

THE RESEARCH ON THE DEVELOPMENT OF MANAGEMENT THOUGHT

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I INTRODUCTION

Management has been some concern to organized society throughout civilized history. Certain principles of management can be traced back many centuries, but there has not been a continuous historical development of management theory over the years. Instead, there has been the sporadic recurrence of certain ideas, formulated independently by different writers, at different times, and in different circumstances.¹

It wasn't until the nineteenth century and the ascendancy of the factory system as the primary mode of production that we see evolve a great need for a managerial class and for managerial principles. As business continued to grow both in size and in number multiple problems not previously faced by managers were encountered. Concern was expressed over these problems of bigness, and emphasis in thinking moved from the area of the firm to the area of things within the firm: process, equipment location, layout, production techniques, incentive systems, and the like.²

As management progressed new streams of thought concentrating on the broad principles of management began to develop. These principles were later refined in order to explain the totality of the manager's role within the organization.

As interest in management expanded, other fields, such as the social sciences, began to introduce new theories from a different perspective. Soon there was great interest in the human element in the organization, and an increasing amount of study in the field of human behavior developed.

1 W. Warren Haynes and Joseph L. Masse, *Management: Analysis, Concepts, and Cases* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961), p. 2.

2 Claude S. George, Jr., *The History of Management Thought* (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1968,) p. 85.

As a last step in the evolution of management thought, there has emerged a systems approach to management. This approach borrows from all the sciences to explain the relationship of the parts of a complex system to the whole which could be the business organization, society, or the whole world.

II THE SCIENTIFIC MANAGEMENT MOVEMENT

The Factory System

Under the feudal system of government, predominant in Europe from the ninth to the fourteenth century, as agricultural type environment existed. The family was primarily a self-supporting unit by raising its own food supply and spinning its own cloth. Any surplus of agricultural production went to the feudal lord, and consequently there was little chance to accumulate wealth.

Gradually, various free cities became established in which there was a large measure of self-government, although in many instances, the people still owed allegiance to some feudal lord. In addition, specialization began to develop. If an individual produced more than he needed, he could use the surplus for sale or barter. Usually organized on a family basis, the system that developed existed in conjunction with a farm where the labor was provided by the farmer and his family. This was known as the domestic system.³

The next stage of development toward the factory system was the putting-out system.⁴ Again the work was primarily done at home, but instead of just selling surplus, a contract was made by a local merchant who would supply the necessary raw materials and would pay a bargained piece rate for the finished product. A merchant could now be assured of a steady supply of finished products; however, problems developed with this system. Since the piece rates were not very high and the workers were normally hard pressed, there was a tendency to withhold materials and sell them on the sly. The merchant, on the other hand, had no

³ Claude S. George, Jr., *The History of Management Thought* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968,) p. 47.

⁴ *Ibid.*, p. 48.

objective standards of material usage, and therefore could not account for all the raw material provided. This problem was one of the contributing factors that led to the rise of the factory system.

The factory system may be distinguished from other modes of production by the following characteristics.⁵ (1) Workers, raw materials, machinery, and equipment are concentrated in a building or group of buildings used exclusively for production. As was noted previously, production before the factory system was performed in the home by a single or a small group of craft workers. (2) The factory system brought centralized control of raw materials, production, and output. The earlier merchant-employer or putting-out system lacked this type of control.

(3) The ultimate development of the factory system brought a clear distinction between the employer and employed.

The industrial revolution was a major contributing factor in the rapid development of the factory system.⁶ A number of inventions that appeared during the middle of the eighteenth century resulted in this development. For example, in 1765 Watt perfected the steam engine and in 1770 it was introduced into industry through Hargreave's spinning jenny. In 1771, Arkwright applied water power in a spinning device called the water frame and in 1779, Compton developed the "mule" spinner which employed the features of both previous inventions. It is that these inventions had a far-reaching effect and probably mark the beginning of the modern factory system.⁷

The factory was now able to furnish both power and machines for large-scale production. The specialized machine performing one operation in a total sequence of hundreds of operations now required a great number of workers. Large amounts of capital were required to finance these factories and because the craftworker could not obtain the resources and compete with the factories, his only alternative was to assume the role of employee.

⁵ Henry H. Albers, *Principles of Organization and Management* (New York: John Wiley & Sons, Inc., 1961), p. 14.

⁶ *Ibid.*

⁷ R.C. Davis, *The Principles of Factory Organization and Management* (New York: Harper & Brothers, Pub., 1928), p. 4.

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With the rise of more complex operations, there appeared a need for more planning and supervision than was needed in the smaller and simpler handicraft production units. ⁸ Division of work became more important and complex, the worker's part in the production process became more specialized, and the relationship between the employer and the worker became more impersonal. The problem of motivation became more and more apparent for in the past the customs and traditions of craft production had played an important role in promoting cooperation while the craftsman derived social status from craft status. But now the worker no longer could feel that he was an organic part of the organization. His only interest in the enterprise rested in its ability to pay him a wage with which to survive.

The coming of the industrial revolution and the factory system brought forth a great system of producing goods, but also brought forth a need for a managerial class. It is evident by the complexity of the problems encountered by the early factory system that management soon will become a great subject of discussion and writing.

The Origin of Scientific Management

In 1832, at a time when the factory system was still young in Europe and not introduced on a substantial scale in America, Charles Babbage, a mathematician, a scientist, and an author, recognized that scientific methods could be applied to industrial management. In addition to being a genius in the field of automatic computation, Babbage took full advantage of the fact that in the prosecution of his undertaking, he spent ten years visiting workshops and factories both in England and on the Continent. These ten years offered him a unique opportunity to study the problems created by the development of this new type of organization: the factory. ⁹ His studies of their methods led him to conclusions as to their problems of management which in many respects anticipated some of the most important findings of F.W. Taylor in the United States, though

⁸ Albers, *op. cit.*

⁹ Raymond Villers, *Dynamic Management in Industry* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960,) p. 15.

Taylor was unacquainted with his work.¹⁰ The results of Babbage's investigations led him to write a small book, *On the Economy of Manufactures*.

In general, Babbage recommended that data obtained as a result of rigid investigation should be utilized in managing an enterprise. He also indicated that management should find out the number of times each operation is repeated each hour; that work should be divided into mental and physical efforts; that the precise cost for every process should be determined; and that the worker should be paid a bonus in proportion to his own efficiency and success of the business. Babbage emphasized the importance of division of labor, indicating that greater profit could be made by specializing, that the time required to learn a certain process could be cut considerably, and that skill acquired in that process could be increased by the division of labor.¹¹

Even though it appears that Babbage's book was widely read, the recommendations he presented were so advanced for the times that they had little affect on the practice of management. In fact, it wasn't until the 1880's, that is fifty years after Babbage's book, that the problem of industrial management was considered again.

The feeling that there was a need for action was crystallized at an historical meeting of the American Society of Mechanical Engineers in May 1886.¹² At this meeting two papers were presented. The first, entitled "The Engineer as an Economist," was presented by Henry R. Towne, president of the Yale and Towne Company. In this paper he attempted to obtain recognition of management as a distinct field and to persuade his fellow engineers to extend the traditional scope of their professional interest to include management subjects. He stated that:

The matter of shop management is of equal importance with that of engineering as effecting the successful conduct of most if

¹⁰ Lyndal Urwick (ed), *The Golden Book of Management* (London: Newman Neame, Limited, 1956), p. 10.

¹¹ George, *op. cit.*, p. 73.

¹² Raymond Villers, *The Dynamics of Industrial Management* (New York: Funk and Wagnalls Company, 1954), p. 35.

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not all of our industrial establishments, and the management of works has become a matter of such great and farreaching importance as perhaps to justify its classification also as one of the modern arts.....

.....A vast amount of accumulated experience in the art of workshop management already exists, but there is no record of it available to the world in general, and each old enterprise is managed more or less in its own way, receiving little benefit from the parallel experience of other similar enterprises and imparting little of its own to them. While each new enterprise starting *de novo* and with much labor, and usually at much cost for experience, gradually develops a more or less perfect system of its own, according to the ability of its managers, receiving little benefit or aid from all that may have been done previously by others in precisely the same field of work. Surely this condition of things is wrong and should be remedied.¹³

The second paper, entitled "The Shop Order System of Accounts" was presented by Captain Henry C. Metcalfe, United States Ordnance Department. In this paper he described his system of cost recording and also suggested a plan of organization based on the fundamental division of work between the "work shop" and the "office" which will appear later as an equivalent to Taylor's idea of the fundamental division of planning and performance.¹⁴

Although realization did not follow immediately, this meeting, which was attended by Fredrick W. Taylor, appears as a turning point in the evolution of management. Studies in engineering economics, finance, cost accounting, and labor wages began to appear in increasing numbers. Engineering schools began to teach workshop management and the first schools of business administration were created. The Scientific Management

¹³ Henry R. Towne, "The Economist as an Engineer," *Transactions of the American Society of Mechanical Engineers*, Vol. 7, 1886, pp. 428-432. Reprinted in Harwood F. Merrill, *Classics in Management* (New York: American Management Association, 1960,) pp. 59-64.

¹⁴ Villers, *The Dynamics of Industrial Management, op. cit.*, p. 61.

Movement, which did not formally start before 1903, had its roots in this meeting of 1886.¹⁵

The Scientific Management Movement

Any complete discussion of the history of management thought must include the scientific management movement for it encompasses the first group of writers to win wide attention. F.W. Taylor remains the most famous author on management subjects, having had a world wide influence since the turn of the century. Taylor disclaimed credit for founding the movement — he was aware that most of the ideas he advocated had been practiced by managers before him. Taylor's contribution was one of publicizing existing ideas and converting broad generalizations into practical management tools. His work as a laborer, a foreman, a mechanical engineer, a plant manager, a consultant to industrial firms, and a writer gave him the opportunity to bridge the gap between generalization and practice.¹⁶

It was through the gradual elaboration of techniques for analyzing and measuring elementary processes that Taylor progressed towards a new philosophy of management. His major thesis was that the maximum good for all society can come only through the cooperation of management and labor in the application of scientific methods to all common endeavors.¹⁷ It was toward this end that Taylor proposed that managers use scientific research methods to discover the best way of performing every piece of work. This would enable management itself to determine how much work should really be accomplished in a given time. It would also involve far reaching changes in the specifications for tools and materials; the selection, training, and compensation of workmen; and the supervision of work.

In 1903 Taylor presented a paper, "Shop Management," before the American Society of Mechanical Engineers. In this paper he focused on his philosophy of management. In essence, what Taylor was trying to say was that:

¹⁵ *Ibid.*, p. 35.

¹⁶ Haynes and Massie, *op. cit.*, p. 4.

¹⁷ George, *op. cit.*, p. 89.

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1. The objective of good management was to pay high wages and have low unit costs.
2. To achieve this objective management had to apply scientific methods of research and experiment to its overall problem in order to formulate principles and standard processes which would allow for control of the manufacturing operations.
3. Employees had to be scientifically placed on jobs where materials and working conditions were scientifically selected so that standards could be met.
4. Employees should be scientifically and precisely trained to improve their skill in so performing a job that the standard of output could be met.
5. An air of close and friendly cooperation would have to be cultivated between management and workers in order to insure the continuance of this psychological environment that would make possible the other principles he had mentioned.¹⁸

Taylor, in effect, was the spark which ignited an ever increasing interest in management. Through the use of scientific principles, he paved the way for improving factory management. Upon the five principles of experiment, standards, planning, maintenance of standards, and cooperation, Taylor pointed the way to a more effective organization, a more reliable product, a better work force, a better understood customer, an improved corporate image, and a more effective profit picture.¹⁹

In brief, scientific management became something of a "movement." In an age of growing achievement in the physical sciences it offered the hope of resolving industrial problems through the use of objective principles. For young and imaginative engineers it provided an ethos and a mission in life. The movement soon became replete with popularizers, traditionalists, and dissidents. After the initial period of resistance it conquered the citadels of old-fashioned industrial management in the United States and had a tremendous effect on industrial practice.²⁰

¹⁸ *Ibid.*

¹⁹ *Ibid.*, p. 93.

²⁰ Bertram M. Gross, *The Managing of Organizations* (London: Collier-Macmillan, Limited, 1964), p. 127.

Taylor's Contemporaries. In addition to Taylor, there were three contemporaries of his that made contributions not only to the furtherance of the scientific management movement, but also toward a better understanding of the management of the human being. Although these individuals were direct disciples of Taylor, their contribution was a singular achievement, and in some respects differed from their leader's approach.

Frank B. Gilbreth and his wife, Dr. Lillian Moller Gilbreth, brought into the scientific management movement a greater comprehension of the human factors. The methods Frank B. Gilbreth devised for showing up wasteful and unproductive movements became primary tools for managers and presented a basis for new thinking about the aims of management. He felt that if the one best way to do work could be discovered for each and every element in a worker's movements and surroundings, the resulting gains in productivity could add significantly to the gains which Taylor was making by revising the system of management in the productive unit as a whole. For while Taylor's emphasis had been primarily on the external factors effecting the worker, the Gilbreths began by looking at the worker first, and this led them to apply the knowledge available from all the social sciences, physiology, psychology, education, and the rest — to the task of improving and broadening the worker's capacity to contribute to the productivity of industry. Therefore, their particular contribution was to develop management as a social science with the human being the center of interest, around which research and experiment revolve and towards whose development they are directed.²¹

Henry L. Gantt was one of the earliest pioneers in the scientific management group in the United States. It took fourteen years — six of them as Taylor's right-hand men at Midvale and Bethlehem Steel Companies — before Gantt got the chance to humanize the new management methods.²² Although he is credited with the development of the Gantt Chart, his most outstanding contribution came in 1901 when he invented the

²¹ Urwick, *op. cit.*, pp. 138-139.

²² "Charting a Way to Democracy," *Business Week*, January 11, 1964, p. 44.

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task-and-bonus system which was based on scientific methods, but unlike Taylor's piece rate system it rewarded the worker for above standard performance and eliminated any penalty for failure. Still more important, the system also offered the foreman a bonus for every one of his men who exceeded the standard. Now management would have a reason to show interest in employees, helping them to achieve as much as they could through training, better planning of work, and improved working conditions.²³

In its first years the movement had had a different emphasis. Taylor, although his ultimate objective had undoubtedly been to improve the lot of the working man, had sought the solution of industrial problems through the analysis of processes, the planning of work, and organization; for individual motivation he had relied largely on financial incentives.²⁴ Now with the introduction of Gantt's system, a new emphasis begins to prevail — an emphasis on the worker instead of the process.

III MANAGEMENT IN TRANSITION

There is a transitional period in the development of management for it was during this period that management concepts and theories began to emerge. It was here that we see the great expansion of scientific management principles into other fields of work besides the industrial shop. Further, the search for universal principles of management becomes a part of management literature, and the introduction and application of the social sciences begins to have its impact in the field of management. Lastly, we see rising criticism of the scientific management movement because of its lack of totality as a guide to management and because of its lack of attention toward the human aspect of industry.

The Rise of Scientific Management

Several events occurred that helped publicize the movement which was begun by F.W. Taylor. In 1911 at an Interstate Commerce Commission hearing on the efficiency of railroads, and at a subsequent investigation

²³ *Ibid.*

²⁴ Urwick, *op. cit.*, p. 89.

by a special House of Representatives Committee, Taylor's ideas became widely known. In fact, at one of these hearings Taylor himself testified on his ideas of scientific management. Here he provided a statement of what scientific management really meant. He said:

Scientific management is not any efficiency device, not a device of any kind for securing efficiency; nor is it any branch or group of efficiency devices. It is not a new system of figuring costs; it is not a new scheme of paying men; it is not a piecework system; it is not a bonus system; it is not a premium system; it is not a time study; it is not motion study nor an analysis of the movements of men; it is not any of the devices which the average man calls to mind when scientific management is spoken of.

Now in its essence, scientific management involves a complete mental revolution on the part of the workingman engaged in any particular establishment or industry — a complete mental revolution on the part of these men as to their duties toward their work, toward their fellow men, and toward their employers. And it involves the equally complete mental revolution on the part of those on the management's side — the foreman, the superintendent, the owner of the business, the board of directors — a complete mental revolution on their part as to their duties toward their fellow workers in the management, toward their workman, and toward all of their daily problems. And without this complete mental revolution on both sides scientific management does not exist.¹

These hearings were much publicized at the time and shortly thereafter Taylor's Scientific Management appeared. Widespread interest in scientific management was immediately manifest.

In October of that same year Harlow S. Person, dean of the Amos Tuck School at Dartmouth, initiated and played host to the first scientific management conference in the United States. It was this conference that gave academic recognition for the first time to the management methods

¹ Fredrick W. Taylor, "Taylor's Testimony before the Special House Committee," *Scientific Management* (New York: Harper & Brothers, 1947), pp. 26-27.

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of Fredrick W. Taylor.² Later, as director of the Taylor Society, he continued to promote and encourage wide spread discussion of the new science of management.

One of the expert witnesses at the railroad hearings was Harrington Emerson who was a popularizer of Scientific management in his active consultancy work, in his prolific writing on different aspects of efficiency, and in his education of a vast following of businessmen in his methods. Although he was not an associate or disciple of Taylor, he expounded the concepts of standard times, of standard costs, and preventable wastes, and indicated how scientific methods could be applied.³ He invented the term "efficiency engineer" and in 1913 his book, *The Twelve Principles of Efficiency*, was published. The major thesis of his book was that ideas — not land, labor, and capital — create wealth; that ideas employing the tools of land, labor, and capital generate wealth.⁴ To explain this further, he set forth twelve principles of efficiency upon which management should rest — principles which became one of the earliest and most comprehensive guides to good management.

Scientific management began to expand into other areas also. Morris L. Cooke, an authentic pioneer in the years before management even had a name, was the first to expand its teachings to the administration of higher education and the management of nonprofit organizations, and even more, he successfully carried the new gospel of efficiency into practical politics.⁵ In 1918 Carl C. Parsons wrote *Office Organization and Management* in which he recognized the need for the application of scientific management in organizing the office, in properly selecting and training office employees, and in properly utilizing office machinery.⁶

Principles of Management

During this period in France, Great Britain, and the United States a

2 "Extending the Scientific Gospel," *Business Week*, April, 18, 1964, p. 132.

3 Urwick, *op. cit.*, p 51.

4 George, *op. cit.*, p. 103.

5 "Extending the Scientific Gospel," *Business Week*, April 18, 1964, p. 132.

6 George, *op. cit.*, p. 120.

new trend in management thought began to emerge. This trend involved new theories that looked at management as a total concept and as a universal endeavor common to all types of organized activities.

Henri Fayol. Henri Fayol is the most distinguished European in the field of management thought, born in 1841 of a French bourgeois family. Fayol was appointed engineer in 1860 of the Commentry pits of the Commentry-Fourchambault Decazeville (Comanboul) which was a great French mining and metallurgical combine, and by 1888 he had risen to the position of managing director of the mining firm.⁷

Like Taylor, Henri Fayol's technical achievements were impressive. In his early days he performed outstanding work in overcoming the fire hazards in coal mining and in analyzing the geological formation of French coal deposits. Again like Taylor, he concentrated on industrial administration. When Fayol rose from a technical post to become general manager of his company, the problem he faced was how to save a mining company which was on the verge of bankruptcy. To deal with it, he could not limit himself to work methods and work planning. He focused his mind more and more on what is expected from managers. He based his conclusions not on "scientific" observations but on personal experience during many years of high administrative responsibility.⁸

At a time when scientific management ignored almost completely the executive management role in favor of industry's production problems, Fayol insisted that management played a very important part in the government of undertakings—all undertakings, large and small, industrial, commercial, political, religious, or any other. He considered management as neither an exclusive privilege nor a particular responsibility of the head or senior members of the business, but as an activity apread between the head and members of the body corporate. Fayol believed that everyone needed some concepts of management and that it would make sense to bring a few broad ideas about management into primary education.⁹ It

7 Urwick, *op. cit.*, p. 21.

8 Gross, *op. cit.*, p. 128.

9 "Discoveries from Looking Inward," *Business Week*, June 6, 1964, p. 152.

was toward this end that Fayol developed his comprehensive theory of management.

Fayol began by dividing the total industrial undertaking into six independent activities: (1) technical (production); (2) commercial (buying, selling, and exchange); (3) financial (search for, and optimum use of, capital); (4) security (protection of property and persons); (5) accounting including statistics); and (6) managerial planning, organization, command, coordination, and control).¹⁰ Of these six activities Fayol concentrated more on the last one and in so doing developed fourteen principles of management which are:

1. Division of work (specialization belongs to the natural order).
2. Authority and responsibility (responsibility is a corollary with authority.)
3. Discipline (discipline is what leaders make it).
4. Unity of command (men cannot bear dual command).
5. Unity of direction (one head and one plan for a group of activities having the same objectives).
6. Subordination of individual interest to the general interest.
7. Remuneration (fair, rewarding of effort, reasonable).
8. Centralization (centralization belongs to the natural order).
9. Scalar chain (line of authority, gang-plank principle).
10. Order (a place for everyone and everyone in his place).
11. Equity (results from combination of kindness and justice).
12. Stability of tenure of personnel (prosperous firms are stable).
13. Initiative (great source of strength for business).
14. *Espirit de corps* (union is strength).¹¹

In 1916 Fayol's ideas first appeared in France under the title of *Administration industrielle et générale* in the *Bulletin de la Société de*

¹⁰ H. Fayol, *General and Industrial Administration* (London: Sir Isaac Pitman & Sons, Limited, 1949,) p. 3.

¹¹ Henri Fayol, *General and Industrial Management* (London: Pitman Publishing Company, 1949,) pp. 19-20. Cited in Claude S. George, Jr., *The History of Management Thought, op. cit.*, p. 109.

L'Industrie Minerale and in 1925 it was published in a book. However, it was not printed in English until 1929, and did not receive wide circulation until 1949.

Two things hindered Fayol from becoming an instant success in the field of management thought. First, the war delayed the publication of his writings, and second, he was completely overshadowed by the enthusiasm for Taylorism which was sweeping France and Europe. The French were, in fact, much taken by the spread and efficiency of American troops in building docks, setting up roads, establishing lines of communication, and the like; they branded all this efficiency as Taylorism. So intrigued were they with Taylor's principles that Georges Clemenceau, the French Minister of War, ordered all plants under his control to study and apply Taylor's scientific management.¹²

Fayol's contribution did not go unheralded long for soon French executives began to realize the practicality of his principles. Here was a man of experience who spoke their language, recognized their problems, and presented his ideas in a neat theory that added perception rather than confusion to their thinking.¹³

Alexander H. Church.¹⁴ In 1914 in the United States, Alexander H. Church in his book, *The Science and Practice of Management* conceived of two fundamental instruments of management: analysis and synthesis. In analysis he saw such things as cost accounting, time study, motion study, the exact study of rating product, layout of machines, and planning, while presenting a functional approach for analyzing management, he saw in synthesis five organic functions: design, equipment, control, comparison, and operation.

In addition to this functional concept Church evolved fundamental laws of effort which he defined as:

1. Experience must be systematically accumulated, standardized, and applied.
2. Effort must be economically regulated:

¹² *Business Week*, *op. cit.*

¹³ George, *op. cit.*, p. 107.

¹⁴ *Ibid.*, p. 112.

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- a. It must be divided.
 - b. It must be coordinated.
 - c. It must be conserved.
 - d. It must be remunerated.
3. Personal effectiveness must be promoted:
- a. Good physical conditions and environment must be maintained.
 - b. The vocation, task, or duty should be analyzed to determine the special human faculty concerned.
 - c. These should be applied to determine in what degree candidates possess special faculty.
 - d. Habit should be formed on standardized bases, old or new.
 - e. Espirit de corps must be fostered.
 - f. Incentive must be proportioned to effort expected.¹⁵

Here for the first time in the United States is an attempt to conceive of the entire managerial function. Fayol, of course, in that same year (1916) published his French treatise. But it was Church who, as an American writer, attempted to explain the totality of the managerial concept and to relate each of its components to the whole.

Oliver Sheldon.¹⁶ After graduating from Oxford and completing his military service, Oliver Sheldon settled down in York, England, for a lifetime's work at the Coca Works of Rowntree and Company, Limited, moving from personal assistant to B.S. Rowntree to a directorship on the General Board of Directors. During his tenure at Rowntree, Sheldon developed the concepts that made him famous, the best expression of which can be found in his 1923 book, *The Philosophy of Management*.¹⁷ In this book Sheldon departed from the milieu of everyday functions and attempted to meld social ethics with the practicality of scientific management.

This was a novel direction for management. It stemmed from the industrial atmosphere that developed during World War I, which

¹⁵ Alexander Hamilton Church, *The Science and Practice of Management* (New York: The Engineering Magazine, Vol., 1916), p.iii. Cited in George, *op. cit.*, p.113.

¹⁶ George, *op. cit.*, p. 107.

¹⁷ Oliver Sheldon, *The Philosophy of Management* (London: Sir Issac Pitman & Sons, Limited, 1923); published in New York by Pitman Publishing Corp., 1966.

possessed a bigness, a newness of character that had not prevailed before. Profits, growth, unions, scientific management, and the awakening of the public to a more responsible social atmosphere all contributed toward increasing the complexity of the problems facing management. Up to this time, the emphasis had been on the "things" of production. Sheldon now emphasized the ethics or "oughtness" and human elements of industrial responsibility.

Based on the thesis that management's primary responsibility was service to the community, Sheldon developed a set of principles to serve as a guide that would satisfy both the scientific approach to production and management's social responsibility. Sheldon made it clear that the mechanics of production were secondary to the human element.

Riding this dual approach of humanity and things, Sheldon developed the fundamentals of his managerial philosophy. Briefly stated, they are:

1. Industry exists to provide the commodities and services which are necessary for the good life of the community in the volume required.
2. Industrial management must be governed by principles based on the concept of service to the community.
3. Management as a part of industry is separate from capital and labor, and is broken into three main parts: administration, management, and organization.
4. Management while keeping industry on an economic basis must achieve the communal objectives for which it exists through the development of efficiency in both the human and material elements of the factory.
5. This efficiency is to be developed by management through the use of science in management and the development of the human resources of industry.
6. Efficiency is dependent upon the structure of organization based on a detailed analysis of the work to be done and the facilities needed to do it.
7. The activities of management are divided into four functions. First, those concerned with the inception of manufacture as

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design and equipment. Second, the actual operation of manufacture. Third, those functions which facilitate the manufacture which are transport, planning, comparison, and labor. Fourth, those functions necessary for the distribution of the product as sales planning and execution.

8. The use of scientific methods for the economical utilization of the people and the things of the factory involves the following: first, the use of research and measurement in the activities which management undertakes or controls; second, the preparation and use of definitions for the make-up of each item of work; third, the determination of references and working standards for the justifiable and precise determination of desirable achievement; and fourth, the institution of these standards to insure the most economical methods of production and management.
9. The policy of responsibility to the community demands certain practices in regard to the human element of production. Associations of workers must be recognized as long as they are not detrimental to society, and their self-development toward the goal of service to the community should be facilitated. In relation to the worker as an individual, the following rules should be followed: first, all the workers should share in deciding the conditions of work; second, the workers should receive a standard of living in keeping with the civilized community; third, the worker should have adequate leisure time for self-development; fourth, the worker should be secure from involuntary unemployment; fifth, the worker should share in industrial prosperity according to his contribution; sixth, a strict spirit of equity should be found in all relations between labor and management.
10. Through study and development of standards, a "Science of Management" distinct from the science it uses and the techniques of an industry, can be formulated toward the end of forming a code to govern the conduct of industry.

Sheldon provided several contributions to the progress of management, the most important being his philosophy, with its emphasis on social responsibility. In addition, Sheldon did more than any individual to conceptualize management and promote it to a higher theoretical level. The genuine philosophy of management he developed through his writings and lectures clearly pointed out that management was a separate, distinct function in industry that revolved about a given set of principles which could be analyzed and studied.

Management and the Social Sciences

Prior to this period many of the contributions made to the field of management were from practicing engineers who were developing techniques to solve production problems. Now we see for the first time contributions coming from the social sciences of psychology, sociology, and political science.

There were two individuals who can be credited for bringing psychology into business. The first is Hugo Munsterberg who was recruited in 1892 from Germany to take over Harvard University's pioneering work in experimental psychology.

It was in 1910 when Munsterberg began to ask first in the laboratory and then in industry how to find the best possible man, how to produce the best possible work, and how to secure the best possible effects? His United States audience got the answers as early as 1913 in *Psychology and Industry Efficiency* which is a book that still makes a strong case for more science in management though written when psychology was only beginning to divorce itself from speculative philosophy.¹⁸

After paying tribute to Fredrick W. Taylor as the brilliant originator of the scientific management movement, Munsterberg outlined in his book the role of the psychologist in business. He stated:

We select three chief purposes of business life, purposes which are important in commerce and industry and every economic endeavor. We ask how we can find the men whose mental qualities make them best fitted for the work which they have to do; secondly,

¹⁸ "Measuring Minds for the Job," *Business Week*, January 29, 1966, p. 60.

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under what psychological conditions we can secure the greatest and most satisfactory output of work from every man; and finally how we can produce most completely the influences on human minds which are desired in the interests of business. In other words, we ask how to find the best possible work, and how to secure the best possible effects.¹⁹

In essence, Munsterberg argued that industrial psychology must join hands with industrial engineering for he recognized the fact that efficiency could never be achieved by excessive driving of the workingman and he knew that scientific management proclaimed the same thing. Yet his investigations showed that almost no attention had been given to "objective psychology."²⁰

Another psychologist that had more of an impact on business in general was Walter Dill Scott. Through several books, *The Psychology of Advertising in Theory and Practice* and *Influencing Men in Business: The Psychology of Argument and Suggestion*, he introduced psychology into advertising and personnel administration.

There was one political and social philosopher that had a great impact on management development in the late 1920's. It was Mary Parker Follett whose work spanned the gap between scientific management as advanced by Fredrick W. Taylor and the new social psychology, which made better human relations in industry the primary concern of modern management. Her contribution to management was to apply psychological insight and findings of the social sciences to industry and through this, to offer a new conception of management and of human relationships within industrial groups.²¹

Mary Parker Follett was less interested in the practice of management than in the extent to which the everyday incidents and problems reflected the presence or absence of sound principle. She was chiefly concerned to teach principles in simple language, amply illustrated from everyday events not the mechanics of management, but its special human character,

¹⁹ H. Munsterberg, *Psychology and Industrial Efficiency* (New York: Houghton Mifflin Company, 1913,) p. 24. Quoted in Urwick, *op. cit.*, p. 98.

²⁰ "Measuring Minds for the Job," *Business Week*, January 29, 1966, p. 60.

its nature as a social process, deeply embedded in the emotions of man and in the interrelations to which the everyday working of industry necessarily gives rise — at manager levels, at worker levels, and, of course, between the two.²² She anticipated the need to depersonalize authority in recognition of “the law of the situation,” the significance of management training and development; the application of behavioral science to the problems of organization; the constructive uses of conflict, the psychology of power, the nature of horizontal management and, above all, the social responsibilities of management.²³ In addition, she recognized the importance of coordination within group efforts and that people could evoke each others latent ideas and become united in pursuit of their goals.

It was this theory that swung Mary Parker Follett into the mainstream of progressive management thinking, for businessmen were already looking beyond scientific management for help with their problems of administration. How could they better achieve coordination and control? How should they motivate and organize? How might they exercise authority?²⁴

Critics of Scientific Management

In addition to the rising popularity of the scientific management movement created by the Interstate Commerce Commission hearings, there was also a rising opposition and criticism of the techniques advocated by Taylor. The rise in organized labor during the 1920's led to this bitter opposition for Taylor had made no mystery of his opposition to collective bargaining and other union methods of handling the relationships between employers and employees.

In 1913 and 1914 the annual conventions of the American Federation of Labor adopted a resolution condemning Taylor's system. In 1914, the United States Commission on Industrial Relations held hearings on scientific

21 Urwick, *op. cite.*, p. 132.

22 E.F.L. Brech (ed.), *The Principles and Practice of Management* (London: Longmans, Green and Company, Limited, 1966), p. 86.

23 “Sibll of a Modern Science ,” *Business Week*, November 21, 1964, p. 196.

24 *Ibid.*

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management and commissioned Professor Robert F. Hoxie to investigate the movement's methods and accomplishments.²⁵

As a result of his investigation, Professor Hoxie published a book in 1915 entitled *Scientific Management and Labor*. Hoxie saw scientific management as an attempt to accurately analyze industrial processes and determine the principles and laws that underlie true efficiency, through the use of motion and time study. However, when the human element entered the situation, he believed that motion and time studies could not be used. In addition, he felt that there was an insufficient scientific basis for scientific management because there was nothing to prevent violations of standards in matters pertaining to human conditions and relations. He also felt that in as much as scientific management concerned itself wholly with production, it was unfair in setting standards and in fixing wage rates; that in spirit and essence it was a cunningly devised speeding-up and sweating system; that it intensified the modern tendency toward task specialization; that it condemned the worker to the monotony of routine; that it tended to deprive the worker of his job, oriented thought and initiative, and even his trade; that it destroyed his individuality and inventive genius; that it lessened the continuity and certainty of employment; and finally it was incompatible with the ideal of trade unionism and destructive of collective bargaining.²⁶

Other books also appeared that condemned scientific management. In 1912 James Hartness, President of Jones and Lamson Machine Company, published his only book, *The Human Factor in Works Management*. In it he expressed three of his basic ideas: (1) that many of the features of the new approach to management were too mechanistic; (2) that many of the new efficiency engineers were completely ignoring human nature; and (3) that the problem of increasing efficiency included psychology as well as engineering and economics.²⁷

²⁵ Villers, *The Dynamics of Industrial Management*, *op. cit.*, p. 76.

²⁶ George, *op. cit.*, p. 117.

²⁷ *Ibid.*, p. 116.

Summary

During this period we saw great advances in management practice b the application of empirical studies to determine faster and better methods of production. The principles of scientific management were expanded into other fields under the guise of efficiency engineering; however, the approach tended to become one-sided. Except for some basic work done by the Gilbreths and Gantt, the primary emphasis was given to changes in methods for the sole purpose of improving production with little thought to the effect on the worker, or his well-being.

Further a new trend appeared with emphasis on the principles of management and the role of the manager within the organization. We saw Henri Fayol, through his practical experience as a top executive, formulate universal principles of management. Like Fayol, Oliver Sheldon sought to formulate a theory of "management as a whole," through defining its purpose, tracing its line of growth, and spelling out the principles governing its practice.²⁸ In the United States, Alexander H. Church attempted to meld together the principles of scientific management and the totality of management. Although the work of each of these individuals was done separately, they all attempted to formulate a total conceptual model that furthered the evolution of management from the role of a high-class foreman to a dignified profession.

In addition, we saw the subject of management branching out into the social sciences with Mary parker Follett making a great impact on the dynamics of the business organization. Through her insight the behavioral aspects of the organization were put in perspective and through her teachings businessmen began to understand the problems that could not be explained with scientific management techniques.

Lastly, the rising criticism of scientific management became apparent because of its lack of attention to the human element. The labor movement of the early 1900's clearly focused its opposition on the scientific management movement and on the dehumanizing effect on the organization.

²⁸ Harold Koontz and Cynl O'Donnell, *Principles of Management* (3rd edition) (New York: McGraw-Hill Book Company, 1964,) p. 21.

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This period closes with the stage being set for more emphasis on the human factor in business, for more refinement of the principles of management, and for more studies and research on the behavioral aspects of the organization.

IV THE HUMAN RELATIONS PERIOD

To a large extent this period represents a reaction to the dehumanizing aspects of scientific management. During this period concepts of the worker advanced from an unfeeling, unidentified human unit on an assembly line to a person of emotions and worth. In management literature the "man problem" became as important as the "machine problem" or the "sales problem."¹

In the previous period Oliver Sheldon and Mary Parker Follett began to bridge the gap between scientific management and human relations. Sheldon called for professional management to deal with labor and social problems of business organizations on a par with technical problems of production. Mary Parker Follett concentrated on a recognition of the motivating desires of the individual and the group and on the realization that the basic problem of any organization was the harmonizing and coordinating of group effort toward the accomplishment of a task. Thus, Sheldon and Follett heralded the emergence of the human relations movement that was to be a dominant theme of management thought in the 1930's

A New Light from Hawthorne

In an effort to narrow the gulf which had admittedly come to exist between top management and employees, many companies undertook extensive investigations of their problems. One such study was conducted by Elton Mayo and Fritz J. Rosthlisberger at the Hawthorne plant of the Western Electric Company in Chicago in the late 1920's and 1930's.

The original intent of the research workers was to find relationships between "improved" working conditions and productivity. For example,

¹ Herbert G. Hicks, *The Management of Organizations* (New York: McGraw-Hill Book Co., 1967,) p. 332.

there were attempts to measure the effects of improved lighting and the introduction of rest periods. Special groups of workers were organized into "test" and "control" rooms and careful records were kept of their performance. Results revealed little consistent relationship between the changes in physical working conditions and productivity. In fact, when the "improvements" were removed, productivity remained above the initial levels. Rather than give up because of the negative character of the research findings, Mayo and Roethlisberger, and their associates attempted to attach new meanings to the findings. They stressed the changes in human relationships that had been introduced along with the changes in physical working conditions. For example, the fact that these workers had been selected for special attention and were under observation may have been more important than the physical changes themselves. Thus, as the research in the Hawthorne plant continued, greater attention was paid to the ways in which sociological changes affected the attitudes and production of the workers. Interviews with thousands of workers were used to extend knowledge of worker's attitudes and responses.²

There were, however, substantial differences among Mayo and Roethlisberger on the significance of their research findings. Mayo, principally a social philosopher, drew broad conclusions about industrialization. His new concept was that logical, economic forces are far less important even in economic relationships than emotional and non-logical attitudes and sentiments. Moreover, of the human factors influencing an employee's attitudes and sentiments, the most powerful are those arising from his participation in social groups.³ Yet technological advances and changing conditions tend continually to disrupt the formal and informal working groups that form within industry and hence to disturb the worker's sense of belonging and to deprive him of the recognition he has gained within a cohesive group.⁴ In addition, Mayo

2 W. Warren Haynes and Joseph Massie, *Management: Analysis, Concepts and Cases*, 2nd edition (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969), p. 8.

3 Urwick, *op. cit.*, p. 220.

4 Ernest Date, *Management: Theory and Practice* (New York: McGraw-Hill Book Co., 1965), p. 186.

added that the removal of face-to-face contact between management and the workers was a source of frustration and mental deterioration. He emphasized that management must assume a new role in its dealings with employees; it must develop a new concept of authority and right to command; and it must help foster a new social order based on the individual's cooperative attitude and the system of coordinative organization and communication developed by management.⁵

Fritz J. Roethlisberger, on the other hand, was reluctant to apply generalizations and concentrated more upon empirical studies and their interpretation. Best known for the classic, *Management and the Worker*, Roethlisberger came to the conclusion that the human relations between workers and their supervisors and among workers proved to be important influences on the worker's behavior, at least as important as the physical working conditions and monetary incentives.⁶ This was an important breakthrough, but its greatness stems from the shortsightedness of the industrial engineers who had been preaching Taylor's idea that the worker is simply lazy and uncooperative.

Through the Hawthorne Study and the subsequent writings of Mayo and Roethlisberger a new impetus was given to the development of a theory of human behavior in organization. It focused attention upon the importance of social forces and the study of sociopsychological techniques to managerial problems.

Organization Behavior

Borrowing from previous writers such as Fallett and Sheldon and the research findings at the Hawthorne Works, Chester Barnard added another classic to the development of management thought. In his book, *The Functions of the Executive*, he presents a transition from the traditional organization to the humanistic organization by speaking of a system of cooperation and social behavior.

After leaving Harvard without a degree in 1909, Barnard entered big business as a translator for American Telegraph and Telephone Company in its Boston statistical office. He moved to AT & T's New York City

⁵ Urwick, *op. cit.*

⁶ Groes, *op. cit.*, p. 160ff.

office the next year and soon became a commercial engineer and an expert on telephone rate structures. Not until 1922 when he joined Pennsylvania Bell, did he get into general management; and not until 1927 did he reach the presidency of Jersey Bell. But Barnard's contributions to management as a practicing executive are far outweighed by his scholarly contributions. From 1930 until shortly before his death, Barnard was deeply engaged in discovering and defining the nature of modern management.⁷

In writing his book Barnard had two purposes: to express a theory of cooperation and organization and to define the role of the executive within the organization. He began by defining many aspects of both the formal and informal organization. He stated that, "a formal organization is a system of consciously coordinated activities or forces of two or more persons."⁸ An organization comes into being when (1) there are persons able to communicate with each other, (2) who are willing to contribute action, (3) to accomplish a common goal.⁹ He defined the informal organization as contacts and interactions between persons without a specific joint purpose.¹⁰

Barnard stressed the importance of the executive function of providing the system of communication, promoting the securing of essential efforts, and formulating and defining its purpose. He stated that, "Executive work is not that of the organization, but the specialized work of maintaining the organization in operation."¹²

In addition, Barnard emphasized the importance of inducements on cooperative efforts. If, however, authority is used as the inducement a person can and will accept a communication as authoritative only when: (1) he understands the communication, (2) he believes it to be consistent

7 "Composer of Management Classics," *Business Week*, November 27, 1965, p. 84ff.

8 Chester I. Barnard, *The Functions of the Executive* (Cambridge, Massachusetts: Harvard University Press, 1968), p. 73.

9 *Ibid.*, p. 82.

10 *Ibid.*, p. 114.

11 *Ibid.*, p. 217.

12 *Ibid.*, p. 215.

with the purposes of the organization., (3) he believes it to be compatible with his personal interest as a whole, and (4) he is able mentally and physically to comply with it.¹³ Thus, the "acceptance principle" evolved.

It can be seen easily that Barnard's approach to the organization and management differed significantly from that of Taylor who used the terms "scientific management" and "task management" interchangeably and who concentrated on the task of improving the efficiency of the worker. Fayol and Sheldon, moving toward a totality concept of management, directed their attention more to the principles of management, managerial functions and responsibility. Barnard, on the other hand, introduced social concepts and analyzed the kinds and qualities of forces at work. Beginning with the individual he moved through the cooperative system of the organization, and ended with the executive functions. Along the way he examined the interactions and formulated a logical network of definitions and concepts. This approach, coming at a time when Mayo and his associates were making gains in the area of worker psychology, had a profound impact on the thinking about the complex subject of human organization.¹⁴

Traditional Management Theory

While the human relations approach developed, a number of writers, primarily those actively engaged in management or consulting practices, continued to refine their ideas within the pattern established by Henri Fayol. Thus, the concepts of traditional management which place primary emphasis upon structuring the organization, formalizing relationships, and setting forth useful principles began to evolve as a distinct body of management thought.

As president of General Motors Export Corporation, James D. Mooney traveled the world in charge of an international industrial empire. It was through his travels and an interest in medieval history that led him to believe that the principles of organization might be the same for all organizations throughout history.

¹³ *Ibid.*, p. 165.

¹⁴ George, *op. cit.*, p. 132.

Out of his studies Mooney co-authored the book *Onward Industry!*, in which he presents the most complete description of traditional management anywhere available.¹⁵ In drawing upon his experience as an executive and his historical evaluation of governments, the Roman Catholic Church, and military organizations, Mooney developed four major principles: (1) the coordinative, which provided for a unity of action in the pursuit of a common objective, (2) the scalar principle, which emphasized the hierarchical organizational form and authority, (3) the functional principle, which organized tasks into departmental units, and (4) the staff principle, which recognized the role of line management in the exercise of authority, but provided a staff to give advice and information. He makes no mention of the human element in his study of organizations. Instead he provides a tight engineering approach to his analysis of organizations.

Luther Gulick and Lyndall Urwick carried on Fayol's work in the development of principles based upon their wide experience in industry and government. In 1937 they cooperated in editing *Papers on the Science of Administration*.¹⁶ In these papers and other writings they popularized such principles as (1) fitting people to the organization structure; (2) recognizing one top executive as a source of authority; (3) adhering to unity of command; (4) using special and general staffs; (5) departmentalizing by purpose, process, persons, and place; (6) delegating and utilizing the exception principle; (7) making responsibility commensurate with authority; and (8) considering appropriate spans of control.

Primarily through their writings and the writings of others that followed, traditional management theory evolved into the development of concepts such as the pyramidal structure, unity of command, span of control, management by exception, specialization by function, line-staff dichotomy and other generalized "principles of management" which were

15 James D. Mooney and Alan C. Reiley, *Onward Industry!* (New York: Harper & Row, Publishers, Inc., 1931), Cited in "Drawing the Rules from History," *Business Week*, August 3, 1963, p. 46.

16 Luther Gulick and Lyndall Urwick (eds.), *Papers on the Science of Administration* (New York: Institute of Public Administration, Columbia University, 1937).

appropriate for all organizations.

Summary

In this section we have seen a great change in the direction of management thought. Although previous writers such as Gantt, Gilbreths, and Munsterberg were concerned with the worker as an individual, full realization of the social and psychological forces was not apparent until the famous Hawthorne Studies. Through the writings of Fritz Roethlisberger and Elton Mayo, new directions were opened up for the study of the organization, management, and the worker.

Continuing this new trend we saw Chester I. Barnard who borrowed from the works of Follett and Sheldon present a sociopsychological view of the organization and the executive function. From a social point of view he defined the formal and informal organization, the acceptance of authority, and the role and responsibilities of the executive. By explaining the interaction between the parts he was able to put forth a new view of the organization.

Lastly we viewed the evolution of traditional management theory. The pattern developed by Fayol was refined by Mooney, Urwick and Gulick to show the functioning of an organization through principles of management. This view of the organization although limited because it failed to consider the environmental and internal influences still served as a foundation for more modern views of organization theory and management practice.

V THE BEHAVIORAL AND MANAGEMENT SCIENCES

There are many forces both within organizations and in the external environment that have stimulated changes in theory and practice. There has been an unparalleled growth in organizations and with this an increase in complexity. For example, in the early part of this century businesses had only a limited product line, but by the middle of the twentieth century many firms diversified their products into heterogenous lines.

17 Fremont H. Kast and James E. Rosenzweig, *Organization and Management: A System Approach* (New York: McGraw-Hill Book Co: 1970), p. 73.

Through this diversity companies have gone into new fields which has increased the complexity of the business organization.

Specialization has also increased. At the worker level it resulted from mechanization and the scientific management movement. During the first part of the twentieth century there was an increase in the management specialist — the personnel expert, the industrial engineer, and the quality control manager. The problems of integrating people into organizational effort multiplied and required new management concepts because of the increasing specialization.

Mechanization and assembly line production plus more recent trends in automation, computers, and information technology are additional factors which have altered the man-machine relationship. Modern organizations must draw upon the scientific and technical knowledge of highly trained individuals and must provide the mechanism for the coordination of their efforts.

There are many other changes both social and cultural that affect the business organization and its management. Workers have become more educated and highly skilled which means that new inducements are needed to secure their participation. Increased affluency has had its affect on the levels of aspiration and the needs of the individual worker. In addition, the rise of unions through the 1930's has forced management to make changes in the organization.

All these changes have led to an evolution in organization theory and management practice. It is no longer possible to think of the worker as the rational-economic man or use concrete, structured principles of management within the organization, for these are insufficient and limited in explaining the workings of a human organization.

The Behavioral Sciences 1

The behavioral scientists in their study of organization theory and management practice are primarily concerned with the human component in the psycho-social system. Much of their work in psychology, sociology, and anthropology is a product of this century, particularly the empirical research which has provided new insights into human behavior over the

1 Kast and Rosenzweig, *op. cit.*, pp. 86095.

whole spectrum of man's activities.

Behavioral Scientists as Change Agents. During the twentieth century we have moved away from the concept of nonintervention in social affairs which stemmed from the "natural law," and "invisible hand" ideology of the laissez-faire doctrine of automatic adjustment. Today in a large number of our activities we are becoming concerned with the methods used in planning and controlling the forces of change. "Human interventions designed to shape and modify the institutionalized behaviors of men are now familiar features of our social landscape." ² Increasingly, we are not only studying the social system but are actively engaged in shaping its course.

Behavioral scientists interested in the study of organization and management are not just neutral observers and describers but are taking an active interest in changing the system. "In short, behavioral scientists are not only interpreting the world in different ways; some intent to change it." ³ This role as a change agent presents many dilemmas in terms of professional versus organizational identification for the behavioral scientists. It also brings to the forefront basic questions of value systems. There frequently develops an "understanding gap" between the perspective of the behaviorist and his psycho-social orientation and the manager who must also consider economic-technical factors. However, the trend is evident and will continue to have an important impact.

Power Equalization Emphasis of the Behavioral Scientists. The writings of many of the behavioral scientists emphasize the value of more democratic, less authoritarian, less hierarchically structured organizations than proposed in the traditional view which attempted to structure human behavior. Shepherd calls this a "coercion-compromise" system which relies heavily upon internal systems of command, on authority and obedience, and

² Warren G. Bennis, Kenneth D. Benne, and Robert Chin (eds.), *The Planning of Change* (New York: Holt, Rinehart and Winston, Inc., 1961,) p. 9. Quoted in Kast and Rosenzweig, *op. cit.*, p. 93.

³ Warren G. Bennis, "New Role for Behavioral Science," *Administrative Science Quarterly*, September, 1963, p. 127. Quoted in Kast and Rosenzweig, *op. cit.*

upon bureaucratic relations for governing the actions of participants. 4 He sees many adverse consequences of the coercion-compromise system. By comparison most behavioral scientists advocate a "collaboration-consensus" or "power equalization" system. Leavitt describes this as follows:

Besides the belief that one changes people first, these power-equalization approaches also place major emphasis on the other aspects of the human phenomena of organizations. They are, for example, centrally concerned with effect; with morale, sensitivity, psychological security. Secondly, they value evolutionary, internally generated change in individuals, groups, and organizations over externally planned or implemented change. Thirdly, they place much value on human growth and fulfillment as well as the task accomplishment; and they often have stretched the degree of casual connection between the two. Finally, of course, the power equalization approaches, in their early stages at least, shared a normative belief that power in organizations should be more equally distributed than in most existent "authoritarian" hierarchies. Operationally, this belief was made manifest in a variety of ways: in encouraging independent decision making, decentralization, more open communication and participation. 5

Many modern behavioral scientists advocate a democratic, participative approach. For example, Likert suggests an "interaction-influence" system which uses the concept of supportive relationships between members in the organization as a central theme. He advocates the development of effective working groups linked to other such groups in a large organization 6 McGregor also follows this theme by emphasizing the

4 Herbert A. Shepherd, "Changing Interpersonal and Intergroup Relationships in Organization," in James G. March (ed.), *Handbook of Organizations* (Chicago: Rand McNally & Company, 1965), p. 1130. Quoted in Kast and Rosenzweig, *op. cit.*, p. 94.

5 Harold J. Leavitt, "Applied Organizational Change in Industry: Structural, Technological and Humanistic Approaches," March, *op. cit.*, p. 1154. Quoted in Kast and Rosenzweig, *op. cit.*, p. 94.

6 Rensis Likert, *opcit New Patterns of Management* (New York: McGraw-Hill Book Co., 1961).

desireability of replacing the authoritarian system which he calls Theory X by the more democratic-participative system of Theory Y. 7 Argyris reflects still more support for this view. He focuses upon the need for the organization to provide an "authentic" relationship for its participants. In his view the traditional organization restricts human growth and self-fulfillment. 8 Maslow, who evolved a theory of motivation based on a hierarchy of needs, extended this theory to emphasize the importance of providing an organization environment in which the individual can achieve maximum "self-actualization." 9 Bennis is even more outspoken when he says "democracy is inevitable." In his view, the traditional concepts of bureaucracy are inappropriate for modern organizations.

(The bureaucratic) form of organization is becoming less and less effectiveit is hopelessly out of joint with contemporary realities, and.....new shapes, patterns, and models—currently recessive—are emerging which promise drastic changes in the conduct of the corporation and in managerial practices in general. So within the next twenty-five to fifty years, we shall all be witness to, and participate in, the end of bureaucracy and the rise of new social systems better able to cope with the twentieth century demands. 10

Bennis advocates that behavioral scientists should be actively engaged in changing the traditional bureaucratic form toward a more democratic social system.

Presented here were a few of the views of current behavioral scientists who have a general humanistic orientation toward organization and management. They have emphasized human values and may have tended to depreciate from the economic and technical considerations,

7 Douglas McGregor, *The Human Side of Enterprise* (New York: McGraw-Hill Book Company, 1960.)

8 Chris Argyris, *Integrating the Individual and the Organization* (New York: John Wiley & Sons, Inc., 1964).

9 A.H. Maslow, *Motivation and Personality* (New York: Harper & Brothers Publishers, 1954), pp. 80-106. Also from: A.H. Maslow, *Toward a Psychology of Being* (Princeton, N.J.: D. Van Nostrand Company, Inc., 1962.)

10 Warron G. Bennis, *Changing Organizations* (New York: McGraw-Hill Book Company, 1966), p. 4. Quoted in Kast and Rosenzweig, *op. cit.*, p. 95.

but their views have had a profound impact on organization theory and management practices.

The Management Sciences 11

Another evolution in management came about after World War II through the application of quantitative methods to decision making. Generally known as management science, it uses an approach that is in many ways a descendent from the scientific management movement with the addition of more sophisticated mathematical methods, computer technology and an orientation toward broader problems. It adopts the scientific method as a framework for problem solving with emphasis on objective rather than subjective judgement. Like Taylor, the current management scientists are dedicated to the utilization of scientific approaches for the solution of management problems and emphasized a normative approach which means it prescribes how a manager should decide, given certain assumptions of economic-technical rationality and the objectives to be achieved.

In developing an approach which emphasizes optimal managerial decision making, certain assumptions about organizations and participants behavior have been made by management scientists. These assumptions often differ from those made by behavioral scientists. This difference has evolved because of the different backgrounds of those interested in the two approaches. As was indicated previously, the behavioral scientists are drawn primarily from the social sciences with psycho-social orientation. On the other hand, the contributors to management science come from mathematics, statistics, engineering, and economics and have an economic-technical orientation. It is normal, therefore, that these approaches differ in their views and in their assumptions.

Early Operations Research Approaches. As indicated earlier, management sciences are descendants from the scientific management movement; however, there was a definite break between generations. The outgrowth of operations research is usually connected to the efforts of scientists brought together during World War II to solve complex military

11 Kast and Rosenzweig, *op. cit.*, pp. 95-103.

problems. For example, in 1940 operations research groups were formed in Great Britain to study the newly developed radar system. In the United States, operations research was adopted to deal with such problems as deploying merchant marine convoys, improving methods of search for submarines, and achieving greater accuracy in aerial.

It was not until the early 1950's, however, that operations research caught on and began to stabilize. Writing in 1957, Churchman, Ackoff, and Arnoff said:

Ten years ago it would have been difficult to get an operations researcher to describe a procedure for conducting operations research. Today it would be difficult to keep one from doing it. Each practitioner's version of OR's method (if recorded) would differ in some respect. But there would also be a great deal in common.¹²

For example, there seems to be a consensus with regard to the following major phases of an OR project.

1. Formulating the problem.
2. Constructing a mathematical model to represent the system under study.
3. Deriving a solution from the model.
4. Testing the model and the solution derived from it.
5. Establishing controls over the situation.
6. Putting the solution to work: Implementation.¹³

The early philosophy of operations research was directed toward total system optimality and toward interdisciplinary effort in order to insure that all significant factors of the problem were being considered. In looking at the results of OR projects, it appears this theoretical was never achieved in practice for many projects were not interdisciplinary and did not ensure total system optimality. It does appear that OR has moved more toward the development of techniques and toward problem solving at the subsystem level with narrower interdisciplinary teams.

¹² C. West Churchman, Russell L. Ackoff, and E. Leonard Arnoff, *Introduction to Operations Research* (New York: John Wiley & Sons, Inc., 1957), pp. 12-13. Quoted in Kast and Rosenzweig, *op. cit.*, p. 100.

¹³ *Ibid.*

The most significant thing about operations research is that it introduced many scientists to actual military and business decision-making problems where they could apply their specialized knowledge. Under scientific management it was the practicing manager and the industrial engineer who applied scientific methods to problem solving. Now in operations research many individuals from diverse fields such as mathematics, physics, statistics, economics, and other disciplines are contributing their knowledge to managerial decision making.

Current Developments in Management Science

Information concerning management science techniques has been disseminated broadly. In the 1940's approaches such as linear programming, game theory, queuing theory, statistical decision theory, systems analysis, simulation, Monte Carlo techniques, and other similar analytical techniques were relatively unknown. Today they have not only become commonplace in business and industry but are also a part of the curriculum in business and engineering schools.

The development in computer technology and programming over the past two decades has also provided new resources. In the early development of the computer, the primary concern was the automation of many routine data processing activities. The next step was the utilization of the computer and management science approaches for programming lower-level well-structured problems such as inventory control, production control, and allocation problems. Now the computer is being used for highly complex, ill-structured problem solving such as simulation and gaming.

A Synthesis

What is needed now is a synthesis of the behavioral science approach, the management science approach, and the traditional approach into a unified theory. But is this really possible? As Ralph M. Stogdill stated:

Students of organization are at present confronted with a situation in which numerous fragments of theory are presented as complete theories. It is often difficult to find any overlap between two different systems of variables. The systems developed by the

business organization theorists, behavioral scientists, and operations researchers are likely to consist of widely different variables. Each developer is likely to insist that his system includes the variables that are really important to a theory of organization. The value systems and theoretical allegiances of different schools of thought tend to make each distrustful of the concepts and problems regarded as important by others.¹⁴

Instead of developing a more simplified, less complex organization theory, it appears that the opposite direction toward greater complexity and consideration of more variables is being pursued. The development of a "general theory" is becoming even more difficult.¹⁵

Other writers such as Harold Koontz also expressed their views as to the problems of a unified theory. Koontz stated:

.....the varied approaches to management theory have led to a kind of confused and destructive jungle warfare. Particularly in academic writings, the primary interests of many would-be cult leaders seems to be to carve out a distinct (and hence original) approach to management. To defend this originality, and thereby gain a place in posterity (or at least to gain a publication which will justify academic status or promotion), these writers seem to have become overly concerned with down rating and sometimes misrepresenting, what anyone else has said or thought or done.¹⁶

Four steps were proposed by Koontz for "disentangling the jungle."¹⁷ The first is a need to define management as a specific body of knowledge which means that management should be defined in the practitioner's frame of reference and that care should be taken to distinguish between the tools and content of management. The second is the integration of

¹⁴ Ralph M. Stagdill, "Dimensions of Organization Theory," in James D. Thompson (ed.), *Approaches to Organizational Design* (Pittsburg, Pennsylvania: University of Pittsburgh Press, 1966),

¹⁵ Kast and Rosenzweig, *op. cit.*, p. 104.

¹⁶ Harold Koontz, "The Management Theory Jungle," *Journal of the Academy of Management*, Vol. 4, No. 3, December 1961, p. 175.

¹⁷ *Ibid.*, p. 186.

management and other disciplines which means that management should be regarded as a specific discipline and other disciplines would be looked upon as important bases of the field. The third is the classification of management semantics which would largely be satisfied by building a common language between the theorist and the practitioner. The fourth is a willingness to distill and test fundamentals which would, in effect, make management a more exact science upon which to base theories, hypotheses, and generalizations. These steps then would reduce the semantic problem, the differences in the definition of management as a body of knowledge, the misunderstanding of principles, and the inability or unwillingness of management theorist to understand each other.

Summary

Two streams of management thought have evolved and have modified traditional organization theory and management practice. The first is the behavioral sciences which is an outgrowth of the Hawthorne Studies and the work of early human relationist. Based on the humanistic approach, it has developed primarily through the works of psychologists, sociologists and anthropologists.

The second is the management science which is considered a basic extension of scientific management. With the use of sophisticated quantitative techniques and computers, this approach is primarily concerned with the economic-technical aspects of organization and management. Many of the contributions to this field came from economics, engineering, mathematics, and statistics.

A convergence of the behavioral science approach, the management science approach, and the traditional approach has not occurred at present. As long as these are differences in semantics, misunderstandings of the principles of management, differences in the definition of management as a body of knowledge, and theorists who are unable or unwilling to understand each other, this convergence or synthesis will never evolve.

VI EMERGING CONCEPTS IN MANAGEMENT

As management thought develops certain concepts begin to emerge. Many of these concepts are brought about by increased study in the fields of sociology and psychology while others have evolved from the fields of mathematics.

Two concepts have come forth that have been the subject of many books in management. First, the idea of social responsibility, which has caused much debate, has come to the forefront as an important aspect of a managers role within the business. Although social responsibility was first introduced by Oliver Sheldon in 1923, the actual awareness of this concept is only a recent development.

The second concept to evolve is that of a general systems approach to management which in its broad aspects attempts to relate the many parts of the organization to the whole. This approach could very well be the point of convergence for a unified theory of management because it attempts to explain the functioning of the parts in relationship to the whole and to do this it must borrow heavily from the physical, biological, and social sciences.

Social Responsibility

The doctrine of social responsibility evolved because of the great impact that the business organization has had on the rest of society. Since the manager is the center of the decision making process within the organization, this doctrine has been primarily directed at him.

As business organizations have grown over the decades, they have broadened their power beyond their own gates into the general community, until today business shares power for economic growth, social stability, community improvements, education, and a host of other public needs.¹ With this growth a new social dependency evolved which gave to the organization new social powers. As Davis and Blomstrom stated:

¹ Keith Davis and Robert L. Blomstrom, *Business and Its Environment* (New York: McGraw-Hill Book Co., 1966), p. 11.

Since business social powers extend in numerous ways beyond the organization to community values and general welfare, social responsibility also exists. Simply stated, responsibility develops whenever power develops.....

An institution by itself cannot take action. Men must give it life, so employees and other agents of business make social responsibility meaningful. Management assumes the key role because it is responsible for the general direction of business. Social responsibility, therefore, refers to a person's obligation to consider the effects of his decisions and actions on the whole social system. Businessmen apply social responsibility when they consider the needs and interests of others who may be affected by business decisions. In so doing, they look beyond their firm's narrow economic and technical interests. ²

The doctrine of social responsibility has not been professed without criticism. Theodore Levitt has criticized the doctrine on broad social grounds. He says, "The business of business is profits.....In the end business has only two responsibilities — to obey the every-day face-to-face civility (honesty, good faith, and so on) and to see material gain." He foresees the new orthodoxy leading to "a new feudalism," with the corporation investing itself "with all-embracing duties, obligations, and finally powers ministering to the whole man and molding him and society in the image of the corporation's narrow ambitions and its essentially unsocial needs." ³

An economist, Milton Friedman, criticized social responsibility when he said: "Few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible." ⁴

² Ibid.

³ Theodore Levitt, "The Dangers of Social Responsibility," *Harvard Business Review*, Volume 36, Number 5, September-October 1959, pp. 41-50.

⁴ Milton Friedman, *Capitalism and Freedom* (Chicago: The University of Chicago Press, 1962), p. 133. Quoted in Davis and Blomstrom, *op. cit.*, p. 173.

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The only answer to the problem of social responsibility will rest with the practicing manager. His own value system and personal code of ethics will be the primary factors in his decision to consider other groups in society for he alone must decide how much social power exists within the organization.

The Modern View: A Systems Approach 5

Over the past two decades the development of general systems theory has provided a basis for the integration of scientific knowledge across a broad spectrum. It provided a basis for understanding and integrating knowledge from a wide variety of highly specialized fields. In the past traditional knowledge has been along well-defined subject-matter lines. Bertalanffy suggests that the various fields of modern science have a continual evolution toward parallelism of ideas. This parallelism provides an opportunity to formulate and develop principles which hold for systems in general. "In modern science, dynamic interaction is the basic problem in all fields, and its general principles will have to be formulated in General Systems Theory." 6 General systems theory provides the broad macro view from which we look at all types of systems. "So has arisen systems theory — the attempt to develop scientific principles to aid us in our struggles with dynamic systems with highly interacting parts." 7

Systems can be considered in two ways. The first is the closed-system which stems primarily from the physical sciences and is applicable to mechanistic systems. The second is the open-system which recognizes that the biological or social system is in a dynamic relationship with its environment and receives various inputs, transforms these inputs in some way, and exports outputs.

Traditional management theories were primarily closed-system views concentrating only upon the internal operation of the organization and

5 Kast and Rosenzweig, *op. cit.*, pp. 109-118.

6 Ludwig von Bertalanffy, *Problems of Life* (New York: John Wiley & Sons, Inc., 1952), p. 201. Quoted in Kast and Rosenzweig, *op. cit.*, p. iii.

7 W. Ross Ashby in Mihajlo D. Mesarovic(ed,) *Views on General Systems Theory* (New York: John Wiley & Sons, Inc., 1964); p. 166. Quoted in Kast and Rosenzweig, *op. cit.*, p. iii.

adopting highly rationalistic approaches taken from physical science models. The organization was considered as sufficiently independent so that its problems could be analyzed in terms of internal structure, tasks, and formal relationships — without reference to the external environment.

Modern organization theory has moved toward the open-system approach, As Scott said:

The distinctive qualities of modern organization theory are its conceptual-analytical base, its reliance on empirical research data, and above all, its synthesizing, integrating nature. These qualities are framed in a philosophy which accepts the premise that the only meaningful way to study organization is as a system. 8

Chester Barnard was one of the first management writers to use the systems approach. 9 Herbert Simon and his associates viewed the organization as a complex system of decision-making processes. Simon has ranged widely in seeking new disciplinary knowledge to integrate into his organization theories. However, the one broad consistency in both his research and writings has been the utilization of the systems approach. "The term 'systems' is being used more and more to refer to methods of scientific analysis that are particularly adapted to the unraveling of complexity."10 He not only emphasizes this approach for the behavioral view of organizations, but also stresses its importance in management science.

The systems approach has also been advocated by writers in the management sciences. Churchman and his associates were among the earliest to emphasize this view. "The comprehensiveness of O.R.'s aim is an example of a 'systems' approach. Since 'system' implies an interconnected complex of functionally related components. Thus a business organization

8 William G. Scott, *Organization Theory* (Homewood, Ill: Richard D. Irwin, Inc., 1967), pp. 122-123. Quoted in Kast and Rosenzweig, *op. cit.*, p. 116.

9 Chester I. Barnard, *The functions of the Executive* (Cambridge, Mass.: Harvard University Press, 1938).

10 Herbert A. Simon, "Approaching the Theory of Management," in Koontz, *Toward a Unified Theory of Management* (New York: McGraw-Hill Book Company, 1964), pp 82-83. Quoted in Kast and Rosenzweig, *op. cit.*, p. 116.

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is a social or man-machine system.¹¹

The sociologist George Homans uses systems concepts as a basis for his empirical research on social groups. He developed a model of social systems which can serve as an appropriate basis for small groups and also for larger organizations.¹² In his view, an organization is comprised of an external environmental system and an internal system of relationships which are mutually independent. In addition, there are three elements in a social system: (1) activities which are the tasks people perform, (2) interactions which occur between people in the performance of these tasks, and (3) sentiments which develop between people. These elements are also mutually independent.

The systems approach has also been adopted by social psychologists as a basis for studying organizations. Using open-systems theory as a general conceptual scheme, Katz and Kahn present a comprehensive theory of the organization.¹³ They suggest that the psychological approach has generally ignored or has not dealt effectively with the facts of structure and social organization, and they use systems concepts to develop an integrated model.

These examples of the increasing trend in adopting the systems approach to modern organization theory and management practice are by no means exhaustive; they merely illustrate current developments. However, they are sufficient to indicate that increasing attention is being given to the study of organizations as complex systems. This modern view treats the organization as a system of mutually dependent parts and variables, which is part of the whole system of society. Modern organization theory and general systems theory are closely related. Many systems concepts taken from the investigation of other types of physical, biological, and social systems are meaningful to the study of organizations.

11 C. West Churchman, Russell L. Ackoff, and E. Loonard Arnoff, *Introduction to Operations Research* (New York: John Wiley and Sons, Inc., 1957), p. 7. Quoted in Kast and Rosenzweig, *op. cit.*,

12 George C. Homans, *The Human Group* (New York: Nawcourt, Brace and World, Inc., 1950).

13 Daniel Katz and Robert Kahn, *The Social Psychology of Organizations* (New York: John Wiley and Son, Inc.,) 1966.

Summary

In this final section we explored some of the emerging concepts that have recently developed. We examined the doctrine of social responsibility which attempts to define the manager's relationship with the rest of society.

Finally, we looked at the systems approach to management. This approach studies all the aspects of the organization and attempts to explain the relationship of the parts to the whole system. Utilizing the physical, biological, and social science, a systems approach might be the answer to a unified theory of management.

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