



A STUDY PRESENTED AT THE INSTITUTE FOR
MANAGEMENT SCIENCES, OSAKA, JAPAN, JULY 24,
1989. REVISED MAY 1, 1990.

**FOUNDATION FOR
MANAGEMENT OF QUALITY IN
THE WESTERN WORLD**

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Where are we? How are we doing? Let us think about the U.S., or about all North America, not just about our own selves, not just about our Company, not about our own Community. How is the U.S. doing in respect to balance of trade? The answer is that we are not doing well.

North America has contributed much to new knowledge and to applications of knowledge. The U.S., by efficient product and natural resources, beginning around 1920 and for decades, put manufactured products in the hands of millions of people the World over that could not otherwise have had them. Our quality was good enough to create appetite for our goods and services.

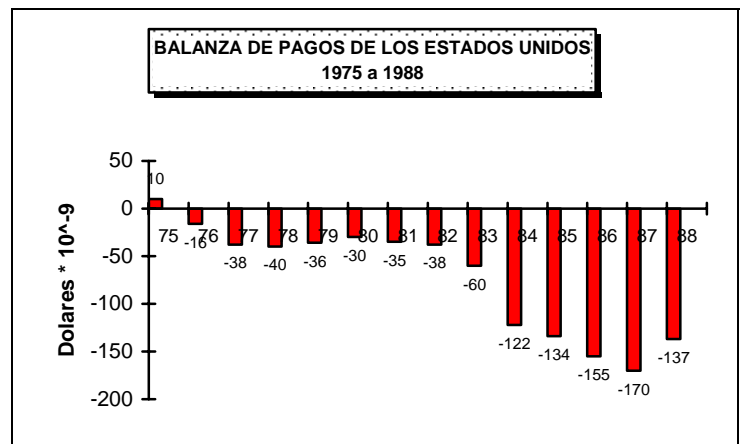
For a decade after the War, North America was the only part of the World that could produce manufactured goods to full capacity. The rest of the industrial World lay in ruins from the War. They were our customers, willing buyers. Gold flowed into Fort Knox.

Everyone expected the good times to continue and to wax better and better. It is easy to manage a business in an expanding market, and to be hopeful. In contrast with expectations, we find, on looking back, that we have been on an economic decline for three decades. *It is easy to date an earthquake, but not a decline.*

What happened? It is hard to believe that anything is different now than in 1950. The change has been gradual, not visible week to week. We can only see the decline by looking back. A cat is unaware that dusk has settled upon the earth, but the cat in total darkness is as helpless as any of us.

Some industries are doing better than ever. There are more automobiles in the U.S. than ever before, and more travel by Air. Do such figures mean decline or advance? An answer would have to take into account that in 1958 we had inter-city trains. There was a choice, Air or train.

Now, we have only limited train service, Air or automobile, go by Air or by automobile. There was until a few years ago a favorable balance of trade in agricultural products- wheat, cotton, soybeans, to name a few- but no longer. Imports of agricultural products have overtaken exports, and as someone in one of my Seminars pointed out, if we could put illicit drugs into the accounting, our deficit in agricultural products would show up worse than the published figures.



One of our best exports, one that brings in dollars, is material for war. We could greatly expand this income but for moral reasons. American aircraft have about 70% of the World market, and bring in huge amount of dollars. Another big earner of dollars is scrap metal. We can't use it, so we sell it. Close on to it is scrap cardboard and paper. Timber brings in dollars. Timber is important, renewable. Equipment for construction is an important Export,



so I understand. American movies, a service, bring in dollars. Banking and other services were at one time important, but no longer. The biggest U.S. bank is today far down the list of biggest banks in the World. Banking is now Known for losses on bad loans. (As an aside, quality in banking might be improved.)

We ship out, for dollars, Iron ore, partially refined, aluminum, Nickel, copper, coal, all non-renewable. Scrap metal is non-renewable .

Have we been living on fat? We have been wasting our natural resources, and worse, as we shall see, destroying our people. We need them.

Our problem is quality. Around 1958, Japanese goods started to flow in. The price was good, and the quality was good, not like the shoddy quality that came from Japan before the War and just after, cheap but worth the price. Preference for imported items -some at least- gradually climbed and became a threat to North American Industry.

Were Americans caught napping? Are we still napping? Our problem is quality. Can't we make quality? Of course, and some Americans products are superior. We are thankful for them. Unfortunately, some good American products have little appeal beyond our borders, good paper clips, for example.

It will not suffice to have customers that are merely satisfied. A satisfied customer may switch. Why not? He might come out better for the switch. What a company requires to get ahead is loyal customers, the customer that comes back, waits in line, and brings a friend with him.

What state of company is in the best position to improve quality? The answer is that a company that is doing well, future assured, is in excellent position to improve quality and service, thus to contribute to the economic condition of itself and of all of us, and has the greatest obligation to improve. *A monopoly is in the best position to improve year by year, and has the greatest obligation*

A look of some of the usual suggestions for quality. There is widespread interest in quality. Suppose that we were to conduct next Tuesday a National referendum:

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| <p>Are you in favor of quality?</p> <p>(Be honest in your answer.)</p> <p>Yes ___ No ___</p> |
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The results would show, I believe, an avalanche in favor of quality. Moreover, unfortunately, almost everybody has the answer on how to achieve it. Just read Letters to the Editor, speeches, books. It seems so simple. Here are some of the answers offered, all insufficient, some negative in results.

- ♣ Automation
- ♣ New machinery



- ♣ Computers
- ♣ Gadgets
- ♣ Hard work
- ♣ Best efforts
- ♣ Make everybody accountable
- ♣ M.B.O. management by objective, management by the numbers, actually tampering.
- ♣ M.B.R. management by results.
- ♣ Merit system (actually, destroyer of people) Incentive pay. Pay for performance.
- ♣ Work standards (quotas, time standards). They double the cost of production be they for Manufacturing or for service (bank, telephone company. They rob people of pride of workmanship, the emphasis being on numbers, not on quality. They are a barrier to improvement.
- ♣ Just in time
- ♣ Zero defects
- ♣ Meet specifications
- ♣ Motivate people

Some remarks. The fallacies of all the suggestions listed above will be obvious from subsequent pages of the text. Every one of them ducks the responsibility of management, requiring only skills, not knowledge about management.

If the reader could follow me around in my consultations, he would perceive that much automation and much new machinery is a source of poor quality and high cost, helping to put us out of business. Much of it, if it performs as intended, is built for twice the capacity that is needed. Some of it is poorly designed, such as: make inspect make inspect make inspect ..., where inspection may not be economically the best procedure. Moreover, the apparatus for inspection usually gives more trouble than the apparatus for make.

Just in time, along with low inventory, is good, of course. Unfortunately, efforts usually start at the wrong end. **The place to start is with processes and movements of materials used.** Once processes and movements are in statistical control, the plant manager will know how much of this and that he will need by 3 o'clock tomorrow. Quantity and quality will be predictable.

Zero defects, meet specifications, incoming and outgoing, are not good enough. Of course, we wish not to violate specifications, but to meet specifications is not enough. The pieces in an assembly must work together as a system. Assemblies must work together as a system. I may refer to page 476 in the book, **OUT OF THE CRISIS.**

Principle 3. Tests of components in stages of development can not provide (a) Assurance that they will work together satisfactorily as a system in service. nor (b) the average run between failures of the system; (c) the type and cost of maintenance that will be required in service.



A company advertised that the future belongs to him that invests in it, and went ahead and spent \$45,000,000,000 for new machinery. Most of it turned out to be a binge into high costs and low quality, but it must be said in defense of the management that they were obviously taking a long view into the future, not trying to capture short-term profits.

Why do the above suggestions fall short? A little ingredient that I call *profound knowledge* is missing from all the above suggestions. There is no substitute for knowledge. Hard work and best efforts will by themselves not produce quality nor a market. We shall soon come to suggestions for the missing ingredient, profound knowledge.

One could announce two important theorems: \

Deming's 2nd. Theorem: *We are being ruined by best efforts directed the wrong way. We need best efforts directed by a Theory of management.*

Deming's 1st. Theorem: *Nobody gives a hoot about sustained profits.*

Wrong way. The President of a company put quality in the hands of his plant managers. The results in time became obvious and embarrassing. Quality went down, as was predictable. A plant manager can not possibly know what quality is, and even if he did, he could do nothing about it. He is helpless. He can only try to do his job, and to confirm specifications.

♣ The President of a company wrote that

Our people in the plants are responsible for their own product and for its quality.

They are not. They can only try to do their jobs. Their product and its quality are the responsibility of the man that wrote the article, the President of the company.

♣ The management of a company put this slogan in the hands of all employees:

- *The operator is responsible for the quality of our products.*
- *The inspectors shares this responsibility.*

Again, the operator is not responsible for the quality of his product. The product is the responsibility of the management. Moreover, responsibility divided between operator and inspector, as it is here, assures mistakes and trouble.

The management in both of these examples rid themselves of their responsibility by handling it over to people that are helpless to define quality and to improve processes. Another example, a group of consultants in management advertised thus: *Computerized quality information systems provide the vital link between high technology and effective decision making.*

I wish that management were as simple as that.

The big losses. Too often, the financial people in a company merely beat down costs, on the thought that any cost is too high. Why do they write cheques for machinery that violates good practice?



It is vital for management to manage the big losses. One should of course chase the nickels and dimes, but it is futile to chase nickels and dimes and at the same time neglect the biggest losses. The biggest losses, as Dr. Lloyd S. Nelson said years ago, are unknown and unknowable. Most of them are not even under suspicion.

What are the big losses? Answer: the so-called merit system- actually, destroyer of people; M.B.O., management by the numbers, quotas, failure to optimize the various activities and divisions of a company as a system, business plans in terms of a matrix of targets without regard to the whole plan as a system of improvement. Further losses come from:

Worker training worker.

- ♣ Executives working with best efforts directed the wrong way, trying to improve quality, the market, and profits, but working without guidance of profound knowledge.
- ♣ Tampering.
- ♣ Failure to optimize efforts of people and divisions within the company, accepting, instead, sub optimization - everyone trying to maximize the profits of his own Division- and the consequent losses.
- ♣ Failure of customers and suppliers to work together for ever greater and greater satisfaction of quality, lower costs, everybody win.

Knowledge about the Taguchi loss Function is necessary for management. Which quality-characteristic is most critical? It is management's job to discover which quality-characteristic is most critical, conquer it, then to move on to the next one.

Where is quality made? The answer is, *in the top management*. The quality of the output of a company can not be better than the quality directed at the top.

The people in the plants and in service Organizations can only produce at best the design of product and service prescribed and designed by management.

Job security and jobs are dependent on management's foresight to design product and service that will entice customers and build a market.

Profound knowledge. Hard work and best efforts, put forth without guidance of profound knowledge, may well be at the root of our ruination. There is no substitute for knowledge. What is profound knowledge? An attempt to supply some answers follow.



A SYSTEM OF PROFOUND KNOWLEDGE

The system of profound knowledge appears here in four parts, all related to each other:

- A. **Appreciation for a system.**
- B. **Some knowledge of the Theory of variation.**
- C. **Theory of knowledge.**
- D. **Psychology.**

One need not be eminent in any part of profound knowledge in order to understand it as a system, and to apply it. The *14 points for management in Industry, education, and Government* follow naturally as application of the system of profound knowledge.

The various segments of the system of profound knowledge can not be separated. They *interact with each other*. Thus, knowledge of psychology is incomplete without knowledge of variation. If psychologists understood variation, as learned in the experiment on the Red Beads, they could no longer participate in continual refinements of instruments for rating people.

If statisticians understood a system, and if they understood some Theory of knowledge and something about psychology, they could no longer teach tests of significance, tests of hypothesis, chi-square.

If economists understood cooperation, and the loss and damage from competition, they would no longer teach and preach salvation through competition. They would, instead, lead us to *optimization through cooperation*.

The Theory of knowledge help us to understand that management in any form is prediction. The simplest plan-- how may I go home tonight-- requires prediction that my automobile will start and run, or that the bus will come, or the train. Management acts on a casual system, and on changes in the causes. Grades and ranks relate to past performance, but are used without justification for prediction of future performance in another course or in a job. Likewise, appraisal of employees is used without justification as prediction of future performance.

Theory of variation can play a vital part in optimization of a system. Statistical theory is helpful for understanding differences between people, and interactions between people, interactions between people and the system that they work in, or learn in.

Theory of variation is helpful for most enumerative studies, and for efficiency in design of tests and experiments in medicine, pharmacology, Chemical Industry, agriculture, forestry, and in any other industry.

Statistical theory, used cautiously, with the help of the theory of knowledge, can be useful in the interpretation of the results of tests and experiments. The interpretation of the results of tests and experiments is for future use: prediction.



A. A SYSTEM

1. What is a system? *It is a series of functions or activities (sub-processes, stages--hereafter components) within an organization that work together for the aim of the organization.* The mechanical and electrical parts that work together to make an automobile or a vacuum cleaner form a system.

There is in almost any system *interdependence* between the components thereof. The components need not all be clearly defined and documented: people may merely do what need's to be done. All the people that work within a system can contribute to improvement, and thus enhance their joy in work. Management of a system therefore requires knowledge of the inter-relationships between all the components within the system and of the people that work in it.

The aim of the system must be stated by the management thereof. *Without an aim, there is no system.* The components of a system are necessary but not sufficient of themselves to accomplish the aim. They must be managed.

The aim proposed here for management is for everybody to gain--stockholders, employees, suppliers, customers, Community, the Environment-- over the long term. For example, the aim might be to provide for employees good leadership, opportunities for training, and education for further growth, and other contributors to joy in work.

The organization will require someone in the position of aid to the President, to teach and facilitate profound knowledge. The performance of any component is to be evaluated in terms of *its contribution to the aim of the system*, not for its individual production or profit, nor for any other competitive measure. Some components may operate at a loss to themselves, for optimization of the whole system, including the components that take a loss.

A flow diagram is helpful toward understanding a system. By understanding a system, one may be able to trace the consequences of a proposed change.

If the aim, size, or boundary of the organization changes, then the functions of the components will for optimization of the new system change. Time will bring changes that must be managed to achieve optimization.

The greater the interdependence between components, the greater be the need for communication and cooperation between them.

2. Optimization. Management's job is to optimize the system over time. Sub-optimization causes loss to everybody in the system. An additional responsibility of management is to be ready to change the boundary of the system for better service and profit.



An example of a system, well optimized, is a good orchestra. The players are not there to play solos as prima donnas, to catch the ear of the listener. They are there to support each other. They need not be the best players in the Country.



An automobile is not merely several thousand pieces and sub-assemblies, all individually of top quality. It is several thousand pieces and sub-assemblies that are *designed to work together*.

It would be poor management, for example, to purchase materials and service at lowest price, or to maximize sales, or to minimize cost of manufacture, or design of product or of service, or to minimize cost of incoming supplies, to the exclusion of the effect on other stages of production and sales. All these would be sub-optimization, causing loss. All these activities should be coordinated to optimize the whole system.

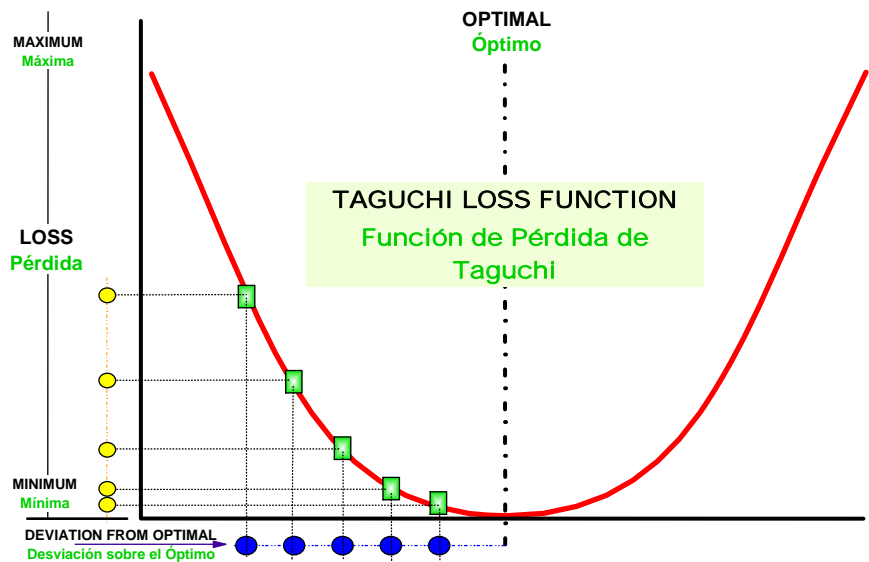
Any system that results in a **win/lose** structure is sub optimized. Examples of sub-optimization in the management of people:

The destructive effect of grading in school, from Toddlers on up through the university, gold stars and prizes in school, the destructive effect of the so-called merit system, incentive pay, M.B.O. (Management by objectives), or M.B.I.R (management by imposition of results), M.B.R. management by results, quotas).

Other examples of sub-optimization, causes of loss:

Competition for share of market. Barriers to trade.

Fortunately, precise optimization is not necessary. One need only to come close to optimization. As a matter of fact, a precise optimum would be difficult to define. The **Taguchi loss Function** will apply. The loss function at the bottom (minimum loss) will be a parabola. One may move away a short distance along the curve in either direction from the optimum, but rise in the vertical only an imperceptible distance.





B. SOME KNOWLEDGE OF STATISTICAL THEORY

Some understanding of variation, including appreciation of a stable system, and some understanding of special causes and common causes of variation, is essential for management of a system, including leadership of people.

1. **Variation there will always be**, between people, in output, in service, in product. what is the variation trying to tell us about a process, and about the people that work in it?
2. **Understanding of the Capability of a process.** When do data indicate that a process is stable, that the distribution of the output is predictable? Once a process has been brought into a state of statistical control, it has a definable capability.
3. Knowledge about the difference sources of uncertainty in statistical data.
 - ♣ How were the data obtained?
 - ♣ Built-in deficiencies.
 - ♣ Blemishes and blunders in interviewing, or in measurements.
 - ♣ Errors in response; non-response.
 - ♣ Errors of sampling.
4. There are two mistakes in attempts to improve a process, both costly:
 - ♣ **Mistake 1.** To treat as a special cause any fault, complaint, mistake, breakdown, accident, shortage, when actually it came from common causes. (*Tampering*)
 - ♣ **Mistake 2.** To attribute to common causes any fault, complaint, mistake, breakdown, accident, shortage, when actually it came from a special cause.
5. Knowledge of procedures aimed at minimum economic loss from these two mistakes. (**Shewhart control charts.**)
6. **Knowledge about interaction of forces.** Interaction may reinforce efforts, or it may nullify efforts. Effect of the system on the performance of people. Knowledge of dependence and interdependence between people, groups, divisions, companies, Countries.
7. **Understanding of the distinction between enumerative studies and analytic problems.** The interpretation of results of a tests or experiment is an analytic problem. It is prediction that a specific change in a process or procedure will improve output in the future, or that no change at all will be a wiser choice. Either way, the choice is prediction.



8. Knowledge about loss functions in relation to optimization of performance of a system--in particular the Taguchi loss function. Which quality-characteristic is causing the most loss to this whole system and is hence most critical for management to work on?
9. Knowledge about the production of chaos and loss that results from **successive application of random forces or random changes** that may individually be unimportant. Examples:
 - ♣ Worker training worker in a chain.
 - ♣ Executives working with best efforts on policy, but without guidance of profound knowledge.
 - ♣ Committees in industry, education, and Government, working without guidance of profound knowledge.
10. Enlargement of a committee does not necessarily improve the results of the efforts of the committee. **There is no substitute for knowledge.** Enlargement of a committee is not a way to acquire profound knowledge.
11. As a good rule, **profound knowledge must come from the outside and by invitation.** Profound knowledge can not be forced on to anybody.

C. THEORY OF KNOWLEDGE

1. Any relational plan, however simple, requires prediction concerning conditions, behavior, comparison of performance of each of two procedures or materials.
 - ♣ For example, how will I go home this evening? I predict that my automobile will start up and run satisfactorily, and I accordingly. Or I predict that the bus will come, or the train.
 - ♣ Or, I will continue to use Method A, and not change to Method B, because evidence that the Method B will be a lot better is not convincing.
2. A statement devoid of prediction or explanation of past events conveys no knowledge.
3. There is no knowledge, no theory, without prediction and explanations of past events.
4. There is no observation without theory.
5. Interpretation of data from a test or experiment is prediction--what will happen on future application of the conclusions or recommendations that are drawn from the test or experiment? The prediction will depend on knowledge of the subject-matter. It is only in the state of statistical control that statistical theory aids prediction.



6. Experience is no help in management unless studied with the aid of theory.
7. An example is no help in management unless studied with the aid of theory. To copy an example of success, without understanding it with the aid of theory, may lead to disaster.
8. Communication (as between customer and supplier) requires operational definitions.
9. No number of examples establishes a theory, yet a single unexplained failure of a theory requires modification or even abandonment of the theory.
10. There is no true value of any characteristic, state, or condition that is defined in terms of measurement or observation. Change of procedure for measurement or observation produces a new number.
11. There is no such thing as a fact concerning an empirical observation. Any two people may have different ideas about what is important to know about any event.

D. Knowledge of Psychology

People are born with a need for relationships with other people, and with a need to be loved and stemmed by others. There is innate need for self-esteem and respect. Circumstances provide some people with dignity and self-esteem. Circumstances deny other people these advantages. Management that denies to their employees dignity and self-esteem will smother intrinsic motivation.

No one, child or other, can enjoy learning if he must constantly be concerned about grading and goldstars for his performance, or about rating on the job. Our educational system would be improved immeasurably by abolishment of grading.

One is born with a natural inclination to learn and to be innovative. One inherits a right to enjoy his work. Psychology helps us to nurture and preserve these positive innate attributes of people.

1. Psychology *help us to understand people*, interactions between people and circumstances, interaction between teacher and pupil, interactions between a leader and his people and any system of management.
2. People are *different from one another*. A leader must be aware of these differences, and use them for optimization of everybody's abilities and inclinations. Management of industry, education, and Government operate today under the supposition that all people are alike.



3. People *learn in different ways*, and at different speeds. Some learn best by reading, some by listening, some by watching pictures, still or moving, some by watching someone do it.
4. A leader, by virtue of his authority, has obligation to make changes in the *system of management* that will bring improvement.
5. There is **intrinsic motivation**, extrinsic motivation, over-justification.

Extrinsic motivation is submission to external forces that neutralize intrinsic motivation. Pay is not a motivator. Under extrinsic motivation, learning and joy in learning in school are submerged in order to capture top grades. On the job, joy in work, and Innovation, become secondary to a good rating. Under extrinsic motivation, one is ruled by external forces. He tries to protect what he has. He tries to avoid punishment. He knows not joy in learning. Extrinsic motivation is a zero-defect mentality.

Over-justification comes from faulty systems of reward. Over-justification is resignation to outside forces. It could be monetary reward to somebody, or a prize, for an act of achievement that he did for sheer pleasure and self-satisfaction. The result of reward under these conditions is to throttle repetition: he will lose interest in such pursuits.

Monetary reward under such conditions is a way out for managers that do not understand how to manage intrinsic motivation.

Effects of the present system of management. The accompanying diagram show some of the present norms of management, and their effects. What they do is to squeeze out from an individual, over his life-time, his innate intrinsic motivation, self-esteem, dignity, and built into fear, self-defense, extrinsic motivation. We have been destroying our people, from toddlers on through the university, and on the job.

Transformation is required in the Government, industry, education. Management is in stable state. Transformation is required to move out of the present state, *metamorphosis, not mere patchwork on the present system of management*. We must of course solve problems and stamp out fires as they occur, but these activities do not change the system.

The transformation will take us into a new system of reward. We must restore the individual, and do so in the complexities of interaction with the rest of the World. The transformation will release the power of human resource contained in intrinsic motivation. In place of competition for high rating, high grades, to be No. 1, there will be cooperation on problems of common interest between people, divisions, companies, Government, Countries. The result will be in time be greater innovation, Applied Science, technology, expansion of market, greater service, greater material reward for everyone. There will be joy in work, joy in learning. Anyone that enjoys his work is a pleasure to work with. Everyone will win; no loser.

The diagram that follows portrays the effect on the individual from the prevailing system of reward. The transformation set forth in this paper will year by year build up the bottom half and shrink the upper half.



The function of Government will be to assist business, not to harass business.

The most important figures for management are unknowable. It was Dr. Lloyd S. Nelson who years ago remarked that *the most important figures for management are unknown and unknowable*. We could add that the most important losses and gains are not even under suspicion. Examples:

1. The merit system, putting people into slots, a lazy way out: actually, destroyer of people.
2. Failure to understand leadership.
3. Worker training worker.
4. Executives working with best efforts, trying to improve quality, the market, and profit, but working without guidance of profound knowledge.
5. Tampering. (See paragraph 2 under "A System of Profound Knowledge.")
6. Failure to optimize efforts of people and divisions within the company, accepting, instead, sub optimization everyone trying to maximize the profits of his own division-- and the consequent losses.
7. Failure of customers and suppliers to work together for ever greater and greater satisfaction of quality, lower costs, everybody win.
8. Gains in quality and productivity throughout the rest of the company from improvement in one stage.

It is wrong to suppose that: "If you can't measure it, you can't manage it." Again, the most important losses are unknown and unknowable.



SOME FAULTY PRACTICES WITH SUGGESTIONS ON BETTER PRACTICE

| FAULTY PRACTICE | BETTER PRACTICE |
|--|---|
| <p>REACTIVE: SKILLS ONLY REQUIRED, NOT THEORY OF MANAGEMENT, M.B.R. (MANAGEMENT BY RESULTS). MIND NOT REQUIRED</p> | <p>THEORY OF MANAGEMENT REQUIRED.</p> |
| <p>Management of outcome, too late tampering; failure to distinguish between special causes and common causes. Immediate action on</p> <ul style="list-style-type: none"> • Costs • Complaints from customers • Poor quality, in or out • Accidents, Emergency • breakdowns. Absenteeism | <p>Work on the system, to reduce failure the source. Costs are no causes. Likewise for complaints from customers, poor quality, accidents, emergency breakdowns, absence.</p> <p>Avoid tampering Instead distinguish by appropriate techniques between special causes and common causes of variation.</p> |
| <p>The so-called merit system actually, destroyer of people</p> | <p>Institute leadership. Change the system of reward from rugged individualism –I win you lose, to cooperation, everybody win.</p> |
| <p>Incentive pay for the individual. Pay based on performance. The incentive is numbers, not quality. Result: back-fire, loss.</p> | <p>Put all people on regular systems of pay. Provide systems of pay. Provide leadership.</p> |
| <p>P.R.R., problem report and resolution. Actually, this system of management by results is tampering, making things worse.</p> | <p>Study the system. Learn methods by which to minimize the net economic loss from the two mistakes described in paragraph 2 in the section, “A System of Profound Knowledge”</p> |
| <p>Work standards (quotas, timestandards). They:</p> <ul style="list-style-type: none"> • Double costs • Rob people of pride of quality and productivity have gone up and then disappeared • Shut off any possibility to obtain data to use for improvement of process and output. This is so because the figures on production are forced. | <p>Provide leadership. Everyone is entitled to pride of workmanship. Wherever work standards have been replaced by competent leadership, workmanship and people on the job are happier.</p> |



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| <p>M.B.O., management by the numbers. (Do it, I don't care how you do it. Just do it.)</p> <ul style="list-style-type: none">• A company will of course, have aims; likewise an individual will have aims.• But the aim should be improvement of the system, improvement of the system, not a number. | <p>A better way is to improve the system to get better results in the future. One will only get what the system will deliver.</p> |
| <p>There are of course facts of life. Example: if we don't decrease faulty product to 5% by the end of the year, we shall not be here. This is not M.B.O.</p> | <p>Any attempt to beat the system will cause loss. (See pronouncement of Dr. Nelson on previous sections of this text).</p> |

WHAT WOULD A SCHOOL OF BUSINESS TEACH?

What would a school of business teach? The answer is I believe, that a school of business ought to teach *profound knowledge as a system*. A school of business has the obligation to *prepare students for the future, not for the past*. At present, most Schools of business teach students how business is conducted, and how to perpetuate the present system of anagement-- exactly what we don't need. *Most of the time that students spend in school of business today is to learn skills, not knowledge*.

A school of business has an obligation to *prepare students to lead the transformation* that will help our balance of trade and our Economy. A school of business has an obligation to teach profound knowledge as a system.

There would of course elective courses in the curriculum for business, such as a language (two years or more), history, physics, chemistry, biology, geography, anthropology, economics. Some students might wish to take their elective courses in more statistical theory, such as the statistical theory of reliability or statistical theory of failure, or in psychology, or in the theory of knowledge.

What about a school of Engineering; a department of statistics? *Engineers need to understand a system of profound knowledge*, so that they may use to the best advantage their knowledge of Engineering. The same remarks apply to a department of statistics.