

## The emergence of scientific management in America

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**Abstract:** *A scientific approach to management was initiated for the first time in America in the late 19th century. Scientific management arose mainly from the need to increase efficiency in America, but other key factors were the spread of big businesses and the expanding application of science in industry. The aims of our paper are to present the emergence of scientific management in America and to emphasize the contribution of some of the most representatives American authors to its development. The methodological approach is literature review. Our paper shows that scientific management was essentially an American achievement that provided useful lessons for the whole human society.*

**Keywords:** scientific management, efficiency, Taylor, America

**JEL Classification:** M10, N61

## 1. Introduction

The importance of management has never been greater in the business world. Nowadays management applies to any kind of organization, public or private, small or large, profit or non-profit, services or manufacturing. In fact, management represents a commonly used word, a very popular term. Management is not only a profession or an art, but also a distinctive domain of research. As an ongoing process of getting things done through a variety of people (Moore, 1964), management refers "to the tasks and activities involved in directing an organization or one of its units: planning, organizing, leading, and controlling" (Hellriegel, Jackson, Slocum, 2002, p. 7).

As a formal field of study and a discipline, management appeared in the late 19th century. In that period, a scientific approach to management was initiated for the first time in the United States of America (USA). Since the beginning of the last century, many schools of management have provided different perspectives and theories that contributed to the development of management as a science. Many theories used in management derived "from social science disciplines of economics, psychology, and sociology" (Smith, Hitt, 2005, p. 1).

The concept of scientific management means "the taking of a precise approach to the problems of work and work organisation" (Pettinger, 1997, p. 13). Its essence might be described as follows: "let's measure the best way to undertake a given process, and redesign that process accordingly" (Mol, Birkinshaw, 2008, p. 9).

The aims of our paper are to present the emergence of scientific management in America and to emphasize the contribution

of some of the most representative American authors to its development. The methodological approach is literature review.

The reminder of our paper is structured as follows. The next section deals with the advent of scientific management in America. The paper ends with conclusions.

## 2. The appearance of scientific management in the USA

At the beginning of the 20th century, the problem of inefficiency both at the macro and the micro level increasingly became one of the most debated in the USA. After the American President Th. Roosevelt remarked the lack of national efficiency, more and more people began to recognize its importance. Therefore, the scientific management arose mainly from the need to increase efficiency in America, but other key factors were the spread of big businesses and the expanding application of science in industry.

As the father of scientific management (Copley, 1923), Fr. W. Taylor was considered by many historians as "the most influential management innovator of the 20th century" (Hamel, Breen, 2007, p. 12). That is why "many of his basic concepts were incorporated into the organization of modern American factories" (Chandler, 1997, p. 276).

Taylor asserted that efficiency came from "knowing exactly what you want men to do, and then seeing that they do it in the best and cheapest way" (Taylor, 1903, p. 3).

"The Principles of Scientific Management", a Progressive declaration against the misuse of resources, was published by Taylor in 1911. He stated that he wrote the book due to the following three main reasons:

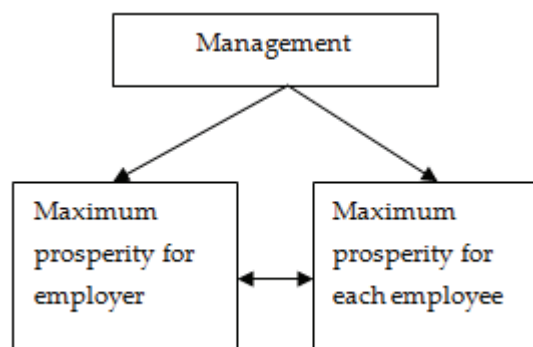
“First. To point out, through a series of simple illustrations, the great loss which the whole country is suffering through inefficiency in almost all of our daily acts.

Second. To try to convince the reader that the remedy for this inefficiency lies in systematic management, rather than in searching for some unusual or extraordinary man.

Third. To prove that the best management is a true science, resting upon clearly defined laws, rules, and principles, as a foundation. And further to show that the fundamental principles of scientific management are applicable to all kinds of human activities, from our simplest individual acts to the work of our great corporations, which call for the most elaborate cooperation.” (Taylor, 1998, p. iv)

In his view, the object of management was to secure maximum prosperity for the employer simultaneously with the maximum prosperity for each employee (Fig.1)

Fig. 1. The relationships between management and prosperity according to Fr. W. Taylor



Taylor clearly made the distinction between the “old” type of management and the “new” one: “Under the management of “initiative and incentive” practically the whole problem is “up to the workman”, while under scientific management fully one-half of

the problem is “up to the management” ” (Taylor, 1998, p. 17). In order to implement scientific management, he emphasized the need for a mental revolution on the part of both management and employees. (e.g. workers). Taylor considered that his method was beneficial for all stakeholders: “the organisation because it cut out all wasteful and inefficient use of resources; managers because they had a known standard of work to set and observe; and workers because they would always do the job the same way” (Pettinger, 1997, p. 14). That is why he established the following four fundamental principles of scientific management:

“First. The development of a true science.

Second. The scientific selection of the workman.

Third. His scientific education and development.

Fourth. Intimate friendly cooperation between the management and the men.” (Taylor, 1998, p. 68)

Taylor’s contribution to the development of management was significant. His scientific management influenced human society in several ways, as follows: “First, scientific management’s impact on organizations was apparent in the formation of “employment departments” that were responsible for such tasks as using job analysis techniques to select employees, training employees, maintaining records of employee performance, assisting employees after accidents or with financial matters, and providing services, such as lunchrooms... Second, scientific management influenced training and networking opportunities for personnel management employees... Finally, scientific management influenced the scope of industrial psychology

as a discipline.” (Payne, Youngcourt, Watrous, 2006, pp. 387-388)

Taylor’s scientific management was developed by other American authors. F. and L. Gilbreth applied the principles of scientific management to bricklaying. As a consequence, the number of movements in laying bricks was reduced from 18 per brick to only 5 per brick. The Gilbreths used several techniques (Fig 2 and 3) as follows:

► Therbligs that “are the basic elements of one-the-job motions and provide standardised basis for recording movements” (Cole, 1990, p. 20).

► Flow process charts that “were devised by the Gilbreths to enable whole operations or processes to be analysed” (Cole, 1990, p. 20).

Fig. 2. Therblig symbols

Name	Symbol
Search	
Select	
Grasp	
Find	
Hold	

Source: Cole, 1990, p. 21

A contemporary and colleague of Taylor, H. Gantt introduced “a bonus plan for rewarding foremen who could up-grade the backward and inefficient workers” (Urwick, Brech, 2002, p. 76). He also created

the Gantt chart (Fig. 4) in order to indicate in a graphical manner the extent to which tasks had been achieved during a specific period of time (e.g. day, week, month).

Fig. 3. Flow chart symbols

Inspection	
Operation	
Transportation	

Source: Cole, 1990, p. 21

Fig. 4 Gantt chart

Period	Week 1	Week 2	Week 3	Week 4
Planned output				
Actual output				
Weekly actual				
Cumulative				

Source: Cole, 1990, p. 22

The works of the above mentioned authors highly affected the business world from America. Their ideas were quickly translated into practice in different domains such as the automotive industry or the steel industry.

### 3. Conclusions

Scientific management might be seen as an outcome of the industrial evolution and of the development of its factory system in

America. It arose mainly from the need to increase efficiency and eliminate waste and paved the way for modern management.

The contribution of Fr. W. Taylor to the emergence of scientific management was decisive. Since the beginning of the last century, industrial efficiency and Taylor have become synonymous terms.

Our paper shows that scientific management was essentially an American achievement that provided useful lessons for the whole human society. Further studies might be carried out in order to expand the debate on the emergence of scientific management in America.

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