

MANAGEMENT AND IDEOLOGY



The Legacy of the International
Scientific Management Movement

JUDITH A. MERKLE

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Introduction

It is a commonplace assumption of our times that modern technology and highly developed industrialism have created a sort of universal culture marked by both the benefits of mass production and the burden of alienation, depersonalization, excessive specialization, and bureaucratization. This technocratic, materialist, time-pressed, and fragmented society is seen as the inevitable by-product of the "machine" in modern life; it is international in scope and its negative characteristics are the unavoidable price paid for the abundant life.

As the effects of the negative side of "modernization" on the entire edifice of industrialism become more apparent, a host of critics have come forward to offer a wide range of solutions. These cures for low productivity, low morale, high error rates, and high wastage of human and material resources range from the redivision of labor to the advocacy of pure democracy in the place of work, from the rebuilding of "community" in society to the attempt to re-create a romanticized pre-industrial past.

Yet many of these proposals for change run headlong into the inescapable fact that their suggested plans for the amelioration of industrial malaise require the dismantling of the massive administrative and organizational structures that surround and control machine technology. These structures, it is often assumed, are the natural result of machine rationality in society. This idea of the spontaneous generation of the social order by the machine lends an often spurious aura of inevitability and permanence to many of the organizational traits of advanced industrialism. It is the theme of this work that these organizational structures are not, in fact, simply natural by-products of machine rationality in society, but are in large part the legacy of a systematic and massive industrial engineering crusade, the international Scientific Management movement, carried out in the first two decades of the twentieth century.

Scientific Management was a name invented in 1911 to describe a

new movement in factory organization which had previously been known by the name of its originator, Frederick W. Taylor, as the "Taylor system." Although "discovered" in the 1880s, the system was not a single invention, but a series of tools, methods, and organizational arrangements designed by Taylor and his associates to increase the efficiency and speed of machine shop production. It began with a system of timing work that was to eliminate once and for all the struggle between workers and owners over the appropriate returns to capital and labor by establishing a scientific measure of "what constitutes a fair day's work."¹ It included various bookkeeping and accounting techniques, an array of techniques for measuring work input, and various methods of organizing storerooms, tool repair, and other potentially time-wasting elements of the work process. It also included a method of charting work and waste and a managerial bonus plan devised by Henry Laurence Gantt, a slide rule for the calculation of machine speeds by Carl G. Barth, and the "science" of motion study and all its branches developed by Frank and Lillian Gilbreth.

The system was unified not by the uniqueness of its managerial devices, but by the manner in which they were organized, by the way it fragmented work and invested control or the organization of a planning process in the hands of a technical elite, and by the obsessive and puritanical style of F.W. Taylor himself. Taylor's system was an entrepreneurial scheme for selling organizational methods as science, and it contained a powerful social message. He promised to use "science" to increase profits, get rid of unions, increase the thrift and virtue of the working classes, and raise productivity to the point where society could enter a new era of harmony based on the high consumption of mass-produced goods by the previously deprived laboring classes.² The movement that he started was a new kind of efficiency evangelism that swept through the world from Petrograd to Tokyo. Taylor himself called his system a "mental revolution," and it is the contention of this book that this description was not altogether inaccurate.

1. Frederick W. Taylor, *The Principles of Scientific Management* (1st ed., 1911; New York: W. W. Norton & Co., 1967), p. 143. Taylor clearly relates the increase in productivity and wages to an expansion of the market for manufactured goods, the "necessities and luxuries of life," and continued employment "even in dull times."

2. *Ibid.*, pp. 27, 138.

The continuity and extent of the Scientific Management movement have often been underestimated by all but its practitioners. Because Scientific Management presented itself as a management technique, its content and influence have rarely been considered fit subjects for intellectual journals or the interest of professional social scientists and historians. Because its most visible manifestations date from the first part of the century, it was easy to dismiss it as a dead administrative fad. Because, for various political and tactical reasons, its techniques were often renamed, it was extraordinarily difficult to make a full accounting of their influence on industry, government, and general administration.

The underestimation of the international Scientific Management movement has led to a misestimation of the unity, direction, and harmony of industrial culture. The accurate estimation of the balance of social forces built into many of the central processes of modern industrial society requires the understanding of the profound effects that Scientific Management had on both the management and the ideology of the modern state and its industrial and business enterprises. While the development of Scientific Management was not the only or the most influential event in the evolution of the twentieth century state, it is distinguished by being one of the most pervasive and invisible of the forces that have shaped modern society. Through the media of technical exchanges, machinery purchases, and engineering journals it spread both at home and abroad not just a management technology, but an ideology about management and for managers. Indeed, the influence of Scientific Management has been such that any major attempt to change the nature of industrial organization must deal with it not just as a series of techniques, but as a way of thinking about the organization and goals of technology.

It is, perhaps, curious to discuss an "objective" management technology as ideology, but then, Scientific Management is a curious ideology. Taking ideology in its most common sense, as the shared beliefs of a group about the proper goals of a society and the appropriate distribution of power and benefits within that society, it is apparent that most ideologies are transmitted with a large proportion of words and a small proportion of objects. Many of these objects, such as banners, pamphlets, and mimeograph machines, themselves have to do with words. Scientific Management, on the other hand, was transmitted with a large proportion of objects and a relatively small proportion of words. The relations between objects—machine

tools, materials, and work stations—and the paper analogues of these relations—flow charts, planning documents, and work blanks—were used to symbolize idealized social relations, that is, the appropriate relations of the individual to hierarchies of specialization, to authority, and to other people, as well as the correct attitude toward work and the reward for work.

This is not to say that successful ideologies do not often possess a large number of impressive physical objects with which to transmit their message, as witness the great cathedrals of Europe. But the binding of an incipient or new ideology to the systematic use of extensive material rituals had not been accomplished before. The technical rituals of interdependence devised by Père Enfantin for the Saint-Simonian cult are but the frailest predecessors of the powerful symbolism of the modern mass-production process, timed and attended by its white-robed adepts. Scientific Management's message, tied to the rituals of time-and-motion study, Gantt charting, differential piecework, and high-speed steel, was not presented as social philosophy, but as Truth. Its proof was presented in material objects. Its social goals were modeled in the realities of factory organization. It was indeed an odd ideology, for it tended to export objects first, and to follow them with its message, rather than the reverse. It was a faith designed for pragmatists.

The chapters that follow will describe the Scientific Management movement as it took form in the United States and as it spread, with varying degrees of success, through France, England, Germany, and the Soviet Union. Scientific Management was by no means limited to these nations, but the wide variety of regimes, social structures, and pre-existing political ideologies in this small sample will show clearly the kinds of social, economic, and intellectual factors that advanced Scientific Management or retarded its influence; it will also demonstrate the extraordinary ability of the scientific managers to cross political barriers as they affected national planning, work organization, and social control. The portrait that emerges of Taylor's "mental revolution" at work shows how Scientific Management's solution to the technical and social problems of turn-of-the-century mass production became the common cultural legacy of modern industrial nations. If it is sometimes difficult to avoid the conclusion that yesterday's solution may have become today's problem, it is also impossible to fault the brilliance with which Scientific Management created a lasting technocratic formula to resolve the social problems of industrial organization.

PART I

FROM TAYLORISM
TO SCIENTIFIC
MANAGEMENT

Throughout my apprenticeship, I had my eye on the bad industrial conditions which prevailed at the time, and gave a good deal of time and thought to some possible remedy for them.

FREDERICK WINSLOW TAYLOR

CHAPTER I

The Origins of the Taylor System

Scientific management will mean, for the employers and the workmen who adopt it . . . the elimination of almost all causes for dispute and disagreement between them.

FREDERICK W. TAYLOR¹

In 1895, an engineer named Frederick Winslow Taylor presented a paper to the American Society of Mechanical Engineers, titled "A Piece-Rate System: A Step Toward Partial Solution of the Labor Problem."² This was the first formal presentation of a system of management which he had devised and applied in several factories in the course of his engineering work. It was not the first paper dealing with new systems of incentive payments that had been presented to the society, but it was the first of its type: unique in a number of ways, the paper was the first of a series of statements which would later be called "Taylorism," "The Taylor System of Scientific Management," or, simply, "Scientific Management," and whose practice and theory would spread throughout the industrial establishments of the world.

Taylor's paper followed a series of papers based on collective benefit plans: Kent's "A Problem in Profit Sharing" (1887), Towne's "Gain-Sharing" (1889), and Halsey's "The Premium Plan of Paying for Labor" (1891).³ Taylor's "A Piece-Rate System" took to task all the schemes previously presented, although Towne was, in many ways, Taylor's benefactor. For Taylor's was the first plan to stress individualism, to discard utopian ideas such as profit-sharing, to appeal directly to individual desire for higher wages in a way expressly designed to break up "groups, combinations, and classifi-

1. Taylor, *Principles of Scientific Management*, p. 142.

2. Frank B. Copley, *Frederick W. Taylor: Father of Scientific Management*, 2 vols. (New York: Harper & Co., 1923), 2:407.

3. Ibid.

cations" of workers leading to "soldiering" and trade unionism, and to do this by a process which was "scientifically" based on records of labor productivity, thus eliminating the "guesswork" in rate-setting on the part of the management.

The system set out in this first paper was a finished plan, whose details had been worked out in the years prior to its formal presentation, when its author changed from the practice of engineering to what might be called engineering management. In essence, the system was the outcome of twelve years of work at the Midvale Steel Company, was based on direct observation and practice, as had been Taylor's engineering education, and was a curious combination of technology and organization which could only have resulted from Taylor's peculiar background and training. As the system evolved through its application in other plants, it first multiplied technical applications and then gradually divested itself of its technical origins, for it was, as its author claimed it to be, a state of mind rather than a series of specific techniques. The system gained mathematical sophistication when Taylor gained college-trained assistants; Taylor himself, in spite of his night-school engineering training, admitted that he lacked the background in mathematics to do more than the logical outlines of the system and to apply them by force (both figuratively and literally—he received death threats in the course of his reorganization work) to practical organizational situations based on technological problems.

After Taylor's death, Scientific Management became somewhat softened in the hands of his followers: the harshest penalties of the piecework system were eliminated in the face of heavy union opposition, for his followers knew how to compromise when Taylor had not. In a like fashion, the different influences of his various successors became evident in the directions that Scientific Management took after 1915: Henry Laurence Gantt's work developed further many of the political implications of the system; the hand of Lillian Gilbreth, humanistically trained, could be seen in a shifting emphasis from "work" studies to "fatigue" studies, and in the branching out of Scientific Management to deal with "efficiency in personal affairs" and "efficiency in the home."

In spite of the fact that Scientific Management became, after its sensational public debut in the Eastern Rates case of 1911, the most widely known and influential system of factory management in the industrial world, it is difficult to define Taylorism in terms of content

alone. Even before the name "Scientific Management" was chosen for the Taylor system, the precise content of the management formula had begun to change, and, as indicated above, its evolution did not cease with the death of its inventor. We must ask, then, what exactly did Scientific Management mean?

In 1912, the Senate Committee on Education and Labor arrived at a definition of Scientific Management in relation to the passage of regulatory legislation. It was, said the committee, a generic term for "several systems of shop management now upon the market which have been invented by efficiency engineers. They are severally known as the Taylor system, the Stimpson system, the Emerson system, the Gantt system, etc., all of which have practically the same basic principles of operation but which differ somewhat as to details."⁴

Many of those systems have much in them that is commendable and proper, since a large portion of their details consists of a compilation of business methods and shop practice which have proven successful and not harmful to the workman; such as the proper grouping of machines, standardizing tools and equipment and methods of doing work, elimination of waste, modern methods of issuing materials and cost keeping, etc. On the other hand, in the effort to get the utmost amount of work out of the employees, excesses are committed which should be curbed.⁵

Clearly, then, Scientific Management was not simply a set of rapidly outmoded ideas on factory belting and typed orders. Nor was it only a popular phrase justifying any and all management "efficiency" re-organization. And, although used as such, it was not just a vaguely defined commodity readily marketable by private consultants to manufacturers eager for a definitive solution to problems of competitive production and sales.

The historical record has been obscured when it comes to a more precise definition of Scientific Management and its influence. In part, this represents the legacy of the violent internecine quarrels of the first little band of Taylorites. In addition, the vast extent of the movement and the ephemeral quality of many of its documents render the record unclear. And, finally, this obscurity is to some extent the product of political motives in the organizations and nations that used Taylorism

4. U.S., Congress, Senate, Committee on Education and Labor, *Systems of Shop Management*, Report no. 930 17 July (Washington, D.C.: Government Printing Office, 1912), p. 1. Cited hereafter as Senate Hearings (1912).

5. *Ibid.*, p. 2.

not only as a technique of speeding work but as a method of social pacification.

For many practical reasons, then, the users of Scientific Management have found it advantageous to define it as a series of its own component parts. The general result is to dispel the reputation of Taylorism and its inventor as a myth produced by the nineteenth-century enthusiasm for great men, or as a quaint turn-of-the-century fad in management which has happily long disappeared. Yet it may be argued that the very elements which obscure the origins of Scientific Management constitute evidence of the importance and extent of this system of industrial control.

The claim that Taylorism was simply a series of common-sense techniques was motivated by everything from the fear of patent infringements to professed adherence to Marxist principles of workers' control. For example, because Taylorism began its life as the arch-enemy of unionization, a professed concern for organized labor was felt to be incompatible with the formal acknowledgment of the influence of Scientific Management on industrial and political organization. In addition, because Scientific Management was a commodity sold by "efficiency engineers," a great deal of rivalry was generated by competing claims to the invention of specific Scientific Management techniques. When rivals downgraded each other's originality, they added to the general impression that there was in fact nothing new in the system. So, while the internecine wars among various kinds of efficiency experts have died, the legacy of anonymity and of multiple names for single ideas has persisted.

What gave Taylor the title of "Father of Scientific Management" in the estimation of his contemporaries was not his invention of all of the techniques of Scientific Management. Taylor's works introduced a complex of technical, organizational, and ideological elements which can be traced to specific currents of thought in his time, and which proved to have differential decay rates during the years that followed his death. The synthesis of ideas that he put forward was the original development. It is this synthesis rather than the ideas alone that has been acknowledged as the identifiable body of Taylorism. This new type of linkage between pre-existing ideas accounts for the unique social reaction to Taylorism, not aroused by its neglected and forgotten predecessors. Other innovators had offered partial answers, but only Taylor's synthesis answered simultaneously problems of production and organization, at the same time that it responded with solutions to the industrial disruption of American society. Taylor's