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Exploring Taylorism and Its Continued Influence on Work and Schooling

E. Wayne Ross

Context: Elementary TE, Secondary TE, 7-12, University
NCSS Standards: II (Time, Continuity, and Change), VI (Power, Authority and Governance), VII (Production, Distribution, Consumption), VIII (Science, Technology and Society)
INTASC Standards: 5 (Learning environment), 6 (Communication and Technology), 9 (Reflection and professional development)
Topics: documentary film, scientific management, standardization, testing, Taylorism

> It is only through *enforced* standardization of methods, *enforced* adaptation of the best implements and working conditions, and *enforced* cooperation that this faster work can be assured. And the duty of enforcing the adoption of standards and enforcing this cooperation rests with management alone (Taylor, 1911/1997, p. 83)[1]

Anyone who has worked in a fast food restaurant, factory, or for that matter has been a student or teacher in a public school understands something about Taylorism, a regime of work control that is characterized by standardization, routinization, and simplification of tasks; coercion rather than consent; speed ups; and lack of intellectual or skilled content.

Taylorism was the most influential management theory of the 20th century. The principles of "scientific management" were widely adopted by educational administrators in the early 20th century and their impact remains evident in 21st century schools. Even though evidence of Taylorism has largely vanished in the contemporary workplace, superseded by new techniques of flexible specialization and lean production, walking into a school today is often like walking into a past where scientific management is still the order of the day, and, indeed, it is. Contemporary schools are still largely driven by conceptions of teaching and learning that have their roots in Taylorism or what is often described as the "factory model" of schooling.

A study of Taylorism is an important element in understanding the history of industry and education in North America. And, an examination of the aims and application of the principles of scientific management is key to developing an appreciation for the experiences of workers in the 20th century as well as understanding why the schools we have exist.

Clockwork (Breitbart, 1981): A Documentary Film on Taylor and Scientific Management

Over 100 years ago factory owners and business managers saw poor productivity, rapid technological change, and heightened competition as obstacles to increased profits. *Clockwork* shows how Frederick Winslow Taylor (1856–1915) and his followers attempted to meet these challenges

through "scientific management," a radical program to organize every aspect of production under a regime of quantitative measures and systematic planning.

Clockwork is the only documentary film that examines Taylor's work and its continuing influence on the modern workplace. This film examines Taylor's theories in historical perspective against later efforts of production efficiency including automation. *Clockwork*, 25 minutes in length, includes original historical footage, which Taylor and his contemporaries the Gilbreths—Lilian Gilbreth introduced psychology to management studies and Frank Gilbreth developed motion studies independent of Taylor using a motion picture camera that was calibrated in fractions of minutes to time the smallest of motions in workers—shot for the pioneering time–motion studies which paved the way for the modern automated assembly line and unskilled factory worker.

The film presents a history of modern mass production and craftsmanship. As factories grew larger and the work force expanded factory owners were confronted with inefficiencies in production and product management. A major barrier in overcoming these inefficiencies was the craft knowledge held by skilled workers, such as machinists, who, as a result of their knowledge and skill, essentially controlled the production process. Factory owners sought new technologies that improved the workflow, reduced labor costs and the division of labor (e.g., circumscribing tasks and roles to increase efficiency of output) was the key solution presented by Taylorism.

> Now one of the very first requirements for a man who is fit to handle pig iron as a regular occupation is that he shall be so stupid and so phlegmatic that he more nearly resembles in his mental make-up the ox than any other type. The man who is mentally alert and intelligent is for this very reason entirely unsuited to what would, for him, be the grinding monotony of work of this character. Therefore the workman who is best suited to handling pig iron is unable to understand the real science of doing this class of work. (Taylor, 1911/1997, p. 59)

Thus scientific management matched the worker to the job (worker or manager) and in the process separated the conceptualization of work from its execution.

The film illustrates Taylor's efforts to improve production by 400% for a worker of particular skills and talent. Though craftsmen resisted— the introduction of scientific management was often resented by workers and provoked numerous strikes including the strike at Watertown Arsenal which led to a congressional investigation in 1912. Taylor's system of scientific management, however, prevailed.

Alongside this history, *Clockwork* presents insights into the life and thinking of Taylor—an aristocratic Quaker, tormented throughout his life by the recurring nightmare of being trapped inside a machine—who was doggedly determined to improve the productivity of workers through the use of his primary tool, a stop watch.

Clockwork, which was produced in 1981 , shows how even the early computer assisted design and manufacturing systems incorporated Taylor's theories of production management. Today, organizational theorists often use Taylor's legacy as a point of contrast with contemporary management theories, but lean manufacturing, Total Quality Management Six Sigma, and other management approaches (e.g., Japanese management culture or Toyota Production System), are new names for what is essentially scientific management.

Using *Clockwork* in Social Studies Education

I have used *Clockwork* in a variety of contexts including secondary social studies courses, social studies methods and curriculum courses, and in teaching about curriculum theory and the history

of education. While the content of the film is relevant for teaching about the history of business, labor–management relations, and the everyday working conditions in factories of the late 19th and 20th centuries, I most often use the film as a springboard for students as well as preservice and in-service teachers to consider how principles of scientific management shape learning and teaching in schools as well as conceptions of curriculum, knowledge, and social relations in school. For example, metaphorically describing students as the "raw material" of schools; controlling the movement of teachers and students via bells; conceiving of the curriculum as a product; dividing students into grade level or dividing curriculum content into units and individual lessons; describing the school facilities as a "plant" are a result of a "factory model" of schooling that has its roots in the adoption of scientific management principles by educational administrators.

Typically I ask students (whether K-12 students or teachers studying at the university level) to view the film with three goals in mind: (1) identify the basic elements of scientific management; (2) describe how they are implemented in K-12 schools and critically analyze the principles of scientific management as applied in workplaces, particularly schools; and (3) discuss the impact of scientific management on the educational process and how deleterious effects might be counteracted.

Clockwork is a short film and I often supplement its use with readings. Depending on the context and goals of the course students may read some portion of Taylor's *The Principles of Scientific Management* (the full text of which is available online as well as in low cost reprint editions). In addition, I have used excerpts from Raymond E. Callahan's (1962) classic study *Education and the Cult of Efficiency*; "Scientific Curriculum-Making and the Rise of Social Efficiency," a chapter from Herbert M. Kliebard's (2004) *The Struggle for the American Curriculum*; and "Scientific Method in Curriculum-Making," by Franklin Bobbitt (1981/2004).

Students typically respond quite positively to the film, despite its now somewhat dated treatment of "contemporary" applications of scientific management. The deadpan narration, rare footage of time–motion studies, selected quotes from Taylor's writing, and somewhat bizarre biographical elements of Taylor's life keep viewers engaged.

While the level of detail varies depending on the supplementary readings used with the film, students can quite easily identify the basic elements of Taylorism after viewing *Clockwork*. After watching the film, our discussion begins with an effort to describe what Taylorism is (however, it should be noted that in the debriefing, description and critique are not rigidly separated). What follows is a representative list of characteristics that students typically identify:

Aims of scientific management:

- Reduce the worker to an appendage of the machine minimizing the margin of error that might inhibit productivity.
- Eliminate conflict between management and workers.

The general approach of scientific management:

- Standard method for performing each job.
- Select workers with appropriate abilities for each job.
- Training for standard task.
- Planning work and eliminating interruptions.
- Wage incentive for increase output.
- Value-free design.
- Division of labor (e.g., separation of thinking and doing).

Effect of scientific management on work/workers:

- Work lacks intellectual or skill content.
- Work is fragmented.
- Work is mechanized or automated.
- Tasks are routinized, simplified.
- Coercion outweighs consent.
- Work speeds up.

Myriad examples are offered up to illustrate the application of Taylorism to K-12 schooling including:

- Schools are often large and bureaucratized.
- Students change teachers each year.
- Teachers plan and teach alone.
- Elementary teachers often do not share students.
- Secondary students see many teachers in large groups (the "platoon" system).
- Curriculum is fragmented.
- Tracking students by ability levels.
- Deskilling of teachers though alignment of teaching with mandated curriculum and standardized tests.
- Emphasis on monitoring/surveillance and bureaucratic activity—scripted curriculum and scripted lesson.
- Decline in academic freedom for teachers to engage students in conversation, inquiry, open-ended activities.

Students usually give particular emphasis to Taylorism's insistence on a rigid separation of thinking from doing. Taylor prohibited participation by production workers in the organization, planning, and direction of the manufacturing process, requiring workers to do exactly as they were told to do and no more. This authoritarian stance is carried over into schooling in at least two ways: (1) its exclusion of students from participation in the planning, organization, and direction of the education process; (2) deskilling of teachers as their work is conceptualized by others (via mandated curriculum) and enforced through bureaucratic outcomes based accountability systems.

Another key way in which Taylorism continues to influence teaching and learning is through the use of individual rewards for individual effort (e.g., the focus on student test scores). Taylor developed wage-incentive systems emphasizing piecework and historically assembly line foremen attempted to suppress any sort of worker interaction. Talking was forbidden in the early days. Sound familiar?

Additional criticisms of scientific management offered by students typically include the disregard of the human side of work/learning, as Taylorism ignores individual differences. And, the fact that the economic interests of workers and management are not the same, so both the measurement processes and the retraining required by Taylor's methods would frequently be resented and sometimes sabotaged by the workforce. Indeed resistance is a key theme in *Clockwork*. Cooperation was the most fundamental precondition for the implementation of scientific management. If the cooperation of workers and managers was not achieved, all the other principles and techniques were useless. While Taylor believed that once the "natural laws" governing work and production

were discovered, the proper time for doing a job and the proper amount of pay can be determined in an objective, scientific way. And if everyone adheres to the laws there is no place for bargaining or labor–management conflict (because you cannot bargain about scientific facts).

Typically, discussions regarding the application of Taylorism in schools lead directly to critiques of scientific management. Questions then follow regarding how teachers, students, and other stakeholders can respond to the deleterious effects it has on teachers and learning. In the No Child Left Behind era there is no shortage of examples regarding acts of resistance (e.g., coordinated local, state, and national efforts to reform or dismantle NCLB; the work of groups such as FairTest.org, The Whole Schooling Consortium, The Rouge Forum, etc).

Teachers struggle for control of their workplaces today, just as the machinists depicted in *Clockwork* did. Many teachers and their allies are currently battling the efforts to replace their minds in the classroom with the minds of test publishers and standards writers. The fight in schools today is not merely about the contemporary version of production quotas (e.g., test scores), but as illustrated in *Clockwork* (and the related readings) the heart of the struggle is about what people will know and how they will come to know it—and who makes those decisions. Obviously, students and teachers have much to learn from the history Taylorism.

Note

1. Pages 5–29 of the 1911 text are part of the Internet *Modern History Sourcebook*. The *Sourcebook* is a collection of public domain and copy-permitted texts for introductory level classes in modern European and World history. http://www.fordham.edu/halsall/mod/1911taylor.html

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