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**Management Development Of Scientists And Engineers In The  
Federal Government;An Analysis Of Basic Behavioral And  
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Vladimir V. Berniklau

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This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of The University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF ARTS IN PUBLIC ADMINISTRATION  
MANAGEMENT DEVELOPMENT OF SCIENTISTS AND ENGINEERS  
IN THE FEDERAL GOVERNMENT: AN ANALYSIS OF BASIC  
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MANAGEMENT DEVELOPMENT OF SCIENTISTS AND ENGINEERS  
IN THE FEDERAL GOVERNMENT: AN ANALYSIS OF BASIC  
BEHAVIORAL AND SYSTEMS CONSIDERATIONS

BY

VLADIMIR V. BERNIKLAU

B.S., University of Nebraska, 1959  
M.B.A., University of New Mexico, 1969

THESIS

Submitted in Partial Fulfillment of the  
Requirements for the Degree of

Master of Arts in Public Administration  
in the Graduate School of  
The University of New Mexico  
Albuquerque, New Mexico

June, 1970

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ABSTRACT OF THESIS

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MANAGEMENT DEVELOPMENT OF SCIENTISTS AND ENGINEERS  
IN THE FEDERAL GOVERNMENT: AN ANALYSIS OF BASIC  
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Vladimir V. Berniklau, M.A.  
Division of Public Administration  
The University of New Mexico, 1970

The field of management development contains a multitude of alternative programs, which are presented as solutions to the problems of developing managers. The thesis of this paper is that prior to examining solutions, the problem must be defined and basic considerations evaluated. The considerations deemed most important are behavioral and systems considerations.

To reflect a specific area of research and a meaningful area of concern, the paper focuses on the scientist and engineer within the environmental constraints of federal government employment. Specifically, this paper is concerned with the transformation from scientist or engineer to competent manager within the federal government.

The research approach consists of extensive secondary research concentrating on empirical research findings in the behavioral area, and centered on the work of C. West Churchman in the systems area. Applicability of elements in these two areas to management development is

examined. The secondary research is supplemented with selected interviews, primarily with personnel who hold positions of responsibility for management development.

A major conclusion of this paper is that management development can be a mechanism for mutual satisfaction of organizational and individual needs under certain conditions. These conditions are shown to include a psychologically healthy organization and the use of Theory Y assumptions by top management. Under these conditions, a management development program can serve as a mechanism to disseminate throughout the organization, management applications based on Theory Y assumptions. An additional conclusion is that a management development program based on a systems approach can serve to smooth the transition from scientist or engineer to manager. The systems approach serves as a basic framework within which each organization can develop a meaningful program to meet its own unique requirements.

Prior to establishing a new management development program or during the evaluation phase of an existing program, the paper recommends that basic considerations, primarily of a behavioral and systems nature, be evaluated.

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## PREFACE

This paper is the result of a lengthy period of conceptual thought, reflecting my interest in this area over several years. I have long been touched by the plight of the technically trained professional, striving for an added measure of self-defined "success" by entering the ranks of management, only to find himself confronted with a host of unfamiliar problems with which he was ill prepared to cope. Too often, the answer has been to quickly generate management development solutions to such a problem without analyzing the basic considerations, primarily of a behavioral and systems nature, which must be preliminary to considering solutions.

This paper is intended for managers interested in examining those basic considerations and evaluating their significance in the formulation, implementation, and evaluation of a management development program.

The material in this paper draws heavily on the literature in the field of management development and on a multitude of conversations with managers and professionals within the management development field. I am indebted for their total efforts which allow me to work from the extensive foundation they have built.

It is questionable whether the paper in this form could have been generated without my fortuitous exposure to the intellectually-broadening environment of the Program for Advanced Study in Public Science Policy and Administration at the University of New Mexico, a program developed by Professor Albert H. Rosenthal. I am appreciative of the farsighted personnel within the National Aeronautics and Space Administration who saw a need for such a program and provided the necessary resources. I am grateful to the Atomic Energy Commission, and specifically the management of the Albuquerque Operations Office, for creating the opportunity for my exposure to this program.

This paper reflects the patient and guiding influence of Professors Albert H. Rosenthal, John M. Hunger, and Lloyd W. Woodruff, who were very instrumental in exposing new routes of approach and sources of information, through their very perceptive questions and helpful conversations.

I am also appreciative of the assistance of Mary Effinger Berniklau, my wife, for her understanding and support, as well as her efforts in editing and typing this paper.

Service Commission notes that "the effectiveness of federal government programs, both in the United States and overseas, depends to a great extent upon how well agencies can attract and develop career executives."<sup>2</sup> This study is concerned with developing those executives but concentrates on those managers drawn from the ranks of the scientist and engineer. But this segment of career executives is significant when we realize that "scientific and technical people play an important part in the government; they comprise Forty percent of the top three Civil Service grades, for example."<sup>3</sup>

Considering this relative importance, how can the transformation of a technically-trained professional into a competent manager be better effected? It is the purpose of this study, not to answer the question with a formula or cookbook approach, but to examine the problem and major factors affecting the transformation, as well as investigate a systems approach as a framework for establishing, implementing, and evaluating a management development program.

It is not the purpose of this study to examine management development program techniques or development alternatives, but to construct a framework of considerations

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<sup>2</sup>U. S. Civil Service Commission, A Guide for Executive Selection, Personnel Methods Series No. 13, October, 1961 (Washington: Government Printing Office, 1961), p. 1.

<sup>3</sup>Donald F. Hornig, at Charles Lathrop Parsons Award Address, as reported in Chemical and Engineering News, January, 1968, p. 52.

which must be evaluated prior to the selection of such techniques and alternatives, if a program is to be meaningful. This framework, if properly developed, can serve as the bedrock for a management development program established by the individual organization to meet its own unique needs.

Although the study may be applicable to other groups, its focus is that of management development for scientists and engineers within the environmental constraints of federal government employment. Consequently it is directed to those managers interested in the development of managerial talent, particularly that drawn from the ranks of the technically-trained professional.

#### Premises

Both Argyris<sup>4</sup> and McGregor<sup>5</sup> point out the need to integrate organizational goals and individual needs to attain greater organizational effectiveness and personal satisfaction. The major premise of this study is that a management development program, based on a systems approach, can act as a mechanism for the integration of organizational goals and the individual needs of scientists and engineers in the managerial ranks. An implicit minor premise is that

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<sup>4</sup>Chris Argyris, Integrating the Individual and the Organization (New York: Wiley & Sons Inc., 1964), pp. 272-78.

<sup>5</sup>Douglas McGregor, The Human Side of Enterprise (New York: McGraw-Hill Book Co. Inc., 1960), pp. 132-44.

such a management development program can smooth the transformation for the individual from the ranks of the scientist or engineer to that of the manager.

### Assumptions and Limitations

The study makes many assumptions. The more notable include: technical professional personnel can become competent managers and should enter the managerial ranks; management is more than common sense, and is in fact a complex job calling for certain skills, knowledge, and attitudes gained from experience and development; managerial capabilities can be developed, i.e. they are not completely distributed based on hereditary factors.

The major limitation is the inescapable coloring of the study due to the values of the author. Although a goal of objectivity has been foremost, this limitation must be recognized. Other study limitations include: restriction to the American culture with its dominant protestant work ethic,<sup>6</sup> restriction to the current state of American economic affluence which tends to dictate a dominant societal

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<sup>6</sup>Other cultures would require different implementations of motivational patterns. For example Italians are more likely to see job security as a large measure of reward for good performance, Bernard M. Bass, "Combining Management Training and Research," Training & Development Journal, April, 1966, p. 4.

position on a hierarchy of needs,<sup>7</sup> applicability only to those scientists and engineers in the federal government who are in the managerial ranks or aspire to these positions, and the lack of any cost or cost-effectiveness considerations. In addition, although recognizing the interface and discussing some boundary conditions of management development with other organizational subsystems, such as personnel selection, performance appraisal, and promotion, no attempt was made at presenting an integrated personnel model for the organization.

#### Definition of Terms

In this study the term, manager, is applied to individuals in first line supervision and above, who can accomplish their assigned tasks only through the assistance of people. An executive is considered to be an individual within the upper levels of management who has significant, organizational, policy-making responsibility. He is often referred to as a member of top management.

"Scientists and engineers are defined as persons engaged in scientific and engineering work at a level requiring a knowledge of sciences equivalent at least to that acquired through completion of a four year college

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<sup>7</sup>A discussion of these needs and their relationship to motivation is included in Chapter 3.

experiences and deeper insights."<sup>11</sup> This differentiation has strong implications for selection of development alternatives in a management development program if the objective is personal growth within a dynamic environment.

The term, management development, is used in the context as defined by House as "any attempt to improve current or future managerial performance by imparting information conditioning attitudes or increasing skills."<sup>12</sup>

The term, development, though, is used as being synonymous with growth, which can result from increased skills and knowledge but occurs primarily with increased awareness of the environment and "interaction between inherent factors (the growth potential of the individual) and environmental conditions."<sup>13</sup> Management development then is seen as a growth process with elements of both training and education but with a heavy emphasis on the personal growth aspects of the latter. A management development program, as defined, is concerned with management development primarily as a state of mind, a philosophy of management which can result in personal growth of the individual. This could allow him

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<sup>11</sup>Ibid., p. 71.

<sup>12</sup>Robert J. House, Management Development: Design, Evaluation and Implementation (Ann Arbor: University of Michigan, 1967), p. 13.

<sup>13</sup>William T. Brady, "Planned Management Development," Top Management Handbook ed. H. B. Maynard (New York: McGraw-Hill Book Co. Inc., 1960), p. 487.



to reach his full potential, thus increasing his contribution to the organization in a more efficient utilization of organizational human resources.

To integrate these and other considerations, a systems approach is examined in this study. This approach, which is basically a way of thinking about a problem, utilizes four major ideas which characterize a system:

1. A system is goal directed; it has purpose.
2. It is composed of elements, parts or components.
3. These elements are linked together through some medium and interact dependent upon received stimuli.
4. A system is influenced by its environment.<sup>14</sup>

A systems approach is concerned with the whole rather than a part, with an integration of the elements rather than their isolated examination. Thus the elements have meaning only as related to the whole.

This exposes a major weakness in presentation. Each elemental interface is individually examined in the study presentation. Due to human limitations, it is impossible to simultaneously recognize the effect of interdependencies of as large a number of variables as actually occur within an organizational system. Nevertheless, it is necessary to at

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<sup>14</sup>As indicated in lecture form by Professor Richard A. Reid, University of New Mexico, November 13, 1969.

least be aware of the variables and their possible impact upon the system due to their interaction.

A fundamental concept of interaction is that a change in input, above a threshold requirement, will result in a change in output. Thus a change in the controllable variables by management in a systematic manner can conceivably result in a modification to an individual's productivity and growth.

### Organization Plan

Overall, the study first analyzes the problem, then identifies and examines behavioral variables before analyzing management development within a systems approach framework.

Specifically, Chapter Two analyzes the problems of transforming the scientist and engineer into a competent manager in terms of problem causes, his characteristics, the magnitude of the problem, and current activities in the area. To place this in the proper perspective, the management development field is briefly examined.

After the problem analysis, Chapter Three examines the behavioral considerations which affect management development, such as attitudes, motivation, leadership styles and organization development.

Chapter Four is devoted to the examination of management development within a systems approach framework

as proposed by C. West Churchman.<sup>15</sup>

Chapter Five then examines the study conclusions and recommendations with emphasis on applications information.

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<sup>15</sup>C. West Churchman, On Whole Systems: The Anatomy of Teleology, Revised Internal Working Paper No. 31, Space Sciences Laboratory, Social Sciences Project, August, 1968, (Berkeley: University of California, 1968), p. 2.

## Chapter 2

### ANALYSIS OF THE PROBLEM AREA

#### Problem Definition

This chapter analyzes the problem of transforming the scientist or engineer into a competent manager. The approach bears some similarities to an Issue Paper or first phase in-depth analysis of a problem that might be accomplished prior to a complete Planning, Programming, Budgeting System (PPBS) program analysis.<sup>1</sup> The sections for program objective and evaluation criteria are incorporated in Chapter Four.

#### Problem Abstract

For an initial orientation with respect to the particular problem under consideration, it is necessary to first review some of the major elements of the problem at least in capsulized form.

During this century and particularly in the past three decades, we have witnessed an increasing rate of

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<sup>1</sup>As defined in State-Local Finances Project, Planning, Programming, Budgeting Note 11 (Washington: George Washington University, 1968), pp. 3-4.

technological complexity about us in this country. The birth of the nuclear industry and the accomplishment of manned space travel as well as significant advances in chemistry and medicine serve as examples. This has generated a rise to prominence of the scientist and engineer. A quick review of currently notable personalities include many technically trained individuals from Dr. Jonas Salk to Neil Armstrong.

To cope with these technical complexities, increasing numbers of scientists and engineers are ascending the managerial ranks of many organizations.<sup>2</sup> This influence is particularly evident in the federal government.<sup>3</sup> Leadership in such highly technical areas as nuclear energy and space projects have added to the recent influx of technical personnel into the federal government and the managerial hierarchies of the technically based agencies.

Unfortunately, scientists and engineers are not formally educated within their professional background to

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<sup>2</sup>A study based on questionnaire information from the 71 largest corporations that were in the top 100 in asset size both in 1945 and 1967 found a trend toward technical educations of the top executives. Austin J. Gerber and George L. Marrah, "How Our Key Executives Have Been Educated," Business Horizons, February, 1969, pp. 51-55.

<sup>3</sup>This is noted in James G. Coke and John W. Lederle, "Equipping the Professionally-Trained Functional Specialist for General Administration Responsibility," Education For Administrative Careers in Government Service, ed. Stephen B. Sweeney, (Philadelphia: University of Pennsylvania Press, 1958), p. 140.

assume managerial positions. Although a small number of elective courses are included within most technical curricula, these are insufficient to cover helpful courses in financial control, personnel administration and the social sciences. In addition, since these courses are not technically rigorous and often not subject to quantitative analysis, they appear as foreign to the technically trained individual. Consequently many see them as marginal utilization of time and effort within an already crowded curriculum. This is particularly applicable to those courses which have no perceived immediate feedback, such as courses pertaining to social responsibilities. Yet the rising concern of our day, and in at least the near future, is social responsibility and particularly the social relevance of science and technology.

A compounding factor in the picture of the technical manager is that scientists and engineers have many characteristics, which although strengthening their technical posture, weaken their managerial capabilities.<sup>4</sup>

The individual scientist or engineer is often described as introverted, absorbed by detail, possibly somewhat brusque in personal relationships, and seeking neat solutions to problems. These characteristics that are often associated with successful achievement as an individual become

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<sup>4</sup>Robert E. Bailey and Barry T. Jensen, "The Troublesome Transition from Scientist to Manager," Personnel, September-October, 1965, p. 50.

handicaps when the person attempts to make the transition to managerial work.<sup>5</sup>

From an organizational recruiting viewpoint, we are facing an increasing labor force and an expanding economy. Nevertheless, we are also facing a decreasing supply of individuals in the prime middle management age group, 35 to 45 years old.<sup>6</sup> Additional reliance will have to be placed on younger, less-experienced men in the future to fill the gap. This compounds our problem of assuring an adequate supply of competent, technically-trained managers in the federal government, particularly when we realize that, "The demand for able and highly trained managerial personnel far exceeds the supply of this limited human resource."<sup>7</sup> Thus both supply and demand are accentuating the problem of providing competent managers in the future.

The advantages of a management development program were substantiated by a Presidential Task Force on Career Development created by President Johnson in May 1966. They

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<sup>5</sup>Nicolas J. Oganovic and Harold H. Leich, "Human Resources for Science Administration: Can Quality Be Enhanced", to be included as Chapter II within a book soon to be published, Issues in Public Science Policy and Administration: A Symposium.

<sup>6</sup>The World Almanac and Book of Facts, 1970 (New York: Newspaper Enterprise Association, Inc., 1970), p. 255.

<sup>7</sup>Edwin L. Miller, "Identifying High Potential Managerial Personnel," Michigan Business Review, November, 1968, p. 12.

found that the ten best managed companies in the United States, as selected by a jury of 300 highly placed industrial executives, had one thing in common, an active continuing management development program.<sup>8</sup> The best managed federal agencies were also found to have above average management and specialist training programs.

One can begin to see then the problem of management development for scientists and engineers as well as the existence of a need for a thorough ongoing program effort to cope with this situation.

#### Problem Causes

To understand some of the fundamental causes of the problem in management development, it is necessary to start by examining the background associated with this field which has led up to our present problems.

After World War II, business experienced a sizeable expansion and an associated need for competent management. At the same time there was an increased realization of the complexity of the management job. Management came more under the guidance of the non-owner, hired manager than prior to the war. With the ascendancy of the highly-paid, non-owner manager came the desire for both high social

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<sup>8</sup>U. S. Civil Service Commission, Annual Report, 1968, (Washington: Government Printing Office, 1969), p. 45.



status and the equating of the managerial occupation to that of a profession.<sup>9</sup>

From this environment, management development grew very rapidly to where it took on the appearance of a fad and many organizations seemed to adopt some form of it merely to appear up to date.<sup>10</sup> As could be expected in such an area of rapid growth, several avenues of approach were attempted, with many disappointing results.<sup>11</sup>

Many times "crash" management development programs were utilized without assessing organizational needs or developmental effectiveness. This lack of planning resulted in little benefit. A survey of 289 managers from 3 company divisions which participated in "crash" development programs found that attitudes were not changed by these programs.<sup>12</sup>

When not properly conceived and implemented, management development can even result in dysfunctional side effects. The following two situations are illustrations.

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<sup>9</sup>Edwin B. Flippo, Principles of Personnel Management (New York: McGraw-Hill Book Co., 1966), p. 230.

<sup>10</sup>Ibid.

<sup>11</sup>As testified in a number of articles, e.g. Daniel Glasner, "Why Management Development Goes Wrong: Five Reasons," Personnel Journal, September, 1968, pp. 655-58.

<sup>12</sup>W. R. Jack, "Are Management Attitudes Changed by 'Crash' Executive Development Programs?" Canadian Personnel and Industrial Relations Journal, January, 1969, pp. 49-54.

In 1962, a British manufacturing company employed an outside consultant to conduct a management training program for office and plant supervisors. As a result of the program, the supervisors recognized that changes had to be initiated by top management to allow the participants to function effectively. When it became apparant that the necessary changes were not forthcoming, many of the participants in the program began to seek other employment.<sup>13</sup>

A study conducted at the International Harvester Company in 1955 indicated that management development courses often result in conflict between the manager and his immediate supervisor. This occurs when the supervisor does not practice the principles which the subordinate has learned during management development.<sup>14</sup>

A major causal element of the problem area is occasioned by the selection process. Very often, scientists and engineers are selected for promotion to a supervisory position based on their past technical performance. A common mistake is not to recognize that these are different jobs and require different skills. Good performance in one

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<sup>13</sup>A. J. M. Sykes, "The Effect of a Supervisory Training Course in Changing Supervisors' Perceptions and Expectations of the Role of Management," Human Relations, August, 1962, pp. 227-43.

<sup>14</sup>E. A. Fleishman, E. F. Harris, and H. E. Burt, Leadership and Supervision in Industry: An Evaluation of a Supervisory Training Program (Columbus, Ohio: The Ohio State University, 1955).

does not necessarily imply good performance in the other.

This situation is further aggravated if top management is desirous of having their supervisory personnel maintain a technical expertise at the expense of devoting effort to developing managerial talents. This fails to recognize that "as a man climbs the executive ladder his problems change from technical problems to people problems."<sup>15</sup> Yet few scientists and engineers have any formal training in coping with people problems.

Even when the technical professional is forearmed with the requisite managerial skills he may fail. As Dunnette points out, "often they are put into situations where their background or perhaps their style of operating is incompatible with the situation in which they are placed. We tend to overlook this and to think that if he is a good man, he will succeed regardless of where you put him."<sup>16</sup> To overcome this, there is increasing evidence of jobs being redesigned in the private sector to fit the strengths of the

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<sup>15</sup>Committee on Post Office and Civil Service, U. S. Senate, Report of the Civil Service Commission to the President on Training Activities in Federal Agencies under the Government Training Act, May, 1960, (Washington: Government Printing Office, 1960), p. 23.

<sup>16</sup>Marvin D. Dunnette, "Predictors of Executive Success," Measuring Executive Effectiveness, eds. Frederic R. Wickert and Dalton E. McFarland (New York: Appleton-Century-Crofts, 1967), p. 68.

manager and his leadership style.<sup>17</sup>

Within the federal government the dominant, historically accepted concept is that a man should be located to fulfill the preconceived job requirements. Even federal career executives, as generalists, are expected to fulfill a number of different preconceived job descriptions. Thus the individual is considered to be highly malleable. But here the job must either be sufficiently flexible for the individual to use his particular strengths and leadership style, or he is faced with a sub-optimal utilization of his talents. This may even result in a possible failure, as noted by Dunnette, in the event of a severe mismatch of job requirements and his unique capabilities. Thus a paradox is generated in that these talents which could result in failure in a second situation were the same talents which fully utilized in a first situation probably precipitated the second job appointment.

A recent study by the American Institutes for Research, for the Committee for Economic Development examined

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<sup>17</sup>Albert S. Glickman, Clifford P. Hahn, Edwin A. Fleishman, and Brent Baxter, Top Management Development and Succession, Supplementary Paper No. 27 issued by the Committee for Economic Development (Washington D. C.: American Institutes of Research, 1968), p. 10; see also Howard Baumgartel, "Leadership Style as a Variable in Research Administration," Administering Research & Development: The Behavior of Scientists and Engineers in Organizations, eds. Charles D. Orth 3rd, Joseph C. Bailey, and Francis W. Wolek, (Homewood, Ill.: Richard D. Irwin Inc., and the Dorsey Press, 1964); see also Fred E. Fiedler, "Engineer the Job to Fit the Manager," Harvard Business Review, September-October, 1965.

top management development and succession in the American corporation.<sup>18</sup> Findings were based on in-depth interviews of 35 recently-promoted top managers and the 36 major decision-makers in these promotions. One of the observations was that "the actual determining decision, with regard to most appointments at the executive level, considerably predated official implementation, in some cases by several years."<sup>19</sup> Talented individuals, recognized by top management, were groomed for these executive positions by periodic rotation to more-challenging positions. If the individual continued to perform adequately, he was considered a candidate for top positions. There is some evidence that this special attention may result in a self-fulfilling prediction,<sup>20</sup> a sort of managerial "Hawthorne effect."<sup>21</sup>

This grooming procedure recognizes the necessity for cultivating top management talent. Yet within the constraints

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<sup>18</sup>Glickman, Top Management Development.

<sup>19</sup>Ibid., p. 17.

<sup>20</sup>Lawrence, L. Steinmetz, "Age: Unrecognized Enigma of Executive Development," Management of Personnel Quarterly, Fall, 1969, p. 2.

<sup>21</sup>That is, increased productivity and attitude toward the job resulting from the individual sensing that the organization was paying more attention to him in doing something different or novel. First noted in studies at the Western Electric Hawthorne Plant, F. J. Rothlisberger and W. J. Dickson, Management and the Worker, (Cambridge, Mass.: Harvard University Press, 1939).

of the federal-government, personnel merit system, such a procedure could well raise charges of favoritism through the existence of "fair-haired boys." Yet isn't such an arrangement which systematically develops competent individuals for high managerial positions within the federal government necessary?<sup>22</sup>

This is basically the difference between the agricultural and the jungle approach to management development. In the agricultural approach, managers are grown through a stretching of the individual to his potential through challenging assignments. In the jungle approach, effective managers are anticipated to eventually emerge from the thicket due to their superior capabilities.<sup>23</sup> The former is planned management growth while the latter is dependent upon fortuitous circumstances.

The relative status of government executive planning was indicated by Donald C. Stone, Dean, Graduate School of Public and International Affairs, University of Pittsburgh when he commented on the previously referenced top management

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<sup>22</sup>There is some recognition of this need within the federal government. For example, the Atomic Energy Commission, an excepted agency from most U. S. Civil Service Commission requirements, notes in a manual Chapter, "Supervisors should identify insofar as possible understudies for key positions. Understudies should be developed and given special training where necessary." AEC Manual Chapter 4150 Employee Development and Training, p. 6.

<sup>23</sup>Saul W. Gellerman, Management by Motivation, (New York: American Management Association, 1968), pp. 101-6.

study by noting that government, universities, and voluntary service organizations "have lagged far behind the better-managed business corporations in providing for executive leadership."<sup>24</sup>

Based on the limited sample in that top management study it appears that top management in the private sector is developing executive talent, but what of the lower ranks? Unfortunately, few organizations reward their supervisors based on the subordinates they develop. This may have to await the day of human asset accounting.<sup>25</sup> Nevertheless, supervisors must realize that developing subordinates is "an important if not the most important part of his job. . . . This is the most disagreeable aspect of a manager's job, it is the part he most often neglects and shuns."<sup>26</sup> For in pointing out improvements for others, he also sees his own areas of needed improvement. The development task may be even more distasteful if not completely neglected by the supervisor who feels his security threatened by a better-educated subordinate of superior potential.

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<sup>24</sup>Glickman, Top Management Development, p. 80.

<sup>25</sup>Rensis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill Book Co., 1967), pp. 146-55.

<sup>26</sup>Willard Bennet, "An Integrated Approach to Management Development," The Personnel Man and his Job ed. Robert E. Finley, (New York: American Management Association, 1962), p. 217.

Thus many problems within the field of management development became apparent. But in addition there are problems caused by the unique characteristics of scientists and engineers.

#### Characteristics of Clientele

In some respects scientists and engineers have a different value system, at least when fully involved in their profession, from that of the manager. Some sources consider that the scientist or engineer values his professional activity and the peer judgement of those in his profession above the goals of the employing organization.<sup>27</sup> Meanwhile, the manager is more concerned with the organization and its values from which he derives his rewards than with an abstract professional discipline. McMurray points out the importance of these values differences by specifying, "The common denominator of nearly all organizational problems is to be found in the area of values."<sup>28</sup>

This value divergence results in some measure of conflict for the technical man during the transition to the

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<sup>27</sup>Hollis W. Peter, "Preparing Scientists for Management" The Bridge Between Science and Management, International Meeting, Conference Proceedings, 1964-65 (New York: Advanced Management Journal), p. 111.

<sup>28</sup>Robert N. McMurray, "Conflicts in Human Values," Harvard Business Review, May-June, 1963, pp. 130-41.



managerial ranks.<sup>29</sup> This is occasioned by such factors as: basing decisions on uncertain conditions which seem contrary to rigorous technical theories, thinking about people instead of things, and increased communications outside the technical profession with people who use a different jargon.<sup>30</sup> Even in solving problems, the scientist thinks in the context of one correct answer while the manager assumes several acceptable answers, no one of which is totally correct.

The extent of this conflict was measured in a research study by Opinion Research Corporation, based on in-depth interviews of 622 scientists and engineers, and 105 of their managers from 6 large corporations.<sup>31</sup> Only 5 percent of the managers could see a serious conflict between their individual goals and the organizational goals, while 26 percent of the scientists and engineers reported a serious conflict. The manager appears to have a goal congruence with the organization, the controller of his reward structure, while many scientists and engineers appear to look to other than the organization for their rewards.

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<sup>29</sup>Ralph C. Botterman and Joseph P. Schwitter, "Engineer-Manager Conflicts," Advanced Management Journal, October 1966, p. 66.

<sup>30</sup>Ibid., p. 68.

<sup>31</sup>Robert D. Best, "The Scientific Mind vs the Management Mind," Industrial Research, October, 1963, p. 51.

On the positive side, the scientist or engineer has "some traits that are useful if he aspires to the managerial role: objectivity in solving problems, planning ability, motivation toward high productivity, intellectual curiosity and perseverance."<sup>32</sup>

George Kozmetsky, noted co-founder of Teledyne Industries and now Dean of the University of Texas Graduate School of Business, noted that the managers of tomorrow "must learn to converse in the language of mathematics, communicate with management scientists and engineers and use sophisticated new tools for planning and controlling strategic and tactical decision making."<sup>33</sup> The scientist or engineer, schooled in the scientific method and with a background of mathematics appears to fulfill the criteria very handily.

Our basic problem is that of management development for the scientist and engineer so as to create a competent manager. To better understand the task to be accomplished to overcome this problem, it is necessary to examine some of the fears and conflicts experienced by some individuals during the transition process:

1. The individual must make a commitment to management away from possibly very successful work for which

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<sup>32</sup>Oganovic, "Human Resources."

<sup>33</sup>"How Good are the Management Sciences?" Duns Review, July, 1968, pp. 34-36.

he has trained many years to an area for which he has received little or no training. With the decreased time available for pure technical effort he must consign his dreams of a "major technical break-through" to the pyre of reality. Has he rejected or at least slighted his profession and sold his soul for the extra salary and status? Will his peers see him as going over to the other side since he must now switch his loyalty slowly but surely from his profession to that of the organization?

2. The individual may fear the loss of his "nice-guy" image in that he is no longer one of the boys but may be seen as one of the other side trying to get more output for less input.

3. The individual may fear the loss of the direct control over an effort in that now he must accomplish the task through people whom he must learn to trust.

4. Having opted for the management route, the individual may feel trapped, particularly with the passage of time.

5. The individual may fear abandoning a discipline wherein decisions are based on theories and laws while managers have few rules to aid them.<sup>34</sup>

Some consider that scientists and engineers see themselves as having unique characteristics. A research

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<sup>34</sup>Bailey, The Troublesome Transition, pp. 51-52.

study published in 1960 and based on interview data from 277 nonsupervisory scientists and engineers and 90 supervisors in 10 companies tended to substantiate that view.<sup>35</sup> The study found that a majority of those interviewed felt that scientists and engineers were different in many respects from other groups of workers. Specifically they mentioned with relative frequency the following:

1. In their approach to the job they are more responsible, objective, and involved in their work.
2. They desire greater freedom as well as more individualized and less routine supervision.
3. They have a greater need for tangible and intangible rewards for their work and ideas.
4. They are more ambitious, creative, analytical, introverted and emotional.
5. They have broader, higher and more definite goals.

Yet when they look at management they see a threatening force to these unique characteristics. The research study based on interviews with 622 scientists and engineers and 105 managers cited earlier in this paper sheds some light in this area.<sup>36</sup> The study found that scientists and engineers

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<sup>35</sup>Lee E. Danielson, Characteristics of Engineers and Scientists (Ann Arbor: University of Michigan, 1960), p. 80.

<sup>36</sup>Best, The Scientific Mind, p. 50.

see management as: misusing their talents, forcing them to over-specialize, not giving them enough freedom to allow true creativity, having little depth in knowledge, oversimplifying problems, and manipulating people for management's purposes.

In even sharper language Harvey Sherman, past President of the American Society for Public Administration, summarized the findings of various studies of the attitudes of scientists and engineers toward their jobs by indicating:

By and large, the scientist sees the manager as a bureaucrat, paper-shuffler, and parasite, an uncreative and unoriginal hack who serves as an obstacle in the way of creative people trying to do a job, and a person more interested in dollars and power than in knowledge and innovation.<sup>37</sup>

There is some evidence, though, that such a vast value divergence between scientists or engineers, and managers may be more popular acceptance than documented evidence. This is not to say that some value differences do not exist. For scientists and engineers have some differences in their reward structures from that of managers which alone could account for value differences.

Each of the previously referenced studies of engineers and scientists contain an element of confusion in that they fail to treat the data separately for the two groups. Ritti, in a study based on survey data from a population of 4,582 engineers, and from 33 research scientists in the same company

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<sup>37</sup>As Quoted from Bailey, The Troublesome Transition, p. 52.

showed interesting differences.<sup>38</sup>

Comparisons among these two groups and with 477 graduating engineering students show that:

1. Engineers employed in industry have considerably different work goals from those of research scientists similarly employed.
2. Engineers seem to possess these goals when they first enter their employing organizations, that is, the observed differences do not seem to derive primarily from organizational experiences.<sup>39</sup>

Study data indicated that "the goals of engineers are generally in harmony with the aims of the business."<sup>40</sup>

Although admitting that the majority fell in between two polar cases, Ritti found that engineers are predominantly "locals", while research scientists represented the "cosmopolitan" dimension. The "locals" patterned their behavior, and measured their success against internal or company standards, while "cosmopolitans" patterned their behavior and measured their success against standards of their entire profession or field of specialty. Thus a variance in the location of the reward structure between the two groups is obvious. As Ritti points out, "It is not so much that scientists are not interested in 'getting ahead' as it is that ways for gaining

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<sup>38</sup>Richard Ritti, "Work Goals of Scientists & Engineers," Industrial Relations, February, 1968, p. 118.

<sup>39</sup>Ibid.

<sup>40</sup>Ibid., p. 127.

influence [or advancement] are very different from those in engineering."<sup>41</sup>

An interesting aspect relating to management development of engineers was noted by Ritti. He found that "most engineers initially aspire to positions in management, and those aspirations are not modest."<sup>42</sup> This serves to verify other such indications in the literature.<sup>43</sup> What does have implication for management development of engineers is the importance placed on advancement in the value system of young engineers. As a result, they can be expected to look for jobs of high visibility which allow them to demonstrate their potential in anticipation of eventually receiving a managerial post as a reward. This brings us full circle in that now we have a picture of engineers with a value system compatible with organizational goals and eager to enter the managerial ranks. It appears then to be an organizational function to equip these candidates with the necessary managerial capabilities--such is the task of a meaningful management development program.

But what of the scientist? Is his managerial

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<sup>41</sup>Ibid., p. 127.

<sup>42</sup>Ibid., p. 129.

<sup>43</sup>For Example, George S. Odiorne, "Making Managers Out of Engineers," Personnel, November, 1956, p. 259. The results of a survey cited indicate that engineering students have a decided orientation toward management.

development to be foresaken due to the value divergence between himself and management? A study published by Tagiuri indicates that although such a divergence does exist, it may be over-dramatized by isolated, but quickly accepted examples.<sup>44</sup> The study included: 178 research and development executives who attended the Industrial Research Institute at Harvard between 1961 and 1963, 71 scientists with at least seven years experience in industry as scientists but with no managerial experience, and 368 businessmen who attended the Advanced Management Program at Harvard between 1960 and 1962. By using the Allport-Vernon-Lindzey "Study of Values" questionnaire,<sup>45</sup> the strength of six values (theoretical, political, economic, aesthetic, religious and social) were measured. When these values were ranked for each of the three groups, no substantial difference in rank order existed. "Theoretical" ranked highest for all three groups while combinations of "economic" and "political" ranked second and third.

Thus the managers appear to have stronger interest, relative to other values, in abstract

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<sup>44</sup>Renato Tagiuri, "Value Orientations of Managers and Scientists," Administering Research & Development: The Behavior of Scientists and Engineers in Organizations eds. Charles D. Orth 3rd, Joseph C. Bailey, and Francis W. Wolek, (Homewood, Ill.: Richard D. Irwin Inc., and the Dorsey Press, 1964), p. 71.

<sup>45</sup>G. W. Allport, P. E. Vernon, and G. Lindzey, Study of Values (3d ed.; Boston: Houghton Mifflin Co., 1960).



ideas, in the empirical, critical and rational than is popularly believed, while the scientists reflect a relatively stronger orientation than might be expected in what is useful, in the production, marketing and consumption of goods, as well as in personal power, influence and renown.<sup>46</sup>

In examining the mean strengths for the values of each group, some differences are evident. The economic, political, and religious scores of the executives are higher than those of the scientists; while the theoretical score is dominant over the relatively undifferentiated other values for the scientists.

Mean score data were used for each group and great variation in individual data were found to the point of almost completely contrary profiles. It is these contrary individual profiles which probably draw the most attention and establish common assumptions about the value divergence between scientists and managers. This is exemplified by the scores of the research and development managers who perceived the scientist and manager values as much more differentiated than they actually were.

Thus in dealing with management development of scientists and engineers it is necessary to recognize the problems imposed by the innate characteristics of the participants but not to over-dramatize their significance.

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<sup>46</sup>Tagirui, "Value Orientations," p. 67.

### Magnitude of Problem

As noted earlier, the federal government is experiencing an influx of scientists and engineers as it assumes leadership in new highly technical fields. In 1955 there were 56,700 federal employees in the physical and biological sciences and 60,500 in engineering and architecture. In 1967 these figures had increased to 84,500 and 144,600 respectively.<sup>47</sup> When the two groups are combined, this amounts to an increase over the 12 year period of about 95 percent while the total federal government civilian employment increased only 23 percent over the same period.<sup>48</sup> Although figures are not available, the increase in managerial positions assumed by technical personnel would be expected to be comparable.

This trend has slowed recently, particularly in view of the fact that the rate of increase in research and development funding by the federal government has recently slowed very noticeably.<sup>49</sup> Nevertheless, "federal employment in science and mathematics occupations over the 1966-1975 period should grow around 37% and employment in engineering

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<sup>47</sup>U. S. Civil Service Commission, Annual Report, 1968, p. 66.

<sup>48</sup>U. S. Bureau of the Census, Statistical Abstract of the United States: 1969 (Washington: U. S. Government Printing Office, 1969), p. 395.

<sup>49</sup>For specific dollar amounts, see Michael D. Reagan, Science and the Federal Patron (New York: Oxford University Press, 1969), p. 7.

around 36%." <sup>50</sup> Although one might wish to select a different set of prognosticating figures, it is difficult to conceive of a long-range future which would completely stem the trend of technical growth and increased complexity in this country, and its accompanying requirement for additional scientists and engineers within the federal government.

It is obvious then that the number of scientists and engineers in the federal government is extensive, has experienced a large degree of growth over the last 15 years, and is expected to continue growing, albeit at a lower rate, in the near future. What is of import to this study is the vast managerial potential available here, but also the extensive associated need for management development if this potential is to be effectively tapped.

#### Current Activities in the Problem Area

In 1966, the Presidential Task Force on Career Advancement sent out a questionnaire on education and training of federal government civilian employees to all agencies who had an individual designated as being responsible for the personnel function. <sup>51</sup> Responses from 57 agencies, representing

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<sup>50</sup>Oganovic, "Human Resources."

<sup>51</sup>John J. Bean, "Education and Training in the Federal Government, 1966" Self and Service Enrichment through Federal Training: An Annex to the report of the Presidential Task Force on Career Advancement, ed. U. S. Civil Service Commission (Washington: Government Printing Office, 1967), pp. 527-52.

a total of 2.7 of the 2.8 million civilians employed at that time, indicated that the following were the major types of training anticipated during the next 5 years which ranked highest but of about equal in importance:

1. Training for entrance-level employees.
2. Training to help "journeymen" keep abreast of new developments in their fields.
3. Management and supervisory training to develop administrative skills and abilities.

Thus management and supervisory training currently assumes a high priority within the training plan of most agencies.

The Government Employees Training Act of 1958<sup>52</sup> and Executive Order 11348 of April 20, 1967 establish the legal basis of training in most federal agencies. The Act was a major milestone in government training and marked the beginning of an upswing in federal-government, civilian-employee, training activities. The Act encourages agency training programs, interagency training activities, and training in non-government facilities where adequate resources are not available within government. This latter point was a major provision of the Act in that it authorized the assignment of employees to universities for long-term training, with salaries and virtually all associated costs such as tuition and transportation paid. The number of participants grew

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<sup>52</sup>Public Law 85-507, 85th Congress, July 7, 1958.

slowly from 28 in 1959 to about 2000 in 1968.<sup>53</sup> The wording of the Act and the Executive Order is sufficiently broad as to allow a large degree of latitude in the extent and type of training considered necessary by agency management.<sup>54</sup>

To place the current activities of management development in the proper context, it is necessary to first examine the overall federal government employee training effort. The estimate of outlays for training of federal government civilian personnel in Fiscal Year (FY) 1969 was \$125 million.<sup>55</sup> This represents a 15 percent increase over 1968 and a 38 percent increase over 1967. By comparison, the estimated outlay for training of military personnel in FY 1969 was \$1.6 billion, an amount 13 times greater than that for the civilian force, for a military force only slightly larger than that of the civilian force.

In FY 1968, 178,749 federal employees participated in

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<sup>53</sup>U. S. Civil Service Commission, Annual Report-1968, p. 81.

<sup>54</sup>For example, one agency, the Atomic Energy Commission, indicates that, "In general, authorities granted under the Act are sufficiently broad and flexible to enable AEC to provide whatever training is necessary to develop the skills, knowledge, and capabilities that will best enable employees to perform official duties more effectively." AEC Manual Chapter 4150, Employee Development and Training. p. 1.

<sup>55</sup>These and following outlay estimates from "Federal Education, Training, and Related Programs, Special Analysis G," U. S. Bureau of the Budget Special Analysis, Fiscal Year 1969, pp. 87-100.

supervisory or management training programs which included 8 or more hours of formal classroom training.<sup>56</sup> This total includes 135,071 employees or 76 percent involved in agency training; 20,620 employees or 11 percent in interagency training;<sup>57</sup> and 23,058 employees or 13 percent trained in non-government-operated programs.

Total non-government programs included 2,004 employees in FY 1968 whose training exceeded 120 days; but 90 percent of these employees were involved in professional, scientific, or technical training, while only 9 percent or less than 200 employees, were involved in supervisory or management training out of a federal civilian employment of about 3 million.<sup>58</sup>

Nevertheless, the federal government is very interested in keeping its management current. In June, 1967, Charles L. Schultze, then Director, Bureau of the Budget, estimated that the federal government spends about \$88 million per year trying to keep its military and civilian employees abreast of

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<sup>56</sup>U. S. Civil Service Commission, Annual Report-1968, p. 80.

<sup>57</sup>For a listing of interagency training courses by subject matter and agency, see the current issue of U. S. Civil Service Commission report, Interagency Training Programs. Interim monthly "calendars" keep the information current.

<sup>58</sup>Eventhough this area is constantly expanding, relatively recent information sources are Ward Stewart and John C. Honey, University Sponsored Executive Development Programs in the Public Service, (Washington: U. S. Dept. of Health Education & Welfare, 1966); see also Jude P. West and Don R. Sheriff, Executive Development Programs in Universities, National Industrial Conference Board, Personnel Policy Study No. 215, (New York: National Industrial Conference Board, 1969).

the latest developments in management techniques.<sup>59</sup>

Recent efforts in this area have been impressive. Executive Seminar Centers were established at Kings Point, New York in 1963, and at Berkeley, California in 1966, which in FY 1969 hosted 620 and 637 participants respectively in two week executive development seminars.<sup>60</sup> This program is aimed at careerists in grades GS-14 and 15 or equivalent. This program has become increasingly popular. In FY 1967 the participant spaces requested exceeded those available by about 19 percent. In FY 1970 the requested spaces were almost double that available. It appears that the 51 departments and agencies who send participants to the program are indeed interested in development of their managerial personnel.

After a number of studies, proposals, and endorsements, the most recent being a recommendation by the Presidential Task Force on Career Advancement in the Public Service, a Federal Executive Institute was established at Charlottesville, Virginia in 1968. This advance study center exists primarily to help meet educational and training requirements for upper echelon government management in grade GS-16 or

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<sup>59</sup>"The Bureaucrats get their own B-School," Business Week, June 10, 1967, p. 72.

<sup>60</sup>This and following information pertaining to the Seminar Centers from Report of Interagency Training Conducted by the U. S. Civil Service Commission Fiscal Year 1969 (Washington: Government Printing Office, 1970).

equivalent and above. Eight week programs are offered five times each year with a total annual expected enrollment of about 300 people.<sup>61</sup> Both the Federal Executive Institute and the Executive Seminar Centers are operated by the U. S. Civil Service Commission on a cost reimbursable basis funded by the agencies who send participants. Current costs for the former are about \$1500.00 per participant and \$475.00 per participant for the latter. Thus agencies must make an out-of-pocket investment in their representatives.

To an increasing extent, many agencies are making arrangements with universities to conduct after hours courses, some for academic credit and some not, at the work site. "In 1968 fourteen federal agencies sponsored 129 such off-campus study centers in cooperation with 91 schools and colleges, and nearly 26,000 employees participated."<sup>62</sup> For example, "Florida State University offers a graduate program at the Kennedy Space Center, Cocoa, Florida, for NASA employees. This leads to the degree of Master of Science in Management."<sup>63</sup>

Universities have expanded their interest in management

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<sup>61</sup> Additional background and descriptive information on the Institute and current curriculum content are available in, U. S. Civil Service Commission, Historical and Progress Report of the Federal Executive Institute, (Washington: Government Printing Office, 1969).

<sup>62</sup> Oganovic, "Human Resources."

<sup>63</sup> Ibid. For additional information on similar programs, see the current issue of U. S. Civil Service Commission, Off-Campus Study Centers for Federal Employees.



development. In 1953, only 4 universities conducted management development programs.<sup>64</sup> In 1969, this had been expanded to 45 programs at 42 universities.<sup>65</sup>

Several conclusions can be drawn from the information on current activities in the management development effort in the federal government:

1. Only within about the last 12 years has management development been taken seriously in the federal government outside of that conducted within the agency. As Golembiewski points out, "Roughly, business has a 10-20 year lead over government in acting on the need for training."<sup>66</sup>

It is difficult to determine seriousness of intra-agency attention to this area. But a survey in 1968-69 of 193 managers in federal science and engineering organizations showed that the majority had not been given any managerial training on assuming their first management responsibilities.<sup>67</sup> In 1968, the U. S. Civil Service Commission moved to correct this problem area by establishing a new standard for promotion

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<sup>64</sup>Robert J. House, Management Development: Design, Evaluation and Implementation (Ann Arbor: University of Michigan, 1967), p. 9.

<sup>65</sup>West, "Executive Development Programs," p. 1.

<sup>66</sup>Robert T. Golembiewski, "Organization Development in Public Agencies: Perspectives on Theory and Practice," Public Administration Review, July-August, 1969, p. 376.

<sup>67</sup>Oganovic, "Human Resources."

to supervisory positions at the lower and middle grades that requires agencies to give appropriate training to employees promoted to their first supervisory assignment.<sup>68</sup>

2. Training in general, including management development, for civilian federal government employees has been growing very rapidly. On the demand side, agencies appear very interested in having their managerial representatives participate in extra-agency development programs and appear willing to utilize "increasingly tight" financial resources in this behalf. The Civil Service Commission requirement for managerial training of first line supervisors will most probably increase the pace of intra-agency supervisory and managerial training efforts. On the supply side, the increasing number of alternative programs mirrors this growth.

3. A review of the figures makes it obvious that extra-agency management development programs are currently attended by an extremely small percentage of the eligible population. Thus despite the current growth in this area, new programs and facilities are needed. In lieu of this, the agencies must assume a heavy portion of the total effort if the job is to be done. This is particularly true for those not yet eligible for much of the extra-agency programs, i.e. less than GS-14.

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<sup>68</sup>U. S. Civil Service Commission, Federal Personnel Manual Chapter 335, pp. 16-17.

If the agency has been swept up in the tide of commitment to management development but finds the capacity of extra-agency development alternatives less than the agency supply of candidates, then they are forced to establish a comprehensive intra-agency management development program. Even if management finds the capacity equal to their supply, they would very likely desire a management development program to integrate the various program elements, particularly in view of the increasing expenditures for management development experienced by the agency. But a comprehensive management development program requires some basic thinking about fundamental issues if a program is to be meaningful. This study proposes to do exactly that.

## Chapter 3

### EXAMINATION OF PERTINENT BEHAVIORAL ISSUES

#### Attitudes

The basis of motivation lies in individual attitudes, and it is motivation that determines behavior. One approach to measuring manager development is to determine the change in behavior in a predisposed direction. Thus attitudes and particularly attitude change are important elements in a management development program.

#### Development of Attitudes<sup>1</sup>

A basic concept in the study of attitudes is that individuals do not simply register what is "out there." Instead their perceptions of external stimuli depend to a great extent on the assumptions they bring to the situation. These assumptions are influenced by such factors as needs, social values, stress, and cultural background. These

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<sup>1</sup>Some of the basic ideas for this section are drawn from "Part One: Perceiving People and Situations," Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind, (Englewood Cliffs, N. J.: Prentice Hall Inc., 1963), pp. 1-54.

influences result in a distortion of reality which nevertheless represents reality to the individual.

Many experiments have shown that there is a tendency to perceive what is logically expected to occur under a certain set of conditions, regardless of what actually occurs.<sup>2</sup> It is this perceptual foundation which makes attitudes so difficult to change.

Within this realm of expectation, the larger the number of alternatives perceived possible by the individual, the more difficult it is to recognize any one alternative which does occur. As a corollary, when speed in perception is required, such as under stress conditions, the likelihood of erroneous perception increases. Thus to gain speed, the individual limits the alternatives considered. This limitation must be recognized for any training or development that occurs under stressful conditions.

To cope with the multiplicity of their environment, people categorize items into classes. For example, when an individual sees a tall object with a trunk, branches and leaves, he places it in the preconceived category of "tree."<sup>3</sup>

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<sup>2</sup>Hadley Cantril, "Perception and Interpersonal Relations" Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind (Englewood Cliffs, N. J.: Prentice Hall Inc., 1963), p. 15.

<sup>3</sup>This concept is treated at length in J. S. Bruner, J. J. Goodnow, and G. A. Austin, A Study of Thinking (New York: John Wiley & Sons, Inc., 1956), pp. 1-24.

People perceptually do the same for categorizing a "mean" boss, a "friendly" neighbor, or a "very knowledgeable" educator.

There is a tendency to categorize present actions with respect to past actions. Thus events are interpreted in the light of past impressions or experience. Dailey found that first impressions in his study tended to be lasting impressions as well as being inaccurate.<sup>4</sup> They are lasting because they influence the way the individual perceives all subsequent information about the subject. This is a limitation which warrants attention with regard to management development evaluation. First impressions and ego identification with a particular program approach may create a self-fulfilling proposition.

Ego identification is a force which must be recognized. It is an old adage that where an individual stands on any issue depends on where he sits. Haire, in an experiment involving labor and management representatives, found markedly different adjectives used to describe a person when he was introduced as either a manager or union man. "Thus, 74 percent of the subjects in the managerial group chose the word 'honest' as descriptive of Mr. A, when he was identified as a manager. The same managerial subjects, however, chose the

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<sup>4</sup>Costello, Psychology in Administration, p. 24.

word 'honest' to describe Mr. A only 50 percent of the time when he was identified as a representative of the union."<sup>5</sup> Similar differences were obtained for adjectives such as conscientious, mature, practical and dependable. When Mr. B was introduced as a union man, managers used such terms as active, aggressive, argumentative, opinionated, out spoken, and persistent.

Individual perception also has an amplification characteristic. For example, anxiety and job insecurity in one study were found to color many of the other work attitudes.<sup>6</sup> This relates to Herzberg's motivation-hygiene theory which will be covered later.

Costello and Zalkind offer a summary listing of characteristics of the perceiver which tie together conclusions suggested by many current research findings:

1. Knowing yourself makes it easier to see others accurately. When we are aware of what our own personal characteristics are, we make fewer errors in perceiving others. . . .
2. Our own characteristics affect the characteristics we are more likely to see in others. . . . The person with "authoritarian" tendencies is more likely to view others in terms of power and is less sensitive to the psychological or personality characteristics of other people than is a non-authoritarian. . . . Thus, traits that are important to us in ourselves will be used more

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<sup>5</sup>Mason Haire, "Role Perception in Labor-Management Relations: An Experimental Approach," Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind, (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963), p. 29.

<sup>6</sup>Costello, Psychology in Administration, p. 35.

when we form impressions of others. . . .

3. The Person who accepts himself is more likely to be able to see favorable aspects of other people. . . .  
In those areas in which we ourselves are more insecure, we see more problems in other people. . . .

4. A corollary is the finding that for people we like, we tend to perceive more accurately the ways in which they are similar to us, and are less accurate in viewing the unlike ways. However, for people we do not like, we tend to see them as different from ourselves; we perceive most accurately their traits that are unlike our own, and their similar traits least accurately.

5. Accuracy in perceiving others is not a single skill that some people have and others do not. Our accuracy level will depend on how sensitive we are to the differences among the people we are judging.<sup>7</sup>

If internalized, these characteristics have a surprising similarity to the desired result of T-Group or sensitivity training. In summary, the manager "who wishes to perceive someone else accurately must be looking at the other person, not at himself,"<sup>8</sup> at the other's characteristics, not a comparison with what he likes and dislikes about himself.

### Attitude Change

Management development is viewed in some quarters as an attitude change process.<sup>9</sup> But such a change requires a

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<sup>7</sup>Ibid., pp. 45-46.

<sup>8</sup>Ibid., p. 46.

<sup>9</sup>Craig C. Lundberg and Robert E. Sproule, "Readiness for Management Development: An Explanatory Note," California Management Review, September, 1968, p. 73.; see also John B. Miner, "Management Development and Attitude Change," Personnel Administration, May-June, 1961, p. 21.



new ordering of existing relationships. Consequently, people resist change because it upsets their established patterns of behavior. There is a certain sunk cost, or inertia associated with attitudes, what Lewin refers to in his condition of freezing.<sup>10</sup>

Lewin examined change within his concept of a force-field equilibrium model by noting:

It does not suffice to define the objective of a planned change in group performance as the reaching of a different level. Permanency of the new level, or permanency for a desired period, should be included in the objective. A successful change includes, therefore, three aspects: unfreezing, then moving to a new level, and freezing group life on the new level. Since any level is determined by a force field, permanency implies that the new force field is made relatively secure against change.<sup>11</sup>

Edgar H. Schein used the three phases of unfreezing, changing and refreezing in examining management development as a process of influence.<sup>12</sup> Contending that adequate managerial performance, at least at the higher levels, is as much a matter of attitudes as that of knowledge and skills, he argues that managerial candidates can be developed

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<sup>10</sup>Kurt Lewin, "Group Decision and Social Change," Readings in Social Psychology, eds. E. E. Maccoby, and E. L. Hartley, (3rd ed.; New York: Rinehart and Winston, Inc., 1958), p. 211.

<sup>11</sup>Ibid., pp. 210-11.

<sup>12</sup>Edgar H. Schein, "Management Development as a Process of Influence," Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind, (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963), pp. 299-309.

through change for the role of a manager which requires a certain set of attitudes.

The unfreezing phase of the influence process requires that the individual be motivated and ready to change. Thus he must perceive the need for change, be able to change and see the influence agent as capable of facilitating the change. Attitudes, though, are integrated into the personality of the individual, and the suggestion of the need for change may be interpreted as a criticism of the individual's image of himself. Thus a move to change attitudes could result in a hardening of resistance to change.

The changing phase is a directed process of learning new attitudes. These are learned either through identification or internalization. Identification refers to the emulation of some given individual who serves as a role model. Use of the management development mechanism of coaching or assistant-to, where an individual is placed under a competent supervisor, would be an operationalized portrayal. Seymour Liberman and others have experimentally demonstrated that a person's attitudes will be influenced by his role in a social system.<sup>13</sup> Internalization is the accumulation of new attitudes

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<sup>13</sup>Seymour Liberman, "The Effects of Changes in Roles on the Attitudes of Role Occupants," Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind, (Englewood Cliffs, N. J.: Prentice-hall Inc., 1963), pp. 278-83.

which become a part of the individual's norms. New attitudes demanded to solve problems in a particular environment would be an example.

Refreezing is basically the integration of the new attitudes into the personality of the individual. In effect, it is a "fixing" process. This is generated through superior, peer, or subordinate support, particularly by those who have also undergone an attitude change. One of the fundamental principles of Alcoholics Anonymous is no less applicable here, for a lack of support is an unfreezing influence. Of major import is that it is very difficult for new attitudes to be maintained by isolated individuals. A completely unique management development program for an individual may not carry the proportional value of the development of a group due to the lack of support. This area relates closely to effect of group norms on the individual. In effect, the individual will change his behavior and attitudes to move toward the group norms or standards due to potential or actual group sanctions.<sup>14</sup> Experiments have shown that a change in group norms through group decision making is very effective in changing group member behavior.<sup>15</sup>

Schein emphasizes the unfreezing phase, noting that

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<sup>14</sup>Costello, Psychology in Administration, p. 428.

<sup>15</sup>Ibid., pp. 285-87.

without proper unfreezing there can be no real change.<sup>16</sup>

Lundberg and Sproule underline Schein's point, indicating that "management development programs which are unaware of, ignore, or de-emphasize the unfreezing process can never be truly effective."<sup>17</sup>

Schein defines the essential elements of unfreezing as "the removal of supports for the old attitudes, the saturation of the environment with the new attitudes to be acquired, a minimizing threat, and a maximizing of support for any change in the right direction."<sup>18</sup> These points have a major impact for any management development program committed to attitude change. Many questions can be asked which must be answered for each individual program. What are the supports for the old attitudes? Can they be removed, even temporarily? Should the individual be saturated with new attitudes or should they be made selectively appealing? Schein does not treat these areas other than to point out the significance of supports for existing attitudes within the organization, recommending that training activities occur away from the place of work. Yet most management development efforts are at the place of work. What of attitude change through identification? Unfortunately, Schein does not spell out in

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<sup>16</sup>Schein, "Management Development," p. 228.

<sup>17</sup>Lundberg, Readiness for Management Development, p. 74.

<sup>18</sup>Schein, "Management Development," p. 304.

detail what is or is not a state of unfreezing or what characterizes the unfreezing process in the individual.

Lundberg and Sproule consider unfreezing to be a "cogent force characterized by conditions of 'growth', 'motivation' and 'process'."<sup>19</sup> Although they translate this into preconditions of unfreezing, such as a consciously created climate of trust and supportiveness, individual job competency, and a sanction system consistent with change, each of these are an outgrowth of a central precondition. This is the satisfaction of the individual's basic needs, low fear and anxiety levels, and high esteem.

Edgar G. Williams contends that more is necessary.<sup>20</sup> Among his suggestions for inducing change are: allow a generous period of time for the change, use groups as the change agent, indicate the reasons for change and allow the group to participate in the change planning process.

Experimental results of Coch and French demonstrate these points.<sup>21</sup> They found that a program of explaining the reasons that made a production change necessary, coupled with

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<sup>19</sup>Lundberg, "Readiness for Management Development," p. 76.

<sup>20</sup>Edgar G. Williams, "Changing Systems and Behavior," Business Horizons, August, 1969, p. 53.

<sup>21</sup>Lester Coch and John R. P. French, Jr., "Overcoming Resistance to Change," Psychology in Administration: A Research Orientation, eds. Timothy W. Costello and Sheldon S. Zalkind, (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963), pp. 228-41.

an opportunity for the employees to participate in implementing the change, had startling results when compared with resistance to production change without employee participation. They found the rate of production recovery after the production change to be directly proportional to the amount of participation in the change process, and the rates of turn over and aggression to be inversely proportional to the amount of participation.

Although certain preconditions appear necessary, change requires that individuals feel a need to change, a need stronger than that supporting the maintenance of the old attitudes.<sup>22</sup>

A classical means of attempting attitude change has been inducements. Needs satisfied by external inducements may result in compliance but not a continuing attitude change. Thus employees must be motivated to change through a need arousal.

### Motivation

The subject of motivation is a very complex topic which many have pursued with some results but much remains yet to be understood. This section surveys the topic through an examination of theoretical literature and empirical

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<sup>22</sup>Costello, Psychology in Administration, p. 296.

research, with the intention of integrating this information into a framework for use in understanding behavior.

### Assumptions Affecting Motivation

Basic to the motivation of people are the assumptions one makes about people. The polar assumptions about human nature and human behavior are embodied in McGregor's Theory X and Theory Y.<sup>23</sup> The Theory X view of man considers that he: has an inherent dislike for work and will avoid it if he can; must be coerced, controlled, directed, and threatened with punishment to work toward organizational goals; prefers to be directed; wishes to avoid responsibility; has relatively little ambition; and wants security above all.<sup>24</sup> Managers who base their actions on these assumptions would naturally attempt to structure, control and closely supervise their employees since external control is clearly appropriate when dealing with immature and unreliable people.

Many managers can cite examples of this type of employee behavior. Therefore isn't it merely a reflection of human nature? It should be noted that when this type of behavior is expected of the employee, and organization

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<sup>23</sup>Douglas McGregor, The Human Side of Enterprise, (New York: McGraw-Hill Book Co. Inc., 1960), pp. 33-59.

<sup>24</sup>Douglas McGregor, "Theory X and Theory Y," Organizational Behavior and the Practice of Management, eds. David R. Hampton, Charles E. Summer, and Ross A. Weber, (Glenview, Ill.; Scott, Foresman and Company, 1968), p. 132.

structure, management philosophy and policy established to counteract it, the conditioned employee may respond in kind thereby providing the manager with a self-fulfilling prognostication.

Argyris points out that as an individual develops over the years from immaturity in childhood into a mature person, he experiences several changes. These include moving from: passive to increased activity, dependence to independence, behavior in few to many ways, subordinate to equal or superordinate position, and lack of awareness of self to awareness and control over self.<sup>25</sup> Yet when he joins the work force, management in many organizations expects him to act in an immature manner due to the implementation of the concepts of scientific management.

Argyris feels that these concepts lead to assumptions about human nature that are incompatible with the development of maturity in human personality. Management which utilizes Theory X assumptions create child-like roles for workers which frustrate natural development. Argyris cites the use of mentally retarded workers in such jobs and management's praise of their excellent performance. In one instance a manager in a radio corporation reported:

The girls proved to be exceptionally well-behaved,

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<sup>25</sup>Chris Argyris, Personality and Organization, (New York: Harper and Row Publishers, Inc., 1957), pp. 118-19.



particularly obedient, and strictly honest and trustworthy. They carried out work required of them to such a degree of efficiency that we were surprised they were classed as subnormal for their age. Their attendance was good, and their behavior was, if anything, certainly better than any other employee of the same age.<sup>26</sup>

Argyris, as a result of his findings, has challenged management to provide an organizational environment in which everyone has a chance to mature by satisfying his own needs while working for the success of the company.<sup>27</sup> Such an effort is very similar to job enrichment suggested by Herzberg which is covered in this section.

#### Motivation of the Individual

The Theory X and Theory Y views of man relate closely with the current state of man's needs. In general, man is a perpetually wanting animal. As each need is satisfied he works to fulfill the next unsatisfied need which in turn motivates his behavior. But as each need is satisfied it is no longer a motivator.

These needs can be organized into a hierarchy of importance. For example, man first strives to continue existence prior to satisfying a need for self fulfillment.

Maslow developed a framework to help explain the

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<sup>26</sup> N. Breman, The Making of a Moron, (New York: Sheed and Ward, 1953).

<sup>27</sup> Chris Argyris, Integrating the Individual and the Organization (New York: Wiley & Sons Inc., 1964), p. 278.

relative strengths of these needs.<sup>28</sup> He ranked the basic needs by relative importance: physiological, safety (or security), love (or affiliation), esteem, and self-actualization needs in that order, in what is called a hierarchy of needs. As each need is fairly well satisfied, the next higher need emerges and motivates the individual's behavior. Although the individual does not operate on one need at a time exclusively, he tends to satisfy a lower need to a greater extent than that of a higher need.

Based on Theory X assumptions, the appropriate employee motivators would include money, fringe benefits, and the threat of punishment. In the past when man was basically at the physiological and security need level, these were in fact motivators. In our present day society, where the individual is virtually assured of his basic lower level needs, they no longer serve as motivators. Yet management today continues to further satisfy these lower level needs through higher pay or greater fringe benefits, while imposing additional controls. This conventional approach ignores the higher level needs which can act as motivators. If the organization will not create the environment where the individual can satisfy these higher needs, he will attempt to satisfy them informally

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<sup>28</sup>A. H. Maslow, "A Theory of Human Motivation: The Basic Needs," Organizational Behavior and the Practice of Management, eds. David H. Hampton, Charles E. Summer, and Ross A. Weber, (Glenview, Ill.: Scott, Foresman and Company, 1968), pp. 27-40.

on and away from the work site. Organizational policy which reflects a Theory X posture and frustrates the satisfaction of the higher level needs on the job, can result in the individual making disproportionate demands for further fulfillment of the lower needs which no longer act as motivators.

Herzberg examined the area of motivators in a study that has been replicated at least sixteen times using a wide variety of populations.<sup>29</sup> The findings of these studies "suggest that the factors involved in producing job satisfaction (and motivation) are separate and distinct from the factors that lead to job dissatisfaction."<sup>30</sup> This reflects two different categories of needs. Herzberg expresses these two needs and the two sets of satisfying factors in his motivation-hygiene theory.<sup>31</sup> He found that when people were dissatisfied about their jobs, they were concerned about the job environment. When people felt good about their jobs, they spoke of factors that dealt with the job itself. Herzberg called the first set of needs hygiene factors, since they serve to prevent job dissatisfaction. The last category of needs were called motivators, since they seemed to motivate people to higher job performance.

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<sup>29</sup>Frederick Herzberg, "One More Time: How Do You Motivate Employees?" Harvard Business Review, January-February, 1968, pp. 53-62.

<sup>30</sup>Ibid., p. 56.

<sup>31</sup>Frederick Herzberg, Bernard Mausner and Barbara Synderman, The Motivation to Work (New York: John Wiley, 1959); see also Frederick Herzberg, Work and the Nature of Man (New York: World Publishing Co., 1966), pp. 71-92.

Hygiene factors include organization policies and administration, supervision, working conditions, salary, and security. These do not produce increased performance but only prevent loss in performance due to work restriction. Motivator factors involve a feeling of achievement, recognition for accomplishment, challenging work, increased responsibility, and advancement.

In overlaying the hygiene and motivator factors on Maslow's hierarchy of needs, Hersey and Blanchard contend that the physiological, security, affiliation and part of the esteem needs are all hygiene factors, while some esteem and self actualization needs are motivators.<sup>32</sup> Thus a management desire to motivate personnel would appear to require organizational arrangements to allow the individual to satisfy his esteem and self actualization needs.

To gain greater job performance and personal satisfaction, Herzberg contends that job requirements should be modified to incorporate his motivation factors. Limited experimentation has shown both increased productivity and positive attitudes toward the job when job requirements were so modified.<sup>33</sup> In a presentation on April 8, 1970, at The 1970 National Conference on Public Administration, Robert N.

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<sup>32</sup>Paul Hersey and Kenneth H. Blanchard, Management of Organizational Behavior (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1969), p. 48.

<sup>33</sup>Herzberg, "One More Time," p. 60.

Ford, Personnel Manager, Manpower Utilization, American Telephone and Telegraph (AT&T) Headquarters specified his organization's progress in this area. He indicated that results of efforts to date in modifying job requirements of hourly workers such as lineman and key-punch operators have been very satisfying. He noted that, based on this experience, AT&T intends to expand their efforts in job enrichment to other occupations and geographical areas.

One must recognize the limitations in Herzberg's theory. In a review of seventeen studies relating to the motivation-hygiene theory by House and Wigdor, they conclude that the two-factor theory is an oversimplification of relationships between motivation and satisfaction on one hand, and the sources of job satisfaction and dissatisfaction on the other.<sup>34</sup> They contend that a given factor can result in job satisfaction for one person as well as job dissatisfaction for the next, since job satisfaction is determined by the perceived characteristics of a job in relation to an individual's frame of reference. Based on the individual studies, they contend that additional variables that partially determine whether a given factor will be a source of job satisfaction or dissatisfaction are: job or occupational role,

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<sup>34</sup>Robert J. House and Lawrence A. Wigdor, "Herzberg's Dual-Factor Theory of Job Satisfaction and Motivation: A Review of the Evidence and a Criticism," Personnel Psychology, 1967, p. 369.

age, sex, formal education, and culture.

Herzberg's recommendations for job enrichment run counter to the concept of division of work which has been highly perfected within industry. Extreme division of work fits quite well with Theory X assumptions about employee inability to accomplish but simple child-like tasks. But are Theory X assumptions dominant today on an industrial scene which has seen radical changes over the last half century? One can contend, as McGregor noted, that over the last few decades management has moved to give more equitable and generous treatment to employees, to reduce economic hardships, as well as provide a more safe and pleasant working environment. But in 1960, McGregor pointed out, "It has done all these things without changing its fundamental theory of management; . . . the assumptions of Theory X remain dominant throughout our economy."<sup>35</sup>

Assuming a desire to modify this dominance, what alternatives are available? Some may consider the desirable alternative to a "hard" Theory X approach is a "soft" approach with a removal of control. But as McGregor himself points out:

We recognize today that "industrial democracy" cannot consist in permitting everyone to decide everything, that industrial health does not flow automatically from the elimination of dissatisfaction, disagreement, or even conflict. Peace is not

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<sup>35</sup>McGregor, "Theory X and Theory Y," p. 136.

synonymous with organizational health; socially responsible management is not coextensive with permissive management.<sup>36</sup>

As an alternative to Theory X, McGregor developed his Theory Y. This assumes that: people find work as natural as play, if the conditions are right; they can be basically self directed and creative at work if properly motivated; under the right conditions they accept and seek responsibility; and in modern industrial life, the intellectual potentialities of the average human being are only partially utilized.<sup>37</sup>

A Theory Y approach presupposes individuals who are reasonably healthy in a psychological sense. The dominant Theory X environmental pressures that shape the individual in our society today suggest less than an ideal development of a psychologically healthy personality.<sup>38</sup> This may be a factor causing the variance in results of the many studies testing Herzberg's motivation-hygiene theory. Thus perhaps individuals, in their various stages of psychological health,

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<sup>36</sup> Ibid.

The benefits of "unrest" can be applied to the scientific and technical organization also. In a study of scientists and engineers, Pelz concluded that "creative tensions" between sources of stability and security on one hand and sources of disruption or challenge on the other contributed to effective performance. Donald C. Pelz, "Creative Tensions in the Research and Development Climate," Science, July 14, 1967, p. 165.

<sup>37</sup> McGregor, "Theory X and Theory Y," p. 137

<sup>38</sup> Howard Finston, "Career Frustration-American Style," (Unpublished Paper), University of New Mexico, School of Business and Administrative Sciences, 1970.

may be introducing additional variables into the data.

The use of Theory Y assumptions requires an entirely different type of management approach. If management accepts these assumptions and finds employees are lazy, indifferent, unwilling to take responsibility, uncreative, and uncooperative, Theory Y implies that the causes are located not in the individual, but in the organizational environment which reflects management's methods of organization and control. Obviously this situation is colored by the current state of individual, psychological health.

#### Effect of Leadership Styles on Motivation

Utilizing Theory X assumptions, management control would be centered in a few capable people who could make effective decisions at the top of a highly controlled, hierarchical structure. Just from a procedural viewpoint, this may already be an obsolete approach and become even more so in the future. Reynolds contends that managers are becoming increasingly programmed by other members of the organization due to increasing organizational breadth and complexity.<sup>39</sup> Thus the future manager would have to reduce his emphasis on decision making and move to become a wise conservator, a humanist among scientists, and even possibly

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<sup>39</sup>William H. Reynolds, "The Executive Synecdoche," MSU Business Topics, Autumn, 1969, p. 29.



a philosopher. He notes that intuition and judgement will always be valued but not as highly in the future manager. He does not indicate the significance of the advancements in management information systems which might allow the manager to continue his control. It is questionable though, whether enough is known about organizational relationships to impute meaning to all the information that can be made available to the manager. Thus he may have a wealth of variable data with very few equations to which it can be applied.

In defining the role of the general manager of the future, Ansoff and Brandenburg noted that management scientists continue "to improve the information environment of general managers, but their most important contribution was improvement in decision-making techniques. In return for better decisions, the manager had to pay a penalty; he had to relinquish control of certain parts of the decision process and to depend on the expert advice of the management scientists."<sup>40</sup> Galbraith argues that the abdication of decision-making powers to the growing technocracy is inevitable and that many firms have already abdicated.<sup>41</sup>

Nevertheless, today we are confronted with an attempt

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<sup>40</sup>H. Igor Ansoff and R. G. Brandenburg, "The General Manager of the Future," California Management Review, Spring, 1969, p. 65.

<sup>41</sup>John K. Galbraith, The New Industrial State, (New York: American Management Association, 1968), p. 270.

to maintain a centralized decision making function in many organizations. What effect does this have on motivation?

Saul Gellerman notes that:

The basic motivational deficiency in most organizations today is the lack of sufficient decision making authority and responsibility in jobs held by people who could respond to such powers with vastly increased energy and commitment. There is no actual shortage of decision making power; it is simply and unnecessarily monopolized by management, and especially at higher organizational levels.<sup>42</sup>

The sharing of power is the basis of participative management which attempts to increase production through increased motivation.

Participative management can stress a manager severely. For if his superiors operate within Theory X assumptions, they will have certain expectations of him which may not be conducive to a participative management approach. If his superiors are sympathetic with the manager's participative moves, the manager must be willing to lay his past decisions on personnel selection, training, and development on the line. He must be willing to change positions from that of the star quarterback to that of a player coach, in exchange for the possibility of increased employee motivation and productivity, as well as an opportunity for employee growth and maturity.

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<sup>42</sup>Saul W. Gellerman, Management by Motivation (New York: American Management Association, 1968), p. 270.

Myers performed an attitude study of 1,344 managers at all levels of Texas Instruments in an attempt to determine conditions for manager motivation.<sup>43</sup> He found that the styles of supervision, which he categorized as developmental, traditional, and reductive, were uniformly distributed through all levels of management. Developmental supervision was defined as synonymous with Theory Y supervision, and reductive with Theory X, while traditional contained elements of each. He found that "motivation is strongly related to the supervisory style of the immediate boss: 'developmental' supervisors stimulate motivation; 'reductive' supervisors inhibit motivation."<sup>44</sup> Specifically, one-half of the highly motivated managers had developmental supervisors, and only eight percent had reductive supervisors. In contrast, almost two-thirds of the poorly motivated managers had reductive supervisors and only eight percent had developmental supervisors. Regardless of the type of supervision practiced, "all managers prefer a developmental supervisor."<sup>45</sup> He also found that the developmental supervisors rated themselves on motivational ability very close to the rating by the subordinates; the reductive supervisors, though, were generally insensitive to their

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<sup>43</sup>M. Scott Myers, "Conditions For Manager Motivation," Harvard Business Review, January-February, 1966, pp. 58-71.

<sup>44</sup>Ibid., p. 58.

<sup>45</sup>Ibid.

talent for suppressing motivation, and rated themselves on a par with the developmental supervisors. This relates to the problems of individual perception discussed earlier.

Myers' findings can readily be applied in management development. A concentrated effort to transform reductive supervisors into developmental supervisors would be advantageous, since reductive supervisors act as a negative development mechanism. In addition, if coaching by the supervisor is to be emphasized as a development mechanism, such should only be implemented under developmental supervisors.

In another study relating to leadership, Baumgartel examined leadership styles as a variable in research administration.<sup>46</sup> He identified eighteen of twenty laboratory directors in a large, government, medical-research organization who employed three different leadership styles: participative, laissez-faire, and directive. Participative leadership was defined as being characterized by a high degree of interaction and involvement with subordinates, and joint decision making; laissez-faire being associated with a low degree of interaction and involvement, and high autonomy in subordinate decision making; while directive leadership was characterized by a moderate degree of interaction and involvement, with most

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<sup>46</sup>Howard Baumgartel, "Leadership Style as a Variable in Research Administration," Administering Research & Development: The Behavior of Scientists and Engineers in Organization, eds. Charles D. Orth 3rd, Joseph C. Bailey, and Francis W. Wolek, (Homewood, Ill.: Richard D. Irwin Inc., and the Dorsey Press, 1964), pp. 86-98.

decisions being made by the laboratory director.

As predicted, participatory leadership was found to be associated with the highest scores on a number of different measures of the motivations and attitudes of the scientists in the eighteen laboratories. The results of this study suggest that high-level professional personnel do respond to situational factors in organization. The leadership climate within which the scientist works is thus an important variable in determining his motivations and attitudes.<sup>47</sup>

### Organization Development

As has been obvious from the previous pages, individual development affects and is affected by organizational posture and adjustment, as operationalized by organizational structure, as well as management philosophy and policies. Most of the research previously cited has investigated individual characteristics or individual relationships to the organization. The emphasis in this paper is on the development of individuals within the organization. The purpose of this section is to recognize the existence and some of the efforts in a field which examines the total organization as a social system.

As managers can grow and develop in an organized management development program, so the area of organization development proposes planned change for the organization. As John W. Gardner notes, "Perhaps what every corporation (and every other organization) needs is a department of continuous

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<sup>47</sup>Ibid., pp. 97-98.

renewal that could view the whole organization as a system in need of continuing innovation."<sup>48</sup>

The term, organization development, can be used to embrace a variety of activities from canned programs to highly responsive joint efforts between behavioral scientists and client systems. In general, it refers to long term efforts to make the organization more responsive in coping with its internal and external environment. Some of its basic assumptions about people are similar to Theory Y assumptions.

A frequent strategy in organization development programs is the use of an action research model.<sup>49</sup> The key aspects, which tend to be cyclical, include: diagnosis of such matters as interpersonal and intergroup problems; data gathering, frequently through interviews; feedback to the client group, data discussion and work by the client groups; action planning, and action.

Organization development programs largely grew from T-group efforts, also known as laboratory training or sensitivity training, which in one form or another tends to be an integral part of most such programs. The main objective of laboratory training is an increased sensitivity or awareness of: one's feelings, reactions, and impact on others; the

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<sup>48</sup>John W. Gardner, Self Renewal (New York: Harper & Row, 1965), p. 76.

<sup>49</sup>Wendell French, "Organization Development Objectives, Assumptions and Strategies," California Management Review, Winter, 1969, p. 26.

dynamics of group action; and organizational role relationships.<sup>50</sup> With additional awareness, changed attitudes in these areas are expected.

In a careful review of the research literature on T-Group training results, House concluded that the research showed mixed results.<sup>51</sup> Research on changes in personality inventories were seen as inconclusive. Studies which examined behavior of participants upon returning to work were seen as more positive.

Campbell and Dunnette in their review contended that research showed T-Group training produced changes in behavior, but that usefulness in terms of job performance has yet to be demonstrated.<sup>52</sup> Thus clear indication of organizational benefit of this type of training must await further research.

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<sup>50</sup>Ibid., p. 46.

<sup>51</sup>Robert J. House, "T-Group Training: Good or Bad? Questions for the Practicing Manager," Business Horizons December, 1969, p. 77.

<sup>52</sup>John P. Campbell and Marvin D. Dunnette, "Effectiveness of T-Group Experiences in Managerial Training and Development," Psychological Bulletin, August, 1968, p. 104.

## Chapter 4

### FRAMEWORK FOR A SYSTEMS APPROACH TO MANAGEMENT DEVELOPMENT

#### The Systems Approach

The elements of the systems approach were outlined earlier in the section on definitions. In general, it is an alternative to the traditional method of examining and solving problems piecemeal. Those using this latter incremental approach often fail to realize that changes in one part of a system, which appear to solve the particular problem in hand, can have a degrading effect on some other part of the system. Thus the systems approach is an attempt to broaden the spectrum of consideration recognizing all of the major variables which determine final output, and identifying the effect on the systems when introducing a modification in one or more variables. But the latter requires a knowledge of relationships among the variables, which in the case of organizations are yet rather tenuous. As a minimum, it is necessary to at least recognize the major factors involved in establishing and maintaining a system, in this case a management development system.

The systems approach framework used for considering



these factors is that proposed by C. West Churchman.<sup>1</sup> His system conditions included: objective, measure of performance, client, system designer or planner, decision maker, controllable factors, environment or uncontrollable factors, components, and system stability. Each of these are examined within this chapter, in addition to other applicable considerations, in the context of their relationship to a management development program.

The function of the examination is not to establish an ideal arrangement of factors, but to explore each factor with the expectation that each organization could draw from this in establishing or improving their program in response to their unique situational requirements.

#### Interrelationship of Objectives

A system which is very complex in its operation is also difficult to understand internally and to knowledgeably manipulate. It is a bit like taking the back off of a watch never having seen or heard of its internal workings. Each part is highly interrelated to the other parts. Thus a determination to examine and manipulate one part in isolation may be misleading.

The same applies to management development. Although

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<sup>1</sup>C. West Churchman, On Whole Systems: The Anatomy of Teleology, Revised Internal Working Paper No. 31, Space Sciences Laboratory, Social Sciences Project, August, 1968 (Berkeley: University of California, 1968), p. 2.

limitations of time and space restrict major consideration in this paper to one element of the organizational system, one should examine elemental interfaces and the function of the management development subsystem within the overall organization.

Management development involves the growth phase of a manager. The first phase is that of recruitment or personnel selection. Some authors contend that development does not change people in dramatic ways but adds to their existing strengths.<sup>2</sup> Saul Gellerman underlines this by specifying:

The original decision to hire a man will largely determine not only the character of future leaders but the attitudes of the men they will lead as well. In fact, since neither hiring nor promotion changes the fundamental character of a man, it follows that the processes by which an organization acquires its people have a greater effect on motivation and productivity than any personnel action it can take afterward.<sup>3</sup>

Although others contend that attitude change is possible, it is obvious that the results of management development are constrained by the caliber of personnel to be developed.

Hand-in-glove with the development of managers is the assessment of their needs and that of the organization. Although this will be more adequately treated within

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<sup>2</sup>Daniel Glasner, "Why Management Development Goes Wrong: Five Reasons," Personnel Journal, September, 1968, p. 657.

<sup>3</sup>Saul W. Gellerman, Motivation and Personality (New York: American Management Association, Inc., 1963), p. 236.

Churchman's framework, the interface between management development and any assessment system, such as a performance appraisal system, must be recognized. Each will affect and be affected by the other. From a management development viewpoint, the appraisal system should: be objective oriented; allow feedback; remain flexible to allow for different supervisory leadership styles; assume an open, nonzero-sum posture, so that all employees can experience positive changes; and be future oriented.<sup>4</sup>

A Study by Meyer, Kay, and French at General Electric Company revealed the very limited effectiveness of the traditional performance appraisal process.<sup>5</sup> They found that this method had little influence on future job performance. Improvement could be realized, though, if specified goals and deadlines were mutually established and agreed upon by the subordinate and his manager in an interview away from the appraisal interview. Both this study and one by Huse found that this latter approach, based on work planning and review, proves to be more effective in improving job performance than the traditional performance appraisal

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<sup>4</sup>Paul H. Thompson and Gene W. Dalton, "Performance Appraisal: Managers Beware," Harvard Business Review, January-February, 1970, p. 156.

<sup>5</sup>Herbert H. Meyer, Emanuel Kay, and John R. P. French Jr., "Split Roles in Performance Appraisal," Harvard Business Review, January-February, 1965, p. 129.

method.<sup>6</sup> Thus a modified approach to performance appraisal can become a management development mechanism. Here, as in other areas, the explicit U. S. Civil Service Commission and agency limiting regulations must be recognized; in this instance, the formal performance appraisal requirements.

Management development is also closely tied to the organization's advancement system. If participants perceive that organizational rewards in terms of advancement, as well as personal rewards in terms of satisfaction are not worth the effort, their participation in a management development program will be lukewarm at best. An effective management development system which helps managers grow to increased levels of competence, coupled with an advancement system which selects based on competence will obviate this problem.

#### Objectives of Management Development

As previously noted, competent managers are a scarce commodity. To obtain the most competent technical management, one must either recruit experienced personnel or develop individuals already within the organization through the mechanism of management development. The former is a very expensive and difficult process, and is often impossible

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<sup>6</sup>Edgar F. Huse, "Putting in a Management Development Program that Works," California Management Review, Winter, 1966, p. 80.

due to the limited supply. Thus the latter appears the more fruitful alternative. To augment the supply of competent technical managers, the management development program, in general, could be aimed at improving the performance of technical managers in their present positions as well as ensuring an adequate reserve of capable well-trained managers for future needs.

The literature is replete with indications of differing specific objectives for management development programs. The integrating aspect is that they all may be correct, but are discussing different programs for the different levels of management. Lower levels of management are concerned primarily with specialist skills and management tool skills. With advancement toward middle management, the former drops off while the latter increases, and interpersonal skills become important. At top management positions, specialist skills almost disappear, management tool skills have some but a lesser importance than previously, and interpersonal skills become dominant.<sup>7</sup> Lower levels of management work with matters of shorter time perspective than that of top management. Thus implementing gives way to planning as one ascends the managerial ranks. All of this serves to point out the differing needs of the different levels of management. Consequently, a

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<sup>7</sup>James G. Coke and John W. Lederle, "Equipping the Professionally-Trained Functional Specialist for General Administrative Responsibility," Education for Administrative Careers in Government Service, ed. Stephen B. Sweeney (Philadelphia: University of Pennsylvania Press, 1958), p. 179.

differing program is required for each set of clientele.

Although located on a sliding scale of importance, this would at least require incorporation of the following program elements: improving technical skills and knowledge; improving administrative or management skills; and changing attitudes as well as developing a managerial philosophy.

Incorporating the area of technical skills and knowledge recognizes the rapid pace of current change, particularly within the domain of the scientist and engineer. This requires that the manager, particularly at the lower levels, remaining comparatively current in his field, but not to the degree of the specialist. As one ascends the managerial ranks it would be impossible to maintain the technical competency of a specialist while gaining managerial capabilities. Consequently, due to priorities reflecting the individual's needs, the former is often sacrificed to gain the latter. Nevertheless, a basic knowledge of the former is still required to be able to ask the right questions of the specialists and to be able to communicate with them. This also implies a broadening spectrum of technical knowledge as one rises to manage a broader range of speciality areas.

Administrative skills refer to those activities associated with the traditional functions of management: planning, organizing, staffing, directing and controlling. The organizational approach here is determined by individual organizational philosophies.

The area of changing attitudes is very important, since without attitude change there can be no change in job performance.<sup>8</sup> Changing the attitudes of a manager, according to Megginson, "involves teaching him to have a perceptive consciousness of his impact upon other people and their impact upon him."<sup>9</sup> It is this sensitivity which is the objective of T-Group or sensitivity training.

The manager must consciously develop a managerial philosophy. For this will guide his actions through consciously establishing a personalized set of operating guidelines. This philosophy is the recognized resultant of the manager's set of values at that time.

In the case of transforming scientists and engineers into competent managers, special attention needs to be paid to areas that have been neglected in the past, which is usually human relations. The relevance of this area should be recognized, and a sensitivity to interpersonal relations should be gained. The necessity for awareness in this area is emphasized by Bennis when he indicated that "the manager must develop interpersonal competence, an ability that is becoming less a luxury than a necessity in a time when human

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<sup>8</sup> Edward C. Andler, "The Promotional Ladder," Personnel Journal, February, 1965, p. 68.

<sup>9</sup> Leon C. Magginson, Personnel: A Behavioral Approach to Administration (Homewood, Ill.: Richard D. Irwin, Inc., 1967), p. 341.

motivation is so crucial to success."<sup>10</sup>

Being highly rational, scientists and engineers will attempt to determine the "one best way" in a management style. Yet Bass notes, "Training programs have to point out to executives that there is no one pattern of behavior that is optimal or ideal. Rather, the executive has to develop awareness of how different situations call for different kinds of actions on his part."<sup>11</sup>

A management development program, particularly for the higher levels of management, is related more to creating an environment in which the manager is encouraged to grow to his potential, rather than a process of manipulation. This growth can also be a motivation force.

If the scientific and technical personnel are to grow and develop into capable managerial employees, and if managerial personnel are to develop, provisions must be made for them to grow as persons. The reasons for this inescapable conclusion is that in the long run, the greatest motivational device at management's disposal is the opportunity for subordinates to grow.<sup>12</sup>

Schein views this process of growth as "basically one of

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<sup>10</sup>Warren G. Bennis in the Forward to Alfred J. Marrow, Behind the Executive Mask, (New York: American Management Association, 1964).

<sup>11</sup>Bernard Bass, "Effective Executive Leadership Styles," Measuring Executive Effectiveness, eds. Frederic R. Wickert and Dalton E. McFarland, (New York: Meredith Publishing Co., 1967), p. 126.

<sup>12</sup>Megginson, Personnel, p. 351.



unlearning and relearning perceptions and attitudes."<sup>13</sup>

Management development can become the mechanism for allowing such growth. This can be accomplished by concentrating on "developing executive sensitivity to problems and situations-- not just human problems, but technical and organizational problems as well."<sup>14</sup>

In summary, the objectives of a management development program can be aimed to satisfy the different needs for different levels of management in terms of improving technical skills and knowledge, improving administrative or management skills, and changing attitudes as well as developing a managerial philosophy. The latter appears to be of significant importance since it is a prerequisite to improving job performance.

#### Measures of Performance and Program Evaluation

A variety of training is conducted in many organizations, but evaluation of the training is frequently conspicuous by its absence.<sup>15</sup> Only recently has evaluation of training and development programs been of serious concern. Major problems are the lack of any standard development

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<sup>13</sup>Edgar H. Schein, "Forces Which Undermine Management Development," California Management Review, Summer, 1963, p. 25.

<sup>14</sup>Bass, "Executive Leadership Styles," p. 126.

<sup>15</sup>W. McGehee and P. W. Thayer, Training in Business and Industry (New York: John Wiley & Sons, 1961), p. 256.

pattern and adequate instruments for meaningful evaluation. The lack of adequate instruments may be a reflection of the uncertainty as to what elements should be measured, and the large number of variables with their associated relationships that affect those elements. The title of a recent article is symbolic of the current state-of-the-art of management development evaluation, "Management Training: An Act of Faith."<sup>16</sup>

Yet evaluation is necessary if improvements are to be made. For how can a meaningful determination be made that the effort is worth the resources expended without some evaluation program?

The problem of evaluation is two fold:

- (1) Determining whether the training procedures under consideration result in the desired modification of employee behavior.
- (2) Determining whether the outcome of training procedures has any demonstratable relationship to the achievement of organizational goals.<sup>17</sup>

The traditional approach to evaluation is that "the effectiveness of any training program can only be assessed in terms of the specific objectives of that program."<sup>18</sup> These

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<sup>16</sup>"Management Training: An Act of Faith," Duns Review, December, 1968, pp. 46-49.

<sup>17</sup>McGehee and Thayer, Training, p. 88.

<sup>18</sup>Francis L. Harmon, A Path to Management Development and to The Measurement of its Growth, AD645772, February, 1963 (Springfield, Virginia: Clearinghouse for Federal Science and Technical Information, 1963), p. 3.

objectives should be indicated in terms of observable behavior or behavior change if evaluation is to be possible. Behavior change could then be used as a common denominator to measure (1) and (2) noted previously.

From this viewpoint, specific objectives for management development programs would be needed in terms of attitude or behavior change which could be measured to determine program effectiveness. This can be accomplished with relative ease for programs involving the lower levels of management where skills and knowledge are a major part of the development program; but it becomes significantly more difficult for middle and upper management where there is a lack of agreement on behavior desired, and uncertainty as to how this behavior should be defined.

It should be noted that the institution of an evaluation program can be helpful not only to management but to the trainee also. For "learning is facilitated in direct proportion to the amount of feedback the learner is given about his performance."<sup>19</sup> Thus feedback has an accelerator effect in accentuating management development effectiveness.

If evaluation is necessary, what criteria should be used and how? The criteria could include an almost infinite

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<sup>19</sup>Timothy W. Costello and Sheldon S. Zalkind, eds., Psychology in Administration: A Research Orientation, (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963), p. 218.

list of elements.<sup>20</sup> For management development, this could include changes in manager knowledge, attitude, and ability, as well as changes in his job performance or that of his subordinates. Considering the associated complexities of test and scale construction, experimental design and statistical analysis, someone well trained in these areas should be consulted in the planning and execution of an adequate and unique, development evaluation instrument.

The literature is silent as to the availability of any measurement instrument of broad acceptance. Interviews with responsible personnel in the management development field confirmed this non-entity.<sup>21</sup>

An attempt was made to search the literature for a suitable development measurement instrument. Such an instrument would have to relate changes in individual behavior to some measure of managerial productivity. One can find many measures of individual development through evaluation of the training process, or evaluation of the individual through attitude change measurements. This satisfies the first of two problems of evaluation cited earlier--that of

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<sup>20</sup>For details on developing a unique evaluation program see Robert J. House, Management Development: Design Evaluation and Implementation (Ann Arbor: University of Michigan, 1967), pp. 79-96; see also William R. Tracey, Evaluating Training and Development Systems, (New York: American Management Association, 1968), pp. 33-267.

<sup>21</sup>Refer to list of interviewees, p. 116.

measuring desired change in the individual. These approaches do not satisfy the more difficult of the two problems--that of showing achievement in organizational goals through individual development.

The organization is affected by a multitude of variables. A very accurate determination of organizational output would require a knowledge of these variables and their interrelationship, as well as their relationship with organizational output. An extensive amount of additional research would be necessary before such could be attained. Nevertheless, a major causal factor in organizational output and individual satisfaction appears to be the organizational style or philosophy of operation, e.g. whether Theory X or Theory Y assumptions are prevalent. It appears that organizational style is extensively established by the dominant style of its management, particularly that of its top management. If this is true, then one should be able to utilize a measurement of movement in organizational style, which has been correlated with output, as an indication of management development effectiveness.

One instrument was found which has applicability. This is the System 1 to 4 measurement scheme created and tested by Rensis Likert, Director of the Institute for Social Research, University of Michigan, and his staff. In his book, The Human Organization, Likert describes his questionnaire in which individuals select descriptive statements of organizational variables in terms of their own organization by

indicating its status as a point on a continuum from System 1 to System 4.<sup>22</sup> Each System has a phrase description of the organizational variable being evaluated to aid the individual in the proper positioning of his organization along the continuum. System 1 can be defined as exploitive-authoritative while System 2 through 4 can be described respectively as benevolent-authoritative, consultative, and participative. System 1 through 4 approximate a Theory X through Theory Y assumption continuum.

Many different types of managers, totaling several hundred persons have completed the questionnaire, describing both the highest-and lowest-producing departments with which they were familiar. A very revealing fact was that the low-producing departments quite consistently were rated to the left or System 1 side of the high-producing departments which were seen as toward the right or System 4 side of the continuum. "Those firms or plants where System 4 is used show high productivity, low scrap loss, low costs, favorable attitudes, and excellent labor relations. . . . Shifts toward System 4 are accompanied by long-range improvement in productivity, labor relations, costs, and earnings."<sup>23</sup>

Likert's instrument measures organization movement

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<sup>22</sup>Rensis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill Book Co., 1967), p. 4.

<sup>23</sup>Ibid., p. 46.

rather than individual movement. This recognizes the systems nature of change. Thus change, to be effective, cannot be isolated to individuals, or to a specific aspect of organizational operations such as goal setting or communications.

The instrument could be used periodically, for example each six months, to determine the total organization's movement toward a system 4 position. This would result in an overall measurement relative to an absolute scale, but would not be indicative of the effectiveness of a management development system. For this measurement, control groups would be necessary. So as not to confound the data,<sup>24</sup> the control groups should be segregated from the experimental group, preferably in a separate physical location such as separate plant or division.

One variable that Likert finds to be particularly important is that of time. He notes that there is evidence from two separate large-scale field experiments, conducted by the Institute for Social Research, "to show that the time intervals between changes in the causal variables [managerial behavior and organizational structure] and the related changes in the intervening and finally in the end result variables

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<sup>24</sup>Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston Inc., 1966), p. 308.

[health, satisfaction, productivity and financial performance] took much longer than the investigators had expected."<sup>25</sup>

### Program Client

The content and approach of a management development program hinge significantly upon the determination of client. Many organizations would quickly respond that the client is obviously the manager being developed. But is he? In the polar case, if the manager is the sole client, it is he who establishes program objectives and content. The program serves his needs. In contrast, if the organization is the sole client, then the manager is a resource to be manipulated to meet organizational needs.

If the manager is the sole client, a laissez-faire situation can evolve. This could almost be termed people without organization. In terms of Blake and Mouton's managerial grid, the program would be very highly people centered but probably have a low task orientation or concern for production.<sup>26</sup>

If the organization is the sole client, a classical

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<sup>25</sup>Rensis Likert, David G. Bowers, and Robert M. Norman, "How to Increase a Firm's Lead Time in Recognizing and Dealing with Problems of Managing Its Human Organization," Michigan Business Review, January, 1969, p. 13.

<sup>26</sup>Robert R. Blake and Jane S. Mouton, The Managerial Grid (Houston, Texas: Gulf Publishing Co., 1964); see also Robert R. Blake and Jane S. Mouton, Corporate Excellence Through Grid Organization Development: A Systems Approach (Houston, Texas: Gulf Publishing Co., 1968).



Theory X situation may be established. The organization would determine program objectives to serve only its needs. Program content would be based on organizational convenience. The program would have a high task orientation but very low concern for people.

As noted earlier both Argyris and McGregor point out the need to integrate organizational goals and individual needs to attain greater organizational effectiveness and personal satisfaction. Using this approach a joint client would emerge with neither being dominant. But this requires a willingness on the part of top management to share their powers rather than monopolize them. This then would be a movement in the direction of participative management and acceptance of Theory Y assumptions.

#### Program Planner and Decision Maker

The identity of the program planner and the program decision maker must be recognized. The literature is replete with intercessions for top management planning and participation in management development programs. House, in his top management commitment approach, recommends top management participation from establishing objectives and aiding in program design to establishing development policy and aiding in the implementation of this policy.<sup>27</sup> He concludes that

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<sup>27</sup>House, Management Development, pp. 45-64.

such an arrangement will insure a climate conducive to a development program which is compatible with top management values.

At the other end of the planning continuum, the employee development staff would design the entire program for top management approval. Such a program is likely to draw only marginal attention from potential candidates. If top management has little time for the program, individuals will probably perceive a very low reward potential for participation. The employee development staff can be a partner with top management in establishing and implementing a management development program; but the more fully the staff assumes the total load, the greater is the danger of a lukewarm program.

The two cases cited near the beginning of this paper, which indicated the dysfunctional aspects of management development at a British manufacturing company and at International Harvester, were examples of a lack of participation by top management. They illustrated that only organizational convulsions can occur when managers are taught participative management principles and return to practice them in an authoritarian organization. This points up the importance of insuring that the designer's value structure be very close to that of the client.

The decision maker controls the system resources. He, or an organizational entity which represents a decision

maker, then implements the system proposed by the system planner. Thus he determines the future, when joined with the environment which he does not control. The importance of locating the decision maker and planner in a single organizational entity, or entities which have very similar value structures immediately becomes obvious.

The determination of program planner and decision maker also relate to the previous section on the client. If the manager to be developed is excluded from the planning and decision making phase entirely, the comments relative to a Theory X situation apply. A joint effort would reflect both organizational and individual needs.

To an extent, we are confronted with a paradox. A management development program can attempt to create a value congruence between that of the organization, as primarily determined by top management, and that of the individual; yet this value congruence appears to be a very helpful, if not necessary, condition in planning and establishing such a program. A heuristic process of an iterative nature based on feedback is suggested. This would allow the management development program to "spiral," in a whirlpool fashion, toward a desired value congruence. This approach relates to system stability which is reviewed at the end of this chapter.

#### Responsibility for Management Development

A common slogan in management development literature

is that "all development is self development."<sup>28</sup> Thus the responsibility for development falls squarely on the shoulders of the individual. The slogan is partially true and partially false. Without an encouraging environment, individuals can easily perceive that the rewards for development are low; otherwise management would encourage it. Bailey and Jensen questioned over one hundred managers from the first three levels of supervision in one company asking, "What books on management have you read in the past year?" The majority responded, "None." The percentages of "No's" were even higher when asked if they had ever taken a course in management.<sup>29</sup> Without some motivational information, it is difficult to see why the scientist or engineer would move management development up his priority list against items for which such motivational information is presented.

Thus the organization has a share in the responsibility for development. The organization must create a supportive environment for individual development to the extent that the individual is motivated through a perception that development is significant to his reward structure.

This thought is further developed in the Federal

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<sup>28</sup>For example Megginson, Personnel, p. 333.

<sup>29</sup>Robert E. Bailey and Barry T. Jensen, "The Troublesome Transition from Scientist to Manager," Personnel, September-October, 1965, p. 53.

Personnel Manual.

Self development is the cornerstone of training in the Federal service. Employees, therefore, should be appraised of Management's interest in and support of their efforts to improve their abilities and skills. . . . To the extent possible, agencies should provide staff and facilities to aid employees in achieving personal goals which may be directly or even indirectly related to the functions of their organization.<sup>30</sup>

Controllable and Uncontrollable Factors

Factors must be segregated dependent upon the extent of control available to the system planner and decision maker. With this analysis, the system planner and decision maker determine those factors which he wishes to manipulate and those which he must recognize as part of the system environment. Thus the uncontrollable factors or environment cause changes not produced by the decision maker while controllable factors cause changes which he produces.

The location of the decision maker in differing organizational positions will determine differing lists of controllable and uncontrollable factors. Thus the designer of the system must take this factor into account, locating the decision maker where the environment will not be excessively restrictive.

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<sup>30</sup>U. S. Civil Service Commission. Federal Personnel Manual, Chapter 410 Appendix A, Section A5.

### Components

One can better understand the system if the individual parts or components are recognized. These are the components which co-produce the output or performance to be measured.

#### Individual Employee and Development Alternatives

In considering these components, certain basic questions must be examined for each organization undertaking a management development program: Who? When? How? and Where? Each organization will probably arrive at different answers.

First of all, who should be developed? This will determine the scope of the management development program and certainly its content. Current predictive methods of identifying individuals capable of growing to assume top management positions are not very reliable. From a testing view, "some psychologists question whether any test for executive potential yet developed can measure the potential for managerial effectiveness in any pure or fundamental way."<sup>31</sup> Selection based on the judgement of peers and superiors as well as self selection appear to be as reliable as any means yet discovered, provided the persons judging are

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<sup>31</sup>Robert C. Albrook, "How to Spot Executives Early," Fortune, July, 1968, p. 111.

concerned and informed.<sup>32</sup>

Dunnette has identified six predictors of executive effectiveness including high intelligence and certain personality characteristics.<sup>33</sup> He is rather pessimistic about developing executive abilities in individuals since he feels these are a culmination of a total life pattern of successful endeavors. On the other hand, he does admit to limited program success in changing behavior in this area as published by Bentz.<sup>34</sup>

When during an individual's career should development be concentrated? Lacking satisfactory predictors of managerial success, most organizations resort to performance on the job as the most reliable method of identifying administrative talent. Some time will have elapsed before the new individual is given significant administrative responsibilities and has proven himself. In addition young scientists and engineers are often more concerned with practicing the profession that

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<sup>32</sup>Lynton K. Caldwell, "Identification and Development of Administrative Talent," to be included as a chapter in a book soon to be published, Issues in Public Science Policy and Administration: A Symposium.

<sup>33</sup>Marvin D. Dunnette, "Predictors of Executive Success," Measuring Executive Effectiveness, eds. Frederic R. Wickert and Dalton E. McFarland (New York: Appleton-Century-Crafts, 1967), p. 4.

<sup>34</sup>V. Jon Bentz, "The Sears Experience in the Investigation, Description and Prediction of Executive Behavior," Measuring Executive Effectiveness, eds. Frederic R. Wickert and Dalton E. McFarland (New York: Meredith Publishing Co., 1967), pp. 147-206.

they have labored so hard to enter than immediately assuming managerial responsibilities. In addition, many will feel a heavy commitment of off-the-job time to a new home and family. There is also evidence that aging is a determining factor in developing managerial talent.<sup>35</sup> These factors point toward early to mid-career as the most advantageous period for concentration of management development. One must immediately recognize though, that development, like education, is a continuous, life-long process.

The how and the where merge to represent the development alternatives which themselves are system components. Based on a study of a number of organizations, Ordiorne summarized a good management development program for engineers as including the following, among other development alternatives: classes, seminars, evening courses, conferences, outside reading, job rotation, service on committees, coaching, understudying executives, advanced management courses, and membership in professional societies.<sup>36</sup> This paper will not explore the relative effectiveness of these development alternatives.

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<sup>35</sup>Lawrence L. Steinmetz, "Age: Unrecognized Enigma of Executive Development," Management of Personnel Quarterly, Fall, 1969, pp. 2-10.

<sup>36</sup>George S. Odiorne, "Making Managers Out of Engineers," Personnel, November, 1956, p. 266.



## Management

Top management is the keystone of the entire system. In many organizational structures, the development of the system awaits their initiative. Even when initiated elsewhere, it most probably will only achieve lukewarm success without their participation and endorsement. The necessary functions of top management in a management development program have been reviewed earlier.

## Employee Development Staff

A successful system in large measure depends upon the capabilities of this staff. Top management must rely upon them for detailed program efforts, maintaining the system, and briefing management. A high level of continuous involvement by the staff may be necessary after program implementation to maintain the organizational momentum for employee development. A concerned and experimental attitude is required within the staff to prevent the developmental function from being translated into a routine administrative operation.

A major role of the development staff is strategy planning with top management. This is concerned with developing managers to cope with future, internal and external, organizational environments. The staff would appraise top management of organizational conditions and policies which would be conducive to individual growth and organizational productivity.

In addition, such a staff would aid managers in their responsibility for developing subordinates; not to assume the development function, which is a line responsibility, but to arm the manager with essential knowledge and tools.

#### Program Stability

In a cybernetic sense, a management development system requires feedback. This feedback can serve two functions. It can fulfill a maintenance function, as a thermostat maintains a space temperature through feedback information, or it can satisfy an improvement function.

To fulfill the latter, the system designer must incorporate an improvement feedback loop into the system. Thus the program would be expected to oscillate in output throughout a learning process, but act as a dampened function through continuous feedback from learning. The output would be expected to attain some "satisficing" level,<sup>37</sup> recognizing that this level would itself be dynamic in response to changing controllable and uncontrollable factors.

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<sup>37</sup>As defined by Herbert A. Simon, Administrative Behavior (2d ed.; New York: The Macmillan Co., 1957).

## Chapter 5

### REVIEW AND ANALYSIS

#### Summary

The major thrust of this paper was the examination of basic considerations in the transformation of scientists and engineers in the federal government into competent managers. These considerations were primarily of a behavioral and systems nature. The characteristics both of top management, as representative of organizational needs, and the individual manager to be developed were examined. Each represented a position of need. Management development was viewed as a mechanism for the integration of these needs.

To set the scene, it was necessary to initially examine the problem. Here many factors are combining to pose a developmental challenge. Scientists and engineers are gaining added prominence by virtue of the current state of increasing technological complexity. This has thrust many technical professional personnel into managerial positions within the federal government during the last quarter-century. Often, organizations based their managerial selection on the individual's technical abilities not recognizing the highly

differing requirements of the two roles.

Unfortunately, the formal education of the scientist and engineer has included only a limited amount of management education, particularly in the area of human relations. Yet the main function of management is dealing with and through people.

In response to the obvious need for developing managers, the field of management development gained rapid acceptance in terms of alternative solutions. The lack of evaluating basic considerations, though, revealed the dysfunctional aspects of management development.

The federal government has also climbed aboard the employee training and development bandwagon, albeit 10 to 20 years later than industry. As a result, large fiscal increases in this area are projected. This reflects a high degree of interest on the part of federal government departments and agencies. Although interagency training has grown significantly over the last few years, the major burden still rests within the agency for management and supervisory development. Thus a comprehensive management development program within the agency, integrating the various developmental efforts, appears to be a necessity.

If this is true, what are the necessary basic considerations in establishing or improving a management development program? This paper examined first the behavioral considerations, and then a set of systems considerations.

A major factor, if not the determining factor, in establishing the complexion of a management development program is the organizational position on a Theory X to Theory Y assumption continuum. This basic view of man is primarily established by the organizational style set by top management. From this very fundamental view appears to emanate a host of considerations. A manager's leadership style seems to reflect his position on the continuum. There is some evidence that this leadership style determines organizational output and individual satisfaction. In addition, the managers position on the continuum tends to color his view of what elements are motivators for his subordinates. Unfortunately, many organizations are still utilizing as motivators those elements which were motivators at one time, but are no longer so since we have moved to a higher level in the hierarchy of needs. Some organizations have recognized this situation and are moving to provide satisfaction for higher level needs which act as motivators. Thus job requirements are being modified to create more challenge and individual responsibility rather than concentrate on such aspects as more pleasant surroundings or greater fringe benefits. Limited evidence indicates that jobs so modified result in increased personal satisfaction and organizational output.

A basic misconception appears to be the view that Theory Y is a "soft" management of little or no control as

opposed to the "hard" authoritarian form of management associated with Theory X. But McGregor, in presenting his Theory X and Theory Y assumptions, points out that such is not the case. The little or no control is associated with a condition of laissez-faire which is yet another category, a Theory W if you will. Studies have shown that participative management, which reflects Theory Y assumptions, are superior in organizational output and individual attitudes to either authoritarian, reflecting Theory X assumptions, or laissez-faire styles of management.

The systems approach utilized in this paper examined management development program objectives, evaluation, client, planner, decision maker, controllable and uncontrollable factors, components, and stability. In addition, the responsibility for management development was examined, as well as the interrelationship of the management development subsystem to other subsystems within the concept of an overall organizational system. The approach concentrated on analyzing elements within each of the above areas which managers could utilize in examining their own unique organizational requirements.

### Conclusions

A major conclusion of this paper is that under certain conditions management development can serve as a mechanism to integrate organizational and individual needs. These

conditions relate to the situation in which both sets of needs have the potential for being satisfied. It is necessary first to examine the necessary conditions relating to each set of needs and then recognize the linking function of management development.

From a behavioral viewpoint, organizational needs can be considered in terms of individual motivation. Without a sense of motivation it is doubtful that individual output will satisfy organizational needs. As indicated in the study, the extent of the individual's motivation is related to his position on a hierarchy of needs and conditions in the organization which allow the individual to strive toward fulfillment of unsatisfied needs. Under these conditions, the unsatisfied needs act as motivators.

Up until the middle of this century in this country, predominantly authoritarian management used the physiological and safety needs as motivators successfully. Under economic conditions up to that time, they were in fact motivators. In examining our current level of affluence, though, it appears that most people in this country have generally satisfied their physiological and safety needs to a high degree. Thus these needs no longer are motivators. If this is true, organizational conditions would be required which allow the individual to satisfy the higher needs of ego, social and self actualization needs which are motivators. But it is the contention of this author that the use of these needs

requires a different form of management style from that typical of previous authoritarian managements. A new set of management assumptions about man is required. These basically are the Theory Y assumptions.

This paper related studies in which participative or developmental management styles, which reflect Theory Y assumptions, are superior in organizational output and individual satisfaction to the more traditional authoritarian management style.

Just as these factors apply to satisfying organizational needs, they also apply to individual needs. A large amount of research has been done in this area, yet much remains to be understood. Nevertheless, based on the empirical findings of Likert and others, it appears that management based on Theory Y assumptions results in higher personal satisfaction than that based on Theory X assumptions.

Thus, under current economic conditions, both organizational and individual needs appear capable of satisfaction under a management style which is based on Theory Y assumptions. Management development can serve to implement and perpetuate this mutual need satisfaction through focalized efforts to change attitudes and their associated values in line with these assumptions. But such an effort can only be successful if these are the guiding assumptions of top management.

A paradox is also created in that a management



development program can serve to yield additional value congruence, but some measure of value congruence between the system designer and the client is necessary in establishing such a program. This serves to point out that management development can make a healthy organization more healthy, but may not make a sick organization healthy. Calisthenics is not the proper prescription for appendicitis. Thus the proper use of solutions is dependent upon ascertaining the form and scope of the problem. Specifically, the determination to utilize a management development program, as well as program scope and content, must be established by the psychological health of the organization. This health is determined in part by the environment of our society, and in part by the organizational style or philosophy which is primarily established by top management. As previously noted, the manager's basic assumptions or view of man, to a large extent, color his managerial style and in turn his mode of operations, level of subordinate job satisfaction, and organization output.

In summary, management development can be a mechanism for attaining mutual organizational and individual need satisfaction under conditions of psychological health of the organization and use of Theory Y assumptions by organizational management. Management development can be an effective mechanism to change the individual's attitudes and in turn behavior in accordance with these assumptions, as well as assure permeation of Theory Y assumptions throughout the

organization.

An additional conclusion of this paper is that a management development program, shaped to fit the needs of the different levels of management, can smooth the transition from scientist or engineer to competent manager. A major consideration was shown to be the inclusion of a systems approach to development rather than attempting to solve problems piecemeal. This recognizes that management development is but one force being exerted upon the manager in his total influence pattern within the organization.

Although the same behavioral considerations relative to Theory X and Y assumptions cited previously are applicable, the transition from technical professional to manager is primarily concerned with a process. To insure that all of the process elements are considered, a framework is necessary. Such a framework is the systems approach utilized in this paper.

#### Some Unresolved Issues

Much research is yet required before we can understand that most complex being--man. Intertwined with individual behavior, and even more complex, is his behavior and relationship with his fellow man in that synthetic accumulation of effort called the organization.

With regard to management development, much remains to be understood about such areas as the relationship between causal variables of management behavior and organizational

structure, and the end-result variables of individual satisfaction and organizational productivity. Preliminary study information indicates that the time interval between causal variable modification and end-result effect is much greater than previously expected. To test various approaches recognizing the factor of time, the Institute for Social Research, under the direction of Rensis Likert, has initiated a five-year research project. This will provide extensive data for analyzing the relationship of causal, intervening, and end-result variables.<sup>1</sup>

Several periodical articles were cited in the paper which indicated that scientists and engineers, when grouped, pay more allegiance to their profession than to their employing organization. Limited research, which segments the two groups, indicates that engineers are highly organization-oriented, and that the value divergence of the scientist from that of the organization may be overdramatized. This area requires additional research for clarification.

Beyond the suggested additional research, the paper poses two basic questions for consideration: one relating to position design, the other to planned management development.

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<sup>1</sup>Rensis Likert, David G. Bowers, and Robert M. Norman, "How to Increase a Firm's Lead Time in Recognizing and Dealing with Problems of Managing Its Human Organization," Michigan Business Review, January, 1969, p. 13.

The first point is one in which the public and private sectors appear to take positions which are at variance with each other. There seems to be increasing evidence of designing the job description to fit the manager within industry, while the dominant view over the last century in the federal government has been to fit the manager to preconceived position requirements. This latter view simplifies personnel administration through standardization and minimizes the potential for favoritism, but would appear to be suboptimal in individual potential utilization. This raises fundamental questions from the systems approach. What are the objectives of such an arrangement? Who is the client? Should fear of favoritism be more important than optimizing individual output?

The second question area relates to planned management development. Limited study findings indicate that executive level appointments in industry are preceded by extensive grooming of potential candidates through rotation to more-demanding positions. Thus management talent is cultivated. Within the constraints of the federal government merit system, such appears to be discouraged due to the possible charges of favoritism and the existence of "fair-haired boys." Yet isn't such an arrangement which systematically develops competent individuals for high managerial positions within the federal government necessary? Or will fortuitous circumstances be an acceptable alternative to planned managerial growth to avoid the possible abuses of such an

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