reducing the spinster population.

In practical decision-making, devious consequences of this sort must of necessity be ignored.² Only those factors which are most closely

¹With respect to similar considerations involved in military tactics, see United States Army Field Service Regulations, 1923 (Washington: Gov't. Printing Office, 1924), p. 4.

²Cf. Dewey, Public and Its Problems, pp. 106-107.

connected with the decision in cause and time can be taken into consideration. The problem of discovering what factors are, and what are not, important in any given situation is quite as essential to correct choice as a knowledge of the empirical laws governing those factors which are finally selected as relevant.

Rational choice will be feasible to the extent that the limited set of factors upon which decision is based correspond, in nature, to a closed system of variables--that is, to the extent that significant indirect effects are absent. Only in the case of extremely important decisions is it possible to bring to bear sufficient resources to unravel a very involved chain of effects. For instance, almost any amount spent for research to determine the indirect effects of a governmental fiscal policy upon employment in the economy would, if it achieved its aim, be well spent. On the other hand, a physician treating a patient does not take time out to determine what difference the life or death of his patient will make to the community.

Difficulties of Anticipation - It is a commonplace of experience that an anticipated pleasure may be a very different sort of thing from a realized pleasure. The actual experience may be considerably more or less desirable than anticipated.

This does not result merely from failure to anticipate consequences. Even when a comprehensive possibility has been rather completely described, the anticipation of it can hardly act with the same force upon the emotions as the experiencing of it. One reason for this is that the mind cannot at a single moment grasp a possibility in its entirety. Instead, attention shifts from one value to another with consequent shifts in preference.

Valuation, therefore, is limited in its accuracy and consistency by the power of the individual to trace the varied value elements in the imagined consequence and to give them the same weight in anticipation as they

will have for him in experience.

The Scope of Behavior Possibilities:--Imagination falls down also in conceiving all the possible patterns of behavior which the individual might undertake. The number of things that a man, restricted only by physical and biological limitations could do in even so short an interval as a minute is inconceivable. He has two legs, two arms, a head, two eyes, a neck, a trunk, ten fingers, ten toes, and many sets of voluntary muscles governing each. Each of these members is capable of complex movements individually or in coordination.

Of all these possible movements, only a very few come to mind at any moment as possible behavior alternatives. Since each alternative has distinct consequences, it follows that many possibilities never reach the stage of valuation, since they are not conceived as possible consequents of available behavior alternatives.

Relatively speaking, of course, human beings come much closer to exploiting in purposive action their physiological capacities of movement than other animals. The relatively simple "tool behaviors" of which the great apes are capable¹ are very elementary, judged by human standards.

In some fields, considerable ingenuity has been shown in devising methods for exploiting possibilities of behavior. Elaborate devices have been constructed in phonetics for observing and correcting lip and tongue movements. Time-and-motion studies are made to observe, in great detail, hand movements in industrial processes.

In the same category could be placed the whole field of tool-invention and skill-training. Both involve a close observation of behavior processes, and a consequent enlargement of the possibilities available for choice.

Role of Positive Stimuli:--If rationality is to be achieved, a

¹See Tolman, op. cit., pp. 219-226, and the literature there cited.

period of hesitation must precede choice, during which the behavior possibilities, knowledge bearing on environmental conditions and consequences, and the anticipated values must be brought into the focus of attention. Psychologically speaking, such a hesitation marks a relatively sophisticated level of behavior. Simpler behavior patterns may be described as responses to stimuli which occur upon presentation of the stimulus and with little or no hesitation.

The distinction between the stimulus-response pattern of behavior and the hesitation-choice pattern gives a clue to the respective roles of nonrational and rational in the complete behavior pattern. Considering the limitations, just described, in human capacity to meet the demands of rationality, the hesitation preceding choice could conceivably lengthen into inaction. The individual, realizing his inability to take into consideration all the factors relevant to his choice, and despairing of rationality, might vacillate among the available alternatives until the time for action was past. No doubt this actually does, at times, occur, but it is not very prevalent in the world of practical affairs. Failure to decide is more often thought of as a disease of philosophers and academicians generally, than of men of affairs.

In fact, choice and action usually take place long before attention has been given even to those elements in the situation which are within grasp. A stimulus, external or internal, directs attention to selected aspects of the situation to the exclusion of competing aspects which might turn choice in another direction. Within the central nervous system are built up channels which permit impulses to be translated into action, while leaving large portions of the central system undisturbed.

Conscious attention is not a necessary element in this process. The consciousness which accompanies the "startle pattern" of behavior in response--it merely accompanies, or even succeeds, the response. However,

since we are concerned primarily with decision points, and with responses to new situations, we may consider first the role of attention in the selective process—that is, in the channelizing of stimuli.

William James, who was not troubled by behavioristic scruples, described attention as follows:

Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others, and is a condition which has a real opposite in the confused, dazed, scatter-brained state which in French is called distracted, and Zerstreuung in German.¹

Tolman, more cautiously, prefers to avoid the term and speaks instead of "selective responsiveness to stimuli."²

Attention, then refers to the set of elements which enter into consciousness at any given time. It is not clear whether consciousness is a necessary precondition to docility, so that only those behaviors which are in the focus of attention are capable of purposive adjustment. Perhaps in the simpler types of conditioned response, consciousness and attention are not involved—certainly this seems true to some extent of the development of motor skills.

In most cases, there seems to be a close relation, however, between the spheres of attention and of rationality. That is docility is largely limited by (1) the span of attention, and (2) the area within which skills and other appropriate behaviors have become habitual. Hence to a considerable extent, the limits upon rationality described above are resultants of the limits of the area of attention.

Now it has already been noted that insofar as an area of behavior

¹The Principles of Psychology, pp. 403-404.

²Op. cit., pp. 35-36.

is governed by habit, it passes out of the area of conscious attention. For example, in a consideration of behavior possibilities, attention is not usually directed to possible movements of individual muscles. Instead, the behavior possibilities which actually come to attention are habitual integrations of such unitary movements--walking, writing, pronouncing, etc.; only under unusual circumstances is there a conscious attempt to analyze these integrations. Once the stimulus is received for the initiation of such movements, they go to completion without further consideration.

The same responsiveness in habitual manner to stimuli occurs at even higher levels of integration. A typist who receives some printed matter for copying converts it into typewritten form almost without the necessity of a single conscious or original decision. To the man on an assembly line, the presence on the belt in front of him of a partially finished product is the only stimulus necessary to initiate the whole series of skilled movements which represent his contribution to the manufacture of that product. The individual sitting down at the dinner table finds in the food before him the sufficient stimulus for the complex process of eating and can carry on this process without conscious attention--meanwhile devoting his attention to conversation.

In executive positions characterized by great busyness on the part of their occupants, a great many stimuli for decision or behavior come from outside the individual. A difficult case is referred upward for appellate review; a caller or a member of another organization insists on discussing a problem with the "top man." Innumerable other persons, problems, and things are constantly being forced on his attention. In any such position the particular behaviors which will occur will depend largely on the accident of what stimuli are presented.

This habitual responsiveness of behavior to immediate stimuli creates a false environment for decision which will be given thorough analysis

in later sections. It might be described thus. Instead of choosing between a large number of alternative behaviors, the individual is confronted with a single stimulus to behavior and conceives his choice to be one of action or non-action. In many such cases, the effective stimulus which leads to action is not external but is psychological—an anticipation of a future state of affairs which is positively valued.

For example, a fire chief pictures a city in which fire losses are extremely low, which seems to him a good thing. His knowledge tells him that progress toward this desirable state of affairs could be achieved by purchase of a new fire engine. He concludes that he should advocate the purchase of a new piece of equipment. The demands of rationality would require, of course, that before deciding whether a new piece of equipment is "needed" he consider the other objects for which the money could be spent: street repairs, an addition to the municipal hospital, or the like. That this caricature is not far from the actualities of administrative behavior will be amply demonstrated in Chapter VII.¹

Almost all human beings have the feeling, at one time or another, that there are more things that they would like to do than there is time to do them. That is, there are more possible stimuli for behavior than could be acted out if they were all simultaneously present to the attention. Rationality demands that a conscious choice be made among competing "goods"

¹The reader who is interested in further examples of this stimulus-response type of thinking will find fascinating materials in several fields. First, let him turn to autobiography and ask each author: "Why did you choose your particular profession?" The autobiographies of Haldane and of William Alanson White both illustrate the point well. (Richard Burdon Haldane: An Autobiography, London: Hodder and Stoughton, Ltd., 1931, and W. A. White, The Autobiography of a Purpose, Garden City: Doubleday Doran and Company, 1938). Next, let him turn to recent literature on propaganda technique and note the generous use of attention-directing devices by the propagandist. The supporting schedules of budget documents and the testimony taken at budget hearings are filled also with examples of attention channellized toward particular values.

instead of leaving the choice to the caprice of the attention directing stimuli.

Determinants of the Psychological Environment

This analysis of the non-rational and irrational elements in behavior substantiates a proposition set forth at the beginning of this chapter, namely, that the rational pattern of behavior integrates unit acts from above, fitting them into a general plan based on a comprehensive recognition of the consequences; while actual behavior is integrated from below, fitting movements together into acts as means to ends, and organizing these acts in turn into patterns of behavior. In the psychological process consequences are only seen in incomplete, partial and vague form, and the full set of behavior alternatives is never simultaneously presented to choice.

Of What Value is Docility?

It would appear, then, that there is a very small element of rationality in this psychological process of adjustment—that movements are merely adjusted to subsidiary ends, these latter to intermediate ends, etc., until a point is reached where a "final" end is selected by a non-rational process. Now of what ethical or practical significance is the effective performance of an isolated task if that task in turn has no meaning in terms of a broader rational picture?¹

These reflections lead to a rather deep skepticism as to the real importance, from the standpoint of any overall view of the consequences of behavior, of these partial integrations from below. Yet it is integrations

¹The reader will recognize that this question is an ethical one and has no empirical answer. The author feels impelled to include this "confession of faith" and hopes it will be accepted in that sense and not as an illegitimate attempt to introduce ethical assumptions into existential propositions.

of this sort which make up the substance of decisions in any human administrative organization. Insofar as such decisions are at all rational, this rationality is usually asserted in relation to intermediate ends which are themselves non-rationally selected.

This non-rational selection of intermediate ends must be clearly distinguished from the non-rational weighing of values which characterizes any process of decision—even the most rational. Under conditions of rationality, choice follows a considered evaluation of all the circumstances surrounding action. When action is guided by intermediate objectives, the over-all pattern is one of stimulus-response rather than choice among alternatives.

It would seem, then, that the fragmentary evidences of rationality which human behavior exhibits are of no particular usefulness. The integrated busyness of the adult is simply a more patterned busyness than the random movements and shifting attentions of the child. The organized wholes of which it is composed are larger and more complex, but as wholes, of no more significance.¹

This does not imply that the presence of rational adjustments in human behavior, as an empirical fact, is inexplicable or a product of chance. As a matter of fact, theories of natural selection easily explain rationality

¹It is at this point that I would take issue with Dewey's discussion of the ethical implications of choice in Human Nature and Conduct—if, indeed, I understand what Dewey is driving at. He says: "The action of deliberation, as we have seen, consists in selecting some foreseen consequence to serve as a stimulus to present action. . . . But the selected consequence is set in an indefinite context of other consequences just as real as it is. . . . The "ends" that are foreseen and utilized mark out a little island in an infinite sea. This limitation would be fatal were the proper function of ends anything else than to liberate and guide present action out of its perplexities and confusions. But this service constitutes the sole meaning of aims and purposes. Hence their slight extent in comparison with ignored and unforeseen consequences is of no import in itself." (p. 261-262.) See also his Public and Its Problems, p. 200. His later views set forth in the Logic; The Theory of Inquiry (New York; Henry Holt and Company, 1938, chap. ix, pp. 159-180) are in closer accord with the point of view of the present study.

as an adaptive mechanism. At sub-human levels, in the rat for instance, patterns of rationality are much less complex and much less sustained. The stimuli which call forth rational integrations are almost all stimuli which are crucial to the survival of the organism--hunger, sexual desire, awareness of danger, fatigue. When one stimulus has worked out its effect on the organism by satiation or other attainment of its goal, it ceases to enter into behavior as an organizing element, and when none of this small number of stimuli is acting, the behavior exhibits a highly random character, displaying at most curiosity--a responsiveness to possible stimuli.¹

Because of the small number of stimuli capable of influencing the lower animals, animal psychologists have been able to use means and ends as descriptive concepts in discussing purposive behavior. The wealth of stimuli capable of affecting human behavior make these terms much less applicable to human psychology. It was this consideration which led us to the possibility schema of Chapter III.

But this possibility schema must be considered a limit. It is the abstract concept of choice which presents itself to the human being when he is self-conscious to the extent that he can picture broadly the consequences of alternative courses of action without first having presented to him an end as stimulus.

The Broader Justification For Docility

At this upper limit of consciousness the human being is able to ask himself not only what means are appropriate to his ends, but more broadly, "What kind of a world do I want to live in, and which behavior alternatives lead to this kind of world?"

Furthermore, the human being has at his disposal a procedure for subordinating his entire behavior pattern to the broad scheme of action which

¹Tolman, op. cit., pp. 32-33.

he values. He does this by constructing for himself an environment of choice in which he can foresee his reactions to these stimuli.¹ This idea is extremely important but relatively obscure, and can perhaps be made clearer with a few illustrations.

A man in a room with a shelf full of books may glance over the titles and deliberately choose one of them to read for an hour. Once he has opened the cover of this book, assuming that it is not too dull and that he is not interrupted, the symbols which it places before his eyes will be the most important, perhaps the only, stimuli engaging his attention during the ensuing hour. Hence, his choice of a book determines these subsequent stimuli.

Let us consider an illustration of a slightly more practical sort. A man has formed the habit of glancing at his calendar pad when he comes to the office each morning. On Thursday he receives a letter which will need to be answered the next Tuesday. He places a note on his pad, knowing that this note will provide the stimulus to act on the following Tuesday.

A third illustration is the deliberate development of a skill. A person who occasionally uses the typewriter usually falls into the "hunt and peck" system of typing because, at any given moment when he wishes to type, this is the fastest way of spelling out the words. If he anticipates, however, that he will make considerable use of the typewriter over a period of time, he may take the pains to develop the habits associated with the touch system. Then in the long run the stimuli which he wishes to translate into typewritten words will receive a more effective response than if he had not previously developed this skill.

A final illustration is provided by the lines of communication in an administrative organization. Each member of the organization requires certain information in order to make correctly those decisions for which he is responsible. To make certain that the necessary information is presented

¹Cf. Mead, op. cit., p. 25

to each member a regular system of records and reports is usually devised, which automatically directs these stimuli into the proper channels.

We have reached here an extremely significant point in the analysis. If human behavior were merely a series of momentary decisions, psychological limitations would prevent anything more than the most rudimentary sort of purposiveness and rationality. It is because the human being can deliberately fashion the psychological environment of his decisions that these can be welded together into an integrated pattern of a high order of rationality.

Our illustrations have given us some notion of the mechanisms which bring about this integration. Two principal sets of mechanisms may be distinguished: (1) those which cause behavior to persist in a particular direction once it has been turned in that direction, and (2) those which initiate behavior in a particular direction. The former are for the most part--though by no means entirely--internal. Their situs is in the human mind. To this extent, their description and functioning is a problem for psychology, and can only be touched upon in the present study.

Behavior-initiating mechanisms, on the other hand, are largely external to the individual, although they usually imply his sensitivity to particular stimuli. Being external, they can be inter-personal--they can be invoked by someone other than the person they are intended to influence. We shall find that, because they are external, they play a central role in administrative organization.

The mechanisms of initiation have already been sufficiently illustrated for present purposes. In the next few pages, we shall dispose briefly of the mechanisms of behavior-persistence. That done, we shall be ready to reconstruct a picture of rational behavior, giving a central place to the mechanisms of integration.

The Mechanisms of Behavior-Persistence

Now, it is a curious—and highly important—feature of behavior that the completion of acts possesses a unique value for the actor even if the original undertaking of the act was a matter of relative indifference. For example, it may be indifferent to us whether we spend the afternoon playing chess or baseball, but it is not likely that we will leave the baseball game in the middle to play chess, or vice versa.

Activities, then, contain within themselves internal stimuli which tend to channelize behavior until a certain point has been reached—the goal or end. Now it should be pointed out that this is not merely because the goal itself is desired, for this phenomenon occurs even when the goal is not the valued object for which the activity is pursued. To be sure, if the goal is a valued state, this will greatly increase persistence. But, for a complete explanation of the phenomenon of persistence, at least two other factors must be considered.

First, when an activity is undertaken, it imposes on the mind a limited framework of attention within which subsequent decisions will be made. Second, completion may be necessary in order to open up possibilities for future decision. Each of these three factors—consummation, attention, and the relevance of extrinsic ends—will be briefly examined.

Consummation.—The phenomenon of consummation has already been discussed in Chapter III.¹ When the valued elements in a possibility are attained only after a series of preparatory behaviors have been carried out, then, from the standpoint of value, the preparatory period is one of anticipation, the final period one of consummation. Since expectation of the consummatory period is the motivating force underlying such preparatory behaviors, it is easy to see why the entire activity is oriented towards its completion.

¹P. 41 supra

It is this increment of value which attaches to completed acts which makes the exercise of rationality practically possible. For it is not necessary at each instant to survey the world of possibilities and choose among them. Insofar as the completion of an act once undertaken possesses an enhanced value, subsidiary decisions during the prosecution of that activity need only be oriented toward it, and possibilities beyond the scope of that activity can generally be ignored.

Attention.--Attention has been described¹ as a limitation upon (1) the empirical knowledge, (2) the values, and (3) the behavior possibilities which can be brought to bear upon any single decision. An activity may similarly be viewed as a series of decisions taking place in a definite area of attention, and of such a nature that they tend to maintain this area of attention for the environment of further decisions of the series. The behavior-situation, is, so to speak, "autocatalytic" with respect to its motivation and point of view.

Illustrations of this phenomenon have already been presented. A book, if it is well written, tends to hold attention to the limits of its covers until it has been read through. But the same thing can be equally well illustrated from almost any administrative situation.

An engineer, arriving at his office, finds on his desk a set of plans for a street on which he was working the previous day. Immediately, his attention is directed to these plans and the problems involved in completing them, and no further external stimuli may be needed to keep him at work on the plans for the remainder of the day.

It may be seen that a large part of this stimulation is "internal," and proceeds along the associational paths which have been built up in the mind. If the pattern of associations is rich, the mind acts as a sort of closed circuit, repeatedly bringing thought back to the subject of concern

¹P. 67 *supra*

whenever it strays. As is well known, any considerable degree of concentration (i.e., internal stimulation) will actually decrease the individual's sensitivity to external stimuli.¹

Extrinsic Ends.---The contingency of possibilities upon earlier behaviors has already been noted in Chapter III.² In some cases this introduces a mode of completion somewhat different from the anticipatory-consummatory pattern. When an activity is such that consummation is simultaneous with the behavior, it is not ordinarily considered as having an end, in the sense of a consummation. It is an end in itself, performed for its own sake. The notion of completion would not apply in its usual sense to such an activity.

However, even such an activity may take on an anticipatory character because of later possibilities which are contingent upon it. Subsequent values which, strictly speaking, are extrinsic to the activity may depend, for their realization, upon its completion.

In billiards, a point is scored each time a "billiard" is made, that is, when the cue ball strikes successively two other balls. Each stroke is aimed towards such a score. However, the skilled player must keep equally in mind the positions which the three balls will assume after the shot, for this will determine the possibility of making a second score. He must consider not only the billiard which he wishes to make, but also the possibilities which will be opened up for further billiards.

This factor plays an important role whenever spatial considerations are involved. When one goes for a walk of a Sunday afternoon, one can hardly be said to have a goal, unless the walk itself is a goal. Nevertheless, the

¹This subject cannot be pursued further at this point, but a wealth of illustrative material will be found in the psychological literature. See for example James' chapters on "The Stream of Thought," (chap. ix), "Association" (chap. xiv), and "Will" (chap. xxvi), in The Principles of Psychology,

²Pp. 47-50.

necessity of sooner or later returning home imposes a goal and determines the general route.

Likewise, the idea of completion in the work of a collector or inspector does not derive from the idea of a goal or end--for each collection or inspection is a unit of performance--but from the purely spatial relations among the places where the collections or inspections are to be made.

The Integration of Behavior

It is time now to turn from the mechanisms which make integration possible to the pattern of behavior which results from the operation of these mechanisms.

The integration of behavior at the highest level is brought about by decisions which determine in very broad terms the values, knowledge, and possibilities which will receive consideration. The next level of integration, which gives greater specificity to these very general determinants, results from those decisions which determine what activities will be undertaken. Other levels follow, each one determining in greater detail a sub-area lying within the area of the level above.

At the higher levels of integration, only the very general aspects of the situation can be given consideration. Particularization can take place only when attention is directed to the more detailed possibilities and consequences. Hence, a fundamental problem of administrative theory is to determine how this plexus of decisions should be constructed--what the proper division of labor is between the broad "planning" decisions and the narrower "executory" decisions. A principal task of this study is to arrive at some conclusions on this point, and it will be a central topic of all the following chapters.

It should be made clear that actual events are determined by choice among on-the-spot possibilities for immediate behavior. In a strict sense, a decision can influence the future in only two ways: (1) present behavior,

determined by this decision, may limit future possibilities,¹ and (2) future decisions may be guided to a greater or lesser degree by the present decision. It is from this possibility of influencing future choice by present decisions that the idea of an interconnected plexus of decisions derives. The first type of influence has already been discussed, but the second requires further consideration.

When a problem of a particular kind has several times arisen for decision, it may lead to a generalized query of the following kind: "What criteria can I discover which can be used as a basis for choice whenever a problem of this kind arises?" For example, the experienced fire-fighter asks, "Are there any underlying principles of fire-fighting which can be applied to the many fire situations with which I deal?"

When a problem of this sort has been posed, and a solution reached, then a decision has been made which will guide all further decisions on this subject. This it may do by selecting (1) particular values as criteria for the later decisions, (2) particular items of empirical knowledge as relevant to the later decisions, (3) particular comprehensive possibilities as alternatives for later choice. Let us illustrate each of these.

(1) The specialization of administrative functions, each with its own "objective," directs each portion of the organization toward the realization of a particular restricted set of values. To accept "reducing fire losses" as the objective of a fire department is to establish a criterion of value which will guide the fire department administrator in all his decisions.

(2) In many fields, general decisions are reached as to the facts which should be taken into consideration in making any subsidiary decision. The engineer, for instance, has routine procedures of calculation for determining whether a given bridge design allows the required factor of safety in bearing its stresses.

(3) Similarly, in many fields, general decisions determine the be-

¹See Chap. iii., p. 48, *supra*.

havior possibilities which are to be considered when a specific choice is faced. A football team goes on the field with a definite repertoire of "plays" which it can call into use at appropriate moments. A policeman, seeing an infraction of the law, is trained to respond in terms of "arrest," "warning," or "report."

The psychological mechanisms by which these general criteria, previously decided upon, are brought to bear upon an immediate problem for choice have already been described.¹ By creating internal and external stimuli, these prior decisions determine the framework of attention with which the mind responds to the specific choice-situation.

This narrow frame of attention is in distinct contrast with the broader area of reference which is involved when the prior, controlling decision is made. That is, a quite different set of factors is taken into consideration when it is determined that "a fire department will be established with the objective of minimizing fire losses" than when a fire-fighter decides, "I had better connect a 2- $\frac{1}{2}$ inch line to this hydrant."

This stratification of decisions makes it possible for each choice to be guided directly or indirectly by much broader considerations of rationality than would be possible if it had to be made "on the spot" without the benefit of previous consideration. Hence, we are lead to a concept of "planned" behavior as the proper means for maintaining rationality at a high level.

The Planning Process

The psychological processes involved in planning consist in selecting general criteria of choice, and then particularizing them by application to specific situations.² A designing engineer selects as his objective a railroad to extend between cities A and B through mountainous country. After a preliminary examination of the topography, he selects two or three general

¹P. 73 supra.

²cf. MacMahon, Millett and Ogden, op. cit., p. 17.

routes which seem feasible. He then takes each of these routes as his now "end"—an intermediate end—and particularizes it further, using more detailed topographical maps.

His thought processes might be described as a series of hypothetical implications. "If I am to go from A to B, routes (1), (2), and (3) seem more feasible than the others. If I am to follow route (1), plan (1a) seems preferable; if route (2), plan (2c), if route (3), plan (3a)"—and so on, until the most minute details of the design have been determined for two or three alternative plans. His final choice is among these detailed alternatives.

This process of thought may be contrasted with a single choice among all the comprehensive possibilities. The latter method is the one dictated by logic, and is the only procedure which guarantees that the decision finally arrived at is the best. On the other hand, this method requires that all the possible plans be worked out in full detail before any decision can be reached. The practical impossibility of such a procedure is evident. The planning procedure is a compromise, whereby only the most "plausible" possibilities are worked out in detail.

Let us present another illustration. Suppose the problem be to select a dam-site for a storage reservoir. For simplicity, it will be assumed that the desideratum is to secure a specified volume of water storage at a minimum cost, and that water storage above the specified amount will be of no value. Usually the real problem is not so simple.

The cost can be estimated, for each point along the river, of building a dam with the required storage capacity. However, to make an accurate estimate, detailed studies would need to be made of the foundation conditions at each point. Then, this huge array of cost estimates could be compiled and a dam-site with least cost selected.

Actually, the engineer proceeds quite differently. By inspection of a topographic map, he immediately picks out a half dozen "plausible" dam-

sites, and forgets the rest. He is sufficiently familiar with dam construction costs to know--with a fair degree of certainty--that any other site he might choose would have a higher construction cost. Next, he makes an approximate estimate of dam costs for each of the plausible sites, assuming "normal" foundation conditions. Finally, he selects the most promising sites and makes careful foundation studies as a basis for final estimates.

At each step in this process there is a chance that the dam site which really is most desirable will be eliminated without complete analysis. The engineer's art consists in determining the degree of approximation which is allowable at each point in the procedure

The Function of Social Institutions

It was mentioned earlier in this chapter that the mechanisms leading to the integration of behavior might be inter-personal. If we conceive of social institutions, in the broad sense, as patterns of group behavior, it is not hard to see that the individual's participation in such institutions may be the source of some of his most fundamental and far-reaching integrations. The institutional influences on the individual are of two principal kinds.

(1) Institutions permit stable expectations to be formed by each member of the group as to the behavior of the other members under specified conditions. Such stable expectations are an essential precondition to a rational consideration of the consequences of action in a social group.¹

(2) Institutions provide the general stimuli and attention-directors which channelize the behaviors of the members of the group, and which provide those members with the intermediate objectives that stimulate action.²

No pattern of social behavior could survive, of course, which did

¹Cf. Stene's discussion of "organization routine." Op. cit., p. 1129.

²Cf. Dewey, The Public and Its Problems, p. 54.

not anticipate and provide in some manner for the satiation of the stimuli of hunger, sexual desire, and fatigue. Beyond this, institutional arrangements are susceptible to infinite variation, and can hardly be said to follow from any innate characteristics of man. Since these institutions largely determine the mental sets of the participants, they set the conditions for the exercise of docility, and hence of rationality in human society.

The highest level of integration which man achieves consists in taking an existing set of institutions as one alternative and comparing it with other sets. That is, when man turns his attention to the institutional setting which, in turn, provides the framework within which his own mental processes operate, he is truly considering the consequences of behavior alternatives at the very highest level of integration. Thought at this comprehensive level has not been common to all cultures. In our Western civilization it has perhaps been confined to (1) the writings of utopian political theorists and (2) the thought and writings surrounding modern legislative processes.¹

If human rationality has any ethical meaning, if it is more than a pleasant game, then it gets its meaning, that is, its higher goals and integrations--from the institutional setting in which it operates and by which it is molded. In our democratic culture, legislation is the designer and arbiter of these institutions.

Administrative organizations cannot perhaps claim the same importance as repositories of the fundamental human values as that possessed by older traditional institutions like the family. Nevertheless, with man's growing economic interdependence, and with his growing dependence upon the community

¹
It has often been shown that the concept of "law-making" as distinct from "law-finding" is a relatively recent development. See, for example, C. J. Friedrich, Constitutional Government and Politics (New York: Harper and Brothers, 1937), and Charles G. Haines, The American Doctrine of Judicial Supremacy (New York: The Macmillan Company, 1914), pp. 12-13, 18-24. Hence, only in recent times has legislation involved a conscious consideration of the possibilities of alternative institutional patterns. (Cont'd., Page 84)

for essential governmental services, formal organization is rapidly assuming a role of broader significance than it has ever before possessed. This is not without its advantages, for administrative organizations are usually constructed and modified with a deliberation and freedom from tradition which--though far from complete--gives them great adaptability to meet new needs with new arrangements.

The behavior patterns which we call organizations are fundamental, then, to the achievement of human rationality in any broad sense. The rational individual is, and must be, an organized and institutionalized individual. If the severe limits imposed by human psychology upon deliberation are to be relaxed, the individual must in his decisions be subject to the influence of the organized group in which he participates. His decisions must be not only the product of his own mental processes, but must also reflect the broader considerations to which it is the function of the organized group to give effect.

Summary

In the course of this chapter we have had occasion to study both the limits and the possibilities of human rationality. The limits of rationality derive from the inability of the human mind to bring to bear upon a single decision all the aspects of value, knowledge, and behavior which would be relevant. The pattern of human choice is often more nearly a stimulus-response pattern than a choice among alternatives. Human rationality operates, then, within the limits of a psychological environment. This environment imposes on the individual as "givens" a selection of factors upon which he must base his decision. However, the stimuli of decision can themselves be controlled so as to serve broader ends, and a sequence of individual decisions

Karl Mannheim has emphasized the importance of the deliberate fashioning of the institutional environment in his recent study, Man and Society in an Age of Reconstruction (London: Kegan Paul, 1940), pp. 149-155.

can be integrated into a well-conceived plan. If this were not so, if human rationality had no deeper justification than the intermediate ends which are selected as the goals of action, the importance and significance of administrative behavior would be brought into serious doubt.

The deliberate control of the environment of decision permits not only the integration of choice, but its socialization as well. Social institutions may be viewed as regularizations of the behavior of individuals through subjection of these behaviors to stimulus-patterns imposed on the individual by the group. It is in these patterns that an understanding of the meaning and function of organization is to be found.

CHAPTER V

THE CONCEPT OF AUTHORITY

The behavior of the human individual is molded into an integrated whole by a process of choice which subordinates specific decisions to more general considerations. In Chapter IV some of the mechanisms were described which make it possible for general decisions, arrived at in anticipation of their subsequent application, to mold and to direct later choices.

In the behavior of organized human groups we often find a unity and coordination of behavior so striking that it has led many social thinkers to draw an analogy between the group and the individual, and even to postulate a "group mind."¹ The mechanism whereby this coordination is achieved is not easily perceived. In the case of the individual, there is a perfectly tangible structure of nerve fibers, capable of transmitting impulses from any part of the body to any other part, and capable of storing and transforming those impulses in a central nucleus. In the case of the social group, no physiological structure is present whose anatomy can be explored in the search for clues to the underlying mechanism.

It is the aim of this chapter to attempt a description of group action, and to show that organization has its basis in the decision-making processes of the group. The concept of authority will prove of central importance for this description, and hence, after some pages dealing with group action in general, the balance of the chapter will be devoted to an analysis of that concept.

The Nature of Organized Group Action

What is it that transforms a number of individuals into an organized group? The behavior of a group of persons is broadly termed "organized" when

¹For two decisive refutations of "group-mind" theories see Floyd H. Allport, Institutional Behavior (Chapel Hill: University of North Carolina Press, 1933), chaps. i-iii, and R. M. Maciver, Community: A Sociological Study (London: Macmillan and Co., Ltd.), Book II, chap. ii, and Appendix A.

the behavior of each member of the group is dependent, in part at least, upon his expectations of the behavior of the other members of the group.¹

Example 1.--In the simplest cases, the only mechanism required to bring about organized behavior is the power of observation of each member of the group. A group of persons walking in wooded country comes upon a brush fire in progress. Without much reflection, each member of the group takes action he believes will help check the fire. Initially each one goes into action with little regard for the others, but after a few moments he observes his companions, looks for places where his efforts may be more effective than at his present task, and acts accordingly. Occasionally a command may be given, but most of these adjustments take place silently and without discussion.

Anyone who has observed an unorganized group of persons act in an emergency, has seen organized behavior of this variety. Of course, if the group has been organized previously to the emergency, or if one or more members of the group are recognized as "leaders," the mechanism of coordination may be much more elaborate, involving vocal commands. But even in the absence of leadership or command, the simple processes of silent coordination can be observed in emergency situations.

Sometimes, the successful performance of a task by a group of persons requires a slightly higher degree of coordination. For instance, it may be necessary for effective performance, that they all apply their efforts simultaneously. Under such circumstances, somewhat more definite mechanisms of organization come into play, but even then these may not be deliberate, nor involve explicit commands.

Example 2.--When two persons paddle a canoe, both must stroke at the same time for most effective application of their effort. The man in the bow starts a steady rhythmic stroke. His companion watches him and follows suit.

¹This point has already been suggested in Chapter III, pp. 55-56 and in Chapter IV, pp. 46-47.

In this case, a kind of primitive "leadership" is in evidence, since the adjustment is made entirely by the stern paddle, but no explicit commands are uttered, and the only mechanism of organization is the observation by the "subordinate" of his companion's behavior.

Example 3.—When simultaneity of effort is required in a gang of men, it is often achieved with a cry of "heave-ho" by the entire group. There may or may not be a leader who sets the count.

The Elements in Coordination

Let us look, for a moment, at the state of mind of the person whose behavior is "coordinated" by some such simple mechanism as those illustrated above. In the example of the brush fire, the behavior is initially guided by the objective of "extinguishing the fire as quickly as possible." This objective is accompanied by the empirical observation that "my efforts will be most effective if applied at points not already adequately handled by the other persons." It is the objective plus the empirical proposition which, guiding the behavior of each member of the group, adapts that behavior to the behavior of the others. The source of the coordination must be sought in the set of propositions which guide the behavior of each of the coordinated members.

The example of the canoe is similar. The stern paddle believes: "Our efforts must be simultaneous to be effective. Simultaneity can be achieved if I follow the example of the bow paddle." His choice of behavior alternatives follows as a matter of observation of his companion. The same analysis covers the case of a gang of men coordinated by the cry of "heave-ho."

Several distinct elements are present here which have already been noted in our discussion of the psychology of decisions. The process of coordination involves: the value systems and intermediate objectives of the members of the group; their expectations, that is, their evaluation of the situation, and their conceptions of the possible behavior alternatives. Under conditions of group behavior, these elements take on special characteristics.

Group versus Individual Possibilities

The individual, in rational choice, views the set of possibilities consequential on his various behavior alternatives as dependent upon this set of behavior possibilities. For each of the various behaviors in which he may engage, there is a distinct consequence. Choice consists in selecting and bringing about that consequence which is preferred to the others.

When choice takes place in a group situation, this concept is somewhat broadened. The consequential possibilities are now seen as dependent not only upon the individual's selection of a behavior alternative, but upon the selections of the other members of the group as well. Only when the behavior of the others is taken as a "constant," that is, when expectations are formed regarding their behavior, does the problem of choice take on a determinate form.¹ For when such expectations have been formed, the only remaining independent variable is the individual's own choice, and the problem of decision reduces to the former case.

Hence, the set of comprehensive possibilities available to the group must be carefully distinguished from the set of comprehensive possibilities available to the individual. The latter is only a subset of the former, a different subset for each given set of behaviors of the other members of the group. The possibility which the individual selects for his own behavior may be quite distinct from the possibility which he would wish the group to realize, if he could determine the behaviors of all the group members.

If the individual's expectations of the behaviors of his colleagues are accurate, these expectations will usually be rather different from the way he wishes they would behave. Since his own decision, to be rational, must be related to his expectations rather than his wishes, he must aim, not at that consequence of all those possible for the group which he prefers, but at that

¹Pp. 46-47 supra.

consequence of all those possible for him which he prefers.

Every chess player knows the difference between a plan of campaign which depends on the opponent playing the wished-for move, and that which depends on the opponent playing the "correct" move. A campaign of the first kind never succeeds, for its rationality depends on a false empirical assumption--that the opponent will move as it is desired that he move. In the practical world plans are characterized as "utopian" whose success depends on wished-for behavior on the part of many individuals without any explanation of how this wished-for behavior will, or can, be brought about.

Now a very special situation arises when all the members of the group exhibit a preference for the same values out of all those possible of realization by the group. All the persons fighting the brush fire are agreed on the aim of their joint behavior--to extinguish the fire as quickly as possible. In such a case there is one determinate set of behaviors for the members of the group which, on entirely objective empirical grounds, is the most expeditious for the accomplishment of this aim. There may be disagreement among the members of the group as to what this best solution is, but any such disagreement is on a factual level, and resolvable, in theory, in purely empirical terms.

The attainment of the "best" possibility implies that each member of the group knows his role in the scheme and is prepared to carry it out with the others. But, unless the intentions of each member of the group can be communicated to the others, this coordination is hardly possible. Each will base his behavior on his expectations of the behaviors of the others--but he will have no reason to expect that they will fit into any preconceived plan. Lacking formal coordination, the result will be highly fortuitous.

The coordination achieved, for instance, by our hypothetical fire-fighters is infinitely less effective than a predetermined scheme of action which would relieve each member of the group of the task of anticipating the

behavior of the others as a basis for his own.

Communication, then, is essential to the more complex forms of cooperative behavior. The process of coordination in these more complicated situations consists of at least three steps: (1) the development of a plan of behavior for all the members of the group (not a set of individual plans for each member); (2) the communication of the relevant portions of this plan to each member; and (3) a willingness on the part of the individual members to permit their behavior to be guided by the plan.

This process is not unlike that whereby the individual integrates his own behavior. In the integration of the group, communication fills the gap left by the absence of any organic connection among the individuals.

The Group Plan

The idea of a plan for the behavior of a group does not involve any metaphysical notions of a "group mind." It is merely a specification as to how a number of persons shall behave, rather than a specification as to how one person shall behave. The plan has its existence on paper, or in the respective minds of the individuals who create it. These individuals may be many, or few; they may belong to the group, or they may not. All that is required is that, before the plan can be acted out it must be communicated to the group members who are to do the acting.

In the discussion this far, it has been assumed that a plan will come into being only when there is perfect agreement among the group members as to which of all the possibilities available to the group they would like to see realized. As a matter of fact, this is not strictly necessary. Group coordination may be possible in many cases where different individuals have a different notion of the "optimum." It is necessary only that they be able to agree upon a plan which is preferable to them to any possibility which would be open to them as individuals if there were no cooperation.¹

¹An amusing illustration of this point is (Cont'd Page 92.)

Since, at the moment, we are interested not so much in the reasons why individuals cooperate as in the mechanisms which make cooperation possible, we may leave the subject of the "group plan" with this brief and inadequate discussion.

Communication

In Chapter IV it was shown that an individual's general decisions could control his specific choices only through psychological mechanisms which would bring values and knowledge to bear upon each individual decision at the time it was being made.

In group behavior, there is a similar necessity of communicating the group plan to the individuals who are to carry it out.¹ This does not mean that the whole plan must be communicated, but that each individual must know what he is to do.

No step in the administrative process is more generally ignored, or more poorly performed than the task of communicating decisions. All too often, plans are "ordered" into effect without any consideration of the manner in which these plans can be brought to influence the behavior of the individual members of the group. Procedural manuals are promulgated without follow-up to determine whether the contents of these manuals are used by the individuals to guide their decisions. Organizational plans are drawn on paper, although the members of the organization are ignorant of the plan which purports to describe their relationships.

Failures in communication result whenever it is forgotten that the behavior of individuals is the tool with which organization achieves its purposes. The question to be asked of any administrative process is: How does it influence the decisions of these individuals? Without communication, the

Hobbes' clever demonstration that the State can arise by agreement even in a group where the natural condition is one of bellum omnium contra omnes. Other contract theorists, notably Locke, felt impelled to postulate a "natural identity of interests." For a penetrating discussion of the motivational basis of

answer must always be: It does not influence them at all. We will return to the subject of communication in Chapters VIII and IX.

The Individual and the Plan

Having discussed briefly the group plan, and its communication, we turn now to the individual whose behaviors are the last link in the chain of coordination.

Coordination results when the behavior of the individual is guided by his expectations of the behavior of the other members of the group. In the simplest cases, as we have seen, this adaptation may be self-induced. But for the coordination to reach any degree of complexity, it is necessary for the individual to make his specific decisions conform to some sort of group plan. Psychologically speaking, this realization that a particular behavior is a part of his role under the plan must be a sufficient stimulus to bring about the behavior in question.

The mental processes involved are seldom entirely deliberate or conscious. Most of the behaviors resulting in coordination are in large part habitual or reflexive. A soldier obeying a command does not reflect on the philosophy of obedience, but he does set himself a rule of behavior which makes his choices responsive to the command. Instead of being guided at each moment by a decision, "I will ~~stroke~~ now," the conoist comprehends all such decisions under the general rule, "I will stroke when my companion does."

An analysis of organized behavior of all sorts will demonstrate that such behavior results when each of the coordinated individuals sets for himself a criterion of choice which makes his own behavior dependent upon the behavior of others. In the simplest cases (the example of the fire) he makes

cooperation, see R. M. Maciver, op. cit., especially Book II, chaps. ii and iii. Ordway Tead has contributed to the analysis of the processes whereby group objectives are formulated. See his Human Nature and Management, (New York: McGraw-Hill Book Co., 1929), pp. 137, 138 and passim.

¹(Page 92) For Mead, the coordinative function of communication was fundamental (op. cit., p. 46.) cf. U.S. Army Field Service Regulations, p. 6.

his own decision at each point as to what those adjustments should be. In slightly more complex forms of organization, he sets himself a general rule which permits the communicated decision of another to guide his own choices without deliberations on his own part of the expediency of those choices.

Authority

Even the very simple illustrations that have been presented of organized behavior exhibit, in-embryo at least the phenomenon of authority. Authority may be defined as the power to make decisions which guide the actions of another. It is a relationship between two individuals, one superior, the other subordinate. The superior frames and transmits decisions with the expectation that they will be accepted by the subordinate. The conduct of the subordinate is determined by the decisions of his superior.¹

The relationship of authority can be defined, therefore, in purely objective and behavioristic terms. It involves behaviors on the part of both superior and subordinate. When, and only when, these behaviors occur does a relation of authority exist between the two persons involved. When the behaviors do not occur there is no authority, whatever may be the "paper" theory of organization.

The behavior pattern of the superior involves a command--an imperative statement concerning the choice of a behavior alternative by the other--and an expectation that the command will be accepted by the other as a criterion of choice.²

The behavior pattern of the subordinate is governed by a single indeterminate decision, or criterion for decision, to "follow that behavior alternative which is selected for me by the superior." That is, he holds in

¹For other descriptions of authority see L. D. White, Principles of Public Administration (New York: MacMillan & Company, 1939), pp. 44-46, and C. I. Barnard, The Functions of the Executive, p. 163.

²This idea was central to the utilitarian concept of the state. See, for example, Jeremy Bentham, A Fragment on Government (Oxford: Clarendon Press,

abeyance his own critical faculties for choosing between alternatives and uses the formal criterion of the receipt of a command or signal as his basis for choice.¹

Now, since the relation of authority involves a particular criterion of choice as the basis for the subordinate's behavior, it is clear that two persons may stand in a relation of authority at one moment and not at the next. For the subordinate's behavior may be governed at the first moment by a command, and not at the next. Nor does it follow that when two persons recognize each other as "superior" and "subordinate" respectively, all the verbalizations of the first which affect the behaviors of the second are "commands." The willingness of the subordinate to accept a command, if given, does not imply that all, or even most, of his behavior choices are governed by commands.

It is necessary to distinguish, therefore, between specific behaviors which are momentary instances of the exercise of authority; and the roles played by two persons over a period of time, which involve an expectation of obedience by the one, and a willingness to obey by the other,

Distinction Between Influence and Authority

The relation of authority by no means comprehends all situations where the verbalizations of one person influence the behavior of another. The verbs "persuade," "suggest," etc., describe several kinds of influence which do not involve authority. The characteristic which distinguishes authority from other kinds of influence is one already mentioned above, namely, that a subordinate holds in abeyance his own critical faculties for choosing between alternatives and uses the formal criterion of the receipt of a command or signal as his basis for choice. On the other hand, a person who receives a suggestion accepts it as only one of the evidential bases for making his choice--but the choice he will make depends upon conviction. Persuasion, too, centers

¹Cf. Tead, op. cit., p. 149, and Stene, op. cit., p. 1131.

around the reasons for or against a course of action. Persuasion and suggestion result in a change in the evidential environment of choice which may, but need not, lead to conviction. Obedience, on the other hand, is an abdication of choice.

Confusion among these terms results from the fact that all three phenomena--persuasion, suggestion, and command are frequently present in a single situation. Even where a behavior can be secured by the exercise of authority, a superior often prefers to employ suggestion or persuasion. Some reasons for this will be discussed presently. But confusion will be avoided if it is remembered--as has been pointed out already--that merely because two persons accept the role of superior and subordinate does not imply that all, or even most, of their behaviors will be instances of the exercise of authority.

The line of demarcation between suggestion and command is perhaps not so clear as would be suggested by this discussion, however. Certain subtleties are concealed in the term "conviction," which was used as the distinguishing criterion.

A conviction, as used in this connection, is a belief in an existential proposition which is relevant to a particular decision. Belief in an existential proposition may be induced in a number of ways, one of which is proof.

A proposition may be demonstrated by deducing it from other propositions which have already been accepted, or by confronting it with the evidence of the senses. The first method employs the resources of logic. The second method employs the resources of observation and experiment.

But we are convinced of a great number of things which never have been proved to us, logically or empirically. Most persons in this country would agree that a war is now going on in Europe, though they would be hard put to demonstrate this either by pure logic or the evidence of the senses. Likewise, few persons before taking prescribed medicines ask their physicians for a demonstration of the curative properties of the prescription.

In other words, conviction often results from the social transmission of indicative statements, even in the absence of proof. So, a secretary who has been instructed by her employer to investigate a particular question of office procedure may report: "I have looked into the problem, and suggest that you do it in this manner." This suggestion may be accepted without any review of its evidential basis by the employer, merely on the strength of his confidence in the secretary. Here is evident the same relaxation of critical faculties which we have said was characteristic of the relation of authority.

At the expense of a possible abuse of the term, we shall use "authority" broadly, and comprehend under it all situations where suggestions are accepted without any critical review or consideration.

If this definition is accepted, it follows that when A is superior to B and one moment, B may act as superior to A at the next moment. What is meant, then, when A is described as the superior of B?

Authority and the "Last Word"

In the situations which have been discussed, a subordinate accepts commands in the absence of a determinate choice of his own. But a subordinate may also accept commands in opposition to a determinate choice of his own. In such a case, the element of authority in the behavior pattern is unequivocal. When there is a disagreement between two persons, and when the disagreement is not resolved by discussion, persuasion, or other means of conviction, then it must be decided by the authority of one or the other participants. It is this "right to the last word" which is usually meant in speaking of "lines of authority" in an administrative organization. Too often, however, the element of disagreement in obedience is over-emphasized at the expense of the other elements of the situation. The term "authority" would be too narrowly employed if it were restricted to such instances of disagreement.

A final complication must be added to the notion of authority. If authority were evidenced entirely in the acceptance of explicit commands, or

in the resolution of disagreements, its presence or absence in any relationship could be sought in the presence or absence of these tangible concomitants. But it is equally possible for obedience to anticipate commands. The subordinate may ask himself "how would my superior wish me to behave under these circumstances?"

Under such circumstances, authority is implemented by a subsequent review of completed actions, rather than a prior command. Further, the more obedient the subordinate, the less tangible will be the evidences of authority. For authority will need to be exercised only to reverse an incorrect decision.

This phenomenon has been pointed out by Friedrich,¹ who states it as a "rule of anticipated reactions." It affords a striking example of the manner in which expectations and anticipations govern human behavior, and the difficulties which result for the analysis of human institutions.

The problem of analysis is common to all "power" relations. Any study, for instance, of a governor's veto power must take into consideration what bills failed of passage in the legislature because of the anticipation of veto, and what bills were passed for the very same reason.²

Any study of power relations which confines itself to instances where the sanctions of power were invoked misses the essential fact of the situation. To avoid this fallacy, authority has been defined in this study not in terms of the sanctions of the superior, but in terms of the motives of the subordinate.

The Sanctions of Authority

Having decided, tentatively at least, what authority is, the circumstances surrounding its exercise must be examined. Why and to what extent will a

¹C.J. Friedrich, op. cit., p. 16. Cf. Bentham's very interesting definition: "A tacit expression of will is that which is conveyed by any other signs than words whatsoever; among which none are so efficacious as acts of punishment annexed in times past, to the non-performance of acts of the same sort with those that are the objects of the will that is in question." A Fragment on Government, p. 138.

²Leslie Lipson, The American Governor: From Figurehead to Executive (Chicago: University of Chicago Press, 1939), pp. 210-212.

subordinate accept the decisions of another as governing his own conduct?

The superior-subordinate relationship is one of many possible examples of the role taking which characterizes broad areas of human conduct. Perhaps the most important basis for such role-taking is custom. That is, a great deal of conduct requires no further explanation than that, under the circumstances, it is the socially "expected" conduct. For the reasons why particular conduct is dictated by custom it would be necessary to study the social history of the society in question.¹

The "institutions" of a society may be regarded as rules specifying the roles which particular persons will assume in relation to one another under certain circumstances. The range of possible roles and possible behaviors is as broad as the ingenuity of man for dramatic invention.²

Perhaps the best answer to the question of why persons act in a superior or subordinate role under certain circumstances is that, under those circumstances, it is the "social" way for them to behave. That leads to the further question of why they behave in the "social" way. An answer to that question on any comprehensive basis would lead deep into the realms of sociology. It will suffice here to note some of the sanctions which enforce superior-subordinate relations in ordinary working situations.

(1) The social sanctions are the first to be noted, and perhaps the most important. People obey for the same reason that they wear neckties--because it is "done."³

(2) Psychological factors may play an important part in enforcing such relations. Though the study of leadership is in a very primitive stage,

¹This is, of course, a central problem of sociology and social psychology.

²For a further discussion of this problem, see Charner M. Perry, "The Relation between Ethics and Political Science," International Journal of Ethics (Vol. 47, January, 1937), pp. 169-170, 172-174.

³W. G. Sumner, Folkways (Boston: Ginn and Co., 1907)

there are some indications that there may be certain personality types which "lead," and other which follow.¹

(3) Purpose has been stressed by students of administration as a sanction of prime importance. In voluntary organizations, for example, efforts are contributed largely because the contributor is sympathetic to the purpose of the organization. He is willing to obey commands because he realizes that the coordination secured thereby is useful to the attainment of the joint purpose.²

(4) More formal sanctions in our society are based on the relation between the "job" and economic security. Thus, obedience may be the price of retaining the position, securing a higher salary or other economic advantages.³

The Limits of Authority

The most striking characteristic of the "subordinate" role is that it establishes an area of indeterminacy⁴ in behavior, so that within this area it is indifferent to the subordinate as to which behavior he selects. His choice is then determined for him, always within the area of indeterminacy, by his superior. The relation of superior-subordinate holds only within this area of indeterminacy--or indifference.

A large number of circumstances determines the magnitude of the area. A voluntary organization with poorly defined objectives has perhaps the narrowest range of indeterminacy.⁵ An army, where the sanctions, as well as the customs, are of extreme severity, has the broadest area of indeterminacy.⁶

Restraint of the superior is as important as obedience of the sub-

¹Charles E. Merriam, Political Power (New York: Whittlesey House, 1934), pp. 24-46 and Harold D. Lasswell, Psychopathology and Politics, pp. 38-64, 78-152.

²C. I. Barnard, op. cit., pp. 165-166, and Luther Gulick, "Notes on the Theory of Organization," in Gulick and Urwick, eds., op. cit., pp. 37-38.

³Barnard, op. cit., pp. 142-149.

⁴This concept is adapted from Barnard, who, however, does not develop to any great extent the positive significance of what he calls the "zone of indifference." Ibid., pp. 168-169.

⁵Ibid., p. 155

⁶Military literature shows a clear recognition of the importance of

ordinate in maintaining the relationship. Modern writers on administration have emphasized the need for restraint by recommending when possible the use of other means of influence which lead to conviction rather than authority which leads only to acquiescence..

The corresponding limitations of political authority have been discussed by Professor Charles E. Merriam in a chapter on "The Poverty of Power."¹ Theoreticians of history have often questioned the extent to which "leaders" really lead. How broad is the area of indifference within which a group will continue to follow its leadership? In a very real sense, the leader, or the superior, is merely a bus-driver whose passengers will leave him unless he takes them in the direction they wish to go. They leave him only minor discretion as to the road to be followed.

Unity of Command

Now the empirical character of behavior demands that of all the available behavior alternatives, only one comprehensive possibility can be realized. Hence, in one sense, a unity of command is always attained. For if two choices are suggested from a set of mutually exclusive alternatives, only one of these suggestions can be carried out. Likewise, if two orders are received covering the same choice-point, both orders cannot be obeyed. This is not a principle of administration at all, but simply a proposition which is inferred from the relation of choice to behavior.

In an administrative organization, some procedure is usually devised whereby, when alternative suggestions are offered at a particular choice-point and discussion fails to resolve the choice, one of these suggestions can be accepted, the others rejected. In other words, at any such choice-point, an individual must (1) choose for himself among the alternatives, or (2) accept the choice of some one other person. Unless the choices of two persons happen

the area of indeterminacy as a fundamental element in tactics. Cf. Colonel Fuller's graphic description of the psychology of battle (op.cit., pp. 140-141).
¹Political Power, pp. 156-183.

accidentally to coincide, they cannot both be acted out.

Hierarchy of authority.--A hierarchy of authority is one device for assuring an unequivocal resolution of any difference. An "administrative hierarchy" will be defined as a group of men arranged in, and acting according to, the following superior-subordinate relations: (1) One and only one member of the group has no immediate superior; (2) no member of the group has more than one immediate superior; (3) if A is superior of B, and B of C, then A is a superior of C, and (4) no member of the group is his own superior.¹

Within the area of indeterminacy--that is, of obedience, there can be no conflict of choice in the hierarchy. Every such conflict can be resolved by submitting it to the decision of a common superior. The administrative hierarchy, therefore, provides a determinate procedure which decides who is to decide.

Division of authority.--If every disagreement among members of a group had to be referred to a common superior, the superior would shortly be overwhelmed by the volume of appellate work. In anticipation of this difficulty, formal organizations are usually characterized by a division of authority among the members of the group.

To divide authority is to issue an authoritative communication delineating the area within which each member of the group is to confine his activities, and within which the decisions of each member are to have an authoritative character in the group. Instead of deciding, in each particular case of conflict, what decisions are to be obeyed and what decisions are not, a general rule is laid down beforehand, granting each member of the group a certain sphere of decision within which he is to have authority.

The boundaries may be drawn in any of a number of different ways. The simplest type of allocation is that which gives each member of the group

¹For a precise definition of a hierarchy, using the resources of symbolic logic, see J. H. Woodger, The Axiomatic Method in Biology (Cambridge, University Press, 1937), p. 42.

authority over certain other members of the group--that is, which establishes the hierarchy of authority. If the work of members of the group were carried on in mutual isolation, this is the only allocation that would be necessary.

Normally, however, the manner in which each member of the group performs his work closely affects the work of each other member. The slow-down of one man on the assembly line may disrupt the entire line. The delay of a purchasing agent may affect a construction gang. A back-log on a reviewing officer's desk may hold up correspondence.

Because of these inter-relationships, it is necessary not only to establish the hierarchy of authority, but also to divide along functional, or subject-matter lines. There are two criteria for measuring the success of an allocation of authority: (1) the extent to which it aids or hinders the work of the group, and (2) the extent to which it minimizes jurisdictional disputes. The two criteria do not necessarily coincide. For instance, a division of authority in an automobile plant on the basis of the place of residence of the buyer of each car would probably be univocal, but would hardly facilitate the process of manufacture. To be successful, the division of authority must be adapted to the division of work--that is, to the technology of the work process.

Even under the best conditions, cases will occur where jurisdiction is doubtful. This is especially probable where two portions of the organization are organized on diverse principles: line and auxiliary, functional and geographical. In such cases, the need reappears for an appellate process to settle the dispute. The hierarchy of authority may be used for this purpose, or special appellate agencies may be used.

Where a formal division of authority on a subject-matter basis exists, however, the basis on which a dispute is settled is somewhat different than when it is referred to a common superior in a simple hierarchy--even though the process may be the same. When there is no division of authority, each separate dispute is submitted to and decided on its merits by the superior.

Where there is a division of authority, the issue to be decided is not the specific question in dispute so much as the question of jurisdiction.

In the latter process, which we may call "adjudication," the superior must concern himself not so much with the content of the decision or its expediency, but rather with its "legality"--that is, the competence of the decider, in terms of the formal organizational structure. Without this division of authority, the superior would be concerned principally with the merits of the specific case.

For example, there might be a disagreement between a purchasing agent and a line officer as to the specifications for stationery. The line officer may wish one brand and quality, the purchasing agent may insist on delivering another to him. If there were merely a question of a hierarchy of authority, the common superior to these two men would be faced merely with the question of which type of paper was more desirable for the contemplated use.

In an organization with formal allocations of authority, the question would not be submitted to the superior in this form. Instead, each subordinate would claim that decisions specifying the quality of paper lay within his sphere of authority. Instead of deciding which paper was best, the superior would be forced to decide which officer should decide which paper was best. Instead of a question of technology, he would be faced with a question of administration.

In practice, of course, the issue is seldom decided on such a clear-cut basis. The administrative superior will generally inquire both into questions of authority and into the merits of the case. Where jurisdictional lines are vague, he is more apt to be swayed by considerations of expediency, than when the allocation of authority is clear. On the other hand, in order to maintain the lines of authority and the division of work in his organization, he must often support a particular decision because it lay within the sphere of authority of the decider rather than because it was the correct decision.

The Uses of Authority

Authority has been described as a process which secures coordinated behavior in a group by subordinating the decisions of the individual to the communicated decisions of others. Thus, the exercise of authority in a group makes possible a large degree of separation of the decision-making processes from actual performance.

Just as an individual, piloting a boat, may permit his moment-to-moment decisions to be controlled by a course laid out beforehand on the map, so the member of an organization submits his behavior to the control of the decision-making portion of the organization. In the first case, the coordination takes place in the behavior of a single individual over a period of time. In the second case, the coordination takes place in the behavior of a number of individuals, over a short or long period of time. The principle involved in both cases is the same: the subordination of specific to general decisions.

The wide employment of authority as a tool for coordination of group activity reflects the important uses to which this tool may be put. Three functions of authority deserve special notice:

- (1) It enforces responsibility of the individual to those who wield the authority;
- (2) It secures expertise in the making of decisions;
- (3) It permits coordination of activity.

Responsibility

Writers on the political and legal aspects of authority have emphasized that its function is to enforce the conformity of the individual to norms laid down by the group, or by its authority-wielding members.¹

The enactments of a legislature, for instance, are accepted as authoritative not only by the administrative hierarchy employed by the state,

¹Charles E. Merriam, Political Power, p. 16, and History of the Theory of Sovereignty Since Rousseau (N.Y: Columbia Univ. Press, 1900); C. J. Friedrich, Responsible Bureaucracy (Cambridge: Harvard Univ. Press, 1932),

but by all the persons subject to its jurisdiction. When disobedience occurs, an elaborate set of sanctions may be invoked and applied against the recalcitrant member.

The central core of many of the most important social institutions consists of a system of authority, and a set of sanctions for enforcing it. The state itself is the primary example, but the law of property, the church, and even the family also fall in this category.¹

This aspect of authority is of considerable importance for our own discussion. The notion of an administrative hierarchy in a democratic state would be unthinkable without the corresponding notion of a mechanism whereby that hierarchy is held to account.² The question of responsibility must be a central issue in any discussion of the relation between administrative and legislative bodies, or in any analysis of administrative law.

When authority is employed to enforce responsibility, sanctions will probably play an important part in the process, and this accounts for the attention which is usually given to the subject of sanctions in discussions of authority. Even in this connection, the importance of sanctions should not be over-emphasized, however. The person who accepts the authority of a legislature, a property holder, or a father within a particular institutional setting, is probably motivated quite as much by socially indoctrinated ethical notions, as by the fear of sanctions. That is, the individual in a particular society believes that he ought to obey the laws adopted by the constituted authorities and that he ought to recognize property rights. To explain away the whole system of authority and responsibility in terms of sanctions is to oversimplify the situation.

pp. 20-24.

¹For an interpretation of "property" in terms of power and decision, see John R. Commons, Institutional Economics (N.Y.: The Macmillan Co., 1934) pp. 397-401; Morris R. Cohen, Law and the Social Order (N.Y.: Harcourt, Brace and Co., 1933), pp. 44-45, and Albert Kocourek, Jural Relations (Indianapolis: Bobbs-Merrill Co., 1927), pp. 305-334. (2- Page 107)

Expertise

An extremely important function of authority is to secure decisions of a high quality of rationality and effectiveness. It has long been recognized that specialization is of fundamental importance to administrative efficiency, and it is hardly necessary to repeat here the stock examples which show how specialization may increase productivity.¹ These advantages of specialization are quite as important when the specialization concerns the process of "deciding" as when it concerns the processes of "doing."

The farmer in a subsistence economy is a jack-of-all-trades. He must have the skills of a carpenter, and a mechanic, in addition to a host of special agricultural skills. He is also an intellectual jack-of-all-trades. He must, by himself, make all of the decisions which guide his activities during his working day. He must decide when to plow, when to plant, when to cultivate, when to harvest. He must anticipate his equipment needs. He must decide what he will grow in each field, and how much he will spend for seed.

The owner of a large farm growing cash crops is in a very different situation. If his staff is large enough, he may hire a mechanic who specializes in the care of equipment. Specialists will assist, too, in making the decisions which guide the farm's activities. The owner himself may act as the economic specialist--deciding when to market and when to buy. He may have on his staff a trained agriculturist to act as production specialist, responsible for irrigating, fertilizing and feeding practices. His foreman may lay out work schedules and determine equipment needs. Every decision for the farm's operation will receive expert consideration.

Cont'd. from P. 106. ²For variant notions as to the form this responsibility should take, see John M. Gaus, "The Responsibility of Public Administration," The Frontiers of Public Administration, ed. by John M. Gaus, Leonard D. White, and Marshall E. Dimock (Chicago: The University of Chicago Press, 1936), pp. 26-44; C. J. Friedrich, Responsible Bureaucracy; C. J. Friedrich, "Public Policy and the Nature of Democratic Responsibility," Public Policy Review, 1940 (Cambridge: Harvard Univ. Press, 1940), pp. 3-24; Herman Finer, "Administrative Responsibility in Democratic Government," Public Administration Review, I (Summer, 1941), 335-350.

¹Gulick, "Notes on the Theory of Organization," pp. 3-4.

To gain the advantages of specialized skill, the work of an organization must be so sub-divided that all processes requiring a particular skill can be performed by persons possessing that skill. This involves a subdivision of the production process into numerous component parts, and a restriction of the activities of each member of the organization to a very few of these components.

Likewise, to gain the advantages of expertise in decision-making, the authority for decisions must be so allocated that all decisions requiring a particular skill can be performed by persons possessing that skill. This involves a subdivision of the decisions governing the organization into numerous component decisions, and a restriction of the activities of each member of the organization to a very few of these components,

The subdivision of decisions is rather more complex than the subdivision of performance, however. It is not usually possible to apply the sharp eye of one workman to the steady hand of another in order to secure greater precision in a particular operation. It is often possible, however, to add the knowledge of a lawyer to that of an engineer in order to improve the quality of a particular decision.

With regard to performance, the description of an organization ends when it has been shown how and by whom each portion of the task will be done, and how the work will flow from one to the other. With regard to decision, not only must the area of decision of each member of the organization be described, but the sub-, super-, and co-ordination of the decisions made by the several members as well.

A fundamental device for securing expertise in organization decisions is to locate the expert in a strategic position in the formal hierarchy of authority. This is a major advantage of organization by "process." When all activities to which engineering decisions are relevant are organized in a single department, then it is easy to allocate the function of decision in such

a way as to secure the necessary technical competence.¹

So long as the communication of decisions is restricted to the formal hierarchy of authority, however, it is not possible to secure the several kinds of technical assistance which are often needed for a single decision. A small school department, for instance, may lack the technical medical facilities for making decisions with regard to its school health services, or the engineering advice needed in the maintenance of the school plant.

To secure all the advantages, therefore, of expertise in decision-making, it is necessary to go beyond the formal structure of authority. The "authority of ideas" must gain an importance in the organization coordinate with the "authority of sanctions."

The emphasis in this discussion has thus far been on the technical knowledge needed for decisions. Expertise may apply to other types of information as well. Modern police departments in large cities have central dispatching rooms which receive information, by telephone or otherwise, of incidents requiring police attention, and which assign policemen, by radio, to investigate these incidents. The importance which these dispatching rooms have for the process of decision (in this case the assignment of policemen) lies in their strategic location with respect to relevant incoming information. Again, the formal structure of authority may play only a small part in this process, and may actually, except in cases of disagreement, be disregarded by the lines of communication.

In the organizational hierarchy, the superior ordinarily enjoys, by virtue of his strategic position, the same advantage of information over his subordinate. The extent to which this advantage is real, and the extent to which it is mythical, may depend in large part upon the design of the lines of communication in the organization. The superior who possesses such advantages

¹Cf. Frederick W. Taylor, The Principles of Scientific Management, (N.Y.: Harper & Bros., 1929), pp. 99-113.

of information will have much less occasion to invoke the formal sanctions of authority than the superior whose subordinates are in a better situation than he, from the standpoint of information, to make the decision.

Coordination

The third function of authority, to secure coordination, has already been discussed at some length in the earlier sections of this chapter. This notion of coordination should be clearly distinguished from the question of expertise. Expertise involves the adoption of a good decision. Coordination is aimed at the adoption by all the members of the group of the same decision.

Suppose ten persons decide to cooperate in building a boat. If each has his own plan, and they don't bother to communicate their plans, the resulting craft is not apt to be very sea-worthy. They would probably have met with better success if they had adopted even a very mediocre design, and then all followed this same design.

In the first portion of the Waterloo campaign, Napoleon's army was divided in two parts. The right wing, commanded by the Emperor himself, faced Blucher at Ligny; the left wing, under Marshall Ney, faced Wellington at Quatre Bras. Both Ney and the Emperor prepared to attack, and both had prepared excellent plans for their respective operations. Unfortunately, both plans contemplated the use of d'Erlon's Corps to deliver the final blow on the flank of the enemy. Because they failed to communicate these plans, and because orders were unclear on the day of the battle, d'Erlon's Corps spent the day marching back and forth between the two fields without engaging in the action on either. Somewhat less brilliant tactical plans, if coordinated, would have had greater success.

By the exercise of authority, it is possible to centralize the function of deciding, so that a general plan of operations will govern the activities of all members of the organization. Again, this procedure is analogous to the

process whereby an individual plans his own activities over an extended period of time.

Coordination may be exercised in both a procedural and in a substantive sense. By procedural coordination is meant the specification of the organization itself--that is, the generalized description of the behaviors and relationships of the members of the organization. Procedural coordination establishes the lines of authority, and outlines the spheres of activity and authority of each member of the organization.

Substantive coordination is concerned with the content of the organization's activities. In an automobile factory, an organization chart is an aspect of procedural coordination, blue-prints for the engine-block of the car being manufactured are an aspect of substantive coordination.

Formal Organization

This distinction of the procedural from the substantive is of considerable importance to a theory of authority. It explains how the concept of authority can be used to define what is meant by a formal organization. A formal organization is a group of persons whose procedural relationships--the relationships of authority and the division of functions in the group--are regulated by general decisions.

That is, the members of a formal organization have a general understanding of their respective functions, and particularly of the lines of authority. The actual content of their decisions and work is of secondary importance. The same obedience is evidenced by an army unit when it is on a parade ground in the Philippines as when it is doing rescue work in an Ohio Valley flood.

This stability of relationships enables us to recognize the continuity of an organization. The pattern of organized behavior is often so striking that it has led many students of social institutions toward an "organismic"

theory of society.¹ It has been clearly demonstrated, however, that these institutional patterns can be fully explained in terms of the behavior patterns of individuals coordinated by the exercise of authority.

Psychology and the Theory of Authority

It is important to note that propositions about human behavior, insofar as it is rational, do not ordinarily involve propositions about the psychology of the person who is behaving. Let us explain this rather paradoxical statement. In a given situation, and with a given system of values, there is only one course of action which an individual can rationally pursue. It is that course, which under the given circumstances maximizes the attainment of value. Hence, psychological propositions, other than descriptions of an individual's value system, are needed only to explain why his behavior, in any given instance, departs from the norm of rationality.

Likewise, propositions about the behavior of members of an organization, insofar as that behavior is governed by the system of authority in the organization, do not ordinarily involve propositions about the psychology of the person who is behaving. That is, insofar as a person is obedient to the decisions of another, his psychology has nothing to do with his behavior. Hence, psychological propositions are important for determining the area within which authority will be respected, but have no significance for determining what behavior will be within this area.

For illustration let us consider the literature on military psychology. This literature is concerned with one central problem--how to enlarge the area within which the soldier, when faced with the dangers of battle and the hardships of campaign life, will obey his superiors.

¹For a recent comprehensive discussion of this theory, see John Elof Boodin, The Social Mind (N.Y.: The Macmillan Co., 1939), especially, pp. 130-198.

²Col. J. F. C. Fuller, op. cit., pp. 140-141; Ardant in Picq, Etudes sur le combat (Paris: Hochette et Cie., 1880), pp. 7-8, and passim.

If the obedience of soldiers were perfect, then military operations would be limited only by the soldiers's physiological endurance--their marching endurance, and their vulnerability to the effects of bullets. A unit could fail in an attack only through the physical extermination of its members by the enemy, and the only data needed in planning operations would be statistical information of the effects of fire under different conditions.

Actually, however, before a unit is exterminated, it will usually reach a point where its members will refuse obedience. They will refuse to advance when ordered to do so, or they will surrender to the enemy. The real limiting factors, then, in an attack, are the psychological factors which determine when the soldiers will refuse further obedience to commands. To be sure, behind disobedience or surrender will lie the fear of extermination, but the actual amount of destruction necessary before morale fails varies within wide limits under different circumstances.¹

Psychology, then, enters into administration as a condition, just as physiological, physical, or other environmental factors may enter in. It is part of the technology of administration, rather than a part of the administrative theory itself.

Summary

In this chapter the behavior of the organized group was explored with a view to isolating some of its salient characteristics. An individual acts as a member of a group when he applies the same general scale of values to his choices as do other members of the group, and when his expectations of the behavior of other members influence his own decisions.

In all but the simplest varieties of group behavior, definite procedures are adopted for securing coordination. A procedure is coordinative

¹Col. Gen. von Balck, Tactics, trans. Walter Krueger, (Fort Leavenworth, Kansas: U. S. Cavalry Association, 1911), pp. 185-200.

when it adapts the behavior of each individual to a plan for the group. In all cases, coordination requires communication of at least certain critical elements in the group situation to the members of the group.

When coordination goes farther than mere communication, when it deliberately influences the behavior of group members in desired directions, it ordinarily involves some measure of authority. Authority is exercised over an individual whenever that individual, relaxing his own critical faculties, permits the communicated decision of another person to guide his own choice.

Authority is only one of a number of forms of influences. Its distinguishing characteristic is that it does not seek to convince the subordinate, but only to obtain his acquiescence. In actual exercise, of course, authority is usually liberally admixed with suggestion and persuasion. An important function of authority is to permit a decision to be made and carried out, even when agreement cannot be reached. Perhaps this arbitrary aspect of authority has been over-emphasized, however, in discussions of the concept. In any case, the arbitrary element in authority is limited to the "area of indeterminacy" of the subordinate.

The magnitude of the area of indeterminacy depends upon the sanctions which authority has available to enforce its commands. At least as important as the negative sanctions--physical and economic force--are community of purpose, social acceptance, and personality.

In administration the avoidance of contradictory authority-relations is sometimes an important problem. The problem is met by establishing a determinate hierarchy of authority, and by zoning authority along functional or other lines. It is seldom possible, however, to eliminate twilight zones within which conflicts of authority are possible. An important administrative task is to maintain the organization structure by adjudicating "boundary disputes" with respect to authority.

Coordination is only one of the three functions which authority

performs in administrative organization. Authority is also an important factor in the enforcement of responsibility, and in the specialization of decision-making.

The problem of responsibility, which will be discussed at greater length in Chapter VI, arises whenever it is desirable or necessary to enforce the adherence of the individual to the group plan. Sanctions play a more important part in the responsibility-enforcing function of authority than in its other uses.

The same advantages which are obtained from the division and specialization of work may be claimed for the division and specialization of the decision-making function. Authority, by permitting the decision reached by one member in an organization to influence the behavior of other members, makes possible the specialization of decision-making.

A formal organization is a plan for the division of work and the allocation of authority. The organization plan gives to each member of the group his status and role in relation to the other members, but it specifies the content of his work and his decisional function only in very general terms. It is to the substantive aspects of decision--the criteria of choice rather than the procedure of choice--that we must turn next.

THE CRITERION OF EFFICIENCY

The previous chapter was devoted to a consideration of the decision-making process, and the way in which a decision made in one part of an organization could govern the behavior of an individual in another portion of the organization. The present chapter, abstracting for the most part from these procedural considerations, will examine the content of the decisions which govern activities within an organization. There is no necessary relationship between the procedure whereby decisions are formulated in an organization, and transmitted to its members, and the particular content of the decisions which are formulated.

Decision, we have said, is a process of selecting one out of a set of possibilities available for action. How is this selection to be made? What are the criteria of choice?

In this chapter, a theory of "correct" decisions will be set forth.¹ That is, the process of decision-making will be examined in its rational aspects to determine what is meant by the "correct choice" when several possibilities are available, and to suggest how the administrator may proceed to reach a correct decision. The present discussion describes how administrators would have to behave to satisfy the norm of rational behavior. It is not intended as a description of the way in which administrators actually decide.

In the chapters on the logic and on the psychology of decisions, it was pointed out that the possibility consequential on each choice can be viewed in two ways. A consequential possibility may be viewed as contingent upon the selection of a particular behavior alternative in a particular environmental setting. A possibility may be viewed in terms of the values it embodies, that

¹Clarence E. Ridley and the author have already proposed this theory in C. E. Ridley and Herbert A. Simon, Measuring Municipal Activities (Chicago: International City Managers' Association, 1938). The general approach followed in this chapter is that of the earlier volume.

is, its positive and negative value elements may be compared with those of the other available possibilities. Both these aspects of choice, but primarily the latter, will be discussed in this chapter.

Valuation in Choice

The process of decision hinges upon valuation, and it is in the system of values attached to each consequential possibility that the criteria of choice must be sought. More precisely, choice is guided by value-indices, intermediate ends, which are in turn dependent on more final values. Perhaps the simplest illustration of the nature of the value-indices which are taken into consideration in an administrative situation is afforded by the operation of a manufacturing concern.

The Two Types of Values

In any manufacturing establishment, workmen are employed, materials are purchased, a product is manufactured and sold. The elements of the situation which are of primary relevance to administrative decisions affecting the broader aspects of the organization are the following: the list of materials to be purchased and men to be employed, the tasks which each man is to perform and the use to which each material is to be put, and the output of product. The alternative possibilities available to the management are, for administrative purposes, describable in terms of these variables.

The descriptive terms listed above involve existential as well as normative elements. Of primary importance is the fact that existential considerations impose limitations on the possibilities available. The output of product is a function of the input of men and materials and their organization for production. Thus, the engineer designing such an industrial plant might have before him possibilities of the following kind:

"With organization plan A, 200 men, and 500 units of material, 300 units of product can be manufactured; while with organization plan B, 300 men, and 400 units of material, 275 units of product can be manufactured."

Which of these possibilities is preferable? What criteria are used to choose between them? The criteria which would govern such a decision can be summarized in the following three rules:

1. A possibility is higher in the preference list, the larger the amount of product manufactured.
2. A possibility is higher in the preference list, the smaller the number of men required.
3. A possibility is higher in the preference list, the smaller the quantity of raw material required.

If the cost of labor and material be reduced to money terms, then the second and third criteria can be subsumed under a single rule:

- 2a. A possibility is higher in the preference list, the smaller the cost of production.

The two variables, then, which are relevant to the choice are the cost of production and the amount of output. The organization plan is irrelevant, from a valuational standpoint, to the choice--if a given output can be obtained at a given cost, it is indifferent whether plan A is used or plan B. If, however, the desired output can be obtained at a lower cost by use of plan A, plan A will be chosen as a means to the desired end. The analysis has returned to the familiar pattern of means and ends which, as we noted in Chapter III, derives from the peculiarly nodal distribution of values in possibilities.

The particular situation which has been used for illustration is a manufacturing enterprise, but the same factors are involved in any other administrative situation--private or public. There are two principal criteria of choice--two value-indices. These are (1) minimization of input measured as cost, and (2) maximization of output measured in terms of product, or result. The organizational factors, the methods used, enter into the situation largely as means.

Cost as a Value Element

Cost is commonly measured in money terms. It is perhaps more instruc-

tive, however, in discussing the nature of this value, to speak in terms of time-cost, that is, cost measured in man-hours of effort devoted to an activity.

Why must the time spent in the pursuit of an activity be considered a negative value--a cost to be minimized as far as possible? This problem has been given considerable attention by economic theorists, for whom it had proved a troublesome barrier to the completion of a price theory. The economist's answer to this problem has been expressed in a number of different ways. Perhaps the most useful for our purpose, and the one in closest accord with the analysis of behavior in terms of possibilities, is the "opportunity cost" theory.¹ The opportunity cost of an activity consists in the alternative activities which must be foregone in order to undertake the given activity. The opportunity cost of dictating a portion of this manuscript this evening is the loss of two or three hours of radio or moving picture entertainment.

Opportunity costs emphasize a scarcity of time, that is, there are more positively valued activities than time to pursue them.² This is merely to repeat what has been said earlier in other terms, that there are always available for action a large number of mutually exclusive possibilities, the realization of one of which involves the relinquishment of the others.³

It must be emphasized that the exact nature of the activity itself, that is, the way in which the time is spent, is a valuationally neutral element, at least within very broad limits. The only elements of value involved in the administrative decision are (1) the negative value in amount of time spent, and (2) the positive value--the result of the activity.

It makes little difference to a stenographer, for instance, whether she is typing a letter on the subject of peas or one on the subject of porridge.

¹Richard T. Ely, et. al., Outlines of Economics (4th rev. ed., New York: The MacMillan Company, 1925), pp. 141-142; David I. Green, "Pain-Cost and Opportunity-Cost," Quarterly Journal of Economics, VIII (1893-4), 218-229.

²Cf. Tead, Human Nature and Management, P. 103, and Fuller, op.cit., pp. 178-180.

³As a matter of fact, the scarcity which is usually expressed in economic literature as a scarcity of goods is really reducible to this same

From a standpoint of intrinsic values, it makes even less idfference to the executive who makes organizational decisions. The work of his stenographer is valued in terms of man-hours involved, and the exact nature of her task is evaluated almost entirely as means to an end.

The administrator who is making decisions for an organization has at his disposal a certain fund of available man-power, equipment, and supplies. The cost which his activity may incur is limited by these resources, and it is his task to distribute these resources in such a way as to achieve to the greatest extent possible the objective of the activity. The possibilities before him consist in the alternative ways of disposing and utilizing the organization's resources. With given resources, he must select that possibility which leads to the maximization of results.

The central role of cost as a value element in decisions is, of course, emphasized in private management literature. In large part, the methods of cost analysis employed by private management are equally applicable to problems of public administration.¹ In making the translation from an objective of private profit to one of public welfare, there are two topics which require special treatment, however: interest, and full employment of resources.

Interest.--In modern economic theory, interest is interpreted as a price for capital.² Its place in cost calculations may be indicated by the following illustration:

A railroad, facing the necessity of replacing wooden ties on its right-of-way has two alternatives. (1) It may purchase creosoted ties, which will last twenty years. The outlay will be \$100,000 at the beginning of each twenty-year period. (2) It may purchase uncreosoted ties, which will last

scarcity of time and opportunity, cf. Ely, op. cit., pp. 96-97.

¹See Sigwald Johannesson, Highway Economics (N.Y.; McGraw-Hill Book Co., 1931), and Eugene L. Grant, Principles of Engineering Economy. (N.Y.: Ronald Press Co., 1930) rev. ed.

²Gustav Cassel, The Theory of Social Economy (New rev. ed., N.Y.: Harcourt Brace and Co., 1932), pp. 207-216.

ten years. The outlay will be \$50,000 at the beginning of each ten-year period. Which alternative will the railroad take? It will purchase the uncreosoted ties. Why? The immediate outlay required is only \$50,000. The remaining \$50,000 need not be borrowed (assuming the expense to be financed by borrowing) for ten years. Hence, under this plan, ten years' interest on \$50,000 will be saved each twenty years. The same conclusion would be reached if the railroad financed the expenditure out of its current earnings.

Thus, in order to compare costs which will be incurred at different times, it is necessary to take into account the interest rate, and to discount future expenditures and future earnings. Where computations of social costs are concerned, the case is not nearly so clear. As far as the present writer knows, the problem has not been investigated, so no attempt will be made to reach definitive conclusions here.¹

However, there seems no a priori reason why the private interest rate, reflecting the private demand and supply schedules for capital, should be employed as the discount rate for future public expenditures. Instead, it would seem that the determination of the public discount rate is a fundamental value question which might better be determined by those institutions in which the functions of policy-determination are vested. This is the case, of course, in planned economies like the Russian, where the government determines what portion of the national productivity will be directed to capital goods, and what portion to consumption goods. There seems no good reason why a similar determination could not be reached in a free economy with respect to public expenditures.

¹A rather similar issue is involved in planning for conservation of natural resources, and a literature is beginning to develop on this topic. See Walter W. Wilcon, "Economic Aspects of Social Conservation," Journal of Political Economy, XLVI. (October, 1938), 702-713, L.C. Gray and Mark Regan, "Needed Points of Development and Re-Orientations in Land Economic Theory," Journal of Farm Economics, XX (February, 1940), 43- , and Arthur C. Bunce, "Time Preference and Conservation," Ibid., (August, 1940), 533-543.

Full Employment of Resources.--It is a commonplace of economic calculation that when a plant is operating at less than full capacity, fixed costs--those which cannot be curtailed when production decreases--play no part in determining price. Under those circumstances, a manufacturer is willing to fill an order so long as the selling price is more than sufficient to cover the marginal cost, the cost of those variable items whose use will be increased in filling the order. As far as that plant is concerned, the fixed overhead items are not "scarce" goods, for their supply does not change with the change in production. Hence, they have no price.

In calculations of social cost, the same considerations apply, but on a much larger scale. From the social standpoint, all the factors of supply are highly inflexible, and hence general curtailment of production results in unemployment and underemployment of human and capital resources. Without full employment of resources, conditions of scarcity no longer exist, and the criterion of efficiency loses its force.¹ Or, if the criterion of efficiency is retained, then the available resources must be considered as free goods--their marginal cost (in a social sense) is zero.²

This is essentially the position taken by advocates of large-scale government expenditures during the recent depression.³ The present statement is not intended as a justification of that position, for the most important issues--the dynamic effect of such expenditures upon the tempo of the economy--are outside the present frame of reference. What the present discussion does show is that, whatever arguments may be urged against the "spending" theory, it does not violate any principles of efficiency.

¹This does not mean that no questions of efficiency face the administrator during a period of underemployment of resources. Questions of maximizations of results will arise, but not questions of minimization of social cost.

²A. Wald, "Über einige Gleichungssysteme der Mathematischen Ökonomie," Zeitschrift für Nationalökonomie, VII, (December, 1936), 637-670. See especially pp. 640-641 for a discussion of free goods.

³There is a voluminous literature on this point. See for example Arthur E. Burns and Donald S. Watson, Government Spending and Economic Expansion (Washington: American Council on Public Affairs, 1940).

Positive Values in Decision

While the negative values involved in decision can usually be summarized in terms of time or money costs, the positive values present a somewhat more complex picture. In an economic enterprise, money value of out-put plays somewhat the same role as cost of production (in-put) in summarizing the value element involved. From a positive standpoint the kind of product manufactured is a valuationally neutral element. Not so in the case of public services. Hence, some substitute must be found for money value of out-put as a measure of value.

This substitute is provided by a statement of the objectives of the activity, and by the construction of indices which measure the degree of attainment of these objectives. Any measurement which indicates the effect of an administrative activity in accomplishing its final objective is termed a measurement of the result of that activity.¹

Definition of Objectives.—The definition of objectives for public services is far from a simple task. In the first place, it is desirable to state the objectives so far as possible in terms of values. That is, only if they are expressions of relatively final ends are they suitable value-indices. When objectives are stated in terms of intermediate goals, there is a serious danger that decisions governed by the intermediate end will continue to persist even when that end is no longer appropriate to the realization of value. The proliferation of forms and records in an administrative agency, for instance, frequently evidences a failure to reconsider activities which are aimed at some concrete end in terms of the broader values which that end is supposed to further.

On the other hand, however, the values which public services seek to realize are seldom expressible in concrete terms. Aims, such as those of a recreation department—to "improve health," "provide recreation," "develop good

¹Ridley and Simon, op. cit., p. 1.

citizens"--must be stated in tangible and objective terms before results can be observed and measured. A serious dilemma is posed here. The values toward which these services should be directed do not provide sufficiently concrete criteria to be applied to specific decisional problems. However, if value-indices are employed as criteria in lieu of the values themselves, the "ends" are likely to be sacrificed for the more tangible means--the substance for the form.

Further difficulty arises in the lack of a common denominator of value. An activity may realize two or more values, as in the case of the recreation department mentioned above. What is the relative importance of the various values in guiding the department's activities? The health department provides an illustration of the same problem. Shall the department next year re-distribute its funds to decrease infant mortality or to increase the facilities of the venereal disease clinic? Observations of results, measured in terms of value-indices, can merely tell the extent to which the several objectives are realized if one or the other course of action is taken. Unless both activities are directed toward exactly the same value, measurement of results cannot tell which course of action is preferable. Rationality can be applied in administrative decisions only after the relative weights of conflicting values have been fixed.

The question of who should construct the system of values or preferences which underly the administrator's decisions will be discussed at a later point in this chapter. We wish only to emphasize here that somewhere, sometime in the administrative process weights actually are assigned to values. If this is not done consciously and deliberately, then it is achieved by implication in the decisions which are actually reached. It is not possible to avoid the problem by hiding it among the unexpressed postulates of choice.

Accomplishment a Matter of Degree.--Defining objectives does not exhaust the value element in an administrative decision. It is necessary to de-

termine, in addition, the degree to which the objective is to be attained. A city charter or ordinance may define the function of the fire department as "protecting the city from damage due to fire," but this does not imply that the city will wish to expand the fire-fighting facilities to the point where fire damage is entirely eliminated--an obviously impossible task. Moreover, it begs the question to say that the fire department should reduce losses "as far as possible," for how far it is possible to reduce losses depends on the amount of money available for fire protection and fire prevention services.

Value questions have not been eliminated from the fire protection problem of that city until it has been determined that (1) the fire department should aim to limit fire losses to x dollars per capita, and (2) the city council will appropriate y dollars which, it is anticipated on the basis of available information, will permit (1) to be carried out. Values are involved, then, not only in the definition of objectives, but in the determination as well of the level of adequacy of services which is to be aimed at. Attainment of objectives is always a matter of degree.

The processes of "policy determination," as they take place in our governmental institutions, seldom cope with these questions of degree in determining the objectives of governmental services. It will be urged in later sections of this chapter that extension of policy determination to such questions is of fundamental importance for the maintenance of democratic control over the value elements in decision. It will be shown that a large measure of this procedural reform can be attained by a modification and extension of budgetary techniques.

Distributive Values.--Thus far, the discussion has centered on social values which are "aggregates." That is, the community measures its fire loss in terms of total dollars of destruction during the year. It does not distinguish the loss of \$1,000 in Smith's store from a loss of \$1,000 in Jones' store. The police department, in attempting to reduce the number of robberies,

does not give a robbery on Third Street a different weight from a similar robbery on Fourth Street.

Nevertheless, questions of "distributive" value enter into almost every administrative decisions--if in no other way than in an assumption of "equal weight" like those cited above. A playground built on the West Side will not serve children on the East Side. If chess classes are offered at the social center, there may be no facilities available for persons interested in social dancing.

Many distributive questions are geographical, but they may involve social, economic, or innumerable other "class" distinctions. The importance of such considerations in administration can be appreciated when it is recognized that agencies for assessment administration, administrative tribunals, and even welfare agencies are concerned primarily with questions of distributive rather than aggregate value.

As will be shown later, distributive questions are also of great importance when the work of an organization is specialized by "area" or by "clientele." In these cases, the objective of the organizational unit is immediately restricted to a particular set of persons, and interjurisdictional problems of the greatest consequence may arise.

A Common Denominator for Value--The Criterion of Efficiency

A fundamental problem involved in reaching a decision is the discovery of a common denominator between the two values which have been mentioned; low cost and large results. How is the choice made when the two conflicts? Four relations are conceivable between choices A and B. If I_A is the input for A, and I_B for B, and O_A and O_B are the respective outputs, then these four possible relations may be expressed as follows:

1. I_A is less than I_B , and O_A is greater than O_B .
2. I_B is less than I_A , and O_B is greater than O_A .
3. I_A is less than I_B , and O_A is less than O_B .

4. I_B is less than I_A , and O_B is less than O_A .

In cases 1 and 2 the choice is unequivocal, but not so in cases 3 and 4. That is, when possibility A involves a larger cost than possibility B, but produces a smaller result, B obviously is preferable. But when possibility A involves a lower cost as well as a smaller result than B, cost must be weighed against result before a choice can be made.

The path to the solution of this difficulty has already been indicated. Underlying all administrative decisions is a limitation--a "scarcity"--of available resources. This is the fundamental reason why time and money are costs. Because they are limited in quantity, their application to one administrative purpose prevents the realization of alternative possibilities. Hence, the administrative choice among possibilities can always be framed as a choice among alternatives involving the same cost, but different positive values.

An administrative choice is incorrectly posed, then, when it is posed as a choice between possibility A, with low costs and small results, and possibility B, with high costs and large results. For A should be substituted a third possibility C, which would include A plus the alternative activities made possible by the cost difference between A and B. If this is done, the choice resolves itself into a comparison of the results obtainable by the application of fixed resources to the alternative activities B and C. The efficiency of a behavior is the ratio of the results obtainable from that behavior to the maximum of results obtainable from the behaviors which are alternative to the given behavior.

The criterion of efficiency dictates that choice of alternatives which produces the largest result for the given application of resources.

It should be noted that this criterion, while it supplies a common denominator for the comparison of administrative alternatives, does not supply a common numerator. Even though all decisions be made in terms of alternative applications of the same resources, the problem still remains of comparing

the values which are attained by the different courses of action. The efficiency criterion neither solves nor manages to avoid this problem of comparability.

Note on the Term "Efficiency"

The term "efficiency" has acquired during the past generation a number of unfortunate connotations which associate it with a mechanistic, profit-directed, stop-watch theory of administration.¹ This is the result of the somewhat careless use of the term by over-enthusiastic proponents of the "scientific management" movement. Nevertheless, no other term in the language comes so close as does "efficiency" to representing the concept described in this chapter. The term has therefore been employed, with the hope that the reader will understand the criterion in the sense that it is defined just above, and will be able to dissociate from it any unfortunate connotations it may have had in his mind.

Until practically the end of the nineteenth century, the terms "efficiency" and "effectiveness" were considered almost synonymous. The Oxford dictionary gives as the definition of "efficiency": "Fitness or power to accomplish, or success in accomplishing, the purpose intended; adequate power, effectiveness, efficacy."²

In recent years, however, "efficiency" has acquired a second meaning: the ratio between input and output. In the words of the Encyclopedia of the Social Sciences:

¹See pp. 174-177, infra.

²An early application of the engineering concept to the social field is that of Edgeworth, who in his Mathematical Psychics defined efficiency in essentially the same way that it is defined in this study: "...efficiency being thus defined: one engine is more efficient than another if, whenever the total quantity of fuel consumed by the former is equal to that consumed by the latter, the total quantity of energy yielded by the former is greater than that yielded by the latter." F. Y. Edgeworth, Mathematical Psychics (London: Kegan Paul and Company, 1881), p. 2.

Efficiency in the sense of a ratio between input and output, effort and results, expenditure and income, cost and the resulting pleasure, is a relatively recent term. In this specific sense it became current in engineering only during the latter half of the 19th century, and in business and economics only since the beginning of the 20th.¹

The use of the term by leaders of the scientific management movement added still a third meaning. Again quoting from the Encyclopedia of the Social Sciences:

The foundation of modern scientific management may be dated from F. W. Taylor's paper, A Piece Rate System, in which he described his pioneer method of establishing standards of job performance at the Midvale steel plant. When such standards were set, it became customary to refer to the ratio of actual performance to the standard performance as the efficiency of labor, a use somewhat different from that of the mechanical engineers, who apply the term to the ratio of actual output to an actual input.²

Harrington Emerson, another pioneer in the scientific management movement, and one who preferred the term "efficiency engineering" is described as defining efficiency as "the relation between what is accomplished and what might be accomplished."³ In this connection, he speaks of the "efficiency percent of the employee."⁴

It must be noted that there is a difference in computing an output-input ratio in the physical and in the social sciences. For the engineer, both output and input are measured in terms of energy. the law of conservation of energy tells him that the output of useful energy cannot exceed the energy input. Hence arises the concept of "perfect" efficiency--that is, a situation in which output equals input. In the social sciences, output and input are seldom measured in comparable units, and even when they are, as in a comparison of cost of fire protection with dollar losses from fire, there

¹"Efficiency," Encyclopedia of the Social Sciences, Vol. V, p. 437.

²Loc. cit.

³Horace Bookwalter Drury, Scientific Management (New York: Columbia University Press, 1915) p. 114.

⁴Ibid., p. 115.

is no "law of conservation of energy" which prevents the output from exceeding the input. Hence, the concept of perfect efficiency, if it is used at all, must be redefined. As a matter of fact, the concept of perfect efficiency will not be required in the present study. Actual problems, as they present themselves to the administrator, are always concerned with relative efficiencies and no measure of absolute efficiency is ever needed. Moreover, the theory does not require a numerical measure of efficiency, but merely a comparison of greater or less between the efficiencies of two alternative possibilities. Under these circumstances, the definitions of efficiency as ratio of output to input and as ratio of the actual to the maximum possible amount to the same thing.

An Economic Analogy

It can be seen that the criterion of efficiency as applied to administrative decisions, is strictly analogous to the concept of maximization of utility in economic theory. The former is asserted here only in implicative or hypothetical form, that is, as a necessary consequence of rationality in administrative behavior. There is no assertion that such rationality is a common characteristic of actual behavior. On the other hand, the doctrine of maximization of utility has been commonly set forth in the economic literature as an explanatory doctrine as well, that is, as descriptive of actual behavior in the market. This difference between the two propositions should be kept carefully in mind.

The analogy between the two propositions extends also to the assumptions which underlie them. The first of these is the principle of scarcity, which has already been discussed. A second assumption is that both propositions apply to "instrumental" activities--that is, activities which are carried on for the positive values they produce, in the form of some kind of "result." Third, both propositions involve the comparability, at least sub-

jectively, of the values in terms of which results are measured. (This assumption has already been discussed in the previous section.)

The broad scope of the analogy will become increasingly clear as the discussion proceeds. It will be seen that the problem of administrative decisions can be translated into a problem in the theory of production, and that concepts and theorems developed in economic theory have wide applicability to administrative decisions.

Ethical and Factual Elements in Decision¹

The analysis of Chapter II and III shows that the process of decision, in its most rational form, involves both ethical and factual elements. Ideally, these two can be separated, the ethical corresponding to the process of valuation, and the existential consisting in the determination of the functional relations between behavior alternatives and consequential possibilities.

In practice, the separation can usually be carried only a short distance. The values involved in administrative decisions are seldom immediate values in any psychological sense. As we have seen in Chapter III, a great many objectives and activities derive their value from the means-ends relationships which connect them with objectives or activities that are valued in themselves. By a process of anticipation, the value inhering in the desired end is transferred to the means. The product of a manufacturing process is valued by its producers for its convertibility into money (which in turn has value only in exchange) and by its purchasers for the values to be derived from its consumption. Just so, the activities of a fire department, or a school system are valued ultimately for their contribution to human and social life, and they retain their value only so long as they serve those more final ends.

¹The approach in this section has been suggested in Chapter I of Technique of Municipal Administration, the first draft of which was prepared by the writer.

To the extent that these anticipatory values are involved, valuation includes important existential as well as ethical elements. Since the results of administrative activity can be considered as ends only in an intermediate sense, the value which will be attached to these results depends on the empirical connections which are believed to exist between them and the more final goals. To weigh properly anticipatory values, it is necessary to understand their objective consequences.

At best it might be hoped that the process of decision could be subdivided into two major segments. The first would involve the development of a system of anticipatory values, and an appraisal of their relative weights. The second would consist in a comparison of the available possibilities in terms of this value system. The first segment would obviously involve both ethical and factual considerations; the second segment could be pretty well restricted to factual problems.

The reason for making a division of this sort lies in the different criteria of "correctness" which must be applied to the ethical and factual elements in a decision. "Correctness" as applied to imperatives has meaning only in terms of subjective human values. "Correctness" as applied to factual propositions means objective, empirical, truth. If two persons give different answers to a factual problem, both cannot be right. Not so with ethical questions.

Policy and Administration

Recognition of this distinction in the meanings of "correctness" as applied to value judgments, and as applied to factual judgments would lend clarity to the distinction which is commonly made in the literature of political science.

treatise, Politics and Administration,¹ published in 1900. Yet, neither in Goodnow's study, nor in any of the innumerable discussions which have followed it have any clearcut criteria, or marks of identification, been suggested which would enable one to recognize a "policy question" on sight, or to distinguish it from an "administrative question." Apparently, it has been assumed that the distinction is self-evident--so self-evident as hardly to require discussion.

In The New Democracy and the New Despotism, Charles E. Merriam sets forth as one of the five principal assumptions of democracy "the desirability of popular decision in the last analysis on basic questions of social direction and policy, and of recognized procedures for the expression of such decisions and their validation in policy."² As to the exact scope and nature of these "basic questions," he is less explicit.

"It may be asked, Who shall decide what are "basic questions," and who shall determine whether the ways and means of expressing the mass will are appropriate and effective? We cannot go farther back than the 'general understandings' of the community, always the judge of the form and functioning of the legal order in which the system is set."³

Similarly, Goodnow, in the original statement of the roles of politics and administration in government, fails to draw a careful line between the two. In fact, he comes perilously close to identifying "policy" with "deciding," and "administration" with "doing." For example:

"....political functions group themselves naturally under two heads, which are equally applicable to the mental operations and the actions of self-conscious personalities. That is, the action of the state as a political entity consists either in operations necessary to the expression of its will, or in operations necessary to the execution of that will."⁴

¹Frank J. Goodnow, Politics and Administration (New York: The MacMillan Company, 1900).

²Charles E. Merriam, The New Democracy and the New Despotism (New York: Whittlesey House, 1939), p. 11

³Ibid., p. 39

⁴Op. cit., p. 9.

And again:

"These two functions of government may for purposes of convenience be designated respectively as Politics and Administration. Politics has to do with policies or expressions of the state will. Administration has to do with the execution of these policies."¹

At a later point in his discussion, however, Goodnow retreats from this extreme position, and recognizes that certain decisional elements are included in the administrative function.

"The fact is, then, that there is a large part of administration which is unconnected with politics, which should therefore be relieved very largely, if not altogether, from the control of political bodies. It is unconnected with politics because it embraces fields of semi-scientific, quasi-judicial and quasi-business or commercial activity--work which has little if any influence on the expression of the true state will."²

Without embracing Goodnow's conclusion regarding the desirability of removing some portions of administration from political control, we may recognize in this third statement an attempt on his part to segregate a class of decisions which do not require external control because they possess an internal criterion of correctness. The epistemological position of the present study leads us to identify this internal criterion with the criterion of factual correctness, and the group of decisions possessing this criterion with those which are factual in nature.

In discussions of administrative discretion from the point of view of administrative law there has sometimes been a tendency to deny that there exists any class of factual questions which possess a unique epistemological status. Neither Freund nor Dickinson are able to find a justification for administrative discretion except as an application of decisions to concrete instances, or as a transitory phenomenon confined to a sphere of uncertainty within which the rule of law has not yet penetrated.³

¹Ibid., p. 18

²Ibid., p. 85

³Ernest Freund, Administrative Powers over Persons and Property

To be sure, the two men offer different suggestions for the gradual elimination of this area of uncertainty. Freund relies upon the legislature to restrict discretion by the exercise of its function of policy determination.¹ Dickinson thinks that administrative discretion can gradually be replaced by general rules to be formulated by the courts, as principles gradually emerge to view from a given set of problems.² Neither is willing to admit any fundamental difference between the factual and normative elements involved in law-finding, or to see in that difference a justification for discretionary action.

The courts have come somewhat closer to a recognition of this distinction, though their separation of "questions of fact" from "questions of law" places in the latter category a great many factual issues--especially when "jurisdictional facts" and "constitutional facts" become "questions of law."³ This is not the place, however, to discuss the whole problem of judicial review. These brief comments serve merely to illustrate the lack of any general agreement as to the fundamental difference between factual and value questions in the field of administrative law.

Opposed to the view that discretion is inherently undesirable, is the equally extreme view that all administrative decisions can safely be guided by the internal criteria of correctness, and that legislative control can be supplanted by the control which is exercised by the fellowship of science.⁴ Our own analysis exposes the fallacy of an argument which declares

(Chicago: University of Chicago Press, 1928), pp. 97-103; John Dickinson, Administrative Justice and the Supremacy of Law in the United States (Cambridge: Howard University Press), passive.

¹Op. cit., pp. 98-99

²Op. cit., pp. 105-156.

³Freund, op. cit., pp. 289-299; Dickinson, op. cit., pp. 307-313.

⁴C. J. Friedrich stresses the value of "the fellowship of science" in enforcing responsibility. He does not propose, however, to dispense with the device of legislative control. See "Public Policy and the Nature of Administrative Responsibility," op. cit., pp. 3-24. Cf. John M. Gaus, "The Responsibility of Public Administration," op. cit.

all decisions to be factual as clearly as it refutes an argument which declares them all to be ethical.

The position to which the methodological assumptions of the present study lead us is this: The process of validating a factual proposition is quite distinct from the process of validating a value judgment. The former is validated by its agreement with the facts, the latter by human fiat.

Legislator and Administrator

Democratic institutions find their principal justification as a procedure for the validation of value judgments. There is no "scientific" or "expert" way of making such judgments, hence expertise of whatever kind is no qualification for the performance of this function. If the factual elements in decision could be strictly separated, in practice, from the ethical, the proper roles of representative and expert in a democratic decision-making process would be simple. For two reasons this is not possible. First, as has already been noted, most value judgments are made in terms of anticipatory values, which themselves involve factual questions. Second, if factual decisions are entrusted to the experts, sanctions must be available to guarantee that the experts will conform, in good faith, to the value judgments which have been democratically formulated.

Critics of existing procedures for enforcing responsibility point to the high degree of ineffectiveness of these procedures in practice.¹ But there is no reason to conclude that these procedures are inherently valueless. First, for the reasons already explained, self-responsibility of the administrator is no answer to the problem. Second, the fact that pressure of legislative work forbids the review of more than a few administrative decisions

¹Cf. Friedrich, "Public Policy and the Nature of Administrative Responsibility," pp. 3-8. It should be pointed out again that Friedrich does not propose to dispense with democratic control, but to supplement it with other sanctions.

does not destroy the usefulness of sanctions which permit the legislative body to hold the administrator answerable for any of his decisions. As pointed out in the chapter on Authority, Mr. Friedrich has effectively answered his own argument by insisting on the importance of "anticipated reactions" in influencing human behavior.¹ The function of deciding may be distributed very differently in the body politic from the final authority for resolving disputed decisions.

It would not be possible to lay down any final principles with regard to a subject so controversial, and so imperfectly explored.² Nevertheless, if the distinction of factual from ethical questions is a valid one, these conclusions would seem to follow;

1. Responsibility to democratic institutions for value determination can be strengthened by the invention of procedural devices permitting a more effective separation of the factual and ethical elements in decision. Some suggestions will be offered along these lines in later portions of this chapter.

2. The allocation of a question to legislature or administrator for decision should depend on the relative importance of the factual and ethical issues involved, and the degree to which the former are controversial. A proper allocation will become increasingly possible, without over-burdening the legislature, to the extent that point (1) above is successfully carried out.

3. Since the legislative body must of necessity make many factual judgments, it must have ready access to information and advice. However, this must take the form not merely of recommendations for action, but of factual information on the objective consequences of the alternatives which are

¹See p. 98 supra.

²I. G. Gibbon treats of this question in "The Official and his Authority," Public Administration, IV (April 1926), 81-94, arriving at conclusions substantially in agreement with those set forth here.

before the legislative body.

4. Since the administrative agency must of necessity make many value judgments, it must be responsive to community values, far beyond those which are explicitly enacted into law. Likewise, though the function of making value judgments may often be delegated to the administrator, especially where controversial issues are not involved, his complete answerability, in case of disagreement, must be retained.

If it is desired to retain the terms "policy" and "administration," they can best be applied to a division of the decisional function which follows these suggested lines. While not identical with the separation of "value" from "fact," such a division would clearly be dependent upon that fundamental distinction.

Criticisms of the Efficiency Criterion

Criticisms of "efficiency" as a guide to administration have been frequent and vociferous.¹ One group of these criticisms need not concern us here, for they refer to definitions of the term "efficiency" different from the one proposed here. In this category must be placed attacks on efficiency which equate that term with "economy" or "expenditure-reduction." As we have used the term "efficiency," there is no implication whatsoever that a small expenditure--or, for that matter, a large expenditure--is per se desirable. It has been asserted only that if two results can be obtained with the same expenditure, the greater result is to be preferred. Two expenditures of different magnitude can, in general, be compared only if they are translated into opportunity costs, that is, if they are expressed in terms of alternative results.

¹See instances cited by Marshall E. Dimock, "The Criteria and Objectives of Public Administration," in Frontiers, pp. 116-133.

"Mechanical" Efficiency

Others have objected to "efficiency" on the grounds that it leads to a "mechanical" conception of administration. This objection, too, must result from the use of the term in quite a different sense from that proposed here. For a mere criterion of preference among possibilities does not in any manner limit the administrative techniques which may be employed in attaining these possibilities, nor, as we shall see in the next section, does it in any way reduce the role of the administrator's judgment in reaching decisions. Furthermore, the efficiency criterion is in the most complete accord with a viewpoint which places the social consequences of administration in the forefront of its determining influences.

"The Ends Justify the Means"

Two other lines of criticism assert that the criterion of efficiency leads to an incorrect relationship between "means" and "ends." On the one hand, it is alleged that in the interests of efficiency, ends are taken to justify any appropriate means. As we have noted in Chapter III, the terms "means" and "ends" need to be employed carefully in order to avoid contradictions, and for this reason, we have preferred to talk of the value and factual aspects of possibilities. Suffice it to say that if the evaluation of the results of administrative activity takes into account all the significant value elements of the administrative alternatives, no subordination of "means" to "ends" can result.

"Ruthless" Efficiency

On the other hand, it is charged that efficiency directs all attention to the means, and neglects the ends. This charge has already been answered in pointing out the integral role which valuation plays in the employment of a criterion of efficiency. It may be freely admitted that efficiency, as a scientific problem, is concerned chiefly with "means," and that

"efficient" service may be efficient with respect to any of a wide variety of ends. But merely to recognize that the process of valuation lies outside the scope of science, and that the adaptation of means to ends is the only element of the decisional problem which has a factual solution, is not to admit any indifference to the ends which efficiency serves. Efficiency, whether it be in the democratic state or in the totalitarian, is the proper criterion to be applied to the factual element in the decisional problem. Other, ethical, criteria must be applied to the problem of valuation.

Common to all these criticisms we notice an implication that an "efficiency" approach involves a complete separation of "means" and "ends." We have already seen that, strictly speaking, this is not the case--that the only valid distinction is one between ethical and factual elements in decision. Yet in the actual application of the efficiency criterion to administrative situations, there is often a tendency to substitute the former distinction for the latter, and such a substitution inevitably results in the narrower, "mechanical" efficiency which has been the subject of criticism.

How this substitution comes about may be briefly explained. The ethical element in decision consists in a recognition and appraisal of all the value elements inhering in the alternative possibilities. The principal values involved are usually expressed as "results" of the administrative activity, and, as we have seen, the activity itself is usually considered as valuationally neutral. This leads to the isolation of two values: (1) the positive values expressed as "results," and (2) the negative values, or opportunity costs, expressed in terms of time or money cost.

In fact, to consider the administrative activity itself as valuationally neutral is an abstraction from reality which is permissible within broad limits but which, if carried to extremes ignores very important human values. These values may comprehend the remuneration and working conditions (using these terms broadly) of the members of the group which carries out the

activity.

We may enumerate some of these value elements more explicitly.

1. If cost is measured in money terms, then the wages of employees cannot be considered a valuationally neutral element, but must be included among the values to be appraised in the decision.

2. The work pace of workers cannot be considered a valuationally neutral element--else we would be led to the conclusion that a "speed-up" would always be eminently desirable.

3. The social aspects of the work situation cannot be considered a valuationally neutral element. The decision must weigh the social and psychological consequences of substituting one type of work-situation for another.

4. Wage policies, promotional policies, and the like need to be considered not only from the viewpoint of incentives and result-efficiency, but also from the standpoint of distributive justice to the members of the group.

It must be emphasized, then, that when a choice between possibilities involves any valuationally significant difference in the work activity, this difference must be included among the values to be weighed in reaching a decision.

Valuational Bias

A closely related fallacy in the application of the efficiency criterion is to include in the evaluation of alternatives only those values which have been previously selected as the objective of the particular administrative activity under consideration. The effects of some administrative activities are confined to a rather limited area, and indirect results do not then cause much difficulty. The activities of the fire department usually have an effect on fire losses, but very little relation to the recreation problem in the community (unless a large part of the community are ardent fire fans.) Hence the fire chief does not have to take recreation values into consideration in reaching his decisions. It is a very fortunate characteristic of human activities that their consequences are so strictly segregated, for if this were not so, the problem of reaching rational decisions would be

impossible.¹ But merely because activities do not usually have valuationally significant indirect effects, we are not justified in ignoring such effects if they are, in fact, present. That is, the fire chief cannot, merely because he is a fire chief, ignore the possibility of accidents in determining the speed at which his equipment should respond to alarms.

This all seems commonplace, yet we shall devote a large portion of the next chapter to showing that, in actuality, administrators in reaching decisions commonly disclaim responsibility for the indirect results of administrative activities.² To this point of view we oppose the contrary opinion that the administrator, serving a public agency in a democratic state, must give a proper weight to all community values which are relevant to his activity, and cannot restrict himself to those values which happen to be his particular responsibility. Only under these conditions can a criterion of efficiency be validly postulated as a determinant of action.³

Existential Elements in Decision⁴

Thus far the discussion has centered about the value elements in decision, and the distinction between legislative and administrative processes. The administrator will be most directly concerned with the factual elements in decision--those aspects of the problem which are answerable in objective, factual terms.

¹See Pp. 42, 74-75 supra.

²For a superlative illustration of the difficulty of securing administrative responsibility ~~for~~ indirect effects see Karl E. Stromsem, "The Usefulness of Central Review of Bureau Communication," Case Reports in Public Administration, #16, compiled by a Special Committee on Research Materials, Committee on Public Administration, Social Science Research Council (Chicago Public Administration Service, 1940). The entire analysis assumes that organizational relevance is the ruling criterion of whether an indirect effect should be given administrative consideration.

³Dewey finds in these indirect effects the basic characteristic which distinguishes a "public" from a "private" transaction. See The Public and Its Problems, pp. 12-13.

⁴This section is based on Herbert A. Simon, "Comparative Statistics and the Measurement of Efficiency," National Municipal Review, XXVI (Novem-

We have seen that the criterion which the administrator applies to these factual problems is one of efficiency. The resources, the input, at the disposal of the administrator are strictly limited. It is not his function to establish a utopia. It is his function to maximize the attainment of the governmental objectives (assuming they have been agreed upon), by the efficient employment of the limited resources that are available to him. A "good" public library, from the administrative standpoint, is not one which owns all the books that have ever been published, but one which has used the limited funds which are allowed it to build up as good a collection as possible under the circumstances.

When a decision is made in terms of the criterion of efficiency, it is necessary to have empirical knowledge of the results which will be associated with each alternative possibility. Let us consider a specific municipal function, the fire department. Its objective is the reduction of the total fire loss, and results will be measured in terms of this loss.

The extent of the fire loss will be determined by a large number of factors--natural factors: frequency of high winds, heavy snowfall, severe cold weather, hot dry weather, tornadoes, hurricanes and cyclones, earthquakes, and floods; structural and occupancy factors: exposure hazards, physical barriers, density of structures, type of building construction, roof construction, contents, and risk of occupancy; the moral hazard: carelessness and incendiarism; finally, the effectiveness of the fire department itself. The loss, then, will be a function of all these variables, including the performance of the fire department itself. The fire chief must know how the activities of his department affect the loss if he is to make intelligent decisions.

How does the fire department perform its task: It inspects buildings to eliminate fire hazards, it carries on campaigns of education against care-

 vember, 1937), 524-527.

lessness, it fights fires, trains firemen, it investigates and prosecutes incendiaries.

But we can carry the analysis a step farther. Of what does fire-fighting consist? A piece of apparatus must be brought to the scene of action, hose laid, water pumped and directed upon the flames, ladders raised, and covers spread over goods to reduce water damage. Again, each of these activities can be analyzed into its component parts. What does laying a hose involve? The hose must be acquired and maintained. Equipment for carrying it must be acquired and maintained. Firemen must be recruited and trained. The firemen must spend a certain amount of time and energy in laying the hose.

A final level of analysis is reached by determining the cost of each of these elements of the task. Thus, the whole process of fire-fighting can be translated into a set of entries in the city's books of accounts.

The problem of efficiency is to determine, at any one of these levels of analysis, the cost of any particular element of performance, and the contribution which that element of performance makes to the accomplishment of the department's objectives. When these costs and contributions are known, the elements of performance can be combined in such a way as to achieve a maximum reduction in fire loss.

There are at least four rather distinct levels at which the analysis of the administrative situation may be carried out. At the highest level is the measurement of results, of the accomplishment of agency objectives. Contributing to these results are the elements of administrative performance. Subordinate to these, in turn, is input measured in terms of effort. Effort, finally may be analyzed in terms of money cost.

The mathematically minded will see in this structure a set of equations--strictly identical with the economist's "production functions." The first equation expresses the results of government as a function of the performance of certain activities. Further equations express these performance

units as functions of less immediate performance units, the latter in terms of units of effort, and finally effort is expressed as a function of expenditures. The problem of efficiency is to find the maximum of a production function, with the constraint that total expenditure is fixed.

The Determination of Social Production Functions

It follows from the considerations which have been advanced that that portion of the decision-making process which is factual, which is amenable to scientific treatment, resolves itself into the determination of the social productive functions of administrative activities. This is a research task of the first magnitude, and one which as yet has hardly been touched.

Progress toward an understanding of these functions involves a series of well-defined steps:

- (1) The values, or objectives, affected by each activity must be defined in terms which permit their observation and measurement,
- (2) The variables, extra-administrative as well as administrative, which determine the degree of attainment of these functions must be enumerated.
- (3) Concrete, empirical investigations must be made of the way in which results change when the extra-administrative and administrative variables are altered.

The necessary scope and difficulty of a research program which would make a substantial contribution to our knowledge of these functions can hardly be exaggerated. The principal progress to date has been in the first step,¹ and as yet, empirical studies involving steps 2 and 3 are almost non-existent.²

But if such research is difficult, it is also indispensable. It is hard to see how rationality can play any significant role in the formulation

¹For a bibliography of writings on this subject see Ridley and Simon, op. cit., pp. 68-74.

²Herbert A. Simon, et. al., Determining Work Loads for Professional Staff in a Public Welfare Agency (Barkelay: Bureau of Public Administration, University of California, 1941).

of administrative decisions unless these production functions are at least approximately known. Nor can the problem be avoided by falling back on the "common sense" of administrators--their "intuition" and "practical insight" in dealing with situations for which "long experience" has qualified them. Anyone who has had close contact with administrative situations can testify that there is no correlation between the ability of administrators and their confidence in the decisions they make--if anything the correlation is an inverse one. The most able administrators are the first to admit that their decisions are, in general, the sheerest guesswork; that any confidence they evidence is the protective shield with which the practical man armors himself from his doubts.

The fact of the matter is that momentous decisions are daily being made as to the allocation of resources to one or another of competing purposes, and that these decisions are being made in an almost complete absence of the evidence which would be necessary to validate them. To recognize this fact is no criticism whatsoever of the administrator, who must act, whether for better or for worse. It is a criticism of apologies which would make of this ignorance a virtue, and would question the need for extensive programs of research in this direction.¹

Functionalization in Relation to Efficiency

A few words need to be said now regarding the bearing of this efficiency criterion upon organizational problems. In an earlier chapter it was noted that specialization in organization often follows functional lines. This functionalization involves the analysis of the organization objective into subsidiary objectives. One or more of the subsidiary objectives may be assigned to each of the organizational units.

Thus, a fire department may be divided into a fire prevention

¹Even Barnard, whose critical insight usually saves him from the "practical man" fallacy, credits the intuitional faculties with considerably

bureau, and a number of fire fighting divisions. The function, or objective, of the former will be defined in terms of prevention, that of the latter in terms of extinguishment. A health department may include a communicable diseases division, a division for pre-natal care, a vital statistics division, and so forth. Similar illustrations can be found in every field of governmental service.

Under these circumstances, there will correspond to the hierarchy of divisions and bureaus in the agency a similar hierarchy of functions and objectives. In general, this hierarchical arrangement will correspond, so far as the functions are concerned, to a means-end relationship. Fire losses, for instance, can be conceived as a product of number of fires by average loss per fire. Hence, a fire department might take reduction in number of fires and in average loss per fire as subsidiary objectives, and assign these objectives to subsidiary units in the organization.

There are several prerequisites to effective functionalization. First, as indicated above, the general objective must be analyzed into subsidiary objectives, standing in a means-end relation with it. But further, the technology of the activity must be such that the work of the agency can be broken into distinct portions, each contributing primarily toward one, and only one of the subsidiary objectives. Thus, it would be useless to divide a recreation department into "good citizenship," "health," "enjoyment," and "education," divisions. Although these might be defended as subsidiary objectives of recreation work, it would be impossible to devise a scheme of organization which would break activities into component parts each contributing to only one of these objectives.

Value and Limits of Functionalization

The so-called "functional principle" of organization is thus seen more validity than seems to be due them. See his "Mind in Everyday Affairs," reprinted as an appendix in The Functions of the Executive, pp. 301-322.

to be of a rather complex nature. It assumes the possibility of a parallel functionalization of objectives and of activities. Where such parallelism is absent, the mere analysis of an objective into its components does not afford any basis for organization.

If the limitations of functionalization are apparent, so also are some of its values. For, if the activities of an organizational unit are directed toward a particular well-defined objective, then the problem of decision-making in that unit is correspondingly simplified. The value elements to be considered in weighing alternatives can all be related to the organizational objective. A fire prevention division need consider only the impact of its activities upon the number of fires which will occur.

On the other hand, as the next chapter will show, if the functionalization is unrealistic--if it does not fit the technological picture--then functionalization may lead to a deterioration in the quality of decisions. For in this case, those values which are affected by the unit's activities, but which are not comprehended in the statement of the organizational objective, will be neglected in the decision-making process.

Specialization by "Area" and "Clientele"

It has not generally been recognized in the literature of administration that specialization by "area" and "clientele" are, in fact, merely a particular kind of functionalization. This follows from the fact, already noted, that the complete definition of an objective involves the specification of the group of persons to whom the value in question refers.

The fire department of Podunk, for instance, has as its objective not "minimization of fire losses," but "minimization of fire losses in Podunk." The school health department has as its objective not "minimization of morbidity and mortality," but "minimization of morbidity and mortality among the school children of Podunk."

If specialization by area and clientele are merely forms of functionalization, then, to be successful they must satisfy the conditions of effective functionalization:

(1) it must be technologically feasible to split the work activity, as well as the objective, along functional lines; (2) these segregated work activities must not affect, to a substantial degree, values extraneous to the specified functions.

The first point may again be illustrated by a health department. It would not be technologically feasible to divide a contagious disease program into two portions, one aiming to reduce contagious diseases among men, the other among women.

The second point will be developed at length in Chapter VII. By way of illustration we need only to recall the frequent newspaper accounts of buildings which burn to the ground when a fire department refuses, or is unable, to cross a jurisdictional line.

Efficiency and the Budget¹

As a practical application of the approach set forth in this chapter, we may consider the budget-making process, and the form which this process will have to take if it is to conform to the requirements of rationality.

It has been asserted that the concept of efficiency involves an analysis of the administrative situation into a positive value-element--the results to be attained--and a negative value-element--the cost. For the practical execution of this analysis, a technique is needed which will enable the administrator to compare various expenditure alternatives in terms of results and costs. The budget document will provide the basis for such a comparison.

The essence of the budget process is that it requires a comprehensive plan to be adopted for all the expenditures which are to be made in a limited

¹This section is adapted from Herbert A. Simon, "Measurement Techniques in Administrative Research," Civic Affairs, VIII (May, 1941), pp. 1 ff.

period. But if the budget is to be used as an instrument for the control of efficiency, substantial improvements must be made in present techniques.

Inadequacy of Customary Budget Methods

What does the typical budget include? It tells how much each department will be allowed to spend during the subsequent year, and how it may spend it. How are the particular figures to be found in budgets arrived at? How is it determined that 14 per cent of the budget shall be devoted to fire protection and 11.6 per cent to highways?

A different answer to this question would be given in every community in which it was asked. Some budgets are made by copying off the figures of the previous year's expenditures. Some are constructed by increasing or decreasing appropriations by a fixed percentage. Some are determined by allotting to each department a certain percentage of its request--he who shouts loudest gets the most. Some have even less systematic plans than these.

If this seems exaggerated, the following examples of justifications for increased appropriations in the supporting schedules of a city budget should serve to convince even the most sceptical:

"Salaries should be commensurate with duties and responsibilities of office."

"Naturally with increased work more supplies will be necessary and the cost will be greater. My postage bills alone amount to \$2,500 a year."

"Time and skill required for this work before and after election."

"A larger increase was asked last year and refused."¹

There are, of course, a few exceptional cities and other agencies which are attempting to substitute a more rational budget review for this hit-or miss process. A number of federal departments including the Department of

¹I will permit the city from whose budget these examples are drawn to remain anonymous.

Agriculture may be cited in this connection.¹

The Long-Term Budget

If budgeting is to serve as a basis for the rational allocation of expenditures, two comprehensive budgets must be substituted for the present inadequate documents: an annual budget and a long-term budget. However, since the annual budget is merely a segment of the long-term budget only the latter need be discussed.

The long-term budget will be made up of several parts: (1) long-term estimates of trends in problem-magnitude for the various departments--distribution and concentration of burnable values which must be protected against fire, mileage of streets which must be kept clean, population which must be served by libraries, etc.; (2) long-term estimates of service adequacy--that is, the level of services which the city intends to provide its citizens, so many acres of park per 1,000 population, a specified fire loss, etc; (3) a long-term work program, showing in work units the services which will have to be provided and facilities constructed to achieve the program outlined in items (1) and (2); and (4) a financial program which will relate the work-program to the fiscal resources of the community.

Item (1) involves primarily factual considerations. The determination of item (2) is primarily a matter of value judgments. Items (3) and (4), once the first two items have been determined, become largely factual questions. Hence, it would seem to be a legislative task to weigh (2) against (4), and to determine the budget program. On the other hand, the legislature would need assistance in developing the factual information for (1), (2), and (3).

¹Verne Lewis, "Budgetary Administration in the Department of Agriculture," in John M. Gaus and Leon Wolcott, Public Administration and the U.S. Department of Agriculture (Chicago: Public Administration Service, 1940), pp. 403-462; MacMahon, Millett and Ogden, *op.cit.*, pp. 171-185.

Under present budgetary procedure, items (2) and (4) are seldom even a part of the budget document, and the entire discussion is carried on in terms of items (3) and (4). Furthermore, usually a single budget plan is presented to the legislature, for its approval or amendment. It would seem much preferable, if the necessary information were available, to present directly to the legislature the policy issues involved in (2), and to present the legislature with alternative budget plans, indicating the implications for policy of increases and curtailments of expenditure. Modifications along these lines would seem absolutely essential if the legislature is to be returned to a place of influence in the determination of public policy.

Too often, under current practice, the basic decisions of policy are reached by technicians in the agency entrusted with budget review, without any opportunity for the review of that policy by the legislature. That this condition is tolerated results partly from general failure to recognize the relative element in governmental objectives.¹ Since most legislative declarations of policy state objectives of governmental activity without stating the level of adequacy which the service is to reach, it is impossible for an "expert" to reach on factual grounds a conclusion as to the adequacy of a departmental appropriation. Hence, present procedures would not seem to safeguard sufficiently democratic control over the determination of policy.²

Progress Toward a Long-Term Budget

Public agencies have made considerable progress within the past few years toward long-term plans which include a work program and a financial plan. Little progress has as yet been made toward a program which will tell the legis-

¹See pp. 156-157, *supra*. Cf. Gaston Jeze, Théorie Générale du Budget (Paris: M. Giard, 1922), pp. i-iii.

²John Dewey has done much to develop a democratic philosophy of the relation of expert to public. In The Public and Its Problems (p. 208) he states the thesis which is essentially that of the present study.

lator and the citizen what this program means to him in terms of specific governmental services. Furthermore, little progress has as yet been made toward estimating the cost of maintaining governmental services at a particular level of adequacy, or determining when expenditures should, in the interests of efficiency, be turned from present channels into other, more useful directions.

Illustration of a Rational Budget

As an illustration of the line of development which needs to be pursued, the budget procedure of the California State Relief Administration will be described briefly. The SRA for several years employed a well-designed procedure of budget estimating. One reason the agency was able to accomplish this difficult task was the nature of the agency's objectives.

The major task of an unemployment relief agency is to provide a minimum level of economic security to needy families. The family budget which the agency employs to effect its policies provides an immediate translation of "cost" into "result." That is, it is immediately possible to visualize what a specific expenditure means in terms of the level of economic assistance which the agency provides. The policy-forming body can decide how large a family budget it is willing to authorize, and this decision can be immediately translated into cost terms. In this way "service adequacy" is determined.

Similarly, the SRA had worked out a detailed procedure for estimating over a period of time how many cases would be eligible for assistance, that is, what the problem-magnitude would be. With these two steps completed--the level of service determined and the problem magnitude estimated--it was a simple matter to develop the work budget and estimate financial needs.

This illustration has been oversimplified to emphasize its salient features. An unemployment relief agency must provide certain types of service as well as cash relief. The operating expenses of the agency have been left out of consideration also.¹ But, allowing for this oversimplification and these

¹Simon, et. al., op. cit.

omissions, the budget procedure which has been described very closely approximates the ideal of a rational budget process.

Summary

In this chapter we have seen that, in the factual aspects of decision-making, the administrator must be guided by the criterion of efficiency. This criterion requires that social results be maximized with limited resources.

On the other hand, criteria of "correctness" have no meaning in relation to the purely valuational elements in decision. A democratic state is committed to popular control over these value elements, and the distinction of value from fact is of basic importance in securing a proper relation between policy-making and administration.

Improvement in the quality of decision awaits empirical research into the production functions which relate activities to results. Our knowledge of these functions is fragmentary at present, yet they are indispensable as a tool of reason, without which it operates in a factual vacuum.

The value of organization along functional lines lies in its facilitation of decisional processes. Functionalization is possible, however, only when the technology permits activities to be segregated along parallel lines.

A potent device for the improvement in decision-making processes, both legislative and administrative, is the budget document. The improvement of budgetary methods will (1) permit a more effective division of labor between the policy-forming and administrative agencies, and (2) focus attention upon the social production functions and their critical role in decision-making.

CHAPTER VII

INSTITUTIONAL IDENTIFICATIONS AND DECISION-MAKING

In Chapter VI, the general schema of rational choice developed in Chapter III was applied to the problem of administrative choice. Decision was viewed as a selection, based on a comprehensive system of values, of one among the available comprehensive possibilities. The choice depended upon (1) the value system, and (2) the factual connections which related functionally the behavior alternatives with their consequential possibilities. With a given value system, only one objectively "correct" choice was available. In Chapter VI it was stated that in administrative situations "efficiency" usually provided the criterion for discovering this correct alternative. The discussion abstracted, for the most part, from psychological and institutional considerations.

With this discussion as the basis, we may now turn again to one of the psychological problems introduced in Chapter IV, and study its implications for the decisional process. It was pointed out in Chapter IV that in actual choice only a very few of the valuationally and factually significant factors can be taken into consideration.¹ Hence, if each decision were independent of each other decision, human rationality would amount to hardly more than the instrumentalism which is exhibited by the hungry, frightened, or sex-starved rat.²

In human affairs, this difficulty is met by a hierarchical arrangement of decisions which permits the consequences of choice to be drawn in first in bold outline, and these outlines to be later filled in by narrower decisions. The broader decisions control the narrower by selecting (1) particular values as criteria for the narrower decisions, (2) particular items of empirical knowledge as relevant to the narrower decisions, and (3) particu-

¹ pp. 61-70, supra.

² p. 71, supra.

lar comprehensive possibilities as alternatives among which the narrower decisions are made.¹

The mechanism through which this control is exercised is primarily institutional.² Social institutions assign to members of the group their respective roles: the particular values, facts, and alternatives to which their choices are to be limited. For a park foreman the alternatives take the form of grass-cuttings, planting, road maintenance work, clean-up work, and so forth; the values are legislatively and socially determined standards of appearance, cleanliness, recreation use-value; the facts are budgets, work methods, unit costs. The foreman is not ordinarily expected to give serious thought to the alternative possibility of eliminating the park entirely, and making a subdivision of it. Yet this possibility may merit quite as serious attention as the proper location of a flower-bed. It is not considered because it is not his "business."³

The broader decisions, then, are those which determine what each man's "business" is--what his frame of reference in decision-making is to be. With this framework established, the task of deciding is reduced to manageable proportions.

When it is recognized that actual decisions must take place in some such institutional setting, it can be seen that the "correctness" of any particular decision may be judged from two different standpoints. In the broader sense it is "correct" if it is consistent with the general social value scale--if its consequences are socially desirable. In the narrower sense, it is "correct" if it is consistent with the frame of reference which has been institutionally assigned to the decider.

¹Pp. "73-81, supra"

²Pp. "72-74, supra"

³Cf. Dewey, The Public and Its Problems, p. 22.

This distinction is well illustrated in the literature of what is called "welfare economics."¹ In a private economy, the institution of private property permits a considerable degree of decentralization in decision-making. It is assumed that each individual will make his decisions in terms of the maximization of his "profit" or "utility." A decision is "correct" if it achieves this maximization. But the welfare economist evaluates these decisions from another standpoint. He wants to know the extent to which the maximization of personal utility is compatible with the maximization of social value. Viewing choice from within the individual's environment, advertising is explainable as a technique for increasing profit. Viewing choice from the social viewpoint, the welfare economist questions the social value of energies expended on advertising.²

This distinction between general social value and institutionalized value leads, in turn, to a third notion of correctness--the "correctness" of the institutional environment itself. That is, the social value of the institutional structure may be determined by noting the degree of coincidence between the institutionally-correct and the socially-correct decisions.

A private economy, for instance, is commonly justified on the ground that a high degree of coincidence exists between the two kinds of correctness. When it is recognized that under certain circumstances--conditions of monopoly, for instance--a considerable discrepancy arises, changes are demanded in the environment of decision which will eliminate or reduce the discrepancies.

Social Versus Institutional Values

By way of illustration, let us consider the decision-making process in a specific institutional setting. In the State of California, prior to

¹A. C. Pigou, The Economics of Welfare (London: Macmillan and Co., 1924).

²See, for example, Elizabeth Ellis Hoyt, Consumption in Our Society (New York: McGraw-Hill Book Co., 1938), pp. 104-105.

July 1941, responsibility for the care of unemployed persons was divided between two agencies. The State Relief Administration cared for employable unemployed persons and their families; the county welfare departments cared for unemployable unemployed persons. The division of function was largely historical in origin and was not supported by any very cogent reasons, but that is beside the point.

From the standpoint of the state as a whole, the objective of welfare administration was to care for the unemployed and to guarantee them a certain minimum standard of living. It was desirable, moreover, to accomplish this objective as efficiently as possible. That is, once the rules of eligibility had been established and the size of budgets to be authorized determined, the administrative task was to see that eligible persons, and only eligible persons, qualified for relief; that their budgets conformed to the standards authorized; and that these ends were attained with the least possible expenditure of funds. The SRA was presumably trying to accomplish this objective with its area of activity limited to employable persons, while the county welfare departments were aiming at the same objective with their areas of activity limited to unemployable persons.

But if these objectives are viewed institutionally, a competitive element immediately enters into the decisions of the state and county administrative officials, respectively. One way in which the state agency could increase its efficiency (measured in terms of its own limited objective, and not in terms of the objective of the state as a whole) was to make certain that any unemployable persons on its rolls were discovered and transferred to the county. One way in which the county agency could increase its efficiency (measured, again, in terms of the limited organizational objective) was to make certain that any employable persons on its rolls were discovered and transferred to the state.

As a result, each organization sought the relative maximization of

its own objective, and a great deal of time, effort, and money was spent by these agencies in attempting to shift clients from one to the other in borderline cases. This competitive activity is entirely understandable from the point of view of the institutional objectives of each individual organization, but it contributed nothing toward the maximization of the broader social value.

It should be noted, however, that there is nothing inevitable about this development. Decisions are not made by "institutions," but by human beings behaving as members of institutions. There is no logical necessity that a member of an institution must perforce make his decisions in terms of values which are institutionally limited. Nevertheless, in example after example, we can find individuals behaving as though the institutions to which they belong are "economic men," always calculating the "institutional utility" in each decision. How can this phenomenon be explained? To understand it, we must make clear first the distinction between men's personal and their organizational decisions.

Impersonality of Organization Decisions

Barnard has very clearly pointed out that the decisions which a person makes as a member of an organization are quite distinct from his personal decisions.

The system, then, to which we give the name "organization" is a system composed of the activities of human beings. What makes these activities a system is that the efforts of different persons are here coordinated. For this reason their significant aspects are not persons. They are determined by the system either as to manner, or degree, or time. Most of the efforts in cooperative systems are easily seen to be impersonal. For example, a clerk writing on a report form for a corporation is obviously doing something at a place, on a form, and about a subject that clearly never could engage his strictly personal interest. Hence, when we say that we are concerned with a system of coordinated human efforts, we mean that although persons are agents of the action, the action is not personal in the aspect important for the study of cooperative systems.¹

At a later point, Barnard shows clearly why this is so. Personal

¹C. I. Barnard, op. cit., p. 77.

considerations determine whether a person will participate in an organization, but, if he decides to participate, they will not determine the content of his organizational behavior.

Every effort that is a constituent of organization, that is, every coordinated cooperative effort, may involve two acts of decision. The first is the decision of the person affected as to whether or not he will contribute this effort as a matter of personal choice. It is a detail of the process of repeated personal decisions that determine whether or not the individual will be or will continue to be a contributor to the organization. . . . This act of decision is outside the system of efforts constituting the organization. . . although it is, as we have seen, a subject for organized attention.

The second type of decisions has no direct or specific relation to personal results, but ~~views~~ the effort concerning which decision is to be made non-personally from the viewpoint of its organization effect and of its relation to organization purpose. This second act of decision is often made in a direct sense by individuals, but it is impersonal and organizational in its intent and effect. Very often it is also organizational in its process, as for example, in legislatures, or when boards or committees determine action. The act of decision is a part of the organization itself.

This distinction between the two types of decision is frequently recognized in ordinary affairs. We very often say or hear sentences similar to this: "If this were my business, I think I would decide the question this way--but it is not my personal affair"; or, "I think the situation requires such and such an answer--but I am not in a position to determine what ought to be done"; or "The decision should be made by someone else." This is in effect a restatement, with a different emphasis, of the suggestions in Chapter VII that a sort of dual personality is required of individuals contributing to organization action--the private personality, and the organization personality.¹

Once the system of values which is to govern an administrative choice has been specified, there is one and only one "best" decision, and this decision is determined by the organizational values and situation, and not by the personal motives of the member of the organization who makes the decision. Within the area of discretion, once an individual has decided, on the basis of his personal motives, to recognize the organizational objectives, his further behavior is determined not by personal motives, but by the demands of efficiency.

There is a limit, however, in this proposition. There is an area

¹Ibid., pp. 187-188

of indeterminacy within which the individual will behave "organizationally." When the organizational demands fall outside this area, personal motives reassert themselves, and the organization, to that extent, ceases to exist.

When a person is behaving impersonally, then, an institutional value scale is substituted for his personal value scale as the criterion of "correctness" in his decisions. Hence, his decision may be considered a variable, depending for its specific character upon the particular institutional value scale which governs it.

We still do not have an answer to the question of why an individual employs one particular institutional value scale as his criterion of choice, rather than one or more of all the innumerable other scales he might use. We can now turn our attention to this question.

Institutional Identification

To designate the phenomenon we are discussing, we may introduce the term "identification" which has already had some currency in political theory. "Identification" is used in the psychoanalytic literature to denote a particular kind of emotional tie. Freud describes the nature of the tie thus:

It is easy to state in a formula the distinction between an identification with the father and the choice of the father as an object. In the first case one's father is what one would like to be, and in the second he is what one would like to have. The distinction, that is, depends upon whether the tie attaches to the subject or to the object of the ego.¹

Freud hypothesized, further, that identification is a fundamental mechanism in group cohesion.

We already begin to divine that the mutual tie between members of a group is in the nature of an identification of this kind, based upon an important emotional common quality; and we may suspect that this common quality lies in the nature of the tie with the leader.²

Lasswell, presumably adopting the term from Freud, devotes an entire chapter of his World Politics and Personal Insecurity to "Nations and Classes:

¹Sigmund Freud, Group Psychology and the Analysis of the Ego (New York: Boni

the Symbols of Identification."¹ Nowhere, however, does he define the term, other than to speak of "...identifying symbols like 'nation,' 'state,' 'class,' 'race,' 'church,'"² and to define a "sentiment area" as "the locus of those who are mutually identified."³ Further, he nowhere asserts that the underlying psychological mechanism is identical with the Freudian concept of identification.

To make explicit the definition of the concept which Lasswell names, we will say that a person identifies with a group when, in making a decision, he evaluates the several alternatives of choice in terms of their consequences for the specified group. We shall not assume that the mechanism underlying this phenomenon is the Freudian one. In fact, in this case as in many others, the Freudian hypothesis appears to be a greatly oversimplified one.

When a person prefers a particular course of action because it is "good for America," he identifies with Americans; when he prefers it because it will "boost business in Berkeley," he identifies with Berkeleyans. A person is said to act from "personal" motives when his evaluation is based upon an identification with himself or with his family.

The group with which a person identifies can be characterized by the geographical area which it inhabits, its economic or social status in the society, or any number of other criteria. The "nation" is an example of geographical identification, the "proletariat" and "women" are examples of economic and social identification symbols. Examples of identifications which are important to our political institutions may be found in the literature on legislative processes and pressure groups.⁴

and Liveright, 1922), p. 62.

²Ibid., p. 66

¹H. D. Lasswell, World Politics and Personal Insecurity (New York: (Whittlesey House, 1935), pp. 29-51

²Ibid., p. 7

³Loc. cit.

⁴Cf., E. Pendleton Herring, Group Representation Before Congress (Baltimore:

The term "identification" can be used somewhat more broadly to refer not only to the group of persons whose values are weighed in the decision, but also to the particular kinds of values which are included in the evaluation. For example, a person making a decision can identify with the function of education--he can evaluate all alternatives in terms of their effect upon education. Or he might identify with health values, with public-safety values, or with innumerable others.

Thus, corresponding to the two dimensions of the administrative objective¹--the area covered by the activity, and the kind of values involved--there correspond the two aspects of identification--geographical and functional.

These identifications with group or with function are such an all-pervasive phenomenon that one cannot participate for fifteen minutes in political or administrative affairs, or read five pages in an administrative report, without meeting examples of them.

Newspapers carry frequent illustrations of such identifications.

Following is a brief news item about the California highway system:

California can hardly think of spending \$150,000,000 to bring its highways up to military standards when the network of rural roads is seriously in need of reconstruction, State Highway Engineer Charles H. Purcell said today.

Purcell told a legislative interim committee the chief concern of the State Division of Highways was how to obtain the \$442,500,000 required to make the rural roads adequate to carry normal civilian traffic in the next ten years.

If the War Department wants some 5887 miles of California's strategic highways improved to its standards, the State engineer declared, it was the 'primary responsibility' of the Federal Government to advance the money. The same highways system, he added, is considered adequate for civil use.²

The Highway Engineer apparently conceives it to be his function to choose between competing possibilities for highway construction in terms of the value of "civilian need" rather than of the value of "military need" or

Johns Hopkins Press, 1929), pp. 1-12, and passim . and H. D. Lasswell, Politics: Who Gets What, When, How (New York: McGraw-Hill Book Co., 1936), pp. 1-28, 29-51, 129-232.

¹See chap. vi, supra.

²Oakland (California) Tribune, October 13, 1941.

some composite of both values. He further implies in his statement that when funds are spent through a state institution, values to the state are to be given a weight in the decisions for allocating these funds, while values which may diffuse across state boundaries are not to be considered. Neither criticism of, nor agreement with, this position is intended here. The points to be noted ~~are~~ that the Engineer's judgments are consequences of his institutional identifications, and that his conclusions can be reached only if these identifications be assumed.

The hearings before the House Committee on Appropriations of the United States Congress are a fertile source of illustrations of the phenomenon of identification. The following example will suffice:

Mr. Oliver: That, of course, is all worth-while service, but how do you feel you are accomplishing practical, concrete results from the studies and surveys you are making in the different directions referred to?

Miss Anderson: Well, that is very difficult to say, because it is intangible in a way.

Mr. Oliver: In other words, it is information which, of course, either the States or some organizations in the States should take up, and acting on the suggestions you make, provide some remedy or relief?

Miss Anderson: Yes. For instance, take the State of Connecticut. There has been a great deal of information given to the State of Connecticut, and I have no doubt that the information that we gave them on these conditions, and what they have followed up themselves since, will manifest itself in certain legislation in the next session of their legislature.

Mr. Oliver: Now, why should not the States undertake to collect that information? Why should they be expected to send to Washington, many, many miles away, and call on the Federal Government to collect information which is much more readily available to them and to their own officials?

Miss Anderson: The Labor Department in only one or two States in the country are able to collect that material themselves. They have not set up that kind of investigational organization.

Mr. Oliver: Is not this true: So long as the Federal Government willingly responds to requests of that character--and it appears from your statement that each year you are being called on to become active in a new field--just so long as ready response is made to requests, the States will decline to do that which primarily should devolve upon them?

A little later in the dialogue the Congressman adds:

Mr. Oliver: How long, in times like these, should we continue to render a service of that character for the States which all seem to concede is primarily a duty devolving on the State?¹

It is clear that although the Congressman states his first argument in terms of efficiency, the real issue in his mind is an institutional one. An activity, which might be of legitimate value if pursued by a State, is to be valued less highly if pursued by a Federal agency because it "is primarily a duty devolving on the State." We will forgive the Congressman the supreme illogic of his qualifying phrase "in times like these," for this implies that a federal economy has social value even when it results in an equivalent expenditure by the states. It is significant, however, that his illogic, quite as much as his logic, stems from an institutional identification.

The Psychology of Identification

No single or simple mechanism is likely to explain realistically the phenomenon of identification. Some of the contributory factors may be enumerated:

1. Personal Interest in Institutional Success—The decision which is made in terms of institutional values is, to that extent, impersonal, but attachment to the institution derives from personal motives. The individual is willing to make impersonal organizational decisions because a variety of factors, or incentives, tie him to the organization—his salary, prestige, friendship, and many others.

Many of these personal values are dependent not only on his connection with the organization, but also on the growth, the prestige, or the success of the organization itself. His salary and his power are both related to the size of the unit that he administers. Growth of the organization offers

¹U. S. Congress, Subcommittee on House Committee on Appropriations, Hearing on Department of Labor Appropriation Bill for 1934. (U. S. Government Printing Office, 1933), pp. 74-76.

to him and to his employees salary increases, advancement, and opportunity to exercise responsibility. A large budget will enable him to undertake activities and services which will excite the interest and admiration of his professional peers in other organizations.

Conversely, failure of the organization, or curtailment of its budget, may mean salary reduction, loss of power, or even unemployment to the administrator. At the very least it forces on him the unpleasant duty of dismissing personnel and seriously impairs the incentive of possible advancement for his subordinates.

2. Transfer of Private-Management Psychology--The private segment of our economy operates on the assumption that management will make its decisions in terms of profit to the individual business establishment. This institutional psychology of choice may easily be carried over to the public segment of the economy through lack of recognition of the fundamental differences in the assumptions which underly these two segments. The executive who is accustomed to thinking in terms of "my" business, is very apt to think in terms of "my" county, or "my" department. These same attitudes may be present in persons who, while they may never have had administrative responsibility in the private segment of the economy, have absorbed these notions from a predominately private-economy cultural environment.

It would be an interesting subject of research to determine the extent to which private-management attitudes persist in a communistic economy like that of Soviet Russia. It would be extremely difficult, however, to separate this factor from the elements of personal motivation which would continue to bind the individual to the institution even in a nationalized economy.

The illustration drawn from the administration of public welfare in the state of California, which was cited¹, is a good example of the consequences which flow from a "private" conception of organizational efficiency.

¹pp. 157-158, supra.

So zealous were the state and county agencies, respectively, in rejecting clients who were the "responsibility² of the other that it proved politically impossible in most counties of the state to set up an impartial medical board to pass on the employability of doubtful cases.

3. Focus of Attention--A third element in the process of identification is the focusing of the administrator's attention upon those values and those groups which are most immediately affected by the administrative program. When an administrator is entrusted with the task of educating Berkeley's children, he is likely to be more clearly aware of the effect of any particular proposal upon their learning, than of its possible indirect effects upon their health--and vice versa.

It is clear that attention may narrow the range of vision by selecting particular values, particular items of empirical knowledge, and particular behavior alternatives for consideration, to the exclusion of other values, other knowledge, and other possibilities. Identification, then, has a firm basis in the limitations of human psychology in coping with the problem of rational choice.

From this point of view, identification is an important mechanism for constructing the environment of decision. When identification is faulty, the resulting discrepancies between social and institutional values result in a loss of social efficiency. When the institutional structure is well conceived, on the other hand, the process of identification permits the broad institutional arrangements to govern the decisions of the persons who participate in the structure. Thereby, it permits human rationality to transcend the limitations imposed upon it by the narrow span of attention.¹

An example of the manner in which the focus of attention of participants in an administrative structure is determined by their position in

¹See chap. iv., pp. 72-78, Karl Mannheim has emphasized this same point. Cf., op. cit., pp. 52-57, 290.

year is for an increase in staff. This is especially necessary in the Minimum Wage Division, the work of which has increased enormously since the Supreme Court decision validated ~~minimum wage~~ legislation. Many States still in the early stages of wage-law administration are looking to the Women's Bureau for help in organization, in securing the necessary wage and hour data, and in the all-important work of bringing uniformity into the setting of rates and the practice of enforcement. Frequent visits to the States, and meetings in Washington of State officials, are necessary. The staff of this Division must be increased, as it is not able to meet all the demands upon it.¹

That is the universal administrative complaint. "The budget is inadequate." Now, between the white of adequacy and the black of inadequacy lie all the shades of grey which represent degrees of adequacy. Further, human wants are insatiable in relation to human resources. From these two facts we may conclude that the fundamental criterion of administrative decision must be a criterion of efficiency rather than a criterion of adequacy. The task of the administrator is to maximize social values relative to limited resources.²

If, then, the process of identification leads the administrator to give undue weight to the particular social values with which he is concerned, he is in no position, psychologically speaking, to make a satisfactory decision as to the amount of money which should be allocated to his function, or as to the relative merits of his claims upon public funds, as compared with

¹U. S. Department of Labor, 25th Annual Report of the Secretary, Fiscal Year Ended June 30, 1937 (Washington: Government Printing Office, 1937), p. 136.

²We must not commit the opposite error of making budget decisions in terms of economy--that is, reduction of expenditures without regard to service. This seems to be the fundamental objection to entrusting undue influence in budget matters to a controllership or treasury agency as recommended, for instance, by the British Machinery of Government Committee: "On the whole, experience seems to show that the interests of the taxpayer cannot be left to the spending Departments; that those interests require the careful consideration of each item of public expenditure in its relation to other items and to the available resources of the State, as well as the vigilant supervision of some authority not directly concerned in the expenditure itself; and that such supervision can be most naturally and effectively exercised by the Department which is responsible for raising the revenue required." (Great Britain, Ministry of Reconstruction, Report of the Machinery of Government Committee, Cd. 9230, (London: H. M. Stationery Office, 1918, reprinted 1925), pp. 18-19).

the claims of competing units.¹

Budgetary procedures are the most important means of translating questions of adequacy into questions of efficiency. The budget, first of all, forces a simultaneous consideration of all the competing claims for support. Second, the budget transports upward in the administrative hierarchy the decisions as to fund allocation to a point where functional identifications will not lead to a faulty weighting of values.

Modifying Identifications through Organization

It would seem that a major problem in effective organization is to specialize and sub-divide activities in such a manner that the psychological forces of identification will contribute to, rather than hinder, correct decision-making.

Modes of Specialization

The way in which activities are sub-divided in the organization

¹The importance of "location" to the psychology of the administrator is accepted, even in lay circles as a natural attribute of institutional thought. This is humorously, but convincingly, illustrated by an incident reported in the gossip column of a local newspaper. The item refers to the San Francisco Utilities Department, which controls the city's Water Department and the Hetch Hetchy Power development as well as other local utilities.

"While Utilities Mgr. Cahill was in Washington for 10 days that lasted a month, Nelson Eckart, head of the Water Department, filled his own job, the top Hetch Hetchy post of the late A. T. McAfee, and Cahill's overall job, too. Forrest Gibbon, executive secretary, had to tell who he was by the hat he was wearing.

"On Cahill's return, Eckart's first words were, 'Here's the key to the powder house, here's the aspirin bottle, I quit.' But it was some days before Cahill discovered all the triple-personality kinks which had brought Eckart to the brink of madness. He discovered, in fact, a letter Waterman Eckart had written asking money for more water-works, another letter Hetch Hetchy Eckart had written asking more HH dough, and a final letter Acting Utilities Mgr. Eckart had written denying both of his own requests. Naturally, Cahill asked what the devil.

"'From up here,' Eckart explained, 'things don't look the same as they do from down there.'" (San Francisco News, February 12, 1942).

Thomas Becket seems to have been a highly institutionalized personality--his loyalties shifting with his office. See his biography in the Eleventh Edition

will have a major influence on identification. The administrative segregation of a function will be satisfactory to the extent that (1) the activities involved in the performance of the function are independent of the other activities in the organization, (2) indirect effects of the activity, not measurable in terms of the functional objective, are absent, and (3) it is possible to set up lines of communication which will bring to the unit responsible for the performance of the function the knowledge necessary for its successful execution.

All three of these are technical and factual questions. This means that any attempt to devise an administrative organization for carrying on a service by means of an arm-chair analysis of the agency's function into its component parts is inherently sterile. Yet a large part of the administrative research, so-called, which has been carried on in the last generation is exactly of this nature.

Allocation of the Decision-Making Function

To the extent that identifications modify decisions, the effective allocation of decision-making functions must take these identifications into consideration.

If any basic principle governs this allocation, it is that each decision should be located at a point where it will be of necessity approached as a question of efficiency rather than a question of adequacy. That is, it is unsound to entrust to the administrator responsible for a function the responsibility for weighing the importance of that function against the importance of other functions. The only person who can approach competently the task of weighing their relative importance is one who is responsible for both or neither.

of the Encyclopedia Britannica (Vol. III, p. 609), where his relations to Henry II are explained in institutional terms.

This presupposes, however, that persons will identify with their organizational units. While we have indicated that there are a number of factors making for such identification, it should not be supposed that it is ever complete or consistent. The administrator who is faced with a choice between social and institutional values usually feels a twinge of conscience, stronger or weaker, when he puts organizational objectives before broader social ones. There is no inevitability in any particular identification.

It might be hoped, then, that it would be feasible to broaden, to some degree, the area of identification which governs the administrator's decisions. Steps might be taken to transfer allegiance from the smaller to the larger organizational units, and from the narrower to the broader objectives. To the extent that this is achieved, the precise location of decision-making functions is of less importance.

Lord Haldane's Committee deplored what they called the traditional attitude of antagonism between the Treasury and the other departments. I do not know myself that I have been particularly conscious of it, but there is no doubt that in many departments there are individuals who seem to believe in the Russian proverb, "Whose bread I eat his songs I sing," and who think it is incumbent upon them as members of a particular department to show what they conceive to be their loyalty to that department by supporting it, right or wrong. Such a view I believe to be a thoroughly mistaken one. The loyalty of every citizen in the State is to the country at large. It is the country's bread that he eats, not the bread of the Ministry of Health or the Department of Agriculture, or the Exchequer and Audit Department. If he finds something which he thinks it is in the interest of the country to point out, he ought not to be deterred from doing his plain duty by the feeling that he might be disliked in his own department or might prejudice his personal advancement. That, of course, is still more true when you take departments collectively, and when you get one department very jealous of another department, very angry if there is any poaching on its preserves, upon which follow barren interminable interdepartmental correspondence.¹

Here, clearly, is the end to be aimed at; but it will take more than hope and preaching to reach it. If personal motives, private-business attitudes, and limitations of the span of attention are the factors making for narrow institutional identifications, then any attempt to weaken such identifications, or to transfer them, must modify these same factors. Loyalty to the

¹Henry Higgs, "Treasury Control," Journal of Public Administration, II (April, 1924), p. 129.

larger group will result when loyalty to that group is rewarded even in conflict with loyalty to the smaller group. Loyalty to the larger group will result when the distinction is clearly understood between the private-economy and public economy modes of thought. Loyalty to the larger group will result when administrative situations are understood in terms of efficiency rather than adequacy.

Psychological Types in Decision

These considerations suggest that a very fundamental classification of administrative types might be developed in terms of the variant thought-processes underlying decision. The development of this theme would carry us too far afield from our main topic, but a few remarks may serve by way of illustration.

Observation indicates that as the higher levels are approached in administrative organizations, the administrator's "internal" task--his relations with the organization subordinate to him--decreases in importance relative to his "external" task--his relations with persons outside the organization. An ever larger part of his work may be subsumed under the heads of "public relations" and "promotion."

The habits of mind characteristic of the administrative roles at the lower and higher levels of an organization undoubtedly show differences corresponding to these differences in function.

At the lower levels of the hierarchy, the frame of reference within which decision is to take place is largely given. The factors to be evaluated have already been enumerated, and all that remains is to determine their values under the given circumstances.

At the higher levels of the hierarchy, the task is an artistic and an inventive one. New values must be sought out and weighed; the possibilities of new administrative structures evaluated. The very framework of reference

within which decision is to take place must be constructed.

It is at these higher levels that institutional identifications may have their most serious consequences. At the lower level, the identification is instrumental in bringing broad considerations to bear on individual situations. It assures that decisions will be made responsibly and impersonally. At the higher levels, identifications serves to pre-determine the decision, and to introduce among its assumptions unrecognized and unverified valuations.

SUMMARY

In this chapter we have examined a specialized but fundamentally important element in the psychological environment of decision--namely, the element of identification. Identification is the process whereby the individual substitutes organizational objectives for his own aims as the value-indices which determine his organizational decisions.

Through identification, organized society imposes upon the individual the scheme of social values in place of his personal motives. An organizational structure is socially useful to the extent that the pattern of identifications which it creates brings about a correspondence between social value and institutional value.

The psychological bases of identification are obscure, but seem to involve at least three elements: personal interest in institutional success, a transfer to public agencies of a private-management philosophy, and limitations upon the area of attention which prevent more than a restricted sphere of values to come within its purview.

The principal undesirable effect of identification is that it prevents the institutional individual from making correct decisions in cases where the restricted area of values with which he identifies must be weighed against other values outside that area. The organization structure must be designed, and decisions allocated within it, so as to minimize the decisional bias aris-

ing from this cause. Two important applications may be mentioned. To avoid biases of identification, budget decisions must be made at a point in the organization where they will be viewed from a standpoint of efficiency rather than adequacy--that is, where the real alternatives of cost as well as value are posed. Likewise, the success of functional specialization will depend, in part, on the absence of value-consequences which lie outside the area of identification, for the presence of such consequences will introduce serious biases into decision.

If identification is highly useful in depersonalizing choice within an organization and enforcing social responsibility, it may be equally harmful if it colors and distorts the decisions which precede the establishment of the organizational structure itself. The construction of socially useful organizations requires an unprejudiced assessment of all the values involved. Prejudice is bound to enter if the assessor's judgment is warped by his identifications. Hence, the personal loyalty to institutional values which is generally so useful an aspect of behavior in an organization may be correspondingly harmful when encountered in the fields of invention and promotion, namely, in the tastes of the administrator at the higher levels of the hierarchy.

CHAPTER VIII

INFLUENCING DECISIONS

It is clear that the actual physical task of carrying out an organization's objectives falls to the persons at the lowest level of the administrative hierarchy. The automobile, as a physical object, is built not by the engineer or the executive, but by the mechanic on the assembly line. The fire is extinguished, not by the fire chief, or the captain, but by the team of firemen who play a hose upon the blaze. Relief applications are approved, not by the social service supervisor, but by case workers.

It is equally clear that the persons above the lowest level in the administrative hierarchy are not mere surplus baggage. They, too, must have an essential role to play in the accomplishment of the agency's objectives. This role has already been described in Chapter V.

The non-operative staff of an administrative organization participate in the accomplishment of the objectives of that organization to the extent that they influence the decisions of the operatives--the persons at the lowest level of the administrative hierarchy.

The phenomenon of influence and the part it plays in group behavior, were first taken up in Chapter V. There, one particular aspect of influence, the superior-subordinate relationship, was studied in detail. In Chapter VII, another type of behavioral influence--"identification" with the group objective--was described and analyzed. It is time now to draw these partial analyses together and to describe several modes of influence which were hardly touched in the earlier chapters in order to get a comprehensive picture of all the influential processes which are at work in an organization.

The discussion centers around two principal issues. First, an influence ordinarily affects only one or a few of the numerous premises upon which a single decision is based. Hence, influence is a matter of degree as well as

kind. From this fact derives the possibility of discretion in administrative organization.

Second, authority is a "willingness to be influenced" rather than a determinate mode of influence. Hence, some attention must be given to the ways in which authority can actually bring its influence to bear.

These, then, will be the two topics of discussion in this chapter: the degrees of influence and the modes of influence.

The Degrees of Influence

Influence is exercised in its most complete form when a decision promulgated by one person governs every aspect of the behavior of another. On the parade ground, the marching soldier is permitted no discretion whatsoever. His every step, his bearing, the length of his pace are all governed by authority. Few other examples could be cited, however, of the exercise of influence in unlimited form.

Most often, influence places only partial limits upon the exercise of discretion. A subordinate may be told what to do, but given considerable leeway as to how he will carry out the task. The "what" is, of course, a matter of degree, and may be specified within narrower or broader limits. A charter which states in general terms the function of a city fire department places much less severe limits upon the discretion of the fire chief than the commands of a captain at the scene of a conflagration place on the discretion of the firemen.

A realistic analysis of influence in general and authority in particular must recognize that influence can be exercised with all degrees of specificity. To determine the scope of influence or authority which is exercised in any concrete case, it is necessary to dissect the decisions of the subordinate into their component parts, and then determine which of these parts are determined by the superior, and which are left to his discretion.

Influence Over Value and Fact

In Chapter VI it was shown that a rational decision can be viewed as a conclusion reached from certain premises. These premises are of two different kinds: value premises and factual premises. Given a complete set of value and factual premises, there is only one unique decision which is consistent with rationality. That is, with a given system of values, and a specified set of empirical possibilities, there is one possibility of the set which is preferable to the others.

The behavior of a rational person can be controlled, therefore, if the value and factual premises upon which he bases his decisions are specified for him. This control can be complete or partial--all the premises can be specified, or some can be left to his discretion.

Influence, then, is exercised through control over the premises of decision. The decisions of the subordinate are required to be consistent with premises selected for him by his superior. The scope of authority, and conversely the scope of discretion, are determined by the number and importance of the premises which are specified, and the number and importance of those which are left unspecified.

As pointed out in Chapter VI, discretion over value premises has a different logical status from discretion over factual premises. The latter can always be evaluated as "right" or "wrong" in an objective, empirical sense. To the former, the terms "right" and "wrong" do not apply. Hence, if only factual premises are left to the subordinate's discretion, there is, under the given circumstances, only one decision which he can "correctly" reach. On the other hand, if value premises are left to the subordinate's discretion, the "correctness" of a decision will depend upon the value premises he has selected, and there is no criterion of right or wrong which can be applied to his selection.

Implications for Unity of Command

When it is admitted that authority need extend to only a few of the premises of decision, it follows that more than one order can govern a given decision, provided that no two orders extend to the same premise. An analysis of almost any decision of a member of a formal organization would reveal that the decision is responsive to a very complex structure of influence.

Military organization affords an excellent illustration of this. In ancient warfare, the battlefield was not unlike the parade ground. An entire army was often commanded by a single man, and his authority extended in a very complete form to the lowest man in the ranks. This was possible because the entire battlefield was within range of a man's voice and vision, and because tactics were for the most part executed by the entire army in unison.

The modern battlefield presents a very different picture. Authority is exercised through a complex hierarchy of command. Each level of the hierarchy leaves an extensive area of discretion to the level below, and even the private soldier, under combat conditions, exercises a considerable measure of discretion.

Under these circumstances, how does the authority of the commander extend to the soldiers in the ranks? How does he limit and guide their behavior? He does this by specifying the general mission and objective of each unit on the next level below, and by determining such elements of time and place as will assure a proper coordination among units. The colonel assigns to each battalion in his regiment its task; the major to each company; the captain to each platoon. Beyond this, the officer does not ordinarily go. The internal arrangements of each unit are left to the officer in command of that unit. The United States Army Field Service Regulations specify that "an order should not trespass upon the province of a subordinate. It should contain everything beyond the independent authority of the subordinate, but nothing more."¹

¹U. S. Army Field Service Regulations, 1923, p. 7.

So far as field orders go, then, the discretion of an officer is limited only by the specification of the objective of his unit, and its general schedule. He proceeds to narrow further the discretion of his subordinates so far as is necessary to specify that part each sub-unit is to play in accomplishing the task of the unit.

Does this mean that the discretion of the officer is limited only by his objective or mission? Not at all. To be sure, the field order does not go beyond this point. It specifies the what of his action. But the officer is also governed by the tactical doctrine and general orders of the army which specify in some detail the how. When the captain receives field orders to deploy his company for an attack, he is expected to carry out the deployment in accordance with the accepted tactical principles in the army. In leading his unit, ~~he~~ will be held accountable for the how as well as the what.

When we turn our attention, finally, to the man who carries out the army's task--the private soldier--we see that a great mass of influences bear upon the decisions which he makes. The decision that he will participate in an attack may have been made by a divisional, or even a corps commander. His precise geographical location and place in the attack will be determined with ever-increasing degrees of specificity by general, colonel, major, captain, lieutenant, sergeant in turn. But that is not all. The plan of attack which the captain determines upon will be a result not only of the field orders he receives, but also of the tactical training he has received, and his intelligence of the disposition of the enemy. So also the private, as he moves forward to the attack in the skirmish line, must thenceforth rely more and more upon the influences of his training and indoctrination.

To understand the process of decision in an organization it is necessary to go far beyond the on-the-spot orders which are given by superior to subordinate. It is necessary to discover how the subordinate is influenced by standing orders, by training, and by review of his actions. It is necessary

to study the channels of communication in the organization in order to determine what information reaches him which may be relevant to his decisions. The broader the sphere of discretion left to the subordinate, the more important become those types of influence which do not depend upon the exercise of formal authority.

Modes of Exercise of Influence

These several modes of influence upon decision must now be examined more closely. Since a principal goal of administrative organization is to secure correct decisions, the precise manner in which these decisions are determined will be of considerable importance to the theory.

The principal modes of influence may be classified as: (1) orders, commands, rules and regulations; (2) plans, schedules, and designs; (3) training and indoctrination; (4) advice and information; and (5) review.

Orders and Commands

Perhaps the most significant instance of the exercise of authority to influence decisions are the rules and regulations which specify the form of the administrative organization itself--which establish the areas of specialization, and determine the hierarchy of authority. The extent to which the formal organization affects the actual content of decisions varies widely from one organization to another. In the army, the organizational form does little more than specify the lines of authority and to classify the units into major services which are equipped and trained for specialized kinds of tasks.

The formally organized army, then, is a group of men responsive to a definite hierarchy of authority, and consisting of specialized subgroups whose components can be regrouped and combined for the performance of the organization's tasks. Beyond this the organizational form does not go--the actual tasks of each division are determined by field order and not by the form of organization.

The case is somewhat different with a fire department. The organizational plan of the department not only sets up the hierarchy of authority, but also sets up the objective of each unit--the area which it must protect from fire.

The orders which specify the form of organization are normally supplemented by a host of ad hoc orders which determine the content of the day to day work of the agency. In the army, these would correspond to the field orders issued by each officer to his subordinates. In the fire departments these would correspond to the signals instructing a fire company to respond to an alarm.

On the one hand, ad hoc orders may be extremely rare, as is apt to be the case in the relations between the manager of a large city and the heads of his departments. In other cases, the ad hoc orders may be the very core of the system of authority--the relations of a stenographer with an executive.

Plans and Schedules

Plans and schedules are perhaps not strictly distinguishable from commands, since they usually derive their authority from an order. Nonetheless, they are of special interest as devices for influencing decisions because of the immense amount of detail which it is possible to include in them, and because of the broad participation that can be secured, when desirable, in their formulation. Let us consider the last point first. An example follows:

There is very little that is haphazard or disconnected about the array of Admiralty Departments. The noteworthy thing about them is not their number or variety, so much as their close inter-connection and the manner in which they combine to serve those administrative ends which I mentioned at the beginning of my paper. Perhaps I can best illustrate this by describing briefly the procedure followed in the design and production of a new battleship, which always seems to me to be the very romance of cooperation.

We start with the First Sea Lord and his Assistant Chief of Naval Staff laying down in general terms the features that they desire to see embodied in the new design--the speed, the radius of action, the offensive qualities, the armour protection. Thereupon the Director of Naval Construction, acting under and in consultation with the Controller, formulates provisional schemes outlining the kind of ship desired, together with forecasts of the size and cost involved by the different arrangements. To do this he and his officers must have a good general knowledge--in itself only attainable by close

relations with those in charge of these matters--of the latest developments and ideas in regard to a great range of subjects--gunnery, torpedo, engineering, armour, fire-control, navigation, signalling, accommodation, and so on--in order to be reasonably sure that the provision included in his schemes is such as is likely to satisfy the experts in all these subjects, when the time for active cooperation arrives.

With these alternative schemes before them, the Sea Lords agree on the general lines of the new ship, which done, the actual preparation of the actual designs begins. The dimensions and shape of the ship are drawn out approximately by the naval constructors. Then the Engineer-in-Chief and his Department are called in to agree upon the arrangement of the propelling machinery, the positions of shafts, propellers, bunkers, funnels, etc., and at the same time the cooperation of the Director of Naval Ordnance is required to settle the positions of the guns with their barbettes, and magazines and shell rooms and the means of supplying ammunition to the guns in action.

An understanding between these three main departments enables further progress to be made. The cooperation of the Director of Torpedoes and the Director of Electrical Engineering is now called for to settle the arrangements for torpedo armament, electric generating machinery, electric lighting, etc. So the design progresses and is elaborated from the lower portions upwards, and presently the Director of Naval Construction is able to consult the Director of Naval Equipment as to the proposed arrangements in regard to the sizes and stowage of the motor boats, steamboats, rowing and sailing boats to be carried, as well as of the anchors and cables; the Director of the Signal Department as to the wireless telegraphy arrangements; the Director of Navigation as to the arrangements for navigating the ship, and so on. In this way the scheme goes on growing in a tentative manner, its progress always being dependent on the cooperation of numbers of separate departments, all intent upon ensuring the efficiency of different parts, until ultimately a more or less complete whole is arrived at in the shape of drawings and specifications provisionally embodying all the agreements. This really is the most difficult and interesting stage, for generally it becomes apparent at this point that requirements overlap, and that the best possible cannot be achieved in regard to numbers of points within the limits set to the contractors. These difficulties are cleared up by discussion at round-table conferences, where the compromises which will least impair the value of the ship are agreed upon, and the completed design is then finally submitted for the Board's approval. Some fourteen departments are concerned in the settlement of the final detailed arrangements.¹

The point which is so clearly illustrated here is that the planning procedure permits expertise of every kind to be drawn into the decision without any difficulties being imposed by the lines of authority in the organization. The final design undoubtedly received authoritative approval, but during the entire process of formulation, suggestions and recommendations flowed freely from all parts of the organization without raising the problem of "unity of command." It follows from this that to the extent to which planning procedures

¹Sir Oswyn A. R. Murray, "The Administration of a Fighting Service," Journal of Public Administration, I (July, 1923), 216-217.

are used in reaching decisions, the formal organization has relevance only in the final stages of the whole process. So long as the appropriate experts are consulted, their exact location in the hierarchy of authority need not much affect the decision.

This statement must be qualified by one important reservation. Organizational factors are apt to take on considerable importance if the decision requires a compromise among a number of competing values which are somewhat incompatible with each other. In such a case, the focus of attention and the identifications of the person who actually makes the decision are apt to affect the degree to which advice offered him by persons elsewhere in the organization actually influences him. This factor is present in the example of the warship just cited as illustration.

This same illustration throws in relief the other aspect of the planning procedure which was mentioned above--that the plan may control, down to minute details, a whole complex pattern of behavior. The completed plan of the battleship will specify the design of the ship down to the last rivet. The task of the construction crew is minutely specified by this design.

Training and Indoctrination

Training, as a mode of influencing decisions, may begin long before the employee becomes a member of the organization. All professional training, for example, indoctrinates its subjects in a mode of thinking, a frame of reference with respect to which they orient all their problems, and a body of knowledge. Hence, appropriate kinds of expertise can be brought to bear on organizational decisions by permitting properly trained persons to participate in their resolution.

Training is applicable to the process of decision wherever the same elements are involved in a large number of decisions. Training may supply the trainee with the facts necessary in dealing with these decisions, it may provide him a frame of reference for his thinking, it may teach him "approved"

solutions, or it may indoctrinate him with the values in terms of which his decision is to be made.

Training, as a mode of influence upon decisions, has its greatest value in those situations where the exercise of formal authority through commands proves difficult. The difficulty may lie in the need for prompt action, in spatial dispersion of the organization, or in the complexity of the subject matter of decision which defies summarization in rules and regulations. Training permits a higher degree of decentralization of the decision-making process by bringing the necessary competence into the very lowest levels of the organizational hierarchy.

Advice and Information

Many of the facts which are relevant to decision are of a rapidly changing nature, ascertainable only at the moment of decision. Of crucial importance, for instance, in military operations, is knowledge of the disposition of the enemy's forces. Where the individual who is to make a decision is not in a position to ascertain personally the facts relevant to his decision, then it becomes a task of organization to influence him by transmitting these facts to him. Military organization has developed elaborate procedures for accomplishing this.

Military information is essential to the efficient preparation and execution of strategical and tactical plans. It constitutes a vital element in the commander's estimate of the situation and decision. Continuous research of information by all available means throughout the course of operations is necessary to the successful operations of all units

Information collected by combat units in the field relates chiefly to the enemy forces with which they are in contact.

The necessary orientation is given to the research of information by the issuance of instructions to subordinate units indicating the points of greatest importance to the execution of the commander's plan of operations and to the security of the command.

Each unit commander, in his own zone of operation, directs the research of information in accordance with instructions received, and in addition independently carries out such researches as are dictated by his special situation or

required for the execution of the operation in which he is engaged.

The evaluation, collation, and analysis of military information is the duty of the intelligence division of the general staff of large units and of the intelligence agencies of brigades, regiments, and battalions. . . .

Analysis of the information received leads to a more or less complete reconstruction of the enemy's situation and activities and frequently furnishes the best indication of his intentions.¹

The channels of communication in the organization have, therefore, the double function of communicating orders and of transmitting information. When it is realized that both these types of communication are modes of influence upon decision, it is seen that the process of communication is intimately connected with decision-making.

Information and advice may be employed in place of authority for a number of other reasons. Chief among these is that they preserve morale and initiative on the part of the subordinate, qualities which may disappear if excessively harrassed by authority. Again, when the influences are advisory in nature, the formal organization loses its unique position as the sole channel of influence. The relation between the advisor and the person advised is essentially no different when they are members of the same organization than when the advisor is outside the organization. The extent of the influence of the advisor will depend on the desire of the decision-maker for advice, and the persuasiveness with which it is offered.

Review

Review enables those who are in a position of authority in the administrative hierarchy to determine what actually is being done by their subordinates.

Methods of Review:--Review may extend to the results of the subordinate's activities, measured in terms of their objectives; the tangible products, if there are such, of their activities; or the method of their performance.

When authority is exercised through the specification of the objective of the organizational unit, then a primary method of review is to ascertain the

¹U. S. Army Field Service Regulations, 1923, pp. 25-26.

degree to which the organizational objective is attained--its results. A city manager, for instance, may use measurements of results as a principal means of reviewing city departments. He may evaluate the fire department in terms of fire losses, the police department in terms of crime and accident rates, the public works department in terms of the condition of streets and the frequency of refuse collection.

A second very important method of review is one which examines the piece of completed work to see whether it meets the requirements of quantity and quality. This method assumes that the reviewing officer is able to judge the quality and quantity of the completed work with a certain degree of competence. Thus, a superior may review all outgoing letters written by his subordinates, or the work of typists may be checked by a chief clerk, or the work of a street repair crew may be examined by a superintendent.

It has not often enough been recognized that in many cases the review of work can just as well be confined to a randomly selected sample of the work as extend to all that is produced. A highly developed example of such a sampling procedure is found in the personnel administration of the Farm Credit Administration. This organization carries out its personnel functions on an almost completely decentralized basis, except for a small central staff which lays down standards and procedures. As a means of assuring that local practices follow these standards, field supervisors inspect the work of the local agencies, and in the case of certain personnel procedures, such as classification, the setting of compensation scales, and the development of testing materials, assure themselves of the quality of the work by an actual inspection of a sample. The same type of procedure is usually followed by state boards of equalization which review local assessments. Finally, welfare agencies in California, New York, and perhaps other states, have developed an auditing procedure on a sampling basis, in order to review the work of local welfare agencies.

The third, and perhaps simplest, method of review is to watch the

employee at work, either to see that he puts in the required number of hours, or to see that he is engaging in certain movements which if continued will result in the completion of the work. In this case, the review extends to procedures and techniques, rather than product or results. It is the prevalent form of review at the foremanship level.

Functions of Review:---Quite as important as the different methods of review are the different purposes or functions of review. These are four in number: the diagnosing of the quality of decisions, the influencing of subsequent decisions, the modification of incorrect decisions, and the enforcement of sanctions against prior decisions.¹

In the first place, review is the means whereby the administrative hierarchy learns whether decisions are being made correctly or incorrectly, whether work is being done well or badly at the lower levels of the hierarchy. It is a fundamental source of information, then, upon which the higher levels of the hierarchy must rely heavily for their decisions. With the help of this information, improvements can be introduced into the decision-making process.

This leads to the second function of review--to influence subsequent decisions. This is achieved in a variety of ways. Orders may be issued covering particular points on which incorrect decisions have been made, or laying down new policies to govern decisions. Employees may be given training or re-training with regard to those aspects of their work which review has proved faulty. Information may be supplied them, the lack of which has led to incorrect decisions. In brief, change may be brought about in any of the several ways in which decisions can be influenced.

Third, review may perform an appellate function. If the individual decision has grave consequences, it may be reviewed by a higher authority, to make certain that it is correct. This review may be a matter of course, or it may occur only on appeal by a party at interest. The justification of such a

¹A somewhat similar, but not identical, analysis of the function of review can be found in Sir H.N. Bunbury's paper "Efficiency as an Alternative to Control," Public Administration, VI (April, 1928), 97-98.

process of review is that (1) it permits the decision to be weighed twice, and (2) the appellate review requires less time per decision than the original decision, and hence conserves the time of better-trained personnel for the more difficult decisions. The appellate review may, to use the language of administrative law, consist in a consideration de novo, or may merely review the original decision for substantial conformity to important rules of policy.

Fourth, review is often essential to the effective exercise of authority. As we have seen in Chapter V, authority depends, to a certain extent, upon the availability of sanctions to give it force. Sanctions can be applied only if there is some means of ascertaining when authority has been respected, and when it has been disobeyed. Review supplies the person in authority with this information.

When we recall the "rule of anticipated reactions," we see that the anticipation of review and the invocation of sanctions secures conformity to authority of the decision made prior to review. It is for this reason that review can influence a prior decision.

Alternative Forms of Influence

It can be seen that there are at least five distinct methods of influencing the decisions of operatives. It is a fundamental problem of organization to determine the extent to which and the manner in which each of these forms of influence is to be employed. To a very great extent, these various forms of influence are interchangeable, a fact which is far more often appreciated in small than in large organizations.

The simplest example of this is the gradual increase in discretion which can be permitted an employee as he becomes familiar with his job. A secretary learns to draft routine correspondence; a statistical clerk learns to lay out his own calculations. In each case training has taken the place of authority in guiding the employee's decisions.

"Functional supervision" often takes the form of advice rather than authority. This substitution of advice for authority may prove necessary in many situations in order to prevent conflicts of authority between line officers, organized on a geographical basis, and experts organized on a functional basis.

To the extent to which these forms of influence supplement, or are substituted for, authority, the problem of influence becomes one of internal education and public relations.

Following is an example of this kind of influence:

To the administration of a big department, the staff of the department themselves constitute a kind of inner "public," the right orientation of whose attitudes to each other in their mutual office contacts, in the inevitable absence of the direct personal touch which secures it in a small organization, would seem prima facie to call for just the same kind of attention, the same "practical psychology" or "salemanship," as their attitude to members of the outside public.....

Consider, for example, the machinery for preparing official instructions to the staff. . . . Do not official instructions tend to be drafted too rationalistically? Is not the draftsman's attention often concentrated too exclusively on framing a logical statement setting accurately and comprehensively what ought to be done? But after all, the primary object of an instruction is not to be admired by critical specialists in the same office; an instruction is intended to be acted on, and that by people who are as a rule neither critical, nor specialists, nor in the same office--in other words, to produce such an impression on the ultimate recipient that on receiving it, he will forthwith proceed to do what is required of him.¹

Administrators have increasingly recognized in recent years that authority, unless buttressed by other forms of influence, is relatively impotent to control decision in any but a negative way. The elements entering into all but the most routine decisions are so numerous and so complex that it is impossible to control positively more than a few. Unless the subordinate is himself able to supply most of the premises of decision, and to synthesize them adequately, the task of supervision becomes hopelessly burdensome.

When viewed from this standpoint, the problem of organization becomes inextricably interwoven with the problem of recruitment. For the system of influence which can effectively be used in the organization will depend directly

¹H. Townshend, "'Practical Psychology' in Departmental Organization," Journal of Public Administration, XII, 66.

upon the training and competence of the employees at the various levels of the hierarchy. If a welfare agency can secure trained social workers as interviewers and case workers, broad discretion can be permitted them in determining eligibility, subject only to a sampling review, and a review of particularly difficult cases.

If trained workers can be obtained only for supervisory positions, then the supervisors will need to exercise a much more complete supervision over their subordinates, perhaps reviewing each decision, and issuing frequent instructions. The supervisory problem will be correspondingly more burdensome than in the first example, and the effective span of control of supervisors correspondingly narrower.

Likewise, when an organization unit is large enough so that it can retain within its own boundaries the specialized expertise that is required for some of its decisions, the need for functional supervision from other portions of the organization becomes correspondingly less. When a department can secure its own legal, medical, or other expert assistance, the problems of functional organization become correspondingly simpler, and the lines of direct authority over the department need less supplementation by advisory and informational services.

Hence, problems of organization cannot be considered apart from the specifications of the employees who are to fill the positions established by the organization. The whole subject of job classification needs to be brought in much closer coordination with the theory of organization. The optimum organizational structure is a variable, depending for its form upon the staffing of the agency. Conversely, the classification of a position is a variable, depending upon the degree of centralization or decentralization which is desired or anticipated in the operation of the organizational form.

Centralization and Decentralization

These last paragraphs suggest an issue which has been only approached

obliquely in earlier pages of this study. To what extent should the decision-making functions be centralized in an organization?

What have we already said with respect to this issue? In Chapter V it was pointed out that the specialization and centralization of decision-making serves three purposes: it secures coordination, expertise, and responsibility. In Chapter VI some pragmatic tests were suggested for arriving at a division of function between legislator and administrator. In Chapter VII it was seen that a need for centralization sometimes arises from the faulty institutional identifications of the members of an organization. In the present chapter, it was urged that the capabilities of the members of an organization would be one determinant of the possible degree of decentralization. Are there additional considerations, beyond those already mentioned, which should carry weight in the allocation of decisions?

At the outset, one important distinction must be clearly understood. There are two very different aspects to centralization. On the one hand, decision-making powers may be centralized by using general rules to limit the discretion of the subordinate. On the other hand, decision-making powers may be centralized by taking out of the hands of the subordinate the actual decision-making function. Both of these processes may be designated as "centralization" because their result is to take out of the hands of the subordinate the actual weighing of competing considerations and to require that he accept the conclusions reached by other members of the organization.

The very close relationship between the manner in which the function of review is exercised, and the degree of centralization or decentralization should also be pointed out. Review influences decisions by evaluating them, and thereby subjecting the subordinate to discipline and control. Review is sometimes conceived as a means of detecting wrong decisions and correcting them. This concept may be very useful as applied to those very important decisions where an appellate procedure is necessary to conserve individual rights or democratic responsibility.

Under ordinary circumstances, however, the function of correcting the decisional processes of the subordinate which lead to wrong decisions is more important than the function of correcting wrong decisions. As the resources of the subordinate for making correct decisions are strengthened decentralization becomes increasingly possible. Hence, review can have three consequences: (1) if it is used to correct individual decisions, it leads to centralization, and an actual transfer of the decision-making functions; (2) if it is used to discover where the subordinate needs additional guidance, it leads to centralization through the promulgation of more and more complete rules and regulations limiting the subordinate's discretion; (3) if it is used to discover where the subordinate's own resources need to be strengthened, it leads to decentralization. All three elements can be, and usually are, combined, in varying proportions.

But why should administration aim at decentralization? All of our analysis to this point has emphasized the important functions which the centralization of decision-making performs. Nevertheless, we are warned against a naive acceptance of the advantages of centralization by the distrust which careful students of administration express for it. Sir Charles Harris, for example, has this to say:

If I appear before you as a thoroughgoing advocate of decentralization, it is as a convert to the faith in middle age. . . . At the beginning of my service I was greatly impressed by the lack of general knowledge and grasp of central principle displayed in the local decisions and actions that came under my notice. For years the conviction grew upon me that a larger measure of active control from the center would conduce to both efficiency and economy of administration; and to-day, if I were to confine my view to particular details and to immediate results, I should still feel on that point no possible doubt whatever. It is when one falls back to Capability Brown's view-point, and tries to see the wood as well as the trees, that the certainty disappears.

. . . Simple centralization drives up the functions of decision and authorization to the top centre, it leaves action, when decided upon, to be carried out by the subordinate authority.

Don't cut down the discretion of the man below, or his class, by requiring submission to higher authority in the future, because he has made a mistake. Teach him and try him again; but if he is unteachable, shunt him.

¹Sir Charles Harris, "Decentralization," Journal of Public Administration, III (April, 1925), 117-133.

Almost any person feels "safer" if he makes decisions himself rather than delegate them to a subordinate. The superior rationalizes this centralization on a variety of grounds: he is more highly skilled or trained than the subordinate; if he makes the decision, he can be certain that it is decided as he would want it. What he does not always realize is that by concentrating the entire function of decision in himself, he is multiplying his work, and making the subordinate superfluous.

There are two principal reasons for decentralizing decisions even in cases where the superior is more highly trained than the subordinate. The first harks back to our distinction in Chapter VI between efficiency and adequacy. It is not enough to take into consideration the accuracy of the decision; its cost must be weighed as well. The superior is presumably a higher paid individual than the subordinate. His time must be conserved for the more important aspects of the work of the organization. If it is necessary, in order that he may make a particular decision, that he sacrifice time which should be devoted to more important decisions, the greater accuracy secured for the former may be bought at too high a price.

The second reason why decentralization is often preferable to centralization is that the referral of a decision upward in the hierarchy introduces new time-costs into the decision-making process. Against any advantages of accuracy when the decision is made at the center must be balanced the cost of duplicating the decisional process, together with the cost of communicating the decisions.

To emphasize the costs of uneconomic standards of review, we cannot do better than quote an example cited by Ian Hamilton from his personal experience:

In 1896 I was Deputy Quartermaster-General at Simla; then, perhaps still, one of the hardest worked billets in Asia. After a long office day I used to get back home to dinner pursued by a pile of files three to four feet high. The Quartermaster-General, my boss, was a clever, delightful work-glutton. So we sweated and ran together for a while a neck and neck race with our piles of files, but I was the younger and he was the first to be ordered off by the

doctors to Europe. Then I, at the age of forty-three, stepped into the shoes and became officiating Quartermaster-General in India. Unluckily, the Government at that moment was in a very stingy mood. They refused to provide pay to fill the post I was vacating and Sir George White, the Commander-in-Chief, asked me to duplicate myself and do the double work. My heart sank, but there was nothing for it but to have a try. The day came; the Quartermaster-General went home and with him went the whole of his share of the work. As for my own share, the hard twelve hours' task melted by some magic into the Socialist's dream of a six hours' day. How was that? Because, when a question came up from one of the Departments I had formerly been forced to compose a long minute upon it, explaining the case, putting my own views, and endeavoring to persuade the Quartermaster-General to accept them. He was a highly conscientious man and if he differed from me he liked to put on record his reasons--several pages of reasons. Or, if he agreed with me, still he liked to agree in his own words and to "put them on record." Now, when I became Quartermaster-General and Deputy-Quartermaster General rolled into one I studied the case as formerly, but there my work ended: I had not to persuade my own subordinates: I had no superior except the Commander-in-Chief, who was delighted to be left alone: I just gave an order--quite a simple matter unless a man's afraid: "Yes," I said, or "No!"¹

We must now raise an additional objection to centralization, which goes beyond those already considered. It has been assumed thus far, that given ample time, the superior could make more accurate decisions than the subordinate. This will be true, however, only if the information upon which the decision is to be based is equally accessible to both. When decisions must be made against a deadline, or when the organization is characterized by geographical dispersion, this may be far from the case. The "facts of the case" may be directly present to the subordinate, but highly difficult to communicate to the superior. The insulation of the higher levels of the administrative hierarchy from the world of fact known at first hand by the lower levels is a familiar administrative phenomenon.

Centralization is sometimes urged as a necessary concomitant of the specialization of work. If work is specialized, then procedures must be introduced to secure coordination among the members of the group, and among the most powerful of coordinative procedures is the centralization of decisions. This is true, but in accepting this conclusion, we must not blind ourselves to the very real disadvantages and costs which accompany specialization.

¹The Soul and Body of an Army (London; E. Arnold and Co., 1921), pp. 235-236.

Inter-personal coordination involves communication of a plan. Complex and powerful as are the devices which can be used for such coordination, their effectiveness is in no way comparable to the coordinating power of the individual human nervous system. When the elements of the plan can be reduced to diagrams and maps, as in the case of a design for a ship or a bridge, inter-personal coordination can reach even minute detail. But the coordinative mechanisms of a skilled pianist, or of an engineer bringing all his skill and knowledge to bear on a problem of design, are far more intricate.

Successful use of the device of specialization to increase efficiency implies either that no coordination is required among the specialized segments of the complete task, or that this coordination can be achieved with the available techniques of inter-personal coordination. If neither of these conditions is fulfilled, then specialization must be sacrificed in order to retain the use of the individual brain as the coordinating mechanism.

It is not very easy to thread a needle if one person holds the thread and another the needle. Here the task is to get thread and needle to the same place, and inter-personal coordination accomplishes this much less successfully than the coordination of the movements of the two hands by the human nervous system.

The lengthy quotation above, describing the procedure for designing a battleship,¹ is another case in point. A careful analysis of the procedure reveals that there were involved in it not only the experts on various aspects of battleship design, but also a group of functionaries who might be described as "expert jacks-of-all-trades in battleship design." The Director of Naval Construction, and not the functional experts, lays down the general lines of the ship. To repeat:

Thereupon the Director of Naval Construction, acting under and in consultation with the controller, formulates provisional schemes outlining the kind of ship desired, together with forecasts of the size and cost involved by the different arrangements. To do this he

¹Pp. 182-83, supra.

and his officers must have a good general knowledge--in itself only attainable by close relations with those in charge of these matters--of the latest developments and ideas in regard to a great range of subjects--gunnery, torpedo, engineering, armour, fire-control, navigation, signalling, accomodation, and so on--in order to be reasonably sure that the provision included in his schemes is such as is likely to satisfy the experts in all these subjects, when the time for active cooperation arrives.¹

Only after the "jack-of-all-trades" has done his job are the experts called in for their suggestions. Next a technique of inter-personal coordination, the conference, is used to reconcile the competing claims of experts. Finally, the plan is turned over again to the non-specialist for authorization.

We may conclude, then, that some measure of centralization is indispensable to secure the advantages of organization: coordination, expertise, and responsibility. On the other hand, the costs of centralization must not be forgotten. It may place in the hands of highly-paid personnel decisions which do not deserve their attention. It may lead to a duplication of function which makes the subordinate superfluous. Facilities for communication must be available, sometimes at considerable cost. The information needed for a correct decision may be available only to the subordinate. Finally, centralization leaves idle and unused the powerful coordinative capacity of the human nervous system, and substitutes for it an interpersonal coordinative mechanism.

These are the considerations which must be weighed in determining the degree to which decisions should be centralized or decentralized.

SUMMARY

A decision is analogous to a conclusion drawn from a number of premises--some of them factual premises, and some ethical premises. The environment of decision, as it was explored in Chapters III and IV, provides the individual with the premises which form the basis of his decisions. Hence, the influence of the group upon the decisions of the individual within it can be studied by noting how the organization determines for him these premises.

¹Murray, "The Administration of a Fighting Service," loc. cit.

The organization's influence is a matter of degree. As we travel from top to bottom of the administrative hierarchy we note a progressive particularization of influence. Toward the top, discretion is limited by the assignment of broad objectives, and the specification of very general methods. Lower in the hierarchy, more specific objectives are set, and procedures are determined in greater detail.

Within the limits fixed by his superiors, each member of the organization retains a certain sphere of discretion, a sphere within which he is responsible for the selection of premises for decision. For the most part, this sphere of discretion lies within the factual area of the decisional process, rather than the ethical area.

The individual's decision is not "free," however, even within the area of discretion, in the sense that his superiors are indifferent what decision he makes within that area. Quite the contrary. Even within the area of discretion he is held for the correctness of his decision--for its appropriateness to the objective environment of choice.

There are at least five principal ways in which influence is exerted over the individual: (1) orders, commands, rules, and regulations; (2) plans, schedules, and designs; (3) training and indoctrination; (4) advice and information; and (5) review. Authority plays a major part only in the first and last of these. Hence, the structure of influence in the organization, and the lines of communication through which influence can flow may be far more complex than the structure of authority. It is not enough, in designing an organization, to establish a hierarchy of authority. It is equally important to determine lines of influence, and the modes through which influence is to be exercised. Within very broad limits, the several modes of influence are mutually interchangeable, and an important organizational problem is to determine under what conditions each is to be employed.

A variety of considerations must be weighed in order to determine the

degree of centralization or decentralization in decision-making which is appropriate to an organization. Centralization involves very real costs of communication, as well as other costs, which must all be balanced against its advantages.

CHAPTER VIII

INFLUENCING DECISIONS

It is clear that the actual physical task of carrying out an organization's objectives falls to the persons at the lowest level of the administrative hierarchy. The automobile, as a physical object, is built not by the engineer or the executive, but by the mechanic on the assembly line. The fire is extinguished, not by the fire chief, or the captain, but by the team of firemen who play a hose upon the blaze. Relief applications are approved, not by the social service supervisor, but by case workers.

It is equally clear that the persons above the lowest level in the administrative hierarchy are not mere surplus baggage. They, too, must have an essential role to play in the accomplishment of the agency's objectives. This role has already been described in Chapter V.

The non-operative staff of an administrative organization participate in the accomplishment of the objectives of that organization to the extent that they influence the decisions of the operatives--the persons at the lowest level of the administrative hierarchy.

The phenomenon of influence and the part it plays in group behavior, were first taken up in Chapter V. There, one particular aspect of influence, the superior-subordinate relationship, was studied in detail. In Chapter VII, another type of behavioral influence--"identification" with the group objective--was described and analyzed. It is time now to draw these partial analyses together and to describe several modes of influence which were hardly touched in the earlier chapters in order to get a comprehensive picture of all the influential processes which are at work in an organization.

The discussion centers around two principal issues. First, an influence ordinarily affects only one or a few of the numerous premises upon which a single decision is based. Hence, influence is a matter of degree as well as

kind. From this fact derives the possibility of discretion in administrative organization.

Second, authority is a "willingness to be influenced" rather than a determinate mode of influence. Hence, some attention must be given to the ways in which authority can actually bring its influence to bear.

These, then, will be the two topics of discussion in this chapter: the degrees of influence and the modes of influence.

The Degrees of Influence

Influence is exercised in its most complete form when a decision promulgated by one person governs every aspect of the behavior of another. On the parade ground, the marching soldier is permitted no discretion whatsoever. His every step, his bearing, the length of his pace are all governed by authority. Few other examples could be cited, however, of the exercise of influence in unlimited form.

Most often, influence places only partial limits upon the exercise of discretion. A subordinate may be told what to do, but given considerable leeway as to how he will carry out the task. The "what" is, of course, a matter of degree, and may be specified within narrower or broader limits. A charter which states in general terms the function of a city fire department places much less severe limits upon the discretion of the fire chief than the commands of a captain at the scene of a conflagration place on the discretion of the firemen.

A realistic analysis of influence in general and authority in particular must recognize that influence can be exercised with all degrees of specificity. To determine the scope of influence or authority which is exercised in any concrete case, it is necessary to dissect the decisions of the subordinate into their component parts, and then determine which of these parts are determined by the superior, and which are left to his discretion.

Influence Over Value and Fact

In Chapter VI it was shown that a rational decision can be viewed as a conclusion reached from certain premises. These premises are of two different kinds: value premises and factual premises. Given a complete set of value and factual premises, there is only one unique decision which is consistent with rationality. That is, with a given system of values, and a specified set of empirical possibilities, there is one possibility of the set which is preferable to the others.

The behavior of a rational person can be controlled, therefore, if the value and factual premises upon which he bases his decisions are specified for him. This control can be complete or partial--all the premises can be specified, or some can be left to his discretion.

Influence, then, is exercised through control over the premises of decision. The decisions of the subordinate are required to be consistent with premises selected for him by his superior. The scope of authority, and conversely the scope of discretion, are determined by the number and importance of the premises which are specified, and the number and importance of those which are left unspecified.

As pointed out in Chapter VI, discretion over value premises has a different logical status from discretion over factual premises. The latter can always be evaluated as "right" or "wrong" in an objective, empirical sense. To the former, the terms "right" and "wrong" do not apply. Hence, if only factual premises are left to the subordinate's discretion, there is, under the given circumstances, only one decision which he can "correctly" reach. On the other hand, if value premises are left to the subordinate's discretion, the "correctness" of a decision will depend upon the value premises he has selected, and there is no criterion of right or wrong which can be applied to his selection.

Implications for Unity of Command

When it is admitted that authority need extend to only a few of the premises of decision, it follows that more than one order can govern a given decision, provided that no two orders extend to the same premise. An analysis of almost any decision of a member of a formal organization would reveal that the decision is responsive to a very complex structure of influence.

Military organization affords an excellent illustration of this. In ancient warfare, the battlefield was not unlike the parade ground. An entire army was often commanded by a single man, and his authority extended in a very complete form to the lowest man in the ranks. This was possible because the entire battlefield was within range of a man's voice and vision, and because tactics were for the most part executed by the entire army in unison.

The modern battlefield presents a very different picture. Authority is exercised through a complex hierarchy of command. Each level of the hierarchy leaves an extensive area of discretion to the level below, and even the private soldier, under combat conditions, exercises a considerable measure of discretion.

Under these circumstances, how does the authority of the commander extend to the soldiers in the ranks? How does he limit and guide their behavior? He does this by specifying the general mission and objective of each unit on the next level below, and by determining such elements of time and place as will assure a proper coordination among units. The colonel assigns to each battalion in his regiment its task; the major to each company; the captain to each platoon. Beyond this, the officer does not ordinarily go. The internal arrangements of each unit are left to the officer in command of that unit. The United States Army Field Service Regulations specify that "an order should not trespass upon the province of a subordinate. It should contain everything beyond the independent authority of the subordinate, but nothing more."¹

¹U. S. Army Field Service Regulations, 1923, p. 7.

So far as field orders go, then, the discretion of an officer is limited only by the specification of the objective of his unit, and its general schedule. He proceeds to narrow further the discretion of his subordinates so far as is necessary to specify that part each sub-unit is to play in accomplishing the task of the unit.

Does this mean that the discretion of the officer is limited only by his objective or mission? Not at all. To be sure, the field order does not go beyond this point. It specifies the what of his action. But the officer is also governed by the tactical doctrine and general orders of the army which specify in some detail the how. When the captain receives field orders to deploy his company for an attack, he is expected to carry out the deployment in accordance with the accepted tactical principles in the army. In leading his unit, he will be held accountable for the how as well as the what.

When we turn our attention, finally, to the man who carries out the army's task--the private soldier--we see that a great mass of influences bear upon the decisions which he makes. The decision that he will participate in an attack may have been made by a divisional, or even a corps commander. His precise geographical location and place in the attack will be determined with ever-increasing degrees of specificity by general, colonel, major, captain, lieutenant, sergeant in turn. But that is not all. The plan of attack which the captain determines upon will be a result not only of the field orders he receives, but also of the tactical training he has received, and his intelligence of the disposition of the enemy. So also the private, as he moves forward to the attack in the skirmish line, must thenceforth rely more and more upon the influences of his training and indoctrination.

To understand the process of decision in an organization it is necessary to go far beyond the on-the-spot orders which are given by superior to subordinate. It is necessary to discover how the subordinate is influenced by standing orders, by training, and by review of his actions. It is necessary

to study the channels of communication in the organization in order to determine what information reaches him which may be relevant to his decisions. The broader the sphere of discretion left to the subordinate, the more important become those types of influence which do not depend upon the exercise of formal authority.

Modes of Exercise of Influence

These several modes of influence upon decision must now be examined more closely. Since a principal goal of administrative organization is to secure correct decisions, the precise manner in which these decisions are determined will be of considerable importance to the theory.

The principal modes of influence may be classified as: (1) orders, commands, rules and regulations; (2) plans, schedules, and designs; (3) training and indoctrination; (4) advice and information; and (5) review.

Orders and Commands

Perhaps the most significant instance of the exercise of authority to influence decisions are the rules and regulations which specify the form of the administrative organization itself--which establish the areas of specialization, and determine the hierarchy of authority. The extent to which the formal organization affects the actual content of decisions varies widely from one organization to another. In the army, the organizational form does little more than specify the lines of authority and to classify the units into major services which are equipped and trained for specialized kinds of tasks.

The formally organized army, then, is a group of men responsive to a definite hierarchy of authority, and consisting of specialized subgroups whose components can be regrouped and combined for the performance of the organization's tasks. Beyond this the organizational form does not go--the actual tasks of each division are determined by field order and not by the form of organization.

The case is somewhat different with a fire department. The organizational plan of the department not only sets up the hierarchy of authority, but also sets up the objective of each unit--the area which it must protect from fire.

The orders which specify the form of organization are normally supplemented by a host of ad hoc orders which determine the content of the day to day work of the agency. In the army, these would correspond to the field orders issued by each officer to his subordinates. In the fire departments these would correspond to the signals instructing a fire company to respond to an alarm.

On the one hand, ad hoc orders may be extremely rare, as is apt to be the case in the relations between the manager of a large city and the heads of his departments. In other cases, the ad hoc orders may be the very core of the system of authority--the relations of a stenographer with an executive.

Plans and Schedules

Plans and schedules are perhaps not strictly distinguishable from commands, since they usually derive their authority from an order. Nonetheless, they are of special interest as devices for influencing decisions because of the immense amount of detail which it is possible to include in them, and because of the broad participation that can be secured, when desirable, in their formulation. Let us consider the last point first. An example follows:

There is very little that is haphazard or disconnected about the array of Admiralty Departments. The noteworthy thing about them is not their number or variety, so much as their close inter-connection and the manner in which they combine to serve those administrative ends which I mentioned at the beginning of my paper. Perhaps I can best illustrate this by describing briefly the procedure followed in the design and production of a new battleship, which always seems to me to be the very romance of cooperation.

We start with the First Sea Lord and his Assistant Chief of Naval Staff laying down in general terms the features that they desire to see embodied in the new design--the speed, the radius of action, the offensive qualities, the armour protection. Thereupon the Director of Naval Construction, acting under and in consultation with the Controller, formulates provisional schemes outlining the kind of ship desired, together with forecasts of the size and cost involved by the different arrangements. To do this he and his officers must have a good general knowledge--in itself only attainable by close

relations with those in charge of these matters--of the latest developments and ideas in regard to a great range of subjects--gunnery, torpedo, engineering, armour, fire-control, navigation, signalling, accomodation, and so on--in order to be reasonably sure that the provision included in his schemes is such as is likely to satisfy the experts in all these subjects, when the time for active cooperation arrives.

With these alternative schemes before them, the Sea Lords agree on the general lines of the new ship, which done, the actual preparation of the actual designs begins. The dimensions and shape of the ship are drawn out approximately by the naval constructors. Then the Engineer-in-Chief and his Department are called in to agree upon the arrangement of the propelling machinery, the positions of shafts, propellers, bunkers, funnels, etc., and at the same time the cooperation of the Director of Naval Ordnance is required to settle the positions of the guns with their barbettes, and magazines and shell rooms and the means of supplying ammunition to the guns in action.

An understanding between these three main departments enables further progress to be made. The cooperation of the Director of Torpedoes and the Director of Electrical Engineering is now called for to settle the arrangements for torpedo armament, electric generating machinery, electric lighting, etc. So the design progresses and is elaborated from the lower portions upwards, and presently the Director of Naval Construction is able to consult the Director of Naval Equipment as to the proposed arrangements in regard to the sizes and stowage of the motor boats, steamboats, rowing and sailing boats to be carried, as well as of the anchors and cables; the Director of the Signal Department as to the wireless telegraphy arrangements; the Director of Navigation as to the arrangements for navigating the ship, and so on. In this way the scheme goes on growing in a tentative manner, its progress always being dependent on the cooperation of numbers of separate departments, all intent upon ensuring the efficiency of different parts, until ultimately a more or less complete whole is arrived at in the shape of drawings and specifications provisionally embodying all the agreements. This really is the most difficult and interesting stage, for generally it becomes apparent at this point that requirements overlap, and that the best possible cannot be achieved in regard to numbers of points within the limits set to the contractors. These difficulties are cleared up by discussion at round-table conferences, where the compromises which will least impair the value of the ship are agreed upon, and the completed design is then finally submitted for the Board's approval. Some fourteen departments are concerned in the settlement of the final detailed arrangements.¹

The point which is so clearly illustrated here is that the planning procedure permits expertise of every kind to be drawn into the decision without any difficulties being imposed by the lines of authority in the organization. The final design undoubtedly received authoritative approval, but during the entire process of formulation, suggestions and recommendations flowed freely from all parts of the organization without raising the problem of "unity of command." It follows from this that to the extent to which planning procedures

¹Sir Oswyn A. R. Murray, "The Administration of a Fighting Service," Journal of Public Administration, I (July, 1923), 216-217.

are used in reaching decisions, the formal organization has relevance only in the final stages of the whole process. So long as the appropriate experts are consulted, their exact location in the hierarchy of authority need not much affect the decision.

This statement must be qualified by one important reservation. Organizational factors are apt to take on considerable importance if the decision requires a compromise among a number of competing values which are somewhat incompatible with each other. In such a case, the focus of attention and the identifications of the person who actually makes the decision are apt to affect the degree to which advice offered him by persons elsewhere in the organization actually influences him. This factor is present in the example of the warship just cited as illustration.

This same illustration throws in relief the other aspect of the planning procedure which was mentioned above--that the plan may control, down to minute details, a whole complex pattern of behavior. The completed plan of the battleship will specify the design of the ship down to the last rivet. The task of the construction crew is minutely specified by this design.

Training and Indoctrination

Training, as a mode of influencing decisions, may begin long before the employee becomes a member of the organization. All professional training, for example, indoctrinates its subjects in a mode of thinking, a frame of reference with respect to which they orient all their problems, and a body of knowledge. Hence, appropriate kinds of expertise can be brought to bear on organizational decisions by permitting properly trained persons to participate in their resolution.

Training is applicable to the process of decision wherever the same elements are involved in a large number of decisions. Training may supply the trainee with the facts necessary in dealing with these decisions, it may provide him a frame of reference for his thinking, it may teach him "approved"

solutions, or it may indoctrinate him with the values in terms of which his decision is to be made.

Training, as a mode of influence upon decisions, has its greatest value in those situations where the exercise of formal authority through commands proves difficult. The difficulty may lie in the need for prompt action, in spatial dispersion of the organization, or in the complexity of the subject matter of decision which defies summarization in rules and regulations. Training permits a higher degree of decentralization of the decision-making process by bringing the necessary competence into the very lowest levels of the organizational hierarchy.

Advice and Information

Many of the facts which are relevant to decision are of a rapidly changing nature, ascertainable only at the moment of decision. Of crucial importance, for instance, in military operations, is knowledge of the disposition of the enemy's forces. Where the individual who is to make a decision is not in a position to ascertain personally the facts relevant to his decision, then it becomes a task of organization to influence him by transmitting these facts to him. Military organization has developed elaborate procedures for accomplishing this.

Military information is essential to the efficient preparation and execution of strategical and tactical plans. It constitutes a vital element in the commander's estimate of the situation and decision. Continuous research of information by all available means throughout the course of operations is necessary to the successful operations of all units

Information collected by combat units in the field relates chiefly to the enemy forces with which they are in contact.

The necessary orientation is given to the research of information by the issuance of instructions to subordinate units indicating the points of greatest importance to the execution of the commander's plan of operations and to the security of the command.

Each unit commander, in his own zone of operation, directs the research of information in accordance with instructions received, and in addition independently carries out such researches as are dictated by his special situation or

required for the execution of the operation in which he is engaged.

The evaluation, collation, and analysis of military information is the duty of the intelligence division of the general staff of large units and of the intelligence agencies of brigades, regiments, and battalions. . . .

Analysis of the information received leads to a more or less complete reconstruction of the enemy's situation and activities and frequently furnishes the best indication of his intentions.¹

The channels of communication in the organization have, therefore, the double function of communicating orders and of transmitting information. When it is realized that both these types of communication are modes of influence upon decision, it is seen that the process of communication is intimately connected with decision-making.

Information and advice may be employed in place of authority for a number of other reasons. Chief among these is that they preserve morale and initiative on the part of the subordinate, qualities which may disappear if excessively harrassed by authority. Again, when the influences are advisory in nature, the formal organization loses its unique position as the sole channel of influence. The relation between the advisor and the person advised is essentially no different when they are members of the same organization than when the advisor is outside the organization. The extent of the influence of the advisor will depend on the desire of the decision-maker for advice, and the persuasiveness with which it is offered.

Review

Review enables those who are in a position of authority in the administrative hierarchy to determine what actually is being done by their subordinates.

Methods of Review:--Review may extend to the results of the subordinate's activities, measured in terms of their objectives; the tangible products, if there are such, of their activities; or the method of their performance.

When authority is exercised through the specification of the objective of the organizational unit, then a primary method of review is to ascertain the

¹U. S. Army Field Service Regulations, 1923, pp. 25-26.

degree to which the organizational objective is attained--its results. A city manager, for instance, may use measurements of results as a principal means of reviewing city departments. He may evaluate the fire department in terms of fire losses, the police department in terms of crime and accident rates, the public works department in terms of the condition of streets and the frequency of refuse collection.

A second very important method of review is one which examines the piece of completed work to see whether it meets the requirements of quantity and quality. This method assumes that the reviewing officer is able to judge the quality and quantity of the completed work with a certain degree of competence. Thus, a superior may review all outgoing letters written by his subordinates, or the work of typists may be checked by a chief clerk, or the work of a street repair crew may be examined by a superintendent.

It has not often enough been recognized that in many cases the review of work can just as well be confined to a randomly selected sample of the work as extend to all that is produced. A highly developed example of such a sampling procedure is found in the personnel administration of the Farm Credit Administration. This organization carries out its personnel functions on an almost completely decentralized basis, except for a small central staff which lays down standards and procedures. As a means of assuring that local practices follow these standards, field supervisors inspect the work of the local agencies, and in the case of certain personnel procedures, such as classification, the setting of compensation scales, and the development of testing materials, assure themselves of the quality of the work by an actual inspection of a sample. The same type of procedure is usually followed by state boards of equalization which review local assessments. Finally, welfare agencies in California, New York, and perhaps other states, have developed an auditing procedure on a sampling basis, in order to review the work of local welfare agencies.

The third, and perhaps simplest, method of review is to watch the

employee at work, either to see that he puts in the required number of hours, or to see that he is engaging in certain movements which if continued will result in the completion of the work. In this case, the review extends to procedures and techniques, rather than product or results. It is the prevalent form of review at the foremanship level.

Functions of Review:---Quite as important as the different methods of review are the different purposes or functions of review. These are four in number: the diagnosing of the quality of decisions, the influencing of subsequent decisions, the modification of incorrect decisions, and the enforcement of sanctions against prior decisions.¹

In the first place, review is the means whereby the administrative hierarchy learns whether decisions are being made correctly or incorrectly, whether work is being done well or badly at the lower levels of the hierarchy. It is a fundamental source of information, then, upon which the higher levels of the hierarchy must rely heavily for their decisions. With the help of this information, improvements can be introduced into the decision-making process.

This leads to the second function of review---to influence subsequent decisions. This is achieved in a variety of ways. Orders may be issued covering particular points on which incorrect decisions have been made, or laying down new policies to govern decisions. Employees may be given training or re-training with regard to those aspects of their work which review has proved faulty. Information may be supplied them, the lack of which has led to incorrect decisions. In brief, change may be brought about in any of the several ways in which decisions can be influenced.

Third, review may perform an appellate function. If the individual decision has grave consequences, it may be reviewed by a higher authority, to make certain that it is correct. This review may be a matter of course, or it may occur only on appeal by a party at interest. The justification of such a

¹A somewhat similar, but not identical, analysis of the function of review can be found in Sir H.N. Bunbury's paper "Efficiency as an Alternative to Control," Public Administration, VI (April, 1928), 97-98.

process of review is that (1) it permits the decision to be weighed twice, and (2) the appellate review requires less time per decision than the original decision, and hence conserves the time of better-trained personnel for the more difficult decisions. The appellate review may, to use the language of administrative law, consist in a consideration de novo, or may merely review the original decision for substantial conformity to important rules of policy.

Fourth, review is often essential to the effective exercise of authority. As we have seen in Chapter V, authority depends, to a certain extent, upon the availability of sanctions to give it force. Sanctions can be applied only if there is some means of ascertaining when authority has been respected, and when it has been disobeyed. Review supplies the person in authority with this information.

When we recall the "rule of anticipated reactions," we see that the anticipation of review and the invocation of sanctions secures conformity to authority of the decision made prior to review. It is for this reason that review can influence a prior decision.

Alternative Forms of Influence

It can be seen that there are at least five distinct methods of influencing the decisions of operatives. It is a fundamental problem of organization to determine the extent to which and the manner in which each of these forms of influence is to be employed. To a very great extent, these various forms of influence are interchangeable, a fact which is far more often appreciated in small than in large organizations.

The simplest example of this is the gradual increase in discretion which can be permitted an employee as he becomes familiar with his job. A secretary learns to draft routine correspondence; a statistical clerk learns to lay out his own calculations. In each case training has taken the place of authority in guiding the employee's decisions.

"Functional supervision" often takes the form of advice rather than authority. This substitution of advice for authority may prove necessary in many situations in order to prevent conflicts of authority between line officers, organized on a geographical basis, and experts organized on a functional basis.

To the extent to which these forms of influence supplement, or are substituted for, authority, the problem of influence becomes one of internal education and public relations.

Following is an example of this kind of influence:

To the administration of a big department, the staff of the department themselves constitute a kind of inner "public," the right orientation of whose attitudes to each other in their mutual office contacts, in the inevitable absence of the direct personal touch which secures it in a small organization, would seem prima facie to call for just the same kind of attention, the same "practical psychology" or "salemanship," as their attitude to members of the outside public.....

Consider, for example, the machinery for preparing official instructions to the staff. . . . Do not official instructions tend to be drafted too rationalistically? Is not the draftsman's attention often concentrated too exclusively on framing a logical statement setting accurately and comprehensively what ought to be done? . . . But after all, the primary object of an instruction is not to be admired by critical specialists in the same office; an instruction is intended to be acted on, and that by people who are as a rule neither critical, nor specialists, nor in the same office--in other words, to produce such an impression on the ultimate recipient that on receiving it, he will forthwith proceed to do what is required of him.¹

Administrators have increasingly recognized in recent years that authority, unless buttressed by other forms of influence, is relatively impotent to control decision in any but a negative way. The elements entering into all but the most routine decisions are so numerous and so complex that it is impossible to control positively more than a few. Unless the subordinate is himself able to supply most of the premises of decision, and to synthesize them adequately, the task of supervision becomes hopelessly burdensome.

When viewed from this standpoint, the problem of organization becomes inextricably interwoven with the problem of recruitment. For the system of influence which can effectively be used in the organization will depend directly

¹H. Townshend, "'Practical Psychology' in Departmental Organization," Journal of Public Administration, XII, 66.

upon the training and competence of the employees at the various levels of the hierarchy. If a welfare agency can secure trained social workers as interviewers and case workers, broad discretion can be permitted them in determining eligibility, subject only to a sampling review, and a review of particularly difficult cases.

If trained workers can be obtained only for supervisory positions, then the supervisors will need to exercise a much more complete supervision over their subordinates, perhaps reviewing each decision, and issuing frequent instructions. The supervisory problem will be correspondingly more burdensome than in the first example, and the effective span of control of supervisors correspondingly narrower.

Likewise, when an organization unit is large enough so that it can retain within its own boundaries the specialized expertise that is required for some of its decisions, the need for functional supervision from other portions of the organization becomes correspondingly less. When a department can secure its own legal, medical, or other expert assistance, the problems of functional organization become correspondingly simpler, and the lines of direct authority over the department need less supplementation by advisory and informational services.

Hence, problems of organization cannot be considered apart from the specifications of the employees who are to fill the positions established by the organization. The whole subject of job classification needs to be brought in much closer coordination with the theory of organization. The optimum organizational structure is a variable, depending for its form upon the staffing of the agency. Conversely, the classification of a position is a variable, depending upon the degree of centralization or decentralization which is desired or anticipated in the operation of the organizational form.

Centralization and Decentralization

These last paragraphs suggest an issue which has been only approached

obliquely in earlier pages of this study. To what extent should the decision-making functions be centralized in an organization?

What have we already said with respect to this issue? In Chapter V it was pointed out that the specialization and centralization of decision-making serves three purposes: it secures coordination, expertise, and responsibility. In Chapter VI some pragmatic tests were suggested for arriving at a division of function between legislator and administrator. In Chapter VII it was seen that a need for centralization sometimes arises from the faulty institutional identifications of the members of an organization. In the present chapter, it was urged that the capabilities of the members of an organization would be one determinant of the possible degree of decentralization. Are there additional considerations, beyond those already mentioned, which should carry weight in the allocation of decisions?

At the outset, one important distinction must be clearly understood. There are two very different aspects to centralization. On the one hand, decision-making powers may be centralized by using general rules to limit the discretion of the subordinate. On the other hand, decision-making powers may be centralized by taking out of the hands of the subordinate the actual decision-making function. Both of these processes may be designated as "centralization" because their result is to take out of the hands of the subordinate the actual weighing of competing considerations and to require that he accept the conclusions reached by other members of the organization.

The very close relationship between the manner in which the function of review is exercised, and the degree of centralization or decentralization should also be pointed out. Review influences decisions by evaluating them, and thereby subjecting the subordinate to discipline and control. Review is sometimes conceived as a means of detecting wrong decisions and correcting them. This concept may be very useful as applied to those very important decisions where an appellate procedure is necessary to conserve individual rights or democratic responsibility.

Under ordinary circumstances, however, the function of correcting the decisional processes of the subordinate which lead to wrong decisions is more important than the function of correcting wrong decisions. As the resources of the subordinate for making correct decisions are strengthened decentralization becomes increasingly possible. Hence, review can have three consequences: (1) if it is used to correct individual decisions, it leads to centralization, and an actual transfer of the decision-making functions; (2) if it is used to discover where the subordinate needs additional guidance, it leads to centralization through the promulgation of more and more complete rules and regulations limiting the subordinate's discretion; (3) if it is used to discover where the subordinate's own resources need to be strengthened, it leads to decentralization. All three elements can be, and usually are, combined, in varying proportions.

But why should administration aim at decentralization? All of our analysis to this point has emphasized the important functions which the centralization of decision-making performs. Nevertheless, we are warned against a naive acceptance of the advantages of centralization by the distrust which careful students of administration express for it. Sir Charles Harris, for example, has this to say:

If I appear before you as a thoroughgoing advocate of decentralization, it is as a convert to the faith in middle age. . . . At the beginning of my service I was greatly impressed by the lack of general knowledge and grasp of central principle displayed in the local decisions and actions that came under my notice. For years the conviction grew upon me that a larger measure of active control from the center would conduce to both efficiency and economy of administration; and to-day, if I were to confine my view to particular details and to immediate results, I should still feel on that point no possible doubt whatever. It is when one falls back to Capability Brown's view-point, and tries to see the wood as well as the trees, that the certainty disappears.

. . . Simple centralization drives up the functions of decision and authorization to the top centre, it leaves action, when decided upon, to be carried out by the subordinate authority.

Don't cut down the discretion of the man below, or his class, by requiring submission to higher authority in the future, because he has made a mistake. Teach him and try him again; but if he is unteachable, shunt him.¹

¹Sir Charles Harris, "Decentralization," Journal of Public Administration, III (April, 1925), 117-133.

Almost any person feels "safer" if he makes decisions himself rather than delegate them to a subordinate. The superior rationalizes this centralization on a variety of grounds: he is more highly skilled or trained than the subordinate; if he makes the decision, he can be certain that it is decided as he would want it. What he does not always realize is that by concentrating the entire function of decision in himself, he is multiplying his work, and making the subordinate superfluous.

There are two principal reasons for decentralizing decisions even in cases where the superior is more highly trained than the subordinate. The first harks back to our distinction in Chapter VI between efficiency and adequacy. It is not enough to take into consideration the accuracy of the decision; its cost must be weighed as well. The superior is presumably a higher paid individual than the subordinate. His time must be conserved for the more important aspects of the work of the organization. If it is necessary, in order that he may make a particular decision, that he sacrifice time which should be devoted to more important decisions, the greater accuracy secured for the former may be bought at too high a price.

The second reason why decentralization is often preferable to centralization is that the referral of a decision upward in the hierarchy introduces new time-costs into the decision-making process. Against any advantages of accuracy when the decision is made at the center must be balanced the cost of duplicating the decisional process, together with the cost of communicating the decisions.

To emphasize the costs of uneconomic standards of review, we cannot do better than quote an example cited by Ian Hamilton from his personal experience:

In 1896 I was Deputy Quartermaster-General at Simla; then, perhaps still, one of the hardest worked billets in Asia. After a long office day I used to get back home to dinner pursued by a pile of files three to four feet high. The Quartermaster-General, my boss, was a clever, delightful work-glutton. So we sweated and ran together for a while a neck and neck race with our piles of files, but I was the younger and he was the first to be ordered off by the

doctors to Europe. Then I, at the age of forty-three, stepped into the shoes and became officiating Quartermaster-General in India. Unluckily, the Government at that moment was in a very stingy mood. They refused to provide pay to fill the post I was vacating and Sir George White, the Commander-in-Chief, asked me to duplicate myself and do the double work. My heart sank, but there was nothing for it but to have a try. The day came; the Quartermaster-General went home and with him went the whole of his share of the work. As for my own share, the hard twelve hours' task melted by some magic into the Socialist's dream of a six hours' day. How was that? Because, when a question came up from one of the Departments I had formerly been forced to compose a long minute upon it, explaining the case, putting my own views, and endeavoring to persuade the Quartermaster-General to accept them. He was a highly conscientious man and if he differed from me he liked to put on record his reasons--several pages of reasons. Or, if he agreed with me, still he liked to agree in his own words and to "put them on record." Now, when I became Quartermaster-General and Deputy-Quartermaster General rolled into one I studied the case as formerly, but there my work ended: I had not to persuade my own subordinates: I had no superior except the Commander-in-Chief, who was delighted to be left alone: I just gave an order--quite a simple matter unless a man's afraid: "Yes," I said, or "No!"¹

We must now raise an additional objection to centralization, which goes beyond those already considered. It has been assumed thus far, that given ample time, the superior could make more accurate decisions than the subordinate. This will be true, however, only if the information upon which the decision is to be based is equally accessible to both. When decisions must be made against a deadline, or when the organization is characterized by geographical dispersion, this may be far from the case. The "facts of the case" may be directly present to the subordinate, but highly difficult to communicate to the superior. The insulation of the higher levels of the administrative hierarchy from the world of fact known at first hand by the lower levels is a familiar administrative phenomenon.

Centralization is sometimes urged as a necessary concomitant of the specialization of work. If work is specialized, then procedures must be introduced to secure coordination among the members of the group, and among the most powerful of coordinative procedures is the centralization of decisions. This is true, but in accepting this conclusion, we must not blind ourselves to the very real disadvantages and costs which accompany specialization.

¹The Soul and Body of an Army (London: E. Arnold and Co., 1921), pp. 235-236.

Inter-personal coordination involves communication of a plan. Complex and powerful as are the devices which can be used for such coordination, their effectiveness is in no way comparable to the coordinating power of the individual human nervous system. When the elements of the plan can be reduced to diagrams and maps, as in the case of a design for a ship or a bridge, inter-personal coordination can reach even minute detail. But the coordinative mechanisms of a skilled pianist, or of an engineer bringing all his skill and knowledge to bear on a problem of design, are far more intricate.

Successful use of the device of specialization to increase efficiency implies either that no coordination is required among the specialized segments of the complete task, or that this coordination can be achieved with the available techniques of inter-personal coordination. If neither of these conditions is fulfilled, then specialization must be sacrificed in order to retain the use of the individual brain as the coordinating mechanism.

It is not very easy to thread a needle if one person holds the thread and another the needle. Here the task is to get thread and needle to the same place, and inter-personal coordination accomplishes this much less successfully than the coordination of the movements of the two hands by the human nervous system.

The lengthy quotation above, describing the procedure for designing a battleship,¹ is another case in point. A careful analysis of the procedure reveals that there were involved in it not only the experts on various aspects of battleship design, but also a group of functionaries who might be described as "expert jacks-of-all-trades in battleship design." The Director of Naval Construction, and not the functional experts, lays down the general lines of the ship. To repeat:

Thereupon the Director of Naval Construction, acting under and in consultation with the controller, formulates provisional schemes outlining the kind of ship desired, together with forecasts of the size and cost involved by the different arrangements. To do this he

¹Pp. 182-83, supra.

and his officers must have a good general knowledge--in itself only attainable by close relations with those in charge of these matters--of the latest developments and ideas in regard to a great range of subjects--gunnery, torpedo, engineering, armour, fire-control, navigation, signalling, accomodation, and so on--in order to be reasonably sure that the provision included in his schemes is such as is likely to satisfy the experts in all these subjects, when the time for active cooperation arrives.¹

Only after the "jack-of-all-trades" has done his job are the experts called in for their suggestions. Next a technique of inter-personal coordination, the conference, is used to reconcile the competing claims of experts. Finally, the plan is turned over again to the non-specialist for authorization.

We may conclude, then, that some measure of centralization is indispensable to secure the advantages of organization: coordination, expertise, and responsibility. On the other hand, the costs of centralization must not be forgotten. It may place in the hands of highly-paid personnel decisions which do not deserve their attention. It may lead to a duplication of function which makes the subordinate superfluous. Facilities for communication must be available, sometimes at considerable cost. The information needed for a correct decision may be available only to the subordinate. Finally, centralization leaves idle and unused the powerful coordinative capacity of the human nervous system, and substitutes for it an interpersonal coordinative mechanism.

These are the considerations which must be weighed in determining the degree to which decisions should be centralized or decentralized.

SUMMARY

A decision is analogous to a conclusion drawn from a number of premises--some of them factual premises, and some ethical premises. The environment of decision, as it was explored in Chapters III and IV, provides the individual with the premises which form the basis of his decisions. Hence, the influence of the group upon the decisions of the individual within it can be studied by noting how the organization determines for him these premises.

¹Murray, "The Administration of a Fighting Service," loc. cit.

The organization's influence is a matter of degree. As we travel from top to bottom of the administrative hierarchy we note a progressive particularization of influence. Toward the top, discretion is limited by the assignment of broad objectives, and the specification of very general methods. Lower in the hierarchy, more specific objectives are set, and procedures are determined in greater detail.

Within the limits fixed by his superiors, each member of the organization retains a certain sphere of discretion, a sphere within which he is responsible for the selection of premises for decision. For the most part, this sphere of discretion lies within the factual area of the decisional process, rather than the ethical area.

The individual's decision is not "free," however, even within the area of discretion, in the sense that his superiors are indifferent what decision he makes within that area. Quite the contrary. Even within the area of discretion he is held for the correctness of his decision--for its appropriateness to the objective environment of choice.

There are at least five principal ways in which influence is exerted over the individual: (1) orders, commands, rules, and regulations; (2) plans, schedules, and designs; (3) training and indoctrination; (4) advice and information; and (5) review. Authority plays a major part only in the first and last of these. Hence, the structure of influence in the organization, and the lines of communication through which influence can flow may be far more complex than the structure of authority. It is not enough, in designing an organization, to establish a hierarchy of authority. It is equally important to determine lines of influence, and the nodes through which influence is to be exercised. Within very broad limits, the several nodes of influence are mutually interchangeable, and an important organizational problem is to determine under what conditions each is to be employed.

A variety of considerations must be weighed in order to determine the

degree of centralization or decentralization in decision-making which is appropriate to an organization. Centralization involves very real costs of communication, as well as other costs, which must all be balanced against its advantages.

CHAPTER IX

ORGANIZING THE SKILLS OF DECISION

It was said in an earlier chapter (Chapter III) that "good" administration is behavior which is realistically adapted to its ends. If administrative theory is to be a theory of "good" administration, and if it is to be a scientific theory, the principles of which it is comprised must satisfy two criteria: (1) they must be propositions which state the conditions of efficient administration, and (2) they must be propositions whose empirical validity can be tested.

The theory of decision-making we have developed will assist us to put to the test of these two criteria the principles of administration which are set forth in the current literature of the field. Do these principles enable a "good" administrative arrangement to be distinguished from a "bad" administrative arrangement? Have these principles been validated by the empirical study of actual administrative situations?

In the course of this inquiry it will appear ever more clearly that the current theory of administration does not satisfy these tests. It will then be our task to determine whether the theory of decision-making has anything to contribute toward the development of an adequate administrative theory.

This chapter, then, will begin with criticism before it turns to construction. This discussion of administrative principles will comprise the first two sections of the chapter. In a third, and final, section a few comments will be made about the administrator, and the part he plays in the administrative structure.

A Critique of Accepted Administrative Principles

Let us enumerate some of the more common "principles" which occur in the literature of administration:

1. Administrative efficiency is increased by a specialization of the task among the group.

2. Administrative efficiency is increased by arranging the members of the group in a determinate hierarchy of authority.

3. Administrative efficiency is increased by limiting the span of control at any point in the hierarchy to a small number--say six.

4. Administrative efficiency is increased by grouping the workers, for purposes of control, according to (a) purpose, (b) process, (c) clientele, or (d) place.

These principles appear relatively simple and clear. It would seem that their application to concrete problems of administrative organization would be unambiguous, and that their validity would be easily submitted to empirical tests. Such, however, seems not to be the case.

About three years ago a committee of eminent and distinguished experts in administration submitted to President Roosevelt a plan for the reorganization of the federal government. No sooner had that plan been submitted than it raised a storm of protest and criticism. Remarkably enough, this criticism was not confined to lay groups or to political opponents of the President. Among the most forthright foes of the committee's plan were an equally distinguished and eminent group of experts in administration on the staff of the Brookings Institution.

How is it possible for such disagreement among experts to arise concerning the application of the most fundamental principles of administration? It is submitted here that the basic difficulty lies in the nature of the accepted principles themselves. If the administrative principles are ranged side by side, it will be found that for each principle which is applicable to a given situation, there is a precisely contradictory principle which is equally applicable. To the advantages of boards are opposed the advantages of the single-headed executive; to centralization is opposed decentralization, to determinate responsibility is opposed functional supervision.

Let us consider specifically the four principles which we listed above.

Specialization

Administrative efficiency is supposed to increase with an increase in

specialization. But in this intended to mean that any increase in specialization will increase efficiency? If so, how can we account for the following recommendations made by a well-recognized firm of administrative consultants?

A generalized plan of nursing should be put into effect by which nurses will be assigned to districts and do all nursing within that district, including school examinations, visits to homes of school children and tuberculosis nursing.¹

Would not the "principle of specialization" dictate the following recommendation instead?

A functional plan of nursing should be put into effect by which different nurses will be assigned to school examinations, visits to homes of school children and tuberculosis nursing. The present method of generalized nursing by districts impedes the development of specialized skills in the three very diverse programs.

There is nothing inherently more plausible in the one recommendation than in the other. Which is to be accepted?

We see that the simplicity of our "principle of specialization" is a deceptive simplicity--a simplicity which conceals fundamental ambiguities. For "specialization" is not a condition of efficient administration; it is an inevitable characteristic of group effort, however efficient or inefficient that effort may be. Specialization merely means that different persons are doing different things--and since it is physically impossible for two persons to be doing the same thing in the same place at the same time two persons are always doing different things.

The real problem of administration, then, is not to "specialize," but to specialize in that particular manner, and along those particular lines of specialization, which will lead to administrative efficiency. But, in rephrasing thus our principle of administration, we have brought clearly into the open its fundamental ambiguity: "Administrative efficiency is increased by a specialization of the task among the group in the direction which will lead to greater efficiency."

¹Public Administration Service, Survey of the Organization and Administration of Wheeling, W. Va. (Chicago: Public Administration Service, 1938). In singling out this particular report for adverse comment, we do not imply any criticism whatever of the professional standards maintained in their work by PAS.

Both the real and the hypothetical recommendation cited above satisfy the requirement of specialization. The first recommendation gives preference to specialization by place over specialization by function, while the second recommendation reverses the order. Our principle of administration helps us not at all in choosing between the two recommendations.

Unity of Command

It was pointed out in an earlier chapter that, in a fundamental sense, the principle of unity of command, like the principle of specialization, cannot possibly be violated.¹ For it is physically impossible for a man to obey two contradictory commands--that is what we mean by contradictory commands.

Presumably, if "unity of command" is a principle of administration, it must assert something more than this physical impossibility. Perhaps it asserts this: that it is undesirable to place a member of a hierarchy in a position where the sanctions of authority will be invoked if he fails to follow the orders of both of two superiors.

For example, Gulick says:

From earliest times it has been recognized that nothing but confusion arises under multiple command. "A man cannot serve two masters" was adduced as a theological argument because it was already accepted as a principle of human relation in everyday life. In administration this is known as the principle of "unity of command." The principle may be stated as follows: A workman subject to orders from several superiors will be confused, inefficient, and irresponsible; a workman subject to orders from but one superior may be methodical, efficient, and responsible. Unity of command thus refers to those who are commanded, not to those who issue the commands.

The significance of this principle in the process of coordination and organization must not be lost sight of. In building a structure of coordination, it is often tempting to set up more than one boss for a man who is doing work which has more than one relationship. Even as great a philosopher of management as Taylor fell into this error in setting up separate foremen to deal with machinery, with materials, with speed, etc., each with the power of giving orders directly to the individual workman. The rigid adherence to the principle of

On the contrary, this report was selected because it represents the work of an agency which is generally recognized as outstanding in the field of administrative analysis. The criticisms are directed at the present status of administrative science, rather than at any particular agency currently engaged in administrative reorganization.

¹P. 101, supra.

unity of command may have its absurdities; these are, however, unimportant in comparison with the certainty of confusion, inefficiency and irresponsibility which arise from the violation of the principle.¹

Certainly the principle of unity of command cannot be criticised for any lack of clarity or any ambiguity. The operational definition we gave in Chapter V for the concept of "authority"² should provide a clear test whether, in any concrete situation, the principle is observed. The fault we shall have to find with the principle of unity of command is that it is incompatible with the principle of specialization.

In Chapter V it was shown that one of the principal functions of authority is to separate specialized aspects of the function of decision from the function of action.³ One of the principal purposes of such separation is that it permits the advantages of expertise to be secured to a greater degree in decision-making than would otherwise be possible.

However, if unity of command, in Gulick's sense, is observed, the decisions of a person at any point in the administrative hierarchy are subject to influence through only one channel of authority. If his decisions are of a kind that require expertise in more than one field of knowledge, advisory and informational services must be relied upon to supply those premises which lie in a field not recognized by the mode of specialization of function in the organization. If an accountant in a school department is subordinate to an educator, influence over the technical, accounting aspects of his work can be exercised only through processes of advice and information.

Gulick, in the statement quoted above, clearly indicates the difficulties to be faced if unity of command is not observed. Irresponsibility and confusion are almost certain to ensue. But perhaps this is not too great a price to pay for the increased expertise that can be applied to decisions. What is

¹Gulick, "Notes on the Theory of Organization," p. 9.

²P. 94, supra.

³P. 107, supra.

needed to decide the issue is a principle of administration which would enable us to weigh the relative advantages of the two courses of action. But neither the principle of unity of command, nor the principle of specialization, is helpful in adjudicating the controversy. They merely contradict each other, without indicating any procedure for resolving the contradiction.

If this were merely an academic controversy--if it were generally agreed and had been generally demonstrated that unity of command must be preserved in all cases, even with a loss in expertise--we could assert that in case of conflict between the two principles, unity of command should prevail. But the issue is far from clear, and experts can be ranged on both sides of the controversy.

On the side of unity of command we have (alleged) military practice, and the dicta of Gulick and others.¹

On the side of specialization we have Taylor's theory of functional supervision, MacMahon and Millett's idea of "dual supervision" and (perhaps) technical supervision in military organization.²

Even those who assert that unity of command must be maintained at all costs are equally insistent that lines of authority must be supplemented by coordinative activities, in order to minimize the delays and inefficiencies resulting from the maintenance of unity.³

Furthermore, as noted above, the principle of unity of command applies only to decisional influences which make use of the process of authority. The principle affords no guide whatsoever for the allocation within the organization of advisory, informational, or other influences; nor does it determine what elements of the decisional process should be subjected to the various types of in-

¹Gulick, "Notes on the Theory of Organization," p. 9; L. D. White, op. cit., p. 45.

²Frederick W. Taylor, Shop Management (New York: Harper and Bros., 1911), p. 99; MacMahon, Millett, and Ogden, op. cit., pp. 265-268, and L. Urwick, who describes British army practice in "Organization as a Technical Problem," in Gulick and Urwick, eds., op. cit., pp. 67-69.

³See Technique of Municipal Administration on "follow-up," p. 91, and Urwick, op. cit.

fluence. This is a criterion not so much of the validity as of the adequacy of the principle.

As a matter of fact, it does not go too far to say that unity of command, in Gulick's sense, never has existed in any administrative organization. If a line officer accepts the regulations of an accounting department with regard to the procedure for making requisitions, can it be said that, in this sphere, he is not subject to the authority of the accounting department? In any actual administrative situation authority is zoned, and to maintain that this zoning does not contradict the principle of unity of command would require a very different definition of authority from that set forth in Chapter V. This subjection of the line officer to the accounting department is no different, in principal, from Taylor's recommendation that in the matter of work programming a workman be subject to one foreman, in the matter of machine operation to another.

The principle of unity of command is more defensible if stated as follows: In case two authoritative commands conflict, there should be a single determinate person whom the subordinate is expected to obey; and the sanctions of authority should be applied against the subordinate only to enforce his obedience to that one person.

If the principle of unity of command is more defensible when stated in this limited form, it also solves fewer problems. In the first place, it no longer requires, except for settling conflicts of authority, a single hierarchy of authority. Consequently, it leaves unsettled the very important question of how authority should be zoned in a particular organization, and through what channels it should be exercised. Furthermore, it does not indicate how disagreements between superiors are resolved in the organizational structure.

We conclude that the principle of unity of command is applicable, if at all, only to cases of disagreement; hence, that it is not a sufficient principle to determine the structure of a thority in an administrative organization; that it affords no guide for the zoning of authority; and that it affords even

less help in determining the extent to which authority, advice, and information should be used as decisional influences.

Span of Control

The notion that the span of control should be narrow is confidently asserted as a third incontrovertible principle of administration. Let us cite, again, the recommendations of administrative analysts surveying a health department.

The present organization of the department places an administrative overload on the Health Officer by reason of the fact that all eleven employees of the department report directly to him and the further fact that some of the staff lack adequate technical training. Consequently, venereal disease clinic treatments and other details require an undue amount of the Health Officer's personal attention.

It has previously been recommended that the proposed Medical Officer be placed in charge of the venereal disease and chest clinics and all child hygiene work. It is further recommended that one of the inspectors be designated chief inspector and placed in charge of all the department's inspectional activities; and that one of the nurses be designated as head nurse. This will relieve the Health Commissioner of considerable detail and will leave him greater freedom to plan and supervise the health program as a whole, to conduct health education, and to coordinate the work of the department with that of other community agencies. If the department were thus organized, the effectiveness of all employees could be substantially increased.¹

But a set of contradictory recommendations follows with equally cogent logic from a contradictory set of "principles."

The present organization of the department leads to inefficiency and excessive red tape by reason of the fact that an unnecessary supervisory level intervenes between the Health Officer and the operative employees, and that those four of the twelve employees who are best trained technically are engaged largely in "overhead" administrative duties. Consequently, unnecessary delays occur in securing the approval of the Health Officer on matters requiring his attention, and too many matters require review and re-review.

The Medical Officer should be left in charge of the venereal disease and chest clinics and child hygiene work. It is recommended, however, that the position of chief inspector and head nurse be abolished, and that the employees now filling these positions perform regular inspectional and nursing duties. The details of work scheduling now handled by these two employees can be taken care of more economically by the Secretary to the Health Officer, and, since broader matters of policy have, in any event, always required the personal attention of the Health Officer, the abolition of these two positions will eliminate a wholly unnecessary step in review, will allow an expansion of inspectional and nursing services, and will permit at least a beginning to be made in the recommended

¹Public Administration Service, op. cit. p.

program of health education. The number of persons reporting directly to the Health Officer will be increased to nine, but since there are few matters requiring the coordination of these employees, other than the work schedules and policy questions referred to above, it will not materially increase his work load.

In a large organization with complex interrelations between members, a restricted span of control inevitably produces excessive red tape. Each contact between organization members must be carried upward until a common superior is found. If the organization is at all large, this will involve carrying all such matters upward through several levels of officials for decision, and then downward again in the form of orders and instructions. This is a cumbersome and time-consuming process.¹

The alternative is to increase the number of persons who are under the command of each officer, so that the pyramid will come more rapidly to a peak, with fewer intervening levels. But this, too, leads to difficulty. For if an officer is required to supervise too many employees, his control over them is weakened. Urwick gives the reasons for this limitation:

Students of administration have long recognized that, in practice, no human brain should attempt to supervise directly more than five, or at the most six other individuals whose work is interrelated. Mr. A. V. Graicunas of Paris has shown why this is so. An individual who is coordinating the work of others whose duties interconnect must take into account in his decisions not only the reactions of each person concerned as an individual, but also his reactions as a member of any possible grouping of persons which may arise during the course of the work.²

Granting, then, that both the increase and the decrease in span of control has some undesirable consequences, what is the optimum point? Proponents of a restricted span of control have suggested three, five, even eleven, as suitable numbers, but nowhere have they explained the reasoning which led them to the particular number they selected. The principles cast no light on this question. It is as if we attempted to determine the proper limit for the national debt by deciding what figures "sounded" too high, and what figures sounded low enough,

¹Cf., p. 194 supra.

²L. Urwick, op. cit., p. 52-54.

Organization by Purpose, Process, Clientele, Place¹

We come now to our fourth principle of organization. But from the discussion of specialization it is clear that this final principle is internally inconsistent. For purpose, process, clientele, and place are competing bases of organization, and at any given point of division the advantages of three must be sacrificed to secure the advantages of the fourth.

If the major departments of a city, for example, are organized on the basis of major purpose, then it follows that all the physicians, all the lawyers, all the engineers, all the statisticians will not be located in a single department exclusively composed of members of their profession, but will be distributed among the various city departments needing their services. The advantages of organization by process will thereby be partly lost.

Some of these advantages can be regained by organizing on the basis of process within the major departments. Thus there may be an engineering bureau within the public works department, or the board of education may have a school health service as a major division of its work. Similarly, within smaller units there may be division by area or by clientele. Thus a fire department will have separate companies located throughout the city, while a welfare department may have intake and case work agencies in various locations. Again, however, these major types of specialization cannot be simultaneously achieved. At any point in the organization it must be decided whether specialization will be accomplished by distinction of major purpose, major process, clientele, or area.

Competition Between Purpose and Clientele.— We may illustrate this point further by citing again the recommendations of a firm of administrative consultants in regard to the organization of a health department, and by following these recommendations with a contradictory set of findings which are equally consistent with the principles of organization. The first is a proposal for organization by purpose; the second a proposal for organization by clientele.

¹Cf. Schuyler Wallace, *Federal Departmentalization* (New York: Columbia University Press, 1941), pp. 91-146.

Public health administration consists of the following activities for the prevention of disease and the maintenance of healthful conditions:

1. Vital statistics--the recording of births, deaths, morbidity, and other pertinent matters.
2. Child hygiene--pre-natal, maternity, post-natal, infant, pre-school, and school health programs.
3. Communicable disease control, including the intensive tubercular and venereal disease control campaigns.
4. Inspection of milk, foods, and drugs.
5. Sanitary inspection--the inspection of sewerage facilities and the elimination of insanitary nuisances.
6. Laboratory service.
7. Health education.

With the exception of school hygiene which is a function of the County Board of Education and vital statistics which is a function of the County Registrar, all of the foregoing services are included in the program of the joint City-County Health Unit. . . .

One of the handicaps under which the department labors is the fact that the department has no control over school health, that being an activity of the County Board of Education, and there is little or no coordination between that highly important part of the community health program and the balance of the program which is conducted by the City-County Health Unit. It is recommended that the city and county open negotiations with the Board of Education for the transfer of all school health work and the appropriation therefor to the Joint Health Unit. . . ."¹

And now let us look at an alternative plan of organization:

To the modern school department is entrusted the care of children during almost the entire period that they are absent from the parental home. It has three principal responsibilities toward them:

1. To provide for their education in useful skills and knowledge, and in character.
2. To provide them with wholesome play activities outside school hours.
3. To care for their health and to assure the attainment of minimum standards of nutrition.

With the exception of child health, which is a function of the Joint City-County Health Unit, and the municipal athletics program, which is administered by the City Park Department, all of the foregoing services to children are included in the program of the County Board of Education.

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¹Public Administration Service, op. cit., p.

One of the handicaps under which the Board labors is the fact that, except for school lunches, the Board has no control over child health and nutrition, and there is little or no coordination between that highly important part of the child development program and the balance of the program which is conducted by the Board of Education. It is recommended that the city and county open negotiations for the transfer of all health work for children of school age to be the Board of Education.

We find ourselves again faced with the dilemma of choosing between alternative, equally valid, administrative principles. But this is not our only difficulty in the present case. We have taken it for granted that there is general agreement as to the meanings of our key terms—"purpose," "process," "clientele," and "place."

Ambiguity of "Purpose" and "Process".— For example, Benson cites a department of health as a "purpose" organization,¹ while Gulick states that if the program of a department of health is comprehensive (including school health, and medical care to the needy) it is a process organization.²

Along the same line we may ask: Is an education department organized on the basis of purpose or clientele? Is the Forest Service a purpose, process, clientele, or area organization?

When concrete illustrations of this sort are selected, the lines of demarkation between these categories become very hazy and unclear indeed. Let us attempt to clarify the situation by an analysis of the terms themselves.

"Organization by major purpose," says Gulick, "serves to bring together in a single large department all of those who are at work endeavoring to render a particular service."³ But what is a particular service? Is fire protection a single function, or is it merely a part of the function of public safety?—or is it a combination of functions including fire prevention and fire fighting? We must conclude that there is no such a thing as a function, or a unifunctional organization. What we consider to be a single function depends entirely on our

¹George C. S. Benson, "Internal Administrative Organization," Public Administration Review, I (Autumn 1941), 473.

²"Notes on the Theory of Organization", pp. 16, 23.

³Ibid., p. 21

language and our techniques.¹ If we have a comprehensive term which covers both of two sub-functions, we think of the two together as a single function. If such a term is lacking, the two sub-functions become functions in their own right. On the other hand, we may find that a single activity contributes to several objectives, but since they are technically inseparable, we identify the function with the activity.

Functions are activities oriented with respect to their purposes. Hence, just as we have a hierarchy of purposes, each sub-purpose contributing to some more final and comprehensive end, so functions form a hierarchical structure with a means-end relationship between the lower and higher members of the hierarchy. What we consider a function depends on where we break off the structure.

This same means-end hierarchy makes clear the relation between purpose and process. "Organization by major process, says Gulick, ". . . tends to bring together in a single department all of those who are at work making use of a given skill or technology, or are members of a given profession."² Let us consider a simple skill of this kind--typing. Typing is a skill which brings about a means-end coordination of muscular movements, but brings about this coordination at a very low level in the means-end hierarchy. The content of the typewritten letter is indifferent to the skill which produces it. The skill consists merely in the ability to hit the letter "t" quickly whenever the letter "t" is required by the content, and to hit the letter "a" whenever the letter "a" is required by the content.

There is then, no essential difference between a "purpose" and a "process," but only a distinction of degree. A "process" is an area of ration-

¹At this point we must express complete disagreement with John M. Gaus' discussion of unfunctionality in Gaus and Wolcott Public Administration and the U. S. Department of Agriculture.

²Ibid., p. 23.

ality whose purpose is at a low level in the means-end hierarchy. A "purpose" is an area of rationality whose orienting value or aim is at a high level in the means-end hierarchy. A health department is organized for a purpose if we think of it as an agency which aims at the health of its clientele. A health department is organized by a process if we think of it as an agency using medical techniques for social purposes. It is apt to be the same health department in both cases.

Let us consider now "clientele" and "place" as bases of organization. In Chapter VII it was pointed out that "purpose" has two dimensions, an intensive and an extensive. When we are measuring the degree to which a fire department attains its objectives, we are concerned with two factors: the fire loss per thousand dollars value of structures at risk, and the total value of structures at risk. It is the product of these two factors, that is, the total loss, which measures the effectiveness of the department.

The attainment of objectives, then, is compounded of adequacy and area of service. Usually, when we speak of purpose, we think only of the first element, but the second is just as legitimately an aspect of purpose. Area of service, of course, may be a specified clientele quite as well as a geographical area. In the case of an agency which works on "shifts," time will be a third dimension of purpose—to provide a given service in a given area (or to a given clientele) during a given time period.

Let us reconsider, now, the problem of specializing the work of an organization. We can no longer speak of a "purpose" organization, or a "process" organization, a "clientele" organization, or an "area" organization. The same unit might fall into any one of these four categories, depending on the nature of the larger organizational unit of which it was a part. A unit providing public health and medical services for school-age children in Multnomah County might be considered (1) an "area" organization if it were part of a unit providing the same service for the state of Oregon; (2) a "clientele" organization if it were

part of a unit providing similar services for children of all ages; (3) a "purpose" or a "process" organization (it would be impossible to say which) if it were part of an education department.

We cannot say that Bureau A is a process bureau; we can say only that Bureau A is a process bureau within Department X.¹ This latter statement would mean that Bureau A incorporated all the processes of a certain kind in Department X, without reference to any special sub-purposes, sub-areas, or sub-clienteles of Department X. Now it is conceivable that a particular unit might incorporate all processes of a certain kind, but that these processes might relate to only certain particular sub-purposes of the department purpose. In this case, which corresponds to the health unit in an education department mentioned above, the unit would be specialized by both purpose and process.

It follows also that there is no such thing as "unifunctionality." Any group of services can be considered a single function if a single term exists to describe them. Is a police department a unifunctional organization? It is usually considered so because the terms "law-infracton" and "crime" exist, which describe most of the behaviors with which a police department is ordinarily concerned. But is traffic law enforcement the same function as the enforcement of laws against burglary? We have already stated our reasons for believing that this question has no answer, one way or the other.

Lack of Criteria for Specialization.— Having decided upon a usage for the terms "purpose," "process," "clientele," and "area," our principles of administration give us no guide as to which of these four competing bases of specialization is applicable in any particular situation. The British Machinery of Government Committee had no doubts about the matter. They conceived purpose

¹It should be noted that this distinction is implicit in most of Gulick's analysis of specialization. However, since he cites as examples single departments within a city, and since he usually speaks of "grouping activities" rather than "dividing work," the relative character of these categories is not always apparent in his discussion. "Notes on the Theory of Organization." pp. 15-30.

and clientele as the two possible bases of organization and put their faith entirely in the former. Others have had equal assurance in choosing between purpose and process. The reasoning which leads to these unequivocal conclusions leaves something to be desired. The Machinery of Government Committee has this to say:

Upon what principle are the functions of Departments to be determined and allocated? There appear to be only two alternatives, which may be briefly described as distribution according to the persons or classes to be dealt with, and distribution according to the services to be performed. Under the former method each Minister who presides over a Department would be responsible to Parliament for those activities of the Government which affect the sectional interests of particular classes of persons, and there might be, for example, a Ministry for Paupers, a Ministry for Children, a Ministry for Insured Persons, or a Ministry for the Unemployed. Now the inevitable outcome of this method of organization is a tendency to Lilliputian administration. It is impossible that the specialized service which each Department has to render to the community can be of as high a standard when its work is at the same time limited to a particular class of persons and extended to every variety of provision for them, as when the Department concentrates itself on the provision of the particular service only, by whomsoever required, and looks beyond the interest of comparatively small classes.

The other method, and the one which we recommend for adoption is that of defining the field of activity in the case of each Department according to the particular service which it renders to the community as a whole. Thus a ministry of Education would be concerned predominantly with the provision of education wherever, and by whomsoever, needed. Such a Ministry would have to deal with persons insofar only as they were to be educated, and not with particular classes of persons defined on other principles. This method cannot, of course, be applied with absolute rigidity. The work of the Education Department, for example, may incidentally trench on the sphere of Health, as in the arrangements of school houses and care for the health of scholars. Such incidental overlapping is inevitable, and any difficulties to which it may give rise must in our opinion be met by systematic arrangements for the collaboration of Departments jointly interested in particular spheres of work. But notwithstanding such necessary qualifications, we think that much would be gained if the distribution of departmental duties were guided by a general principle, and we have come to the conclusion that distribution according to the nature of the service to be rendered to the community as a whole is the principle which is likely to lead to the minimum amount of confusion and overlapping.¹

The faults in this analysis are clearly obvious from our prior discussion. There is no attempt to determine how a service is to be recognized. There is a bald assumption that a child health unit in a department of child welfare could not offer services of "as high a standard" as the same unit if it

¹Report of the Machinery of Government Committee

were located in a department of health. No basis is set forth for adjudicating the competing claims of purpose and process--the two are merged in the ambiguous term "service." In the second paragraph, the authors describe as "incidental," the overlapping between departments which may occur--though it is not stated why these overlappings do not also lead to "Lilliputian" administration. Finally, the whole argument is crowned with a petitio principii in which the hypothesis is stated as its own premise.

An even more remarkable illustration of illogic can be found in discussions of purpose vs. process. They would be too ridiculous to cite if they were not commonly used in serious political and administrative debate.

For instance, where should agricultural education come: in the Ministry of Education, or of Agriculture? That depends on whether we want to see the best farming taught, though possibly by old methods, or a possibly out-of-date style of farming, taught in the most modern and compelling manner. The question answers itself.¹

Would the argument be equally convincing if it were rephrased thus:

For instance, where should agricultural education come: in the Ministry of Education, or of Agriculture? The wisdom of the former choice would depend on the personnel chosen to carry on the teaching, and their familiarity with modern types of farming. The wisdom of the latter choice would depend on the selection of personnel who not only have technical competence in agriculture, but who are skilled in the techniques of transmitting their knowledge to others. Whichever department is assigned the function must secure personnel possessing both the skill and the knowledge, and must provide for adequate communication with the other.

These contradictions and competitions have received increasing attention from students of administration during the past few years. Gulick, Wallace, and Benson have stated certain advantages and disadvantages of the several modes of specialization, and have considered the conditions under which one or the other mode might best be adopted.² All this analysis has been at a theoretical level--in the sense that data have not been produced to demonstrate the superior effectiveness claimed for the different modes. But though theoretical, the analysis

¹Sir Charles Harris, op. cit., pp. 117-133.

²Gulick, "Notes on the Theory of Organization," pp. 21-30; Schuyler Wallace, op. cit., George C. S. Benson, op. cit.

has lacked a theory. No comprehensive framework has been constructed within which the discussion can take place. Hence, the analysis has tended either to the logical one-sidedness which characterizes the examples cited above or to inconclusiveness.

The Impasse of Administrative Theory

We have now subjected to critical analysis the four "principles of administration" which were set forth at the beginning of the chapter. None of the four survived the analysis in very good shape. In each case we found that we had, instead of a univocal principle, a set of two or more mutually incompatible principles equally applicable, so far as any evidence we had available, to the administrative situation.

Moreover, the careful reader will see that the very same objections can be urged against the "principles of centralization and decentralization" which were set forth in the last part of Chapter VIII of this study. There we concluded, in effect, that "on the one hand, centralization of decision-making functions is desirable; on the other hand, there are definite advantages in decentralization."¹

Can anything be salvaged which will be useful in the construction of an administrative theory? As a matter of fact, almost everything can be salvaged. The difficulty has arisen from treating as "principles of administration" what are really only criteria for describing and diagnosing administrative situations. Let us illustrate what we mean. Closet space is certainly an important item in the design of a successful house. Yet, a house designed entirely with a view to securing a maximum of closet space--all other considerations being forgotten--would be considered, to say the least, somewhat unbalanced.

Similarly, unity of command, specialization by purpose, decentralization are all items to be considered in the design of an efficient administrative

¹pp. 191-197, supra.

organization. No single one of these items is of sufficient importance to suffice as a guiding principle for the administrative analyst. In the design of administrative organizations, as in their employment, efficiency must be the guiding criterion. Mutually incompatible advantages must be weighed against each other, just as an architect weighs the advantages of additional closet space against the advantages of a larger living room.

This position, if it is a valid one, constitutes an indictment of much current writing about administrative matters. As the examples cited in this chapter amply demonstrate, much administrative analysis proceeds by selecting a single criterion, and applying it to an administrative situation to reach a recommendation. The fact that equally valid, but contradictory, criteria exist which could be applied with equal reason, but with a different result, is conveniently ignored. A valid approach to the study of administration requires that all the relevant diagnostic criteria be identified; that each administrative situation be analysed in terms of the entire set of criteria; and that research be instituted to determine how weights can be assigned to the several criteria when they are, as they usually will be, mutually incompatible.

An Approach to Administrative Theory .

Let us take up this program step by step, and see how it can be attacked. First, what is involved in the description of administrative situations for purposes of analysis? Second, how can weights be assigned to the various criteria to give them their proper place in the total picture?

The Description of Administrative Situations

Before a science can develop principles, it must possess concepts. Before a law of gravitation could be formulated, it was necessary to have the notions of "acceleration" and "weight." The first task of administrative theory is to develop a set of concepts which will permit the description, in terms relevant to the theory, of administrative situations.

Concepts, to be scientifically useful, must be operational. That is, their meanings must correspond to empirically observable facts or situations. Throughout this study, we have attempted to give operational definitions for concepts--to define them in terms of the administrative behaviors which would denote their absence or presence.

What is a scientifically relevant description of an organization? It is a description which, so far as possible designates for each person in the organization exactly what decisions that person makes, and the precise environment which surrounds each of these decisions.

Current descriptions of administrative organizations fall far short of this standard. For the most part, they confine themselves to a description of the allocation of functions, and the formal structure of authority. They give little attention to the other aspects of allocation and influence which have been discussed in this study.¹

What does it mean, for example, to say: "The Department is made up of three Bureaus. The first has the function of -----, the second the function of -----, and the third the function of -----? How much can we tell, from such a description, about the workability of the organizational arrangement? We must conclude that we can tell very little. For, from the description, we can obtain no idea of the degree to which decisions are centralized at the bureau level or at the departmental level. We have no notion as to the extent to which the (presumably unlimited) authority of the department over the bureau is actually exercised, nor by what mechanisms. We are not told the extent to which systems of communication assist the coordination of the two bureaus, nor, for that matter, to what extent coordination is required by the nature of their work. We are not informed of the kind of training the members of the bureaus have undergone, nor

¹The monograph by MacMahon, Millett, and Ogden, already extensively cited, perhaps approaches nearer than any other published administrative study to the sophistication required in administrative description. See, for example, the discussion on pp. 233-236 of headquarters-field relationships.

the extent to which this training permits decentralization at the bureau level. In sum, the ordinary description of administrative organizations in terms almost exclusively of functions and lines of authority is completely inadequate for purposes of administrative analysis.

Let us consider the term "centralization." How is it determined whether the operations of a particular organization are "centralized" or "decentralized?" Does the fact that field offices exist prove anything about decentralization? Might not the same decentralization take place in the bureaus of a centrally located office? A realistic analysis of centralization, again, must include a study of the allocation of decisions in the organization, the types of decisions which are made at the lower levels of the organization, and the methods of influence which are employed by the higher levels to affect the decisions at the lower levels. Such an analysis would reveal a much more complex picture of the decision-making process than any study of the geographical location of the organizational units at the different levels.

Administrative description is suffering from a superficiality, an over-simplification, a lack of realism. It has confined itself too closely to the mechanism of authority, and has failed to bring within its orbit the other, equally important, modes of influence. It has refused to undertake the tiresome task of studying the actual allocation of decision-making functions. It has been satisfied to speak of "authority," "centralization," "span of control," "function," all defined in terms of symptoms instead of in terms of their essential operations. Until administrative description reaches a higher level of sophistication, there is little reason to hope that rapid progress will be made toward the identification and verification of valid administrative principles.

Does this mean that a purely formal description of an administrative organization is impossible--that a relevant description must include an account of the content of the organization's decisions? This is a question which it is hardly possible to answer in the present state of our knowledge. One thing seems

certain: that content plays a greater role in the application of administrative principles than is allowed for in the formal administrative theory of the present time.

This is a fact which is beginning to be recognized in the literature of administration. If we study the chain of publications extending from Monney and Reilley, through Gulick, the President's Committee controversy, to Schuyler Wallace and Benson, we see a steady shift of emphasis from the "principles of administration" themselves to a study of the conditions under which competing principles are respectively applicable. We no longer say that organization should be by purpose, but rather that under such and such conditions purpose organization is desirable, but under such and such other conditions, process organization is desirable. It is the thesis of this study that an understanding of these underlying conditions for the applicability of administrative principles is to be obtained from an analysis of the administrative process in terms of decisions.

Criteria for the Diagnosis of Administrative Situations

In order to understand where we should look for the criteria of diagnosis, it is necessary to review and extend certain portions of the earlier discussion of rationality. In doing so, we shall be concerned primarily with the limits of rationality--those aspects of behavior which border on the rational but are themselves nonrational.

The Area of Rationality:--Rationality, it was found in Chapter IV, is the characteristic of human behavior which makes it adaptable to the objectives or values at which it is aimed, and to the behavior possibilities which it has as alternatives. Rationality, then, does not determine behavior. Instead, rational behavior is determined by the irrational and nonrational elements which bound it. The area of rationality is the area of adaptability to these non-rational elements.

Bounding the area of rationality "above" are the aims or values which are taken as "givens" for the particular choice problem. "Below" are the habit-formed skills and abilities which limit the behavior possibilities that are available for action. Bounding rationality "laterally" is the area of knowledge, correct or incorrect, which influences decision.

It has several times been emphasized that within the area of rationality, the psychology of a person making a decision has no relation to the decision. Two persons, given the same values, the same alternatives, the same knowledge, can rationally reach only a single decision. Administrative science must be interested, first, in the criteria which distinguish a rational from an irrational decision when these elements are given. Chapter VI is an attempt to present these criteria.

Beyond these criteria of rationality, the principles of administration can have nothing to do with the area of rationality. Instead, they must be concerned entirely with the limits of rationality, and the manner in which formal organization affects these limits for the person making a decision. The theory must determine--as suggested in Chapter VII--how institutionalized decision can be made to conform to social values developed within a much broader sphere of values. The theory must be a critique of the social value of the institutional structure itself.

Suppose we saw a man sitting at a board marked somewhat like a chess-board, and with men somewhat resembling chessmen. The player is trying to be a rational man. He asks us to help him determine, in all rationality, what move he should make. Without further information, we would be unable to help him. We would be unable to state any principles for him to follow (beyond the very general principles stated in Chapter VI, which are nothing more than a schema for rationality) unless he told us, for example, what the aim of the game was. Suppose he told us that the aim, as in chess, was to capture the enemy's king. We could

reply, "Ah, that's easy. Here, just remove him from the board."

"But that isn't legal," he would protest, "these are the only moves which are legally permissible to me." We would now restrict ourselves to the moves permitted by the rules of the game, and attempt to work out some principles for defeating his opponent.

At this point it would be called to our attention that there is a time-limit on moves; that we are not permitted an indefinite time to explore the consequences of each move. This new limitation would bring about a considerable modification in the principles we had deduced for the game, because lack of time might force us to relinquish certain types of attack which required more time to analyze their soundness than would be permitted by the rules.¹

In this game, then, the principles of rational play would be deduced not from a consideration of the area of rationality, but from a consideration of the limits imposed upon rationality by values, possibilities, and knowledge.

To return to administrative theory: what are the boundaries of rationality from which the principles of the theory are to be derived? They are the same as those involved in our theory of chess: values, possibilities, and knowledge.

An important fact to keep in mind regarding the limits of rationality in administration is that they are variable limits. Most important of all, consciousness of the limits may in itself alter them. Suppose we were to discover, for instance, that institutional identifications frequently determined the values which enter into administrative decisions; and suppose we were to decide that this had a harmful effect upon the quality of decisions. Then a generation of administrators, trained to be conscious of their identifications, and trained to

¹Anyone familiar with the game of chess will recognize that this point is not hypothetical. There is a distinct difference between "tournament chess" where a time limit is imposed, and "match chess" where there is no time limit.

discount them, could obtain their values for decision in some entirely different manner.

The writer has had occasion in another context to point to this method for re-orienting the behavior of a "rational person" by altering his framework of values. The problem dealt with in that situation was to control and modify the motivation of a group of social workers who were participating in an administrative experiment:

"To the worker, the experiment might seem inconsistent with the objectives he was trying to attain in his daily job. The cooperation of such a worker could be obtained only by interpreting the study in terms of his more fundamental values and by showing him that these broader values would be benefitted by a temporary sacrifice of some of his immediate objectives and attitudes. In this way his attention might be detached from the narrower frame of reference--the conditioned reflexes, so to speak--forced on him by his regular daily schedule of work."¹

The procedure here is no more mysterious than that whereby a poker player, who has been losing heavily, reviews his own play in his mind and discovers that he had been playing according to a "pattern" of bluffing which his opponents have analysed and can now anticipate. The sub-conscious pattern, which has acted as a limit upon the player's adaptability and skill, can, once it is recognized, be modified by a broader rationality.

This brings us to the second kind of limitation to reationality: the limitation upon available possibilities. Suppose a person trying to sight-read a sheet of music is unable to keep up the marked tempo. There is no lack of rationality in his behavior. The fact is that his skills are not sufficiently developed to make the playing of the music at the proper tempo an available possibility. However, if he were to give attention to the skills themselves, and by analysis and practice to develop them, the impossible might readily become possible. Skills are examples of behavior patterns which in the short run

¹Herbert A. Simon and William R. Divine, "Controlling Human Factors in an Administrative Experiment," Public Administration Review, 1:487 (Autumn 1941).

limit the sphere of adaptability or rationality, but in the long run may open up entirely new behavior possibilities.

Finally, the limits of knowledge are equally variable. In this direction principles of administration must be derived from the psychological principles of learning. Here too, by anticipating the items of knowledge which will be needed in decision, and by obtaining the knowledge prior to decision, the area of rationality can be indefinitely extended. Thus, the surgeon not only trains his hands to operate skillfully, but he also fills his mind with the knowledge which will be relevant to his later decisions.

Individual Rationality and Group Rationality:--It was pointed out in Chapter VII that the rationality of a decision can be evaluated from two viewpoints--from the viewpoint of the individual who makes it, and from the viewpoint of the group effort in which that individual is participating.

A decision is rational from the standpoint of the individual if it is consistent with the values, the possibilities, the information which he weighed in reaching it.

A decision is rational from the standpoint of the group if it is consistent with the values governing the group, and the information which the group possesses relevant to the decision.

Let us illustrate at the sub-human level. If a rat has learned from experience that the door in a maze marked with a red circle leads to food, if he is hungry, and if he possesses the simple skill of pushing open a door with his nose, then he is rational if he pushes open the door in the maze which is so marked. If the experimenter has meanwhile changed the rules of his game, the rat will not find the food behind the door, but he has nevertheless acted rationally.

Now consider the same situation from the standpoint of the experimenter who is trying to manipulate the behavior of the rat. Suppose the experi-

menter wishes the rat to reach the food. Then, the experimenter is behaving rationally if he places the food behind a door which is marked with the clue that the rat has learned to associate with food.

If the rat and the man both had the same aim--to lead the rat to food--and both had the same knowledge, then there would be no difference between their viewpoints. Rationality would mean the same thing for both. As a matter of fact, however, the man knows where the food is, while the rat only knows that he can expect the food when he meets a particular sign. If the food is not placed behind the sign, the rat is fooled but rational, while the man is aware of the situation, but irrational (assuming their aims to be as described above). If the experimenter is trying to assist the rat to get the food, he must provide the rat with an environment for decision which, from the experimenter's broader knowledge of the facts, is a correct environment. He must arrange the situation so that the rat's rationality will lead him to the same door that the man would choose for him if he could communicate with him.

What has this to do with a theory of administration? Let us, with apologies to the individuals involved, change the rat to a private soldier and the experimenter to his officer. If the soldier is ordered to capture a particular hill, rationality demands of him that he combine this objective, or value, with the skills he possesses for approaching hostile positions, and with the information his senses provide him regarding his situation.

The officer, on the other hand, is being rational if the objective he has assigned the soldier will contribute to the broader objective of his unit (which usually implies that the soldier's objective must have a reasonable possibility of successful attainment), and if he has provided the soldier with all available information which might assist him in his task. To say that the officer is rational means that the soldier's behavior continues to be rational when evaluated from the broader viewpoint which the officer's position affords him.

This is the basic task of administration--to provide each "operative"

employee with an environment of decision of such a kind that behavior which is rational from the standpoint of this environment is also rational from the standpoint of the group values and the group situation.

One mechanism which is used to accomplish this task is the mechanism of authority. Authority permits the decision-making process to be specialized, and each element in the decision to be allocated to that point in the organization where the decision is being made.

Authority provides only one means for influencing the decisions of the "operative." Equally important are the other mechanisms which may be used to modify the environment of decision at that point in the organization where the decision is being made.

These two principal types of mechanism have already been explained in Chapters V and VIII respectively. By way of review, let us cite one more illustration. In an army, the objective of a particular unit is always determined by the commander next above it. This is because a rational determination of the objective depends on a simultaneous determination of the objectives of the other units coordinate with it. The unit commander is not in a position to achieve this coordination, hence, the decision must be made at a higher level, and the mechanism of authority used to transmit it downward.

On the other hand, the unit commander is usually expected to decide how he will accomplish the task set him. His discretion, in making this decision, is affected by the training he has received, the information of his situation which is transmitted to him, and his awareness of the sanctions which can be applied by his superior. These influences, together with the objective which has been determined for him, provide the environment of his decision.

Why would it not be desirable to allocate to the superior officer the decision on method as well as the determination of objectives? There are two reasons. First, his environment is less satisfactory for making the former decision. To make the correct decision on method involves an intimate knowledge of the situation of the unit in relation to the enemy. The superior officer will not ordinarily have this information in sufficient detail.

Second, the decision, when made, would have to be communicated downward. The techniques of communication are such that only simple, clear directions can ordinarily be successfully communicated. Limits of time and power of ex-

pression lead to a deterioration of the communicated decision.

In this simple illustration are contained the basic elements from which a theory of organization can perhaps be constructed. (1) A decision made above the operative level must be communicated. The technology of communication (in the very broadest sense) is the limiting factor here. (2) Wherever a decision is made, its quality will depend on the environment which bounds the area of rationality of the person making the decision. The limiting factors here are the very factors which limit the area of rationality.

The Variables of Administrative Theory:--If it is impossible, at this stage in the development of the theory, to state any generally valid principles of administration, it may be possible, at least, to enumerate some of the variables which will determine the application of administrative principles to concrete situations. As we have already noted, these variables are to be found at the margins of rationality--at the point where nonrational elements begin to restrict decision, forcing it to conform to their outline. Let us consider, in turn, the lower, the upper, and the lateral boundaries of the area of rationality.

Below, rationality is bounded by the skills, habits, and reflexes which are no longer in the realm of the conscious. In this area, principles of administration will be derived from the physiology of the human body, the laws of skill-training, and of habit. This is the field which has been most successfully cultivated by students of private management, and from it have developed the time and motion study and the therblig.

Above, rationality is bounded by value and purpose. In this area, institutional identifications are a factor of considerable importance, for they determine, in large measure, the extent to which indirect effects of administrative action are weighed, and the extent to which "frictional" losses in social value occur. Any change in the institutional identifications of the members of an organization has profound implications for the operation of the organization. It is this which explains the pronounced effects which result from waves of

patriotism or "national identification" which sweep over a nation in times of crisis. This patriotism, replacing many local, institutional, and personal identifications, can bring about a considerable decrease in "frictional" losses. This is a subject which has already been discussed at length in Chapter VII.

Laterally, rationality is bounded by limitations of knowledge. Knowledge reaches decision through two principal channels: communication and training. Hence, insofar as administrative theory is concerned with this area, it is concerned with mechanisms of communication and the psychology of training.

Since the administrative theory is concerned with control of the non-rational, it follows that, the larger the area of rationality, the less important is the administrative organization. For example, the function of plan preparation, or design, if it results in a written plan that can be communicated interpersonally without difficulty, can be located almost anywhere in the organization without affecting results. All that is needed is a procedure whereby the plan can be given authoritative status, and that can be provided in a number of ways. A discussion, then, of the proper location for a planning or designing unit is apt to be highly inconclusive, and is apt to hinge on the personalities in the organization and their relative enthusiasm, or lack of it, toward the planning function.¹

On the other hand, when factors of communication or identification are crucial to the making of a decision, the location of the decision in the organization is of great importance. The method of allocating decisions in the army, for instance, automatically provides (at least in the period prior to the actual battle) that each decision will be made where the knowledge is available for

¹See, for instance, Robert A. Walker, The Planning Function in Urban Government (Chicago: University of Chicago Press, 1941), pp. 166-175. Walker makes out a strong case for attaching the planning agency to the chief executive. But he rests his entire case on the rather slender reed that "as long as the planning agency is outside the governmental structure, however, planning will tend to encounter resistance from public officials as an invasion of their responsibility and jurisdiction." The verb "will" seems entirely too strong for the facts of the case.

coordinating it with other decisions. Similarly, we may note that final decisions regarding budget allowances are always entrusted to administrators who are not identified with the particular items to be allowed, but must weigh these items against alternative items.

Assigning Weights to the Criteria

So much for the terms which enable us to describe, and the criteria which enable us to diagnose administrative situations. These criteria, as we say in the first portion of this chapter, commonly occur in mutually contradictory pairs. Thus, centralization is opposed to decentralization; the advantages of specialization, to the costs of communication; unity of command, to the specialization of decision-making; limitation of span of control, to limitation of the number of levels in the hierarchy; specialization by purpose, to specialization by process, area, or clientels.

Because the criteria occur in this manner, it is not sufficient for administrative theory merely to identify them. Merely to know that a specified change in organization will reduce the span of control is not enough to justify the change. We must balance this gain against the resulting loss of contact between the higher and lower ranks of the hierarchy.

Hence, administrative theory must also be concerned with the weights that are to be applied to these criteria--to the problems of their relative importance in any concrete situation. This is not a question which can be solved in a vacuum. Arm-chair philosophizing about administration--of which the present study is an example--has gone about as far as it can profitably go in this particular direction. What is needed now is empirical research and experimentation to determine the relative desirability of alternative administrative arrangements.

The methodological framework for this research is already at hand in the theory of Chapter VI. If administrative organizations be subjected to study whose activities are susceptible to objective evaluation, then the actual results

of modifying administrative arrangements in these organizations can be observed and analyzed.

There are two indispensable conditions to successful research along these lines. First, it is necessary that the objectives of the administrative organization under study be defined in concrete terms so that results, expressed in terms of these objectives, can be accurately measured. Second, it is necessary that sufficient experimental control be exercised to make possible the isolation of the particular effect under study from other disturbing factors which might be operating on the organization at the same time.

These two conditions have seldom been even partially fulfilled in so-called "administrative experiments." The mere fact that a legislature passes a law creating an administrative agency, that the agency operates for five years, that the agency is finally abolished, and that an historical study is then made of that agency's operations is not sufficient to make of that agency's history an "administrative experiment." Modern American legislation is full of such "experiments" which afford orators in neighboring states with abundant ammunition when similar issues arise in their bailiwicks, but which provide the scientific investigator with little or nothing in the way of objective evidence, one way or the other.

In the literature of administration, there are only a handful of research studies which satisfy these fundamental conditions of methodology--and these are, for the most part, on the periphery of the problem of decision-making. There are, first of all, the studies of the Taylor group which sought to determine the technological conditions of efficiency. Perhaps none of these is a better example of the painstaking methods of science than Taylor's own studies of the cutting of metals.¹

Studies dealing with the human and social aspects of administration

¹F.W. Taylor, On the Art of Cutting Metals (New York: The American Society of Mechanical Engineers, 1907).

are even rarer than the technological studies. Among the more important are the whole series of studies on fatigue, starting in Great Britain during the First World War, and culminating in the Westinghouse experiments.¹

In the field of public administration, the single example that occurs to the writer is the series of experiments which have been conducted in the public welfare field to determine the proper case loads for social workers.²

Because, apart from these scattered examples, studies of administrative agencies have been carried out without benefit of control, or objective measurements of results, they have had to depend, for their recommendations and conclusions, upon a priori reasoning proceeding from "principles of administration." We have already, in this chapter, given our reasons for believing that such reasoning cannot in any way be conclusive.

The Role of the Administrator

It has been suggested earlier in this study that the decisions which might be uniquely designated as "administrative" decisions are those which are concerned with the decision-making process itself. That is, such decisions do not determine the content of the organization's work, but rather how the decision-making function is to be allocated and influenced in that particular organization.

But to say that in any organization certain "administrative" decisions have to be made, is not to say that the person who happens to be designated an

¹Great Britain, Ministry of Munitions, Health of Munitions Workers Committee, Final Report (London: H.M. Stationery Office, 1918); F.J. Roethlisberger and William J. Dickson, Management and the Worker (Cambridge: Harvard Press, 1939).

²Ellery F. Reed, An Experiment in Reducing the Cost of Relief (Chicago: American Public Welfare Administration, 1937); Rebecca Staman, "What is the Most Economical Case Load in Public Relief Administration?" Social Work Technique, IV (May-June, 1938), pp. 117-121; Chicago Relief Administration, Adequate Staff Brings Economy (Chicago: American Public Welfare Ass'n. 1939); Constance Hastings and Sava S. Schwartz, Size of Visitor's Caseload as a Factor in Efficient Administration of Public Assistance (Philadelphia: Philadelphia County Board of Assistance, 1939); Simon, et al., op. cit.

"administrator" in that organization makes, or should make, only administrative decisions. Whether or not it is desirable that there should be functionaries whose tasks are confined within these limits, it is certainly not an accurate description of administrative organizations as they exist today to define the administrator's task in those terms.

In almost all organizations he has a grave responsibility not only to establish and maintain the organizational structure, but also to make some of the broader and more important decisions regarding the content of the organization's work. To mention only one of these decisions, the higher administrator ordinarily has a considerable responsibility for budget decisions--that is, decisions as to the directions in which the organization's efforts should be expended. Further, to him falls the responsibility, within the limits of his discretion, to formulate organizational objectives--that is, the values which will guide decisions at all lower levels of the organization.

The statement, then, that as we proceed upward in the hierarchy "administrative" duties come to occupy more and more of the administrator's time, and "technical" duties less, must be interpreted with considerable caution. It is not true if the term "administrative duties" is taken to refer only to the organization-determining functions. It is true, if the broader decisional functions which fall to the administrator are considered "administrative duties."

What is the difference between these latter functions and the "technical" functions at the lower levels of the hierarchy. Simply that the content decisions of the higher administrator deal with more ultimate purposes and more general processes than the decisions of the lower administrator. We might say that the lower administrator's purposes are the upper administrator's processes.

The stenographer's rationality is exercised in translating a piece of copy, whatever its content, into a typewritten manuscript. Her employer's rationality is exercised in determining the content of the copy, taking for granted the very element with which the stenographer is concerned--its translation into typewritten form.

If the Chief Engineer's decisions are less concerned with engineering technology than those of his designing engineers, with what are they concerned? If the Health Officer's decisions do not involve the minutiae of medical knowledge, what do they involve? They involve the application of the criterion of efficiency to the broader purposes of the organization. Since the broader purposes of governmental organizations are predominately social, and the larger problems of means are principally economic and fiscal this means that the decisions of the higher administrators involve social science principles and economic calculations.

One further point should be noted which applies even to those decisions which deal with the organization structure itself. If, as has been suggested, administrative theory cannot be entirely freed from concern with the content of the organization's work, it follows that sound organizational decisions require also a knowledge of that content.

We see, then, that the work of the administrator, as organizations are now constituted, involves (1) decisions about the organization structure, and (2) the broader decisions as to the content of the organization's work. Decisions of neither type can rest entirely, or even primarily, upon a knowledge of or facility with administrative theory. The former must be firmly grounded in the organization's technology. The latter must be grounded in the organization's technology and requires in addition (a) a thorough appreciation of the theory of efficiency, and (b) a knowledge of those aspects of the social sciences which are relevant to the broader purposes of the organization.

If this analysis is correct, it has direct implications for the training of an "administrative class," that is, for the training of persons who are able in abstract administration. In the first place, it casts grave doubts on the possibility of developing administrative ability apart from subject-matter competence except at the very highest levels of the hierarchy. In the second place, it indicates that the proper training of "administrators" lies not in the

narrow field of administrative theory, but in the broader field of the social sciences generally.

Conclusion

Our study has not led us to any definitive administrative principles. It has, however, provided us with a framework for the analysis and description of administrative situations, and with a set of factors which must be weighed in arriving at any valid proposal for administrative organization. It has shown us, further, that currently accepted "principles" of administration suffer from internal ambiguity and mutual contradiction.

What are the next steps that research must take? First, it must develop adequate case studies of existing administrative situations. It will do well to initiate these on a small scale--dealing in minute detail with organizational units of moderate size. Only in this way can superficiality be avoided.

Second, techniques must be developed and improved for measuring the success of a particular administrative arrangement. Specifically, the assumption so often made in administrative studies that an arrangement is effective because it exists, is a circular argument of the worst sort. Students of administration are possessed of no occult vision which permits them, by simply observing an administrative organization, to determine whether it is "working" or not. The only procedure of evaluation that can possibly be valid is the comparison of alternative administrative schemes in terms of their objective results.

Finally, the valuable investigations already initiated of the "conditions" under which different administrative principles are validly applicable might well be extended with the use of the "decisional" framework described in this study.

APPENDIX A

WHAT IS AN ADMINISTRATIVE SCIENCE?

The distinction made in Chapter II between the ethical and the factual helps to explain the nature of administrative science. Scientific propositions, it was said in that chapter, are statements about the observable world and the way in which it operates. Ethical propositions, on the other hand, are expressions of preferences. Do principles of administration qualify, under this definition, as scientific propositions, or do they contain an ethical element?

Theoretical and Practical Sciences

Sciences may be of two kinds: theoretical and practical. Thus, scientific propositions may be considered practical if they are stated in some such form as: "In order to produce such and such a state of affairs, such and such must be done." But for any such sentence, an exactly equivalent theoretical proposition with the same conditions of verification can be stated in a purely descriptive form: "Such and such a state of affairs is invariably accompanied by such and such conditions." Since the two propositions have the same factual meaning, their difference must lie in the ethical realm. More precisely, the difference lies in the fact that the first sentence possesses an imperative quality which the second lacks. The first sentence can be said to be "true" or "false" only if this imperative aspect is ignored.

This situation is strictly analogous to that which we found to hold with respect to decisions. In so far as decisions can be said to be "correct," they can be translated into factual propositions. Their ethical element must be eliminated before the terms "true" and "false" can be applied to them. Similarly, the propositions of a practical science must be put in hypothetical form in order to eliminate the ethical element.

When factual propositions are selected primarily for their usefulness

in deriving one imperative from another, they may be considered practical. In other cases, they are theoretical. It is clear that they differ from each other only with respect to the motives of the persons who employ them.

From the foregoing discussion, two definite conclusions may be drawn:

First, science is interested in sentences only with regard to their verification. Hence, science is concerned with the factual aspects of meaning, but not with the ethical.

Second, practical sciences differ from theoretical sciences, as those terms have been used here, only in their ethical aspects.

Propositions of an Administrative Science¹

Propositions about administrative processes will be scientific in so far as truth and falsehood, in the factual sense can be predicated of them. Conversely, if truth or falsehood can be predicated of a proposition concerning administrative processes, then that proposition is scientific.

It is sometimes thought that, since the words "good" and "bad" often occur in sentences written by students of administration, the science of administration contains an essential ethical element. If this were true, a science of administration would be impossible, for it is impossible to choose, on an empirical basis, between ethical alternatives. Fortunately, it is not true. The terms "good" and "bad" when they occur in a study on administration are seldom employed in a purely ethical sense. Procedures are termed "good" when they are conducive to the attainment of specified objectives, "bad" when they are not conducive to such attainment. That they are, or are not, so conducive is purely a matter of fact, and it is this factual element which makes up the real substance of an administrative science. To illustrate: In the realm of economics, the

¹Luther Gulick has set forth substantially this same view with respect to the nature of administrative science. See "Science, Values, and Public Administration," in Gulick and Urwick, eds., op. cit., pp. 191-193.

proposition "Alternative A is good" may be translated into two propositions, one of them ethical, the other factual:

"Alternative A will lead to maximum profit."

"To maximize profit is good,"

The first of these two sentences has no ethical content, and is a sentence of the practical science of business. The second sentence is an ethical imperative, and has no place in any science.

Science cannot tell whether we ought to maximize profit. It can merely tell us under what conditions this maximization will occur, and what the consequences of maximization will be.

If this analysis be correct, then there are no logical differences which distinguish the sentences of one science from those of another. Whatever differences exist must arise from the subject matter of the several sciences, rather than from the intrinsic nature of their sentences.

The Natural and the Social Sciences

The discussion thus far leads to the solution of one issue which has been debated by methodologists of the social sciences. It has often been argued that the social sciences involve ethical norms, and therefore lack the objectivity of the natural sciences. A recent statement of this view may be found in Robert S. Lynd's Knowledge for What?¹ Since it is clear that truth or falsehood cannot be predicated of ought-sentences, this distinction cannot be valid. If there are fundamental differences between the natural and the social sciences, they must lie in some other direction.

¹Robert S. Lynd, Knowledge for What? The Place of Social Science in American Culture (Princeton: Princeton University Press, 1939). A somewhat more sophisticated variant of this viewpoint runs through the writings of Frank H. Knight. See especially his review of "Bertrand Russell on Power," International Journal of Ethics, XLIX (April, 1939), 253-285, and the "Preface to the Re-Issue" of his Risk, Uncertainty and Profit, pp. xv-xvi.

Another group of distinctions, although valid, must be dismissed as superficial. First, social phenomena are probably far more complex than the data with which the natural sciences are concerned. Consequently the task of discovering regularities underlying social phenomena might be expected to be more difficult. Second, experiments cannot be carried on in the social sciences without regard to the consequences for the objects of experimentation. The doctor in Arrowsmith had an unequalled opportunity to experiment with vaccine under controlled conditions, but his human values got the best of him, and he found himself unable to deprive his control subjects of the benefits of treatment. The validity of both of these distinctions may be granted, but they can hardly be considered fundamental. Complexity is a matter of degree, and it may well be questioned whether some of the more involved phenomena which have been dealt with in the physical sciences are not as complex as some of the simpler social phenomena. Experimentation, too, can hardly be the real distinction, for astronomy, the first developed of the natural sciences, has never had the advantages of the laboratory in discovering its laws.

Expectations as Factors in Social Behavior

If there is a fundamental difference between the social and the natural sciences, it derives from the fact that the social sciences deal with conscious human beings whose behavior is influenced by knowledge, memory, and expectation. Consequently, knowledge by the human beings themselves of the forces which mould their behavior may (but need not) alter that behavior. It is apparent today, for example, that public awareness of the uses to which propaganda was put in an earlier world war is affecting to some degree public reaction to propaganda in this war.

This does not mean that it is impossible to state valid laws of human behavior. It simply means that one of the variables to be included in the statement of social laws is the state of knowledge and experience of the persons

whose behavior the law purports to describe.¹ The more deliberate the behavior which forms the subject matter of a science, the more important the role played by knowledge and experience.

The characteristic of purposive behavior, that is, its dependence on belief or expectation, has further consequences in the social field when group behavior is involved. The decision of each member of the group may depend on his expectation of how the other members of the group will behave, that is, A's decision may depend on his expectation of B's behavior, while B's decision may depend on his expectation of A's behavior. In this way a certain indeterminacy may arise, as indeed it does in such social institutions as the stock market, where successful behavior involves out-guessing other participants in the market with regard to these expectations.²

It is a fundamental characteristic of social institutions that their stability and even their existence depend on expectations of this sort. Insofar as behavior of another person can be accurately predicted, it forms a portion of the objective environment, identical in its nature with the non-human portions of that environment.

¹A careful search for discussions of this point in the literature of social science methodology revealed a brief but clear statement of this proposition in a paper by W. Edwin Van de Walle, "A Fundamental Difference between the Natural and Social Sciences," Journal of Philosophy, XXIX (September 29, 1932), 542-550. The distinction is closely allied to the differentiation between the artificial and the natural which was introduced into the field of sociology by Lester F. Ward, Dynamic Sociology (New York: D. Appleton & Co., 1926, 2nd Ed. 2 Vols.). Cf. Joseph Mayer, "Scientific Method and Social Science," Philosophy of Science, I (July, 1934), 338-350. But both in the writings of Ward, and in Frank Knight's discussion of the same issue (Risk, Uncertainty and Profit, pp. xvxxxii) the view is apparently taken that the "artificiality" of society implies that a science of sociology inevitably involves ethical assumptions. In the present study, the contrary view is taken.

²Frank Knight's fundamental thesis is that this "out-guessing" is the explanatory mechanism for profit in a competitive economic system (Risk, Uncertainty and Profit, pp. 35-37, 333-335). See also analyses of the economic problem of duopoly, where the phenomenon of out-guessing shows up to an extreme degree, in R.G.D. Allen, Mathematical Analysis for Economists (London: Macmillan and Co., 1938), pp. 200-204; 345-347, and references cited therein.

Applying these considerations to the field of administration, we see first of all that the administrative organization implies purposive behavior on the part of its participants. Hence the expectations of these participants will be a factor in determining their behavior. Further, part of their expectations will involve expectations as to the behavior of other members of the administrative organization.

In this sense administration is not unlike play-acting. The task of the good actor is to know and play his role, although different roles may differ greatly in content. The effectiveness of the performance will depend on the effectiveness of the play and the effectiveness with which it is played. The effectiveness of the administrative process will vary with the effectiveness of the organization and the effectiveness with which its members play their parts.

The Nature of Administrative Principles

We may summarize the conclusions we have reached with respect to a science of administration. In the first place, an administrative science, like any science, is concerned purely with factual statements. There is no place for ethical assertions in the body of a science. Whenever ethical statements do occur, they can be separated into two parts, one factual and one ethical, and only the former has any relevance to science.

Using the terms theoretical and practical as they have been defined in this section, an administrative science may taken either of these two modes. On the one hand, propositions about administration may be descriptions--either with reference to a particular organization or to organizations in general--of the way in which human beings behave in organized groups. This might be called a sociology of administration.

On the other hand, a practical science of administration consists of propositions as to how men would behave if they wished their activity to result

in the greatest attainment of administrative objectives with scarce means.¹

These two alternative forms of administrative science are exactly analogous to the two forms which economic science takes. First, economic theory and institutional economics are generalized descriptions of the behavior of men in the market. Second, business theory states those conditions of business behavior which will result in the maximization of profit.

This treatise has included discussions of both the sociology of administration and the practical science of administration. Chapters IV and VII have been concerned primarily with the former, and Chapters III, V, VI, VIII, and IX primarily with the latter.

¹For a fuller discussion of the distinction between a sociology and a practical science of administration, see Richard A. Musgrave, "The Planning Approach in Public Economy: A Reply," Quarterly Journal of Economics, February, 1941, p. 324, and Herbert A. Simon, "The Planning Approach in Public Economy: Further Comment," ibid., p. 329. For an example of the misconceptions which result from a failure to make this distinction, see the recommendations for research in administration set forth in V.O. Key, "The Lack of a Budgetary Theory," American Political Science Review, XXXIV (December 1940), pp. 1143-1144.

APPENDIX B

MATHEMATICAL FORMULATION OF THE THEORY OF EFFICIENCY

Precision and clarity may be added to the statement of the general efficiency theory by reformulating it in mathematical symbols. As already noted, this formulation turns out to be practically identical with the theory of maximization of utility in modern economics.¹ This is not surprising since the problem in the two cases is the same--that of maximizing an index of results under specified conditions, and with limited resources.

Let $\underline{i}$ be an administrative objective, and $\underline{I}$ a measure of accomplishment of the objective. Let $\underline{a}$ and $\underline{b}$ be two activities, both directed toward $\underline{i}$, and $\underline{P}_a$ and $\underline{P}_b$ measures of the performance of $\underline{a}$ and $\underline{b}$ respectively. We may introduce further, $\alpha_1, \alpha_2, \alpha_3, \dots$ as parameters measuring extra-administrative factors affecting the application of $\underline{a}$ and $\underline{b}$ to $\underline{i}$, and $\beta_1, \beta_2, \beta_3, \dots$ as parameters measuring the efficacy of $\underline{a}$ and $\underline{b}$ in producing $\underline{i}$.

Then we may state as the fundamental equation governing the administrative process

$$(1) \quad \underline{I} = f(\underline{P}_a, \underline{P}_b; \alpha_1, \alpha_2, \dots; \beta_1, \beta_2, \dots)$$

This equation, corresponding to the "utility function," we may term the "accomplishment function."

Further let $\underline{E}_a$ measure the expenditure for $\underline{a}$

and $\underline{E}_b$ measure the expenditure for $\underline{b}$.

Introduce $\gamma_a, \gamma_{a_1}, \dots$ as parameters measuring the appropriateness of expenditure $\underline{E}_a$ to produce $\underline{P}_a$, and $\gamma_b, \gamma_{b_1}, \dots$ as parameters measuring the appropriateness of expenditures $\underline{E}_b$ to produce $\underline{P}_b$.

¹Henry Schultz, The Theory of Measurement of Demand (Chicago: University of Chicago Press, 1938), especially pp. 12-32. An application of the theory to the problem of demand with a limited budget, identical in its basic approach with the theory presented here, is contained in a paper by Harold Hotelling, "Demand Functions with Limited Budgets," Econometrica, III (January, 1935) pp. 66-78.

Then a second set of equations may be stated:

$$(2) \quad P_a = g(E_a; Y_{a1}, Y_{a2}, \dots)$$

$$(3) \quad P_b = h(E_b; Y_{b1}, Y_{b2}, \dots)$$

Imposing on these functions the further limitation that the sum of expenditures for a and b is a constant, k, we have:

$$(4) \quad E_a + E_b = k$$

The administrative problem is to maximize I, equation (1), with the limitation expressed in (4). This maximization may be accomplished (a) by varying the parameters, or (b) by varying the expenditure for a relative to the expenditure for b. Procedures of the first kind, those intended to find the best values of the parameters, may be termed evaluative. Procedures of the second kind may be termed budgetary. The budget problem is to find, for given values of the parameters, the distribution of expenditures between a and b which will maximize the function I.

If the parameters are given as constants, equations (1) to (4) may be simplified as follows:

$$(5) \quad I = f(P_a, P_b)$$

$$(6) \quad P_a = g(E_a) \quad (6a) \quad E_a = G(P_a)$$

$$(7) \quad P_b = h(E_b) \quad (7a) \quad E_b = H(P_b)$$

and

$$(4) \quad E_a + E_b = k$$

Then, the function ϕ may be defined so that

$$(8) \quad \phi(P_a, P_b) = G(P_a) + H(P_b) = k$$

Now, in general, differentiating (5)

$$(9) \quad dI = \frac{\partial I}{\partial P_a} dP_a + \frac{\partial I}{\partial P_b} dP_b$$

and since, by (8), P_b may be expressed as a function of P_a ,

$$(10) \quad \frac{dI}{dP_a} = \frac{\partial I}{\partial P_a} + \frac{\partial I}{\partial P_b} \frac{dP_b}{dP_a}$$

To find the maximum of I we set (10) equal to zero;

$$(11) \quad 0 = \frac{\partial I}{\partial P_a} + \frac{\partial I}{\partial P_b} \frac{dP_b}{dP_a}$$

Whence,

$$(12) \quad \frac{dP_b}{dP_a} = - \frac{\frac{\partial I}{\partial P_a}}{\frac{\partial I}{\partial P_b}}$$

However, returning to the unrestricted function, (5), we may define an indifference curve of I as a set of values of P_a and P_b which yield a constant value of I . The differential equation of such a curve may be obtained by setting (9) equal to zero;

$$(13) \quad 0 = \frac{\partial I}{\partial P_a} dP_a + \frac{\partial I}{\partial P_b} dP_b$$

But this gives for the slope of the indifference curve

$$(14) \quad \frac{dP_b}{dP_a} = - \frac{\frac{\partial I}{\partial P_a}}{\frac{\partial I}{\partial P_b}}$$

which is identical with (12).

From this we conclude that at the point where the utility function, $I = f(P_a, P_b)$, for a given expenditure, $\phi(P_a, P_b) = k$, is a maximum, this function is tangent to the indifference curve which passes through the maximum point.

The condition (14) may be restated:

$$(15) \quad \frac{\partial I}{\partial P_a} dP_a = - \frac{\partial I}{\partial P_b} dP_b$$

That is, at the point of equilibrium, the increment to accomplishment afforded by an increase in P_a would be exactly balanced by the decrement in accomplishment afforded by the corresponding decrement, (since $\phi(P_a, P_b) = k$), in P_b . $\frac{\partial I}{\partial P_a}$ and $\frac{\partial I}{\partial P_b}$ may be termed the marginal degrees of efficacy of P_a and P_b , respectively, while $\frac{\partial I}{\partial P_a} dP_a$ and $\frac{\partial I}{\partial P_b} dP_b$ may be termed the marginal efficacies of

$\underline{P}_a$ and $\underline{P}_b$ respectively.

Another set of ratios which will be of interest to us is $\frac{dP_a}{dE_a}$ and $\frac{dP_b}{dE_b}$

- These may be termed the marginal unit costs of $\underline{P}_a$ and $\underline{P}_b$, respectively.¹

From (5), (6), and (7), we have:

$$(16) \quad \frac{\partial I}{\partial E_a} = \frac{\partial I}{\partial P_a} \cdot \frac{dP_a}{dE_a}$$

and $(17) \quad \frac{\partial I}{\partial E_b} = \frac{\partial I}{\partial P_b} \cdot \frac{dP_b}{dE_b}$

or, if we may so name them, the marginal degrees of efficacy of $\underline{E}_a$ and $\underline{E}_b$, respectively, are equal to the product of the marginal degrees of efficacy of $\underline{P}_a$ and $\underline{P}_b$, respectively, by the marginal unit costs of $\underline{P}_a$ and $\underline{P}_b$.

Remembering that by (4) $dE_a = -dE_b$, and taking the quotient of (16) and (17), we may write

$$(18) \quad \frac{\frac{\partial I}{\partial E_a}}{\frac{\partial I}{\partial E_b}} = - \frac{\frac{\partial I}{\partial P_a}}{\frac{\partial I}{\partial P_b}} \cdot \frac{dP_a}{dP_b}$$

At the point of equilibrium, however, the further condition (14) holds, so that the entire right-hand side of (18) is equal to unity, making:

$$(19) \quad \frac{\partial I}{\partial E_a} = \frac{\partial I}{\partial E_b}$$

At the point of equilibrium (maximization) then, the rate of increase of $\underline{I}$ with respect to a unit increase in expenditure on $\underline{a}$ is exactly equal to the rate of increase of $\underline{I}$ with respect to a unit increase in expenditure on activity $\underline{b}$.

It is easy to see how the theory can be extended to three or more variables $\underline{a}$, $\underline{b}$, $\underline{c}$, etc., or how intermediate variables might be inserted between the $\underline{P}$'s and $\underline{E}$'s so that:

$$\begin{aligned} I &= f(P_a, P_b, \dots) \\ P_a &= \phi_a(Q_a, \dots); P_b = \phi_b(\dots) \\ Q_a &= \lambda_a(E_a, \dots); Q_b = \lambda_b(E_a, \dots) \end{aligned}$$

¹See *ibid.*, p. 14, fn. 17, for corresponding definitions of marginal utility and marginal cost.