

Notes and quotes from W. Edwards Deming's Book

OUT OF CRISIS

(Compiled by D. H. Groberg)

SUMMARY

Deming states that the purpose of this book is the "transformation of the style of American management." He says that this task is not one of reconstruction or revision, but rather "requires a whole new structure, from the foundation upward." He says that it must be a long term commitment and is the only way to "halt the decline and give American Industry a chance to lead the world again."

He says that the goal should be to improve overall productivity, and the key to this is understanding the nature of variation and having operational definitions. Everyone doing his best is not the answer. They must change what they are doing, and the first step is to learn how to change. He lists 14 points which he calls Principles of Transformation, along with a list of Diseases and Obstacles to change.

Most of the book focuses on statistics as a means of improving quality, but Deming also touches upon subjects such as New Principles of Training and Leadership, Standards, and Illustrations for Improvement of Living.

CHAPTER 1: Chain Reaction: Quality, Productivity, Lower Costs, Capture the Market

Quality and production are not incompatible. Productivity increases as quality improves, because there is less rework and not so much waste. Defects that get into the hands of customers lose the market and cost workers their jobs. With enough people and good management, any country can be rich. [Also any company?] In terms of underuse, misuse, and abuse of knowledge and skills, the U.S. might qualify as the most underdeveloped country in the world.

Most gains in productivity must come from improving the system, improvements to help people work smarter, not harder. Low quality means high cost because someone gets paid for both making and correcting defects. Trusting hopefully in hardware (new gadgets) will be disappointing, and is not a substitute for improved management, which leads to improved systems.

CHAPTER 2: Principles for Transformation of Western Management

Best efforts are not sufficient. "Think of the chaos that would come if everyone did his best, not knowing what to do?" Managers should ask questions such as:

1. Where do you hope to be five years from now?
and
2. How will you reach this goal? By what method?

"Hopes without a method to achieve them will remain mere hopes." But the most important figures needed for management of any organization are unknown and unknowable. Short term profits can come by deferring maintenance, cutting research, etc. Long term profits come by improving quality and productivity (they go hand in hand). Top management must be both committed to quality and know what to do to get it. Quality does not come by motivating people to work faster or harder. It comes by following these 14 points:

1. Create constancy of purpose toward improvement of product and service.
2. Adopt the new philosophy (Take on leadership for change).
3. Cease dependence on inspection to achieve quality. (Build quality into the product in the first place).
4. Don't award business based on price; minimize total cost by having single suppliers on long-term relationships of loyalty and trust.
5. Constantly improve the system of production and service (forever).
6. Institute training on the job.
7. Institute leadership. (The aim of supervision should be to help people, machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.)

8. Drive out fear (so that everyone may work effectively for the company).
9. Break down barriers between departments.
10. Eliminate slogans, exhortations, even target goals etc. aimed at the work force (because the bulk of the causes of problems belong to the system and are beyond the power of the workforce per se).
11. Eliminate work standards (quotas) and Management by Objectives. **SUBSTITUTE LEADERSHIP.** (If you have a stable system, there is no need to specify a goal: you will get what the system produces.)
12. Remove barriers that rob the employees/managers of pride of workmanship.
13. Institute a vigorous program of education and self-improvement.
14. Put everyone in the organization to work to accomplish the transformation.

CHAPTER 3: Diseases and Obstacles

Deadly diseases stand in the way of transformation of management. The diseases are:

1. Lack of constancy of purpose (to plan product and service that will have a market and keep the company in business and provide jobs.)
2. Emphasis on short-term profits. "Most American executives think they are in the business to make money, rather than products and service..." Profits follow good products.
3. Evaluation of performance, merit rating, or annual review. (Management by fear.) The effect is exactly the opposite of what it promises. Problems: It nourishes short-term performance, stops long-term planning, builds fear, destroys teamwork, nourishes rivalry and politics. Deming says:

It leaves people bitter, crushed, bruised, battered, desolate, despondent, dejected, feeling inferior, some even depressed, unfit for work for weeks after receipt of rating, unable to comprehend why they are inferior. It is unfair, as it ascribes to the people in a group differences that may be caused totally by the system that they work in.

"Apparent differences between people arise almost entirely from action of the system that they work in, not from the people themselves." "Monetary reward for outstanding performance [even] outside the system, without other, more satisfactory recognition, may be counterproductive." Modern principles of leadership...will replace the annual performance review. Leadership will take its place.

The first step in a company will be to provide education in leadership. (p. 116)

A leader, instead of being a judge, will be a colleague, counseling and leading his people on a day-to-day basis, learning from them and with them." (p. 117)

4. **Mobility of Management; job hopping. "A company whose top management is deeply committed to quality and productivity, with roots, does not suffer from uncertainty and bewilderment." (Can't happen with so much job hopping.)**
5. **Management by use of only visible figures (without consideration of the unknown and unknowable). "A company may appear to be doing well, on the basis of visible figures, yet going down the tube for failure of the management to take heed of figures unknown and unknowable." (p. 124)**
6. **Excessive medical costs.**
7. **Excessive costs of liability.**

There are obstacles as well as diseases that keep the transformation from happening:

- * **Hope for instant pudding.**
- * **Thinking that solving problems, automation, gadgets and new machinery will accomplish the transformation.**

- * The impression that "Our problems are different."
- * Obsolescence in schools.

Practically all of our major corporations were started by technical men--inventors, mechanics, engineers, and chemists, who had a sincere interest in quality of products. Now these companies are largely run by men interested in profits, not product. Their pride is in the P & L statement or stock report. (p. 131)

- * Poor teaching or statistical methods in industry.
- * Use of Military Standards.
- * Assigning quality to a quality control department.
- * Supposing that the trouble is in the workforce. (94% is not)
- * False starts (Give good impression, but lead to frustration).
- * "Installing" Quality Control (instead of growing it).
- * Trying only to "meet" specifications (need to know its use).
- * Zero defects (instead of loss function above and below optimal).
- * Inadequate testing of prototypes.
- * Assuming that anyone that comes to help must understand all about that business. (Help for improvement can only come from some source outside.)

Quality control circles can never replace management's fundamental responsibility to redefine its role and rebuild the corporate culture. As long as management is quick to take credit for a firm's successes but equally swift to blame its workers for failures, no surefire remedy for low productivity can be expected in American manufacturing and service industries. (p. 148)

CHAPTER 4: When: How Long?

"Does anyone suppose that the Japanese are going to sit still and wait for someone to catch up?" (p. 149) Decades will be required. Only better management [leadership] can bring the needed improvement.

Companies with good management will require five years to remove the barriers that make it impossible for the hourly worker to take pride in his work. Many companies will require ten years. (p. 153)

Actually, the problem will solve itself. The only survivors will be companies with constancy of purpose for quality, productivity, and service. (p. 155)

CHAPTER 5: Questions to Help Managers

[Ten pages of questions for managers to help them understand their responsibilities]

Examples:

- * What is the purpose of your company? [Mission Statement?]
- * Does everyone know what it is?
- * Do you manage by objectives? How are you going to change that?
- * How do your customers see what you do?
- * Do you have an internal education program?
- * Are you depending upon QC circles, posters, etc. instead of doing your job?

CHAPTER 6: Quality and the Consumer

This chapter raises several questions about defining quality. It turns out that quality is difficult to define. It depends on whose point of view you take. Example: What is quality health care? Is it comfort of patients? Number under care? Facilities? Public Health? Average life? Money spent per patient?

Quality of products and services should be based on consumers' wants and needs (but they can't tell you what they need in the future).

CHAPTER 7: Quality and Productivity in Service Organizations

Quality improvement applies to service industries as well as manufacturers. Many people involved in service don't realize that they have a product: service. The unmeasured losses from poor service may be huge.

It is up to management to help the employees to understand that they are an important part of the overall business activity, the activity being service. (p. 194)

Stop blaming employees for the problems of the system. Drive out fear. Break down barriers between departments. Two types of quality: **Design and production.** "To find the mistake is not enough. It is necessary to find the cause behind the mistake, and to build a system that minimizes future mistakes." (p. 225)

CHAPTER 8: Some New Principles of Training and Leadership

Your views, so far as they have any merit, have already been fully considered and rejected... (Dean Rusk to John Kenneth Galbraith, Ambassador to India: Harper's. Nov. 1967)

The aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output, and simultaneously to bring pride of workmanship to people. (p. 248)

Actually, most of this book is involved with leadership...The leader also has responsibility to improve the system--i.e., to make it possible, on a continuing basis, for everybody to do a better job with greater satisfaction. (p. 248)

No one should be blamed or penalized for performance that he cannot govern.

[This chapter is full of examples of statistical control]. Performance within control limits are systems problems, not individual ones.

CHAPTER 9: Operational Definitions, Conformance, Performance

There is nothing more important for transaction of business than use of operational definitions. It could also be said that no requirement of industry is so much neglected. (p. 276)

It puts communicable meaning into a concept. [Like "Quadrant 1" in time management]

CHAPTER 10: Standards and Regulations

The criteria and tests of standards must be expressed in statistical terms in order to have meaning. A regulation is only justifiable if it offers more advantage than the economic waste that it entails. "If you control an industry's standards, you control that industry lock, stock, and ledger." (p. 302)

CHAPTER 11: Common Causes and Special Causes of Improvement. Stable System.

The central problem in management and in leadership, in the words of my colleague Lloyd S. Nelson, is failure to understand the information in variation. (p. 309)

Only information from a stable system tells us about the process.

94% of variation belongs to the system (management's responsibility). 6% is special or unique to individuals.

No amount of care or skill in workmanship can overcome fundamental faults in the system. (p. 315)

Adjustments based on variations within a stable system augment the problems.

People are part of the system; they need help. Few people realize that recruitment, training, supervision, and aids to production workers are part of the system. Who else could be responsible for these activities? [except management] (p. 366)

CHAPTER 12: More Examples of Improvement Downstream

Improvement of the system, downstream and upstream, is the responsibility of management to perceive and to act on.
(p. 371)

[A lot of statistical stuff here.]

CHAPTER 13: Some disappointments in Great Ideas

For every problem there is a solution: simple, neat, and wrong. Mobil Oil Ad 1972 (p. 388)

[This chapter shows how wrong use or understanding of statistics leads to problems.]

Half the children in the U. K. are below average weight--we need to help them!

3 of 100 generals can be considered great. (Great means to win five battles in a row) Winning five in a row is only statistical probability.

CHAPTER 14: Two Reports to Management

[Two example reports on problems encountered there along with suggestions on how to solve them.]

CHAPTER 15: Plan for Minimum Average Total Cost for Test of Incoming Materials and Final Product

[Discussion of statistical methods for sampling/testing materials supplied by someone else but being used as a part of product.]

The product of one operation is incoming material for the next one.

CHAPTER 16: Organization for Improvement of Quality and Productivity

It is in fact rather absurd, though quite in line with the precedents of earlier centuries, that scientific men of the highest talents can live only by doing work that could be done by others of lesser special ability, while the real worth of their most important work receives no official recognition. Harold Hotelling, Feb 24, 1940 (p. 465)

"Everyone, regardless of his job, needs a chance to learn and develop. In a climate of fragmentation, people go off in different directions, unaware of what other people are doing. They have no chance to work to the best advantage of the company nor with themselves, and little chance to develop." (p. 466)

A company must, for its very existence, make use of the store of knowledge that exists within the company, and learn how to make use of help from the outside when it can be effective. (p. 466)

[Gives ideas on hiring and using a statistical specialists at the top levels.]

CHAPTER 17: Some Illustrations for Improvement of Living

[A few simple examples of applications of his principles to everyday life--trains on time, better traffic signs, etc. Malpractice in medicine: unfavorable results are only 1 part in 20,000, most of which are caused by the system, not the individual.]

CHAPTER 18: Appendix: Transformation in Japan

[Very brief history of how he introduced/implemented these ideas in Japan.]

Improvement of quality means improvement of the process, which in turn improves the product and productivity. QC circles are the end, not the beginning of the transformation process. The formalization of QC circles in Japan was accomplished by Dr. K. Ishikawa by 1960. It is natural for the Japanese to work together. [I gave a presentation with Dr. Ishikawa at the Int'l Conference on QC circles in Bangkok 1987.]