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Edited by

HERBERT E. SPIEGEL

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Contemporary Theories and Techniques

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Preface

The purpose of this treatise is to give formal expression to the ideas and philosophies of scientific leaders in the many disciplines related to clinical chemistry. Every attempt has been made by the editor to preserve the individual style of the contributor. It is hoped that these individualized presentations will provide the reader with the impression of conducting a dialogue with the contributor.

A further intent of this volume is to supplement the existing textbooks of clinical chemistry and biochemistry by providing areas of emphasis, such as the biochemistry of aging, managerial techniques, the evaluation of kits, and autoimmune disease, which are usually not emphasized in standard clinical chemistry texts. Where possible, details are de-emphasized in favor of overall concepts and philosophy. Speculation and interpretation by the contributors have been encouraged with the idea that these will be stimulating to the reader.

We trust we have designed a collection of essays to acquaint the reader with the wide spectrum of sciences that is called clinical chemistry.

Herbert E. Spiegel

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Laboratory Management for Clinical Chemists

THOMAS C. ROBINSON
AND MAX E. CHILCOTE

I. INTRODUCTION

The reader must, in our opinion, be told immediately of our interpretation (view) of the intent (guiding philosophy) and the practical limitations of a single chapter on laboratory management. The available literature is greater in both volume and value to the clinical chemist than is immediately apparent from the background education and training of most clinical chemists. In brief, laboratory management is people management just as for most businesses. People budgets, for example, constitute by far the largest share of total budgets. Thus, the clinical chemist must learn to work with individuals both above and below in the organizational structure of the clinical laboratory in order to provide the optimum laboratory

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services at the lowest cost possible. Cost effectiveness is a term you will have to live with and attempt to redefine to your administrative colleagues. The many topics covered by this subject demand entire books—notice the term books instead of book. Please refer to references (Bennington, 1977; Lundberg, 1975) for the more comprehensive discussions necessary to your ability to provide as close to the optimum laboratory services we all desire. Other texts on the subject will probably continue to appear as the necessity for better cost-effective management becomes more widely appreciated.

As the reader may well, and should indeed, wonder why the following emphasis on administrative theory, this introduction addresses that problem. Government has brought to the fore the professionally trained administrator with business practice and/or legal training with perhaps little if any training in the natural or physical sciences. Their training leads many, if not most, of them to believe that tight, logical, disciplined thinking can solve any problem with the aid of only a minimal exposure to the background of the problem. They can be expected to ask questions such as: "Why do you insist on using highly paid Medical Technologists to perform the routine procedures? If given detailed instructions, can't just one Medical Technician supervise a room full of high school graduates?" Or, "Why must your quality control program use so many costly control sera (or such expensive vacutainers)? After all, Company A products are so much cheaper, and I know Hospital Z uses them. Why do you insist on Company B?" In brief, the elements of cost control are highly ingrained into their background, and are essential to sound business practice. In contrast, the correlation of very high quality clinical laboratory data, comparable and high quality interpretation, to high quality medical practice is entirely foreign to them. The gulf is background thinking (knowledge of the complexities involved in a modern clinical laboratory setting, decisions in setting priorities) between you, the clinical chemist, and them is very much deeper and broader than you may think. In brief, they are on the side of quantity and cost which you must battle to get near the quality you will desire. Thus, you must develop some understanding of their *raison d'etre*.

II. ORGANIZATIONAL ENVIRONMENT

The clinical laboratory is most often found in an institutional setting. Any institution contains an organizational structure and staff with people who interpret its goals and mission. It contains informal and formal lines of communications. Values and traditions are inescapable in the roles that

each individual in the institution plays. Change is inherent in institutions. Leadership roles shift and technologies continue to improve.

The period in which we live in health care is confusing and complicated. Those in authority must provide order to the organization that we call the clinical laboratory, so that it can more effectively be managed. Management theory and skills generally are not a part of the educational preparation of most laboratory managers.

A. Organizational Theory

Organizational theory as we know it is a collection of theories. The literature of organizational theory contains many different approaches to describing organization and its management. This discussion is an overview of the most representative themes in the literature with the understanding that it is not all inclusive.

1. Classical School

Organization theory has its beginnings in *Scientific Management* (Taylor, 1911). This school, the Classical School, sees workers as motivated by economic reward only, and the collateral organization is defined through a *division of labor; highly specialized personnel;* and a *hierarchical authority structure.* Etzioni (1964) gives us the most succinct definition:

> Scientific Management combines a study of physical capabilities of a worker, as is still done (primarily by engineers) in time and motion studies, with an economic approach which views man as driven by the fear of hunger and the search for profit. The central tenet of the approach is that if material rewards are closely related to work efforts, the worker will respond with the maximum performance he is physically capable of (Etzioni, 1964).

Taylor's world deals with the worker and the machine as mutually related, and with proper rewards both achieve maximal response. This school sees the human body with a capability, as an example, for shoveling coal, and given the right environment and motivation, the optimum amount of coal can be shoveled.

A contemporary of Taylor, who reflects the same philosophic approach, was Max Weber (1947), a German sociologist who suggests bureaucracy as the "ideal type" of organization. Similar themes to Taylor surface in Weber—technical competence, the division of labor and specialization, hierarchy of authority, rules and standard operating procedures, and exact work duties and authority.

Both men describe what they saw; the capatalist systems of Germany and the United States. In the United States, in particular, it was a time

when the government took a *laissez-faire* attitude. Decision-making was more decentralized than today, and collective bargaining was rare indeed. It was the time when the "captains of industry" had successfully contained their industrial empires with "managers."

Classical proponents remain. In more recent works, neoclassics have modified some of the original statements of the scientific school.

There are certain values that are crucial to management according to the neoclassics (Simon *et al.*, 1959).

1. *Accountability* is the responsibility of the supervisor to see that his directives are carried out and the responsibility of the supervised to carry them out. This augments the concept of control and the hierarchy authority system.
2. *Expertness and economy,* another concept, represents a more developed idea of the division of labor, and makes the case for removal of anciliary activities from all departments and establishment of service departments for greater effectiveness of purpose; e.g., centralized purchasing, typing, storeroom, etc.
3. The concept of *levels of conflict settlement* expands the hierarchical organization as a control group, and defines it also as a mechanism to resolve internal conflict. The most effective settlement of conflict is at the lowest levels within the structure.
4. *Program emphasis* is a way to prevent slow growth away from the original objectives of the organization. More privileges and perogatives are delegated to those departments of functions which are more central to the original objectives of the organization.
5. The *classical school* views the world through the rational use of formal organizational tools as the most effective way to achieve success in meeting the goals of the organization.

The bureaucratic orientation and the scientific approach was adequate until the 1930s. The traditional approach did not concern itself with the human elements and its effect on the organization to the success of goals nastery.

2. Human Relations School

The Human Relations School, a collection of several theorists, contributes the next major emphasis on the continuum of theory development.

The historical context of the time was radically different than the buoyancy of the turn-of-the-century. By the 1930s, government involvement and control, collective bargaining, and economic disaster dramatically altered everyone's view of the world and consequently, their view of organizations in that world.

As social science grew in its ability to measure, researchers conducted studies that shed light on the effectiveness of the more traditional approaches to management and, subsequently, questioned the assumptions of the classical school. The human or social relationship of a worker with his organizational environment was discovered.

The landmark study is one of a series under Elton Mayo known as the Hawthorne Studies. It had been considered, by the tenets of Scientific Management, that if the work environment was improved, then productivity would increase. In this experiment, better illumination was provided, and it was expected that individual worker productivity would improve. *The results contradict this assumption.* In fact, the improved environment and productivity are unrelated. With follow-up study, the researchers conclude that it is the group process that affects productivity (Roethlesberger and Dickson, 1939). Membership in the work group and the norms of the group are the key factors in productivity, not the physical environment.

In fact, in many groups, "an artificial restriction of output" is based on the belief by the groups that if they produce "naturally," then pay will be reduced or, worse, their jobs will disappear.

The Hawthorne studies and the Western Electric study sets the stage for the human relations school (Roethlesberger and Dickson conducted productivity studies at the Western Electric Plant in Chicago from 1927 to 1932.), which postulate that the level of production is established by social norms, and that physiological capacity is no longer accepted. Affection and respect of the work group determine worker productivity. *Economic rewards alone do not* significantly affect the output of the work. Workers do not react as individuals, but rather as group members.

The human relations approach mandates that managers necessarily alter their approach to management within organizations to include group dynamics; the way groups function. Understanding of the informal organization is a trait of a human relations manager and he *shifts toward* an employee orientation, communication, and *participative decision-making.*

Human relations managers attempt to obtain the most efficient organization by cultivating the human resource. The worker who meets his personal (can be group determined) need, is the happiest and, thus, most productive.

Douglas McGregor (1960), a leading proponent at this approach to management, using Maslow's hierarchy of needs as a theoretical base, postulate that the *self-actualized person* is *the most effective.* McGregor provides the best summary of the assumptions underlying two schools of thought, scientific management, theory X, and the human relations school, theory Y.

a. Assumptions of Theory X

1. The average human being has an inherent dislike of work and will avoid it.
2. Because of this human characteristic of dislike of work, most people must be directed and threatened with punishment to get them to achieve objectives of the organization.
3. The average human being prefers to be led, wants to avoid responsibility, has little drive, seeks security above all.

b. Assumptions of Theory Y

1. Work is as natural as play or rest.
2. External control and the threat of punishment are not the only means to motivate. Man will exercise self-direction toward objectives to which he is committed.
3. Commitment to objectives is a function of the rewards associated with their achievement.
4. Man seeks to accept responsibility.
5. The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely distributed in the population.
6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilized.

The classical school emphasizes the organization, the structure itself toward success; whereas, the human approach stresses the happy organization as the most satisfying, thus effective.

The two share a common framework; i.e., goal directed. The organization's press for rationality and the search for human happiness are not mutually exclusive.

3. Recent Theoretical Constructs

There are several more recent attempts to provide an expanded view of organization. These are labeled as the structuralist approach, and include several subgroups, including the contingency approach and the systems approach to organizations. Woodward (1965) and Katz and Kahn (1966) are excellent references in which to view the fields and attempt to interface the organization and its task environment.

The philosophical base of these approaches is that the nature of the organization's technology, its tasks, its staff, and its structure inter-relate and that change in one area impacts directly on another—much like an organizational ecological balance.

B. Functions and Principles of Management

Several concepts of management were documented by the original theorists. Many are considered current and one can readily recognize them in modern organizations and in particular in laboratory medicine.

What are the responsibilities of management? The acronym POSDCORB aids in the enumeration of these functions.

1. *Planning.* Whether the mission is predetermined or determined by the manager, planning is the process of determining what needs to be done in the short run and, importantly, in the long run, i.e., plan objectives to meet the mission.
2. *Organizing.* The manager establishes a formal structure of authority of work-groups subject to that authority to meet the objectives.
3. *Staffing.* The manager hires and trains personnel to do the tasks of the organization.
4. *Directing.* The manager makes decisions continuously and tells the staff what tasks must be done to meet the objectives.
5. *Coordinating.* The manager guides these functions in an orderly sequence so as to meet the objectives.
6. *Reporting.* The manager must be informed of the measures of productivity, so as to evaluate for himself and the success the organization has in meeting its objectives.
7. *Budgeting.* The manager provides fiscal resources in order to obtain the resources, human and physical, to meet the objectives.

In order to successfully complete those functions, scientific managers employ several principles—the principles of management.

1. *Principles of unity of command.* Each subordinate is accountable to one and only one superior. More than one boss creates confusion resulting in inaction or inappropriate action.
2. *Principle of span of control.* One supervisor is responsible for 5–6 subordinates. Too many employees makes for loss of control, and thus ineffective leadership.
3. *Principle of delegation.* Delegation is the process by which a manager assigns responsibility, grants authority, and creates accountability. A good manager cannot do every task, and must assign some to others.
4. *The principle of the scalar chain.* There is an uninterrupted flow of authority through the organization. The chain of command links each supervisor at each level with his supervisor, allowing communication of information and delegation of authority.
5. *Role of staff and line.* Managers use staff to advise and line supervisors to command.