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NOTES:

MY FRIEND, FRED TAYLOR

AND

SCIENTIFIC MANAGEMENT

OR

THE REAL COST OF "PUBLISH OR PERISH SYNDROME"

I've been dismayed to find out how few well-educated engineers remember who Faraday was and how few business school graduates remember Babbage, Taylor or Gantt.

It seems to me that, at one time, a scientific, technical education was largely aimed at teaching the students the tricks, techniques and systems people have learned to break problems down into simple component parts, and the result was an education in the understanding of the phenomena that resulted. It also produced an appreciation of the techniques so that similar techniques can be used to break other problems into components that can be understood and managed.

I'm afraid that our modern education is largely an opportunity for professors to show off their brilliance in developing a critical, clever, elegant analyses of physical or business phenomena. Presentations in class are just a step in developing these analyses so that they can be written down on papers and will be published and appreciated for their elegance.

The business school professor makes points by proving how much brighter, intelligent and analytical he is than Henry Ford. I'd like to have some business students who were taught some of the things that Henry understood.

Electrical engineers today worship the professor who can develop one long, complex, partial differential equation that will encompass all the generalized theory of energy transfer and, in an elegant way, describe both steam engines and electrical motors. I'd like to have some electrical engineers who know both what an electric motor is and how you use it, and who have enough exposure to the techniques used through many, many years of science and engineering--techniques that break new problems into pieces to understand them, analyze them and improve them.

When I first read a little of Fred Taylor's works many years ago, I thought they were obvious and anyone would think that way.

However, I've learned to appreciate Fred Taylor's ideas. It must have been very disturbing for people to have Mr. Taylor analyze their work and break it into simple components. I'm sure each one of them thought their job was filled with art and technique beyond any analysis and that they were the only ones who could do it. I'm sure supervisors and foremen felt that they were a key part and that they had to watch their people and pass on techniques over a long period of time.

When we built our first computer, the engineer who designed it was very competent and very good, however, he felt that he had to supervise the manufacture of every machine. When we had so many orders that it was impossible for him to supervise each one, and we moved it to production where foremen supervise the production of the machine, the engineer resigned. He thought we showed lack of appreciation for his skill and we had done him wrong because we systematized the job so that ordinary people could build the machine.

Today most of our managers still act that way. Their job is so complex that it is beyond analysis, description or systematizing and their skill is dependent on all those years of experience they have. I don't think my friend, Fred Taylor, would agree.

When I read about business managers in Fortune magazine, those who have been successful and those who have failed, I get the feeling that they too feel their job is beyond analysis and beyond systematizing. In fact, the authors often maintain an air of mystery.

Now, I'm sure you can't break the manager's job into pieces and say, "now that we have it organized, we can pass it on to anyone", but one thing is clear. As an organization gets bigger and one man's time does not get much bigger, he has to organize and systematize his job so that he can pass it on to others. It

is further true that we're not all going to live forever  
(although some of us don't see to believe that) and in order to  
pass on our jobs to others, we have to be able to systematize it  
and organize it.

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In the typical situation, where the man is underemployed, overmanaged, and constantly let off the hook, a half-failed man in a half-failed organization, education of any variety won't help. And total failure must follow from the unpleasant delusion that classes can transform the adult mind and personality like some fairy wand. The less companies and educators expect to turn an incompetent into a polymath, or a bully into a Boy Scout, the more they are likely to achieve. As it is, too much of what now passes as management education isn't education: it is indoctrination, entertainment, or occupation of vacant hours. And it has very little to do with the management of business, which is the real business of management.

- (1) Frederick W. Taylor's major publications are "A Piece Rate System" (1895); "Shop Management," (1903); and "The Principles of Scientific Management" (1911). "Shop Management" is an expansion of his earlier paper on piece rates. The emphasis is on the importance of "the coupling of high wages for the workman with low labor cost for the employer" and the resulting public benefits from lower prices. The following principles are listed as guides for the best type of management:
- (a) *A Large Daily Task.* Each man in the establishment, high or low, should daily have a clearly defined task laid out before him.
  - (b) *Standard Conditions.* The workman should be given such standardized conditions and appliances as will enable him to accomplish his task with certainty.
  - (c) *High Pay for Success.* The workman should be sure of high pay when he accomplishes his task.
  - (d) *Loss in Case of Failure.* When the workman fails he should be sure that sooner or later he will be the loser for it.

(2) Harrington Emerson's major publications are "Efficiency as a Basis for Operation and Wages" (1911), and "The Twelve Principles of Efficiency" (1913). The major portion of his latter book is devoted to a description and illustration of his principles of efficiency which are: (a) A clearly defined ideal. (b) Common sense. (c) Competent counsel. (d) Discipline. (e) The fair deal. (f) Reliable, immediate, adequate, and permanent records. (g) Dispatching. (h) Standards and schedules. (i) Standardized conditions. (j) Standardized operations. (k) Written standard-practice instructions. (l) Efficiency reward.



- (3) Henry L. Gantt's major publications are: "Work, Wages, and Profits" (1911); "Industrial Leadership" (1916); and "Organizing for Work" (1919).

A selection of some of the most lasting and useful contributions to management thought from Gantt are:

- (a) *Man is Goal Oriented.* The most effective method of stimulating interest in people in general is to set a task, an objective. This concept provided the basis for his task and bonus plan.
- (b) *Training Is the Responsibility of Management.* It is management's responsibility because it can increase productivity.
- (c) *Task Setting Is Essential.* It is superior to driving or urging men to more strenuous toil without any well measured standards of how much work is reasonable under the conditions present.
- (d) *Authority and Responsibility.* The authority to issue an order involves the responsibility of seeing that it is properly executed.
- (e) *Planning and Control.* These provide proper methods, and proper results will follow proper methods. Fact must be substituted for opinion. This concept is the basis for the principle of the Gantt Charts for which Gantt is best remembered.

- (4) Alexander H. Church's most influential book is "The Science and Practice of Management" (1914). He was the first to analyze the basic functions essential to any manufacturing activity. His organic functions of manufacturing are:
- (a) *Design*, which originates.
  - (b) *Equipment*, which provides physical conditions.
  - (c) *Control*, which specifies duties, and which orders.
  - (d) *Comparison*, which measures, records, and compares.
  - (e) *Operation*, which makes.

Church's principles of effort to be applied to the organic functions are: (a) experience must be systematically accumulated, standardized, and applied; (b) effort must be economically regulated; and (c) personal effectiveness must be promoted.

(5) Frank B. Gilbreth's major publications are: "Concrete System" (1908); "Bricklaying System" (1909); "Motion Study" (1911); and "Primer of Scientific Management" (1912). "Applied Motion Study" was written with Lillian Gilbreth in 1917. His contributions to manufacturing management are in the area of motion and time study. He stated that "the aim of motion study is to find and perpetuate the scheme of perfection." Motion Study (*q.v.*) was explained by him as having three stages: (a) discovering and classifying the best practice; (b) deducing the laws; and (c) applying the laws to standardize practice, either for the purpose of increasing output or decreasing hours of labor, or both. Gilbreth devised a system of dividing work into its most elementary elements which were called "Therbligs." His goal was the development of methods of least waste.

These basic concepts of the representative pioneers of Scientific Management serve to illustrate that they did not put their faith entirely in systems or mechanisms. They considered Scientific Management to be a way of thinking about the process of achieving objectives or tasks and the elimination of wastes through efficiency methods which can be measured.

**Subject Branches.** Perhaps a more fruitful way of appreciating Marketing is to see what is involved in the activity:

- (1) People (as buyers and sellers in a culture).
- (2) Goods and services (product innovation).
- (3) Channels of distribution (a complex of wholesaling and retailing institutions).
- (4) Performance of functions:
  - (a) Marketing information and research
  - (b) Buying
  - (c) Selling (personal, advertising, promotion, publicity)
  - (d) Transportation
  - (e) Storage
  - (f) Financing
  - (g) Risk-taking
  - (h) Standardization and grading
  - (i) Consumer services.
- (5) Pricing.
- (6) Laws and the governments.
- (7) The environment, including competition.
- (8) Marketing management (creativity, planning, control).
- (9) Transfer of title.

Profitable, efficient Marketing implies combining many interrelated variables in correct proportions in a dynamic system.