

## **Frederick Winslow Taylor and His Lasting Legacy of Functional Leadership Competence**

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*In the century since his death a great deal of speculation surrounds just how much Taylor has meant to business and industry functional and leadership practices in the United States and the world. It is generally acknowledged that Taylor not only greatly influenced how work was done in the 20<sup>th</sup> century but also had a direct impact on contemporary management practices and management education. This paper is an attempt to chronicle the life and work of a most extraordinary man who changed the way production, work processes and leadership practices are formulated and put into practice.*

### **INTRODUCTION**

Although it is generally recognized that lawyer and later Supreme Court Justice Louis Brandeis coined the phrase “Scientific Management”, no other man has ever been more associated with the field than Frederick W. Taylor (Savino, 2009). Taylor quickly realized his calling and learned his craft from his early days of employment at Midvale Steel Company of Philadelphia in 1878. As a result of seeing work effort often squandered and preformed inefficiently he felt the need to act on his seminal idea that the key to productivity was knowledge, organization and leadership (Kanigel, 1997). Some years later he applied his management reorganizing efforts at places such as Bethlehem Steel Company and Cramp’s Shipbuilding Company where Taylor was famous for totally remaking companies from top to bottom. In some cases Taylor actually formulated and recommended complete efficient work systems that ranged from the duties of a boy bringing water to the unskilled laborers to the duties of the company president providing solutions to issues ranging from shop problems to improved accounting and sales procedures (New York Times, 1915).

Upon his death on March 21, 1915, the New York Times published the obituary of Frederick W. Taylor where it detailed his life’s work devoted to the simplification of industrial processes to reduce costs and increase outputs (New York Times, 1915). Equally important was the impression he made on business and industry in the United States with his doctrine of where any man who once may have proved to be incompetent in his job could be fitted in where he might provide good service instead of being fired. Along with Charles Darwin and Sigmund Freud, Taylor was once acknowledged by Peter Drucker as one of the few men whose ideas made a lasting and significant contribution to world and Western thought (Will, 1997). Taylor who was born in 1856 saw his life coincide with America’s rapid shift to intense industrialization with the end of the artisan craftsman and the beginnings of mass production and general labor.

Born into an affluent Philadelphia family Taylor learned early from his father of the power of money as a motivator of men. His impatient father would many times resort to the offer of money to laborers to

get them to quickly complete some task that he wanted to be done (Will, 1997). Although he studied at the prestigious Phillips Exeutor Academy and qualified for admission to Harvard, Taylor achieved his overriding professional philosophy of moral ascendancy through downward mobility through his labor experiences in various Philadelphia factories in the late nineteenth century. Throughout his career Taylor was continually challenged as to his true view of labor in terms of whether or not he understood, respected or served the best interests of working people. This was true up to the end of his life even after becoming famous and the publication of his book, *The Principles of Scientific Management* in 1911 which highlighted all the benefits of the movement afforded to business and workers. It is well known that Taylor spent the last few years of his life unhappy and constantly being questioned about his motives by workers and as a result of testimony he gave before a hostile Congressional Committee in 1912 which may have contributed to an early death a few years later (Aitken, 1960).

Taylor entered a work world based on wood, iron, rope and steam power that enhanced the speed, strength and abilities of human muscle (Kanigel, 1997). The time of Taylor and his contemporaries in the Scientific Management movement was an intense period of progressivism. Because of the overwhelming wave of progressivism in American society, Taylorism and Scientific Management made business and industry what it was going to become anyway, only more so and more rapidly (Will, 1997). Therefore, it may be said that Taylor and his theories took industry to its next evolutionary stage and helped create a new or at least different type of management discipline (Dent and Bozeman, 2014; Stewart, 2009). Taylor's approach of redefining work as a series of simple tasks was acknowledged as a meaningful and fundamental break from the past and even Taylor himself once said that while man has been first in the past, the system must be first into the future (Taylor, 1911, Person, 1929).

## **SCIENTIFIC MANAGEMENT AS A PROGRESSIVE MOVEMENT**

The philosophy of Scientific Management developed by Taylor and his followers about a century ago had far reaching implications for business and industry as well as broader societal, political and ideological perspectives (Grachev and Rakitsky, 2013). In the area of business and industry Taylor's work laid the foundation for the processes of effectively integrating the work of machines and mechanisms along with the work of people and to create of new field of scientific inquiry and application (Rakitsky, 2005). The new system was based on basic leadership assumptions that results are best achieved based on the goals that emphasize science, not rule of thumb, harmony, not discord, cooperation, not individualism, maximum output in place of restricted output and the development of each man to his greatest potential (Taylor, 1911).

At the time of Taylor and others in the field most workers did not or could fully comprehend the capacity of their abilities and the equipment available to complete the work that was needed to be done. However, as a result of Scientific Management workers who were specially trained would work based on specific work instructions not based on guesswork, tradition or precedent but rather based on careful studies made on the fundamental operations necessary for the work to be done (New York Times, 1910). While Taylor gets a great deal of credit or the blame in the late nineteenth century for dehumanizing work which was systematically analyzed and prescribed to be in smaller and simple portions, it was Adam Smith who first discussed the division of labor and associated specialization of training a century before (Kanigel, 1997). Despite criticism from the likes of Upton Sinclair and a few other progressive socialists of the time who worried about worker deskilling and the loss of the general faculty of applying the mind to the direction of work, Scientific Management flourished in the United States and throughout the world (Short, 2011; Will, 1997). In an era when Taylor was held to be accountable for a system that was characterized as a cold capitalistic machine that used up and then discarded human capital he argued that his system would actually dissolve tensions between labor and management where men would do extraordinary work for extraordinary pay (Kanigel, 1997; Short, 2011).

With industry-wide applications of Taylor's concepts in the United States in terms of detailed work processes at the shop floor level, Scientific Management also had major implications for broader societal, political and ideological perspectives in other countries (Merkle, 1980; Morgan, 2006). As an indication

of the world-wide appeal of Taylor's 1911 book, *The Principles of Scientific Management*, was very quickly translated into Russian, French, German, Dutch, Swedish, Italian, Chinese and Japanese for global consumption and application (Wren, 2011). Taylorism in Europe and Asia was greeted with various levels of acceptance and application. Taylor's concepts met with some success in places such as France, Germany and Japan while receiving the endorsement of Lenin in Russia with widespread applications to basic rejection in England (Blake and Mosely, 2010).

## **THE LASTING LEADERSHIP LEGACY: TAYLORISM IN THE 21<sup>ST</sup> CENTURY**

As prescribed by Taylor and others, one fact has remained true over the last century which is that each element of the manufacturing process must be constantly dissected, modified, improved or eliminated to promote production efficiency (Gabor, 2000). Therefore, managers and leaders in all functional areas must constantly evaluate and assess the processes used to conduct business operations. In the highly competitive environment of the 21<sup>st</sup> century the ability to collect and analyze data to quickly eliminate constraints is essential to sustained economic viability (Kulesza et al., 2011). In many ways the managers and leaders of today owe a great deal to Taylor when it comes to the efficient performance of their jobs. Taylor's influence on all types of business functions is very obvious spanning from specific work procedures in the area of production to the duties performed by many professionals and managers at the highest levels of their organization. The following is a somewhat brief discussion of how Taylor has a continuing influence of the performance of many business functions a full century after his passing.

### **Management Accounting**

Taylor's experience with accounting systems came out of his work with the Manufacturing Investment Company (Kanigal, 1997). It was there he developed customized systems that provided detail monthly statements of expenses by job based on time studies, prices and standardized practices (Verico and Williams, 2005). A method of formalizing management accounting came about in the textile, iron and steel industries during the industrial revolution (Kulesza et al., 2011). Because of the concern for the use of resources in production, managers were focused on controlling the allocation of materials and especially direct labor (Johnson and Kaplan, 1987). As might be easily imagined Taylor's work in the detailed analysis of work processes, standards, allocating overhead and variance analysis provided the core elements of management accounting (Kanigal, 1997).

### **Codetermination**

In many ways Taylor's career was a paradox. On many occasions he was roundly criticized as being anti-worker and uncaring as to their needs and to the demands of their jobs. In his later years he was often very concerned and uncomfortable being put into a role of the man who created a system that was a reductionist approach that was dehumanizing to workers (Sandrone, 1997). Never was this more evident than his testimony before a Congressional Committee in 1912 on his methods that were met with hostility for which he was bewildered and severely stressed (Will, 1997). However, strangely enough many people believe that in some ways Taylor's philosophy actually was a guiding force toward promoting the leadership concept of codetermination in the workplace (Nyland et al., 2014). Because of Taylor's unique perspective of working his way from the factory shop floor to various leadership positions he was able to see the big picture and the vital role that well qualified and informed labor played in the overall process. It was because of this that Taylor advocated a change in the system of management that promoted a common interest instead of being antagonistic (Nyland, 2000). Despite growing union resistance, Taylor in his last days promoted the idea that knowledge rather than power should rule the workplace (Kraines, 1960; Savino, 2009). Taylor basically believed the best way to balance knowledge and power in the workplace was through codetermination.

With other progressive minds of the day such as Louis Brandeis, Taylor insisted that this knowledge be used to support strong and democratic unions that had the power to effectively engage in the

determination of practices that brought about real change and worker participation in some management activities (Nyland et al., 2014).

### **Compensation**

A key assumption underlying all of Taylor's ideas of Scientific Management was that workers were motivated to a great degree by economic and rational behavior. From his early youth in watching the actions of his father, Taylor was convinced that workers responded well and positively to economic incentives. Although Taylor was trained as an engineer he greatly understood the basic tenants of Classical Economics based on open markets and rational behavior. With an objective for a maximization of profit by both the company and the employee, Taylor developed a compensation system that would allow average employees to achieve maximum performance based on clearly defined jobs and tasks that would pay the employees well that met the work standard and provided bonuses to those who exceeded the standard (Kulesza et al., 2011). Based on a detailed analysis of work standards by managers and leaders in each production area, Taylor developed a system that benefited those who met the standard as well as rewarding superior performance that went beyond the standard (Wren, 1994).

### **Human Performance Technology**

While Taylor is not acknowledged as an early pioneer of Human Performance Technology (HPT), he is nonetheless generally regarded as a major contributor to the field (Blake and Mosely, 2010). HPT became an emerging field of study in the 1970s when studies were done to evaluate systems that are used to cost-effectively influence human behavior, accomplishment and overall performance (Stolovitch, 2000). A review of the field indicates that HPT pioneers such as Thomas Gilbert were greatly influenced by Taylor in that many of the elements of HPT are based on the Principles of Scientific Management such as an emphasis on outcomes, exemplary performance as a standard to improve typical performance levels and the responsibility to promoting employee competence (Blake and Mosely, 2010; Chyung, 2005).

### **Job Requirements**

In the area of Human Resources one of the most important areas that Taylor has had a significant impact on has been related to job requirements as being an early pioneer in the field of systematic job analysis. Whether it is in the development of detailed job descriptions or in job design, Taylor helped define jobs as a series of well-defined tasks and how they are to be completed in a coordinated effort that yields highly productive results in the most efficient manner. In light of the times and the degree of detail that Taylor devoted to defining job as a series of smaller subtasks done in an efficient manner many came to blame Taylor for the boring and repetitive nature of jobs that required a second look years later by the those concerned about motivation (Carpenter et al., 2011). In many circles some might say Taylor's work in establishing small detailed work subtasks led Charlie Chaplin in 1936 to make the film *Modern Times*, which was an artistic representation of the minimization of the worker as a small and insignificant part of the machine process (Will, 1997). In fact, Taylor was so successful in defining job details which promoted productivity and efficiency that the Behavioral Scientists and leaders labored for years to balance it out with elements of job enlargement and enrichment with such efforts as the Job Characteristics Model (Hackman and Oldham, 1980). Nonetheless, job requirements that lead to detailed job descriptions and job specifications begin with the elements established by Taylor.

### **Lean Management/Manufacturing**

A significant movement in recent management has been in the area of lean management. While the concepts of modern lean manufacturing seemed to come out of the Toyota Motor Corporation of Japan in the early 1950s, it is clear that Taylor's early ideas were the basis of many of Toyota's developments in the field (Hines et al., 2004). In order to avoid waste throughout the value chain that absorbs resources and creates no value Taylor often advocated the elimination of awkward, inefficient, or ill-directed movements of men (Abubakar, 2014; Womack and Jones, 2003).

According to Taichi Onho who developed Toyota's lean manufacturing system, Henry Ford is given credit for developing the concept of lean manufacturing (Peterson, 2002). However, it is generally acknowledged that Ford was well aware of Taylor and the Scientific Management movement at the time he first designed his assembly lines and was well understood that lean manufacturing was not just a production technique; it was really a pervasive leadership philosophy of standardized methods to promote production efficiency as a total organizational process (Voss, 1995; Parks, 2003). This is further seen by the common practice of taking Taylor's scientific management emphasis on classical engineering tools such as plant design and layout, workplace design, detailed labor methods and extending them to the entire factory (Waddell, 2005).

### **Marketing**

The influence of management and leadership in the performance of all business functions is obvious. Management is generally viewed as the process to efficiently and effectively achieve set goals in an environment designed and maintained to facilitate individuals working together in a successful manner (Koontz and Wehrich, 1990). The art and the science of management as combined with marketing deals directly with the expressed goals to target markets and customers for the efficient and effective exchange of goods (Kotler and Keller, 2009). Taylor's leadership legacy of breaking complex tasks down into subtasks and tying rewards to performance are well applied in marketing and especially sales. Marketing managers who apply Taylor's principles where targets are set and then achieved by those in sales provide clear linkages between performance and rewards which in turn encourages others to achieve their goals also (Abubakar, 2014). Over the years it appears that Taylor's ideas of Scientific Management has greatly influenced the way in which Marketing has evolved even to the extent of something called Scientific Marketing Management. Some years after Taylor's death, White (1927) believed that Taylor's ideas could be a foundation of creating a marketing system for organizations where a balance could be achieved between standardization and differentiation of products (Tadajewskia and Jones, 2012).

### **Nonbusiness Application**

An unusual area where Taylor has had an impact on a nonbusiness type activity is in shipping safety. The International Code for the Safe Operation of Ships and Pollution Prevention (the ISM Code) was inspired by the need for a systematic approach to ensure safety at sea and on shore, the avoidance of damage to property and the environment and the prevention of human injury or loss of life (Kristiansen, 2005). The ISM Code establishes systematic procedures for preparing and dealing with emergencies, internal audits and management reviews, formalized prescribed work for all key shipboard operations, checklists and detailed definitions of all tasks and assignments of all personnel (Tzannatos and Kototos, 2009). The Code is a thorough system of shipping safety procedures based on a positivistic paradigm of scientific management adapted to the current needs to develop and maintain a culture of safety (Kristiansen, 2005).

### **CONCLUSION**

Frederick W. Taylor was a man of vast interests and accomplishments. He was known to hold about 100 patents for various products and was awarded several medals for industrial accomplishment from the state of Pennsylvania and the Paris Exposition of 1900 for his development of the Taylor-White Process for treating tungsten metal cutting tools (Blake and Mosely, 2010). On a personal note was also an accomplished amateur athlete winning the first United States National Championships doubles tournament in tennis with Clarence Clark in 1881 at Newport, New York which eventually became known as the U. S. Open (New York Times, 1915).

There is little doubt that Frederick Taylor was a truly remarkable man of the 19<sup>th</sup> and early 20<sup>th</sup> centuries who is still influencing how we do things in the early 21<sup>st</sup> century. The essence of his thirty years of scientific study and application were captured in his book, *The Principles of Scientific Management*, which was published by Harper Press in 1911 and cost \$1.50 to purchase (New York

Times, 1911). One hundred years after his passing Taylor still dominates as a person who not only influenced management as a refined discipline but also had a worldwide impact that shaped how we live, think and lead today in business, society as well as in endeavors of economics and political ideologies (Wren, 2011). A true appreciation of the origins of modern management is invaluable for understanding the philosophies and orientations of modern practitioners who maintain a survival of the fittest approach to labor and the technical aspects of work life (Bedeian, 1998; Dent and Bozeman, 2014). It can be safely said that Frederick Taylor is truly a man for three centuries.

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