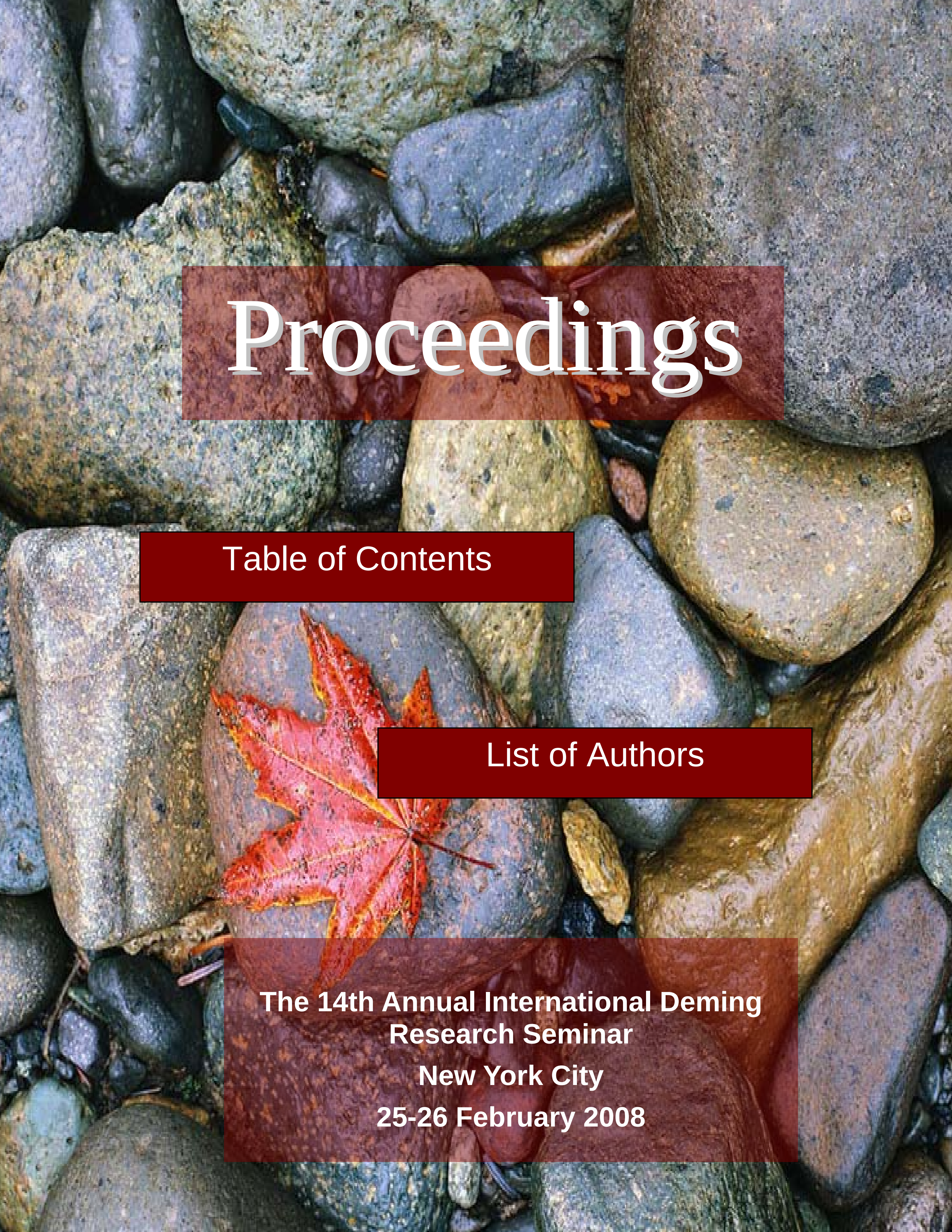

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<u>THE DEMING COOPERATIVE</u>

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CRITICAL SUCCESS FACTORS IN LARGE-SCALE TECHNOLOGY IMPLEMENTATION IN THE FINANCIAL SERVICES INDUSTRY

An Analysis of Enterprise Resource Planning Systems and Business Intelligence Tools

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Abstract

Large-scale technology implementation presents a critical challenge, as well as an unparalleled opportunity for corporations throughout the modern business environment. Due to their intense level of transaction processing and global presence, financial services institutions, in particular, are in a position to profit from the successful implementation of Enterprise Resource Planning (ERP) systems and business intelligence tools. This paper outlines the critical success factors of large-scale technology implementation in the financial services sector and delineates the specific benefits achieved through effective enterprise technology adoption.

Introduction

Over the course of the past several decades, the implementation of large-scale technological systems by corporations across the globe has skyrocketed, as companies both profit from the technical advances afforded to the private sector as well as struggle to keep abreast of the rapidly changing competitive landscape. The successful diffusion of these implementations – predominantly the adoption of Enterprise Resource Planning (ERP) systems and business intelligence tools by corporations – presents one of the greatest assets to the 21st Century corporate landscape, as they facilitate the instantaneous viewing and analysis of data, promote unity across departments through the streamlining of business processes, and reduce costs.

However, the implementation of these systems is fraught with obstacles – such as cultural rejection, intensive process flow analysis, consistently expanding implementation timeframes, and the risk of inadequate guidance, support, and governance – that must be expertly navigated to fulfill the promise of these large-scale, costly endeavors. The successful navigation of a large-scale technology implementation can only be achieved through the melding of technical systems knowledge, expert systems analysis, organizational cultural studies, and intensive project management.

This paper will investigate the effectiveness of large-scale technology implementation in the financial services sector through the lens of ERP systems and business intelligence tools. The financial services arena is unique and fitting as the focus of this paper, as it presents the critical challenge of attacking a fast-paced, high volume, transactional arena that is rapidly augmenting and expanding its use of enterprise systems in all aspects of its business (Fuß, Gmeiner, Schiereck, and Strahringer 2007: 155). Moreover, a focus on the financial services sector provides the additional advantage of examining corporations with multinational presence that will present additional insight into the cultural aspects of enterprise systems implementation. As a result, the paper will present critical success factors and approaches for each of the implementation elements – thereby developing a model for successful system adoption.

What are Enterprise Resource Planning (ERP) Systems and Business Intelligence Tools?

Large-scale technology implementation is aimed at serving several different needs and desires within a company – including, but not limited to, common access to information allowing key business processes to occur faster and more efficiently and the streamlining of different elements of the core business for increased uniformity and control (Fuß et al 2007: 165). The following section lays the groundwork for understanding the key players in the large-scale technology implementation market and highlights the particular areas of interest and focus for each of the system types. It should be noted that although there is a history of frequent overlapping of usage of these terms, the following definitions of ERP systems and business intelligence tools will apply throughout this paper.

Enterprise Resource Planning (ERP) Systems

Enterprise Resource Planning (ERP) systems are defined by Laudon and Laudon (2006: 56) as systems that: "integrate the key business processes of an entire firm into a single software system that enables information to flow seamlessly throughout the organization." Moreover, Laudon and Laudon (2006: 380) state that a critical tenet of the ERP system is the use of a centralized database linked to various software modules that service the entire scope of the business with comprehensive information emanating from the same common source.

Known predominantly as a mechanism for improving business processes in the manufacturing industry (Fuß et al 2007: 155-156) for the past two decades, the ERP market has grown exponentially to include a myriad of applications in cross-functional settings. For example, seventy-percent of the Fortune 1000 companies currently run a form of enterprise system (Fuß et al 2007: 155). Moreover, the application of these systems has grown from relegation to the more traditional "rear-office" setting of operational support activities to "front-office" activities – such as sales support, Customer Relationship Management, and additional Decision Support Systems (Fuß et al 2007: 156, 169).

In a critical role, ERP systems also set the stage for business intelligence implementations, which will be discussed in a later section. ERP systems provide the requisite data for these strategic tools (Davenport and Harris 2007: 45), and serve as a critical first step in the technological progression of a company.

Business Intelligence

Laudon and Laudon (2006: G2) define business intelligence as "applications and technologies to help users make better business decisions." Business Intelligence tools represent the next generation of large-scale technology implementations. As they create the framework for enhanced technological capabilities, they allow companies to set the stage for greater implementations (Fuß et al 2007: 169). For example, now that large quantities of data are available at the fingertips of executives, the question becomes how to use that data for the greatest benefit to the firm. In other words, when business has achieved the first step of an integration, how can it profit from it?

In their work on the subject, Davenport and Harris (2007: 12) discuss the platform of ERP in relationship to the launch of analytics in a company's technological evolution:

> Two studies of large organizations using ERP systems that we did in 2002 and 2006 revealed that better decision making was the primary benefit sought, and (in 2006) analytics were the technology most sought to take advantage of the ERP data.

<u>Why Do Businesses Need Enterprise Architecture?</u>

Large-scale technology implementations predominantly serve to improve the capabilities of legacy architecture. Tromp and Hoffman (2003: 2) define a legacy system as:

> an operational system that has been designed, implemented and installed in a radically different environment than that imposed by the current ICT [Information and Communications Technology] strategy.

Tromp and Hoffman (2003: 2) continue by pointing out factors that contribute to the development of the problems imposed by a legacy system, such as the redevelopment of a company's focus or defining purpose, changing legal specifications and regulatory requirements, and shifting management priorities.

It is assumed that legacy systems do not have the same level of functionality available to users of up-to-date systems. Therefore, these systems have various effects on business efficiency and growth capacity. Three areas of legacy inadequacy are discussed in the following sections.

Physical Limitations of Legacy Architecture

Each legacy system housed by a corporation carries a host of difficulties, such as individualized cost for operation and maintenance, mandated highly specialized knowledge for operation, and lack of redundancy.

Tromp and Hoffman (2003: 2) point out the motivating factor of the impending discontinuation or "sunsetting", as it is often referred to in the Information Systems field, of an application or platform. In this instance, even if a legacy system is fully operational and meets the needs of the company, its life-span will be limited if it is not part of a more widely used, large-scale technology. The life-span of the system will be limited as the companies that produce the systems and provide maintenance and repair services discontinue parts and service after a certain period of time, particularly if it is an older, less profitable, and stand-alone model. Therefore, the company will need to develop a long-term solution for the particular business process performed by the application.

Legacy Architecture Fostering of Silo-like Environments

In the traditional office setting, most departments have independent legacy systems for each of their functions; e.g., Accounting would have an Accounts Receivables system and the Finance Department would have its own, distinct system mapping profit trends and other measures of financial health. In this hypothetical example, there are innumerable ways in which the two departments could use data from the other, but it is clear that they would not have instantaneous access to information from the other department. Moreover, the issue of the time it would take to move information from one department to the other only scratches the surface of the legacy system architecture quagmire.

Data Availability and Groundwork for Analysis

The most crucial development of the post-ERP model is the availability of data for later analysis provided by large-scale systems. The pre-ERP model did not provide this level of data availability, as data was locked up into self-contained systems equipped with little to no reporting capabilities. Moreover, the integrated nature of the data availability is truly the critical addition to the field, as in the current set-up (i.e. – with enterprise architecture) a system can provide reports pulling data from various departments, as opposed to one. This, in turn, allows deeper levels of analysis than legacy architecture.

Enterprise Resource Planning (ERP) Implementation in the Financial Services Industry

A survey conducted by Fuß, Gmeiner, Schiereck, and Strahringer (2007: 162-169) in which they attempted to survey 1000 of the world's largest banks (based on a 2003 list provided by the publication, *The Banker)* to determine the success of ERP system implementation serves as an excellent discussion point for the analysis of the ramifications of ERP in the banking industry. The response rate of 11.4% of the study is quite low, and therefore the study may present biased results. However, we will assume that the results do provide some insight into the results of ERP implementation.

Fuß et al (2007: 162-164) found that of the 1000 banks surveyed, 49.5% of the 114 respondents indicated that they were using an ERP system, with the majority using products provided by SAP, with Oracle and PeopleSoft (who have since merged) as close competitors. Furthermore, Fuß et al (2007: 164) identified that the areas of choice for implementation of ERP systems in these banks, in order of importance for both current use and planned use, were as follows: Human Resources, Accounting, Reporting, Procurement, and Strategic Planning. It should be noted that ERP systems predominantly run across business units and functions, and that the use of an ERP system in one area does not preclude its adoption in a separate part of a company; i.e., if a company has an ERP system in Human Resources, that same system could also be in use in the Accounting department.

Most importantly, however, the study by Fuß et al points out the predominant thinking of respondents from large scale banks on what the anticipated benefits of an ERP system implementation would be as compared to the actual benefits perceived by the company following an implementation. In terms of anticipated benefits, the Fuß et al (2007: 165) found that companies expected the following. (The assigned values are derived from a Likert scale in which each respondent was asked to assign a value representing a level of agreement from 5 – total agreement to 1 – total disagreement with the statement that the company would receive the particular benefit from the implementation of an ERP system).

Anticipated Benefits of ERP Systems (ordered from highest average Likert score to lowest average Likert score) (Fuß et al 2007: 165):

(a) – Better information Transparency and Quality
(b) – More Efficient Business Processes
(c) – Higher Quality of Business Processes
(d) – Improved Integratability (can be assumed that this means ease of integration with other systems)
(e) – Cost Reduction
(f) – Improved Security and Availability
(g) – Reduced Complexity and Better Harmonization of IT Infrastructure
(h) – Better and Faster Compliance with Legal Requirements and Frameworks
(i) – Increase in Organizational Flexibility
(j) – Fast Amortization of Investment

In terms of actual benefits, the Fuß et al findings (2007: 167) indicated the following results, represented with the same corresponding letter as the list of anticipated benefits above:

Goal Achievements through ERP (ordered from highest average of the Likert score to lowest average of the Likert score) (Fuß et al 2007: 165):

(a) – Better Information Transparency and Quality
(b) – More Efficient Business Processes
(f) – Improved Security and Availability
(c) – Higher Quality of Business Processes
(d) – Improved Integratability
(g) – Reduced Complexity and Better Harmonization of IT Infrastructure
(h) – Better and Faster Compliance with Legal Requirements and Frameworks
(e) – Cost Reduction
(i) – Increase in Organizational Flexibility
(j) – Fast Amortization of Investment

In a later section, the critical success factors for successful large-scale technology implementation will be discussed. The integration of these factors into an implementation strategy from the outset will help to alleviate the disconnect between anticipated benefits and delivered results.

<u>Business Intelligence: The Logical Outcome of Enterprise Development and the Future of the Banking Industry</u>

The current structure and offerings of the global banking sector can be examined through the lens of business intelligence tools, the next logical step in the technology progression after the widespread adoption of ERP systems. Through the examination of case studies of these system implementation types, one will see the technological advances currently flooding the market, the business process improvements that companies strive to achieve based on these technological enhancements, the motivations behind these process changes, and the organizational cultural roadblocks and barriers that face each of these implementations.

Decision Support Systems

Decision Support Systems, in many ways, spurred the development of the business intelligence field when they came into development in the mid-1960s (Davenport and Harris 2007: 11-12). Forty years later, Decision Support Systems are playing an increasingly strong role in the financial services sector, and more specifically in the realm of commercial banking, as firms attempt to mitigate risk and improve efficiency in high-volume transactional processes, such as the management of debit accounts (Rowe 2005: 5).

In his study of a French bank, Frantz Rowe (2005: 5-6), points out the desire of banking executives for Decision Support System architecture to manage those transactions carried out by credit advisors that prove to be unwieldy because of their vast volume that are also not highly profitable. For this reason, many banks determined that their employees' time and energy could be better spent, such as in the action of selling products, and that the automation of the process would free up time for more profitable tasks and promote efficiency.

Implementation Advantages

The technological advances of this particular software implementation lie within the ability of the system to appropriately and accurately capture the thought-process of the credit advisors. Ultimately, this knowledge capture allows the system to imitate the client/advisor interaction in a technical environment.

Implementation Drawbacks

The rigidity of Decision Support Systems often generates negative reactions among the workers that are forced to use these systems. As a result, management may experience an increase in non-conformity, which negates the expected positive standardizing effects of instituting a management guidance system. Rowe (2005: 6) highlights this point in his discussion of the reaction of the credit advisors to the DSS:

> The lack of flexibility of the DSS mainly resulted in the advisors receiving incomplete information. This influenced the perception of the advisors, encumbering the perceived efficiency of the system, and making researchers think that the system had intentionally been designed to limit the degree of freedom and to favour conformity to judgment information (Rowe 2005: 6).

Clearly, the idea of ownership of the process by the individual employee plays a significant role in the successful adoption of a system.

Business Intelligence: Analytics

Davenport and Harris (2007: 60) identify the most common categories of analytical tools applied to finance as the following: "external reporting, enterprise performance management (management reporting and scorecards), investment decisions, shareholder value analysis, and cost management."

Royal Bank of Canada

RBC Financial Group's Royal Bank of Canada is a field leader in the implementation of business intelligence tools, with a relatively early adoption of the techniques as well as innovative approaches to its use throughout the firm.

The company is investing in business intelligence tools throughout its business. For example, it implemented an SAS suite of business intelligence tools in the late 1990s (Sutton 2003: 6) in order to extract valuable information from the wealth of information built up since the inception of large-scale technology implementation in the company. RBC is an information technology leader in the Canadian banking industry, which already leads the country in information technology commitment. According to the technology consulting firm IDC Canada, in 2003, Canadian financial institutions were predicted to spend $6 billion on information technology, representing approximately eighteen percent of total national information technology expenditures (Sutton 2003: 6).

In a particularly notable example discussed in detail by Davenport and Harris (2007: 65-68), Royal Bank of Canada implemented a customer profitability system in 2000 that was able to calculate the activity-based cost (ABC) of the full range of its products and, thereby assign a cost to each activity undertaken by a customer. Through this process, the bank was able to determine which of its individual customers were profitable and to what extent. This system leveraged the antiquated "customer file" set-up that they had been using for years, which segmented customers into large groups and analyzed their profitability *en masse* as opposed to the more specific, targeted information that they were able to glean through the use of activity-based costing for individual customers.

<u>Critical Success Factors for Large-Scale Technology Implementation</u>

Large-scale technology implementation is a complex undertaking affecting all aspects of the business in which it occurs. From the review and assessment of the current technological system implementation literature, the examination of particular case studies, and the application of management ideas, such as those proposed by W. Edwards Deming in the late twentieth century, the following series of critical success factors has emerged as the key to beneficial systems implementation in the global banking sector.

The large-scale technology critical success factors can be summarized as: 1.) development of a powerful, well-defined implementation goal; 2.) comprehensive business process mapping and re-engineering; 3.) realistic implementation timeframes; 4.) acknowledgment and acceptance of organizational cultural factors; and 5.) adequate, thoughtful leadership. Each of these factors is well supported by evidence from the field of Information Systems, with the exception of the development of a powerful, well-defined implementation goal, which developed primarily from the application of W. Edwards Deming's management techniques to large-scale technology implementation.

Deming's Fourteen Points for Management (Deming 1982: 23-24), in which he lays out certain critical tenets of a successful business transformation, can be applied to an ERP system implementation – which can be viewed as a microcosm of the organizational change of which Deming spoke. In particular, Deming's (1982: 23-24) points one, two, seven, and nine are significant for dealing with the organizational cultural issues of systems implementation. These points implore company leaders to acknowledge and promote a common goal of continuous improvement across the company, provide leadership to their employees that will allow them to improve their abilities to do their jobs to the fullest extent, and integrate departmental functions and increase inter-departmental collaboration.

Development of Powerful, Well-Defined Implementation Goal

One of the most important lessons in large-scale technology implementation is the absolute necessity of moving toward a particular goal and insisting that the project stay within one path for implementation. In the words of W. Edwards Deming (1982: 23), a company must: "Create constancy of purpose toward improvement of product and service, with the aim to become more competitive and to stay in business, and to provide jobs." This constancy of purpose should be the driving factor behind the change in technology – whether it be to become more competitive in a particular area against one's competitors in the immediate timeframe or to set the stage for large-scale data collection and process streamlining.

Management should explain to employees the reasons behind the technology change and ensure that all members of the organization understand the crucial business decisions that took place in order to make this move to a potentially expensive, long-term development plan. Ensure that all members of the organization understand the way in which the implementation will help the company move closer to its goal. In this way, nonconformity and defection will be reduced, thereby preserving institutional knowledge and furthering the aims of the initiative.

Comprehensive Business Process Mapping and Re-Engineering

To carry out a successful large-scale technology implementation, a company must understand the ways in which its businesses function, but on a more important level, it must understand the ways in which its departments interact. A comprehensive process flow analysis is the only way in which this can be accomplished.

In looking at the benefits of past system successes, experts in the field highlight the ways in which the synergies from the integration of various disparate departments profit the company in the long-run (Laudon and Laudon 2006: 501-504). This ties in with the management work of W. Edwards Deming (1982: 23), who in his management point nine made the following statement:

> Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

Clearly, this can be adapted to technology implementations, as the hallmark result of ERP system and business intelligence tool implementation is the availability of data from each of these departments for use elsewhere. The greater transparency fosters increased interaction between departments, and as a result, engenders a more integrated business.

Realistic Implementation Timeframes

It is the belief of many ERP implementation experts as well as their business-side counterparts that the success of a business-wide transformation led by an ERP implementation is predicated on the realization of the long-term nature of the project and the intensive, inherently slow process that it must follow. This is well-supported by Deming's emphasis on management for the long-term benefit of all stakeholders.

In other words, the implementation of the enterprise system may not, and in fact most likely will not, reduce costs from the initiation of the project – a fact that is also supported by the findings of Fuß et al (2007: 165) in their delineation of goal achievement in ERP implementation. However, this does not mean that the implementation is a mistake; rather, the laying of the groundwork for improved business will move the business further in the long-run.

Acknowledgment and Acceptance of Organizational Cultural Factors

Organizational culture plays a significant role in the successful adoption of an ERP system – a role that is often minimized in the initial projections of system implementation planning. This role of organizational culture manifests itself in attitudes of employees, empowerment of employees, acknowledgment of common goals, and willingness of employees to invest in implementation.

In particular, the example of the Decision Support System implementation in the French bank presented above (Rowe 2005: 5-6) highlights the dangers of misjudging the anticipated perception of a system by its predominant users upon implementation. Deming's Fourteen Points offer insight in this area. Point one underlines the necessity of adopting a common purpose throughout the company (Deming 1982: 23). In keeping with the theme of this point, it can be inferred that if management and employees are not on the same page in terms of the benefits of a system implementation, then there can be no guarantee that all parties will work toward the goal in the same manner, with the same intensity, or most importantly in the same direction, which is needed to ensure consistency and quality of the final product. Points eight, ten, eleven, and twelve deal with factors in the organization that can poison the organization's culture and reduce employee commitment to change.

Adequate, Thoughtful Leadership

The importance of adequate, thoughtful leadership is critical in looking at the successful instances of large-scale technology implementation. The leaders of a project must serve their employees well by understanding both their functional and emotional needs. This can also be seen in the example of the Decision Support System implementation at the French bank described above (Rowe 2005: 5-6). Although the system operated according to the same rules during each use by an advisor, some findings were accepted by the advisors and some were not. The more rigid the employees felt the system was, the less they felt it was appreciating their accumulated knowledge.

Davenport and Harris (2007: 16) identify high-level support as the most critical factor in the successful implementation of analytics in a company, and identify Netflix, Harrah's, and Capital One as examples of top organizations that have been successful due to strong leadership. In outlining and defining the role and consequent effect of strong leadership, Davenport and Harris (2007: 16) continue:

> But then the pivotal factor in how fast and how well an organization proceeds along the analytical path is sponsorship. Firms such as Netflix's, Harrah's, and Capital One have CEO-level sponsorship and even passion for analytical competition that proceed on a "full steam ahead" path.

Deming also highlights strong, balanced leadership as a key to success. In his management point seven, Deming (1982: 23) states:

> Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

Moreover, the issue of properly informed leadership is particularly relevant to technology implementations, as they often fail due to the inability of upper management to fully understand the ways in which line staff use legacy systems.

<u>Conclusion</u>

Future successful large-scale technology implementations throughout the banking industry rely on the integration of the critical success factors outlined above – specifically goal identification and communication, comprehensive business process mapping, use of appropriate implementation timeframes, acceptance of organizational cultural factors, and the infusion of talented, thoughtful leadership throughout the hierarchy of the implementation team.

Business intelligence will continue to make strides based on the gains provided to the industry from a history of ERP system implementation. In the future, the gains gleaned from business intelligence systems will necessitate a next generation of system that will further assist in the analysis of the rapidly increasing amounts of data provided at all levels of the industry.

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HOW EFFECTIVE ARE MICROFINANCE INSTITUTIONS?

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Abstract

Muhammad Yunus is credited with the creation and popularization of microfinance. This paper explores the world of microfinance, how it works as a system, and the effectiveness of microfinance institutions. The question of whether globalization has eased or created a greater need for microfinance is also considered.

Introduction

In 2006, the Nobel Peace Prize went to Muhammad Yunus, an economist who started the Grameen Bank, which, unlike most financial institutions, deals mainly with small loans. Microloans, as they are more commonly referred to, are loans of $200 or less given to poor entrepreneurs who are not considered "bankable" by traditional lending institutions. These entrepreneurs use the loans to start up businesses and support themselves, their families, and their immediate communities.

In an interview with Charlie Rose in 2007, former President Bill Clinton discussed Yunus and his work in Bangladesh: "*In the last couple of years, Bangladesh has had one political crisis after another. It's the kind of thing that tanks the stock market. But in spite of all this trouble, their economy still continued to grow about 6 or 7 percent a year. Unheard of. I think it's because it's growing from the grassroots, through the interlocking networks of microcredit entrepreneurs.*" [a]

Microfinance may not end poverty, but it is successful when used as a system. Microfinance helps society and the poorest of the poor.

The Grameen Bank Method

There are numerous microlending institutions around the world, with over 1,000 in Bangladesh alone [2]. This paper will highlight the Grameen Bank, which shared the Nobel Prize in 2006 with its founder, Muhammad Yunus.

The Grameen Bank (literally translated as "Bank of the Villages" in Bengali) was started in the village of Jobra in Bangladesh in the 1970s as part of a research project undertaken by Yunus. In October of 1983, it was transformed by government legislation into an independent bank. [2]

At its inception, the Grameen Bank's main objectives involved offering "banking facilities to poor men and women" to create "opportunities for the vast multitude of unemployed people in rural Bangladesh" so that "women from the poorest households" could learn how to manage and run organizations. An emphasis was placed on "ending exploitation of the poor by moneylenders", specifically loan sharks. The bank recognized the cycle of poverty, calling it a "vicious cycle of 'low income, low saving, and low investment'" and promised to turn it into a "virtuous cycle of 'low income, injection of credit, investment, more income, more savings, more investment, more income.'" [b]

Since its creation, the Grameen Bank has loaned roughly $5.72 billion of which $5.07 billion has been repaid. 97% of loans are made to poor women, with a repayment rate of 99%. The Grameen Bank is now majority owned by the very people it helps. Borrowers of the bank own 94% of its shares, while the government owns the remaining 6%. [c]

The Grameen Bank works using the following principles:

> *1. Start with the problem rather than the solution: a credit system must be based on a survey of the social background rather than on a pre-established banking technique.*
> *2. Adopt a progressive attitude: development is a long-term process that depends on the aspirations and commitment of the economic operators.*
> *3. Make sure that the credit system serves the poor, and not vice-versa: credit officers visit the villages, enabling them to get to know the borrowers.*
> *4. Establish priorities for action vis-à-vis to the target population: serve the most poverty-stricken people needing investment resources, who have no access to credit.*
> *5. At the beginning, restrict credit to income-generating production operations, freely selected by the borrower. Make it possible for the borrower to be able to repay the loan.*
> *6. Lean on solidarity groups: small informal groups consisting of co-opted members coming from the same background and trusting each other.*
> *7. Associate savings with credit without it being necessarily a prerequisite.*
> *8. Combine close monitoring of borrowers with procedures that are simple and standardized as possible.*
> *9. Do everything possible to ensure the system's financial balance.*
> *10. Invest in human resources: training leaders will provide them with real development ethics based on rigor, creativity, understanding and respect for the rural environment.* [d]

Yunus was very specific when describing his banking method:

> *A bank branch is set up with a branch manager and a number of center managers and covers an area of about 15 to 22 villages. The manager and the workers start by visiting villages to familiarize themselves with the local milieu in which they will be operating and identify the prospective clientele, as well as explain the purpose, the functions, and the mode of operation of the bank to the local population. Groups of five prospective borrowers are formed; in the first stage, only two of them are eligible for, and receive, a loan. The group is observed for a month to see if the members are conforming to the rules of the bank. Only if the first two borrowers begin to repay the principal plus interest over a period of six weeks, do the other members of the group become eligible themselves for a loan. Because of these restrictions, there is substantial group pressure to keep individual records clear. In this sense, the collective responsibility of the group serves as the collateral on the loan.*
>
> *Loans are small, but sufficient to finance the micro-enterprises undertaken by borrowers: rice husking, machine repairing, purchase of rickshaws, buying of milk cows, goats, cloth, pottery etc. The interest rate on all loans is 16 percent. The repayment rate on loans is currently - 95 per cent - due to group pressure and self-interest, as well as the motivation of borrowers.* [e]

The Bank's credit system highlights these features:

> *1. There is an exclusive focus on the poorest of the poor.*
> *2. Borrowers are organized into small homogeneous groups.*
> *3. Special loan conditionalities, which are particularly suitable for the poor.*
> *4. Simultaneous undertaking of a social development agenda addressing basic needs of the clientele. This is reflected in the "sixteen decisions" adopted by Grameen borrowers.*
> *5. Design and development of organization and management systems capable of delivering program resources to targeted clientele.*
> *6. Expansion of loan portfolio to meet diverse development needs of the poor.* [f]

As mentioned above, Grameen Bank institutes a sixteen point social charter developed by poor Bangladeshi women called the "Sixteen Decisions". Borrowers are encouraged to study the charter and are expected to follow it when accepted as members.

1. The four principles of the Grameen Bank - Discipline, Unity, Courage and Hard Work - we shall follow and advance in all walks of our lives.
2. Prosperity we shall bring to our families.
3. We shall not live in dilapidated houses. We shall repair our houses and work towards constructing new houses at the earliest.
4. We shall grow vegetables all the year around. We shall eat plenty of them and sell the surplus.
5. During the planting seasons, we shall plant as many seedlings as possible.
6. We shall plan to keep our families small. We shall minimize our expenditures. We shall look after our health.
7. We shall educate our children and ensure that they can earn to pay for their education.
8. We shall always keep our children and the environment clean.
9. We shall build and use pit-latrines.
10. We shall drink tube-well water. If it is not available, we shall boil water or use alum.
11. We shall not take any dowry in our sons' weddings, neither shall we give any dowry in our daughters' weddings. We shall keep the center free from the curse of dowry. We shall not practice child marriage.
12. We shall not inflict any injustice on anyone; neither shall we allow anyone to do so.
13. For higher income, we shall collectively undertake bigger investments.
14. We shall always be ready to help each other. If anyone is in difficulty, we shall all help them.
15. If we come to know of any breach of discipline in any center, we shall all go there and help restore discipline.
16. We shall introduce physical exercise in all our centers. We shall take part in all social activities collectively. [g]

How has Yunus managed to be so successful in helping individuals considered "unbankable" with this social charter that seems to be so elementary? In an interview with TIME magazine, Yunus explained it this way: "Conventional banks look for the rich; we look for the absolutely poor," he said. "All people are entrepreneurs, but many don't have the opportunity to find that out." [h]

Microfinance Around the World

Microfinance has been around longer than it has been famous, in different parts of the world.

India: Mahila Sewa Co-operative Bank

Three decades before Muhammad Yunus and the Grameen Bank won the Nobel Peace Prize and helped make microfinance a buzzword, Indian women from small villages assembled and created their own banking system. In 1974, around four thousand poor, self-employed women started the Mahila Sewa Co-operative Bank (SEWA) in the Western Indian state of Gujarat. Women contributed as little as 10 rupees, roughly equal to $0.25. Now, the bank is worth 10 cores, approximately $2.5 million, and boasts an average repayment rate of 94%. No collateral is required to take out a loan, but each client needs to have a guarantor. SEWA offers emergency loans for families, as well as personal and business financial counseling and its goal is not to maximize profits but to create and nurture an entire community. [i]

Like SEWA, the Grameen Bank is almost entirely self-sustainable. Unlike SEWA, the Grameen Bank operates on a larger scale, servicing people in Latin America, the Caribbean, Asia, Sub-Saharan Africa, and parts of the Middle East and North Africa. The need for microloans stretches far and wide.

South America: ACCION International

Getting its start as a student volunteer organization in Venezuela in the 1960s, ACCION International is a non-profit organization that partners with microfinance institutions to give loans to individuals in 25 countries around the world. In addition to these loans, ACCION also offers business training and other financial services to entrepreneurs.

At first, ACCION was a Peace Corps-like organization that built schools and waterways in the poorest parts of Latin America. Soon after, founder Joseph Blatchford and former director Terry Holcombe realized that these public works did not create real and lasting improvement in the lives of the indigent. After careful analysis, ACCION staff identified the culprits as loan sharks. Although loan sharks provide much needed capital, their predatory loan terms keep poor entrepreneurs poor by diverting profits away from business reinvestment. As a result, businesses cannot stay afloat and have little hopes for advancement. ACCION staff created the term "micro enterprise" and began offering small loans at moderate interest rates to the poor. [j]

According to their literature, ACCION partners with more than 35 microfinance organizations throughout Latin America, the Caribbean, Asia and Africa, and the United States. [k] In the last decade alone, ACCION partners have disbursed more than 17.9 million loans totaling more than $12.3 billion, and 97% of the loans have been repaid.

The Middle East and North Africa (MENA)

With Queen Rania of Jordan taking a personal interest in microfinance, poverty reduction issues have become more common in parts of the Middle East and North Africa. The United Nations Capital Development Fund declared 2005 the "Year of Microcredit" and unveiled new plans and initiatives that year.

Morocco's Prime Minister confirmed his government's commitment to microfinance and poverty alleviation.

In Jordan, the United Nations Development Program and the Ministry of Planning and Cooperation dedicated a chapter of its third National Human Development Report to microfinance.

Iran's National Committee worked with UNDP on a pilot poverty reduction/empowerment program entitled "Social Mobilization and Microcredit".

Turkey's National Committee is organizing a national conference and planning to hold thematic workshops about microfinance. Turkey's two largest banks and some government institutions are also involved. [l]

Global: KIVA

Until recently, only financial institutions had the ability to make microfinance loans. In the last few years, ordinary citizens have begun providing microfinance loans through charitable organizations. Kiva, which means "unity" in Swahili, is one such organization that has assembled a global network of microlending financial institutions that serve poor individuals. Since launching in late 2005, Kiva has facilitated more than $2.3 million in loans, with a repayment rate of 97%. [m]

Using their website as a social networking tool, Kiva's database links individual donors with people who need aid. Lenders browse through online profiles of potential loan recipients and can make direct loans starting as low as $25. The money is transferred to Kiva who contracts with a recipient's local microfinance organization to get the loan to the entrepreneur. Lenders can keep track of loan disbursements and repayment by emails from individuals to whom they lend money. Also, many loan recipients send email updates about their financial successes and their business operations. Loans are repaid within 6-18 months (depending on the original terms of the loan), and are deposited into the lender's Kiva account. The principal can then be withdrawn by the lender or reinvested in another individual.

Microfinance as a System

In his book, *The New Economics*, W. Edwards Deming identifies a system as "a network of interdependent components that work together to try to accomplish the aim of the system. A system must have an aim. Without an aim, there is no system. The aim of the system must be clear to everyone in the system. The aim must include plans for the future. The aim is a value judgment." (p.50-51).

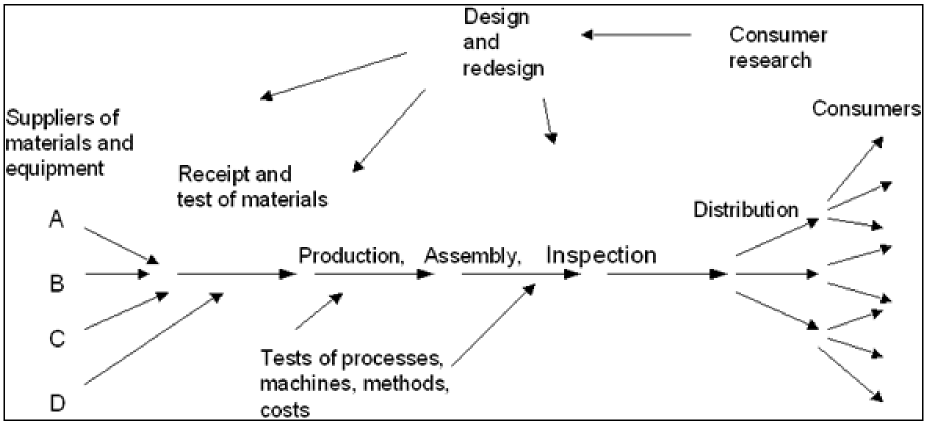

Figure 1. Deming's view of production as a system. (Out Of The Crisis, p. 4) [3]

Microfinance in its purest form works as a system. The aim of microfinance is to provide low-income individuals with the necessary financial tools to start their businesses and lift themselves out of the cycle of poverty so they can plan for the future.

Following the above figure, the suppliers in microfinance are lenders and consumers are low-income individuals around the world. How do supplies, i.e. monetary funds, get from the suppliers to the customers in this system?

Loans are usually less than $200 and come with interest rates that average 31% worldwide. At first glance, this appears to be a very high number, but is explained by many lending institutions as simply being the high cost of the loans themselves. The Consultative Group to Assist the Poor (CGAP), a "consortium of 33 public and private funding organizations working together to expand poor people's access to financial services" [n] working from the World Bank, explains it this way:

> *"There are three kinds of costs the MFI* [microfinance institution] *has to cover when it makes microloans. The first two, the cost of the money that it lends and the cost of loan defaults, are proportional to the amount loaned.*
> *The third type of cost, transaction costs, is not proportional to the amount loaned. Whether small or large, loans require roughly the same amount of staff time for meeting with the borrower to appraise the loan, processing the loan disbursement and repayments, and follow-up monitoring, so interest rates will be higher. At first glance, a rate this high looks abusive to many people, especially when the clients are poor. But in fact, this interest rate simply reflects the basic reality that when loan sizes get very small, transaction costs loom larger because these costs can't be cut below certain minimums."* [o]

The different channels involved in this system include lending institutions, avenues through which suppliers can lend money, and avenues through which borrowers can apply for loans. When people think of microloans, what usually comes to mind is lending money to a single entrepreneur who starts a business to support his or her family. This is not, of course, the only avenue for loans.

To encourage lending and borrowing, microfinance institutions offer opportunities for small groups of borrowers, anywhere from 3-20 people, to get together and apply for a group loan. As mentioned earlier, each member is expected to repay his or her loan individually, but the group will ultimately be responsible for repayment of all loans. This can have positive and negative affects. There is the danger of being kicked out of the group for failure to pay back a loan but more often, group members encourage and help each other. Group members can help others understand the terms of the loan and methods of repayment. In this type of lending, borrowers are not alone but have a support system. This works best when there is social parity among group members because people have more of an incentive to help each other. This system is often referred to as the "Grameen style of group lending."

Another technique to encourage borrowing is progressive lending, which is what many credit card companies offer consumers. Initial loans are small, but as the borrower pays them back, future loans become progressively larger, allowing for more advanced types of credit building

<u>What, if any, is globalization's role?</u>

Globalization, defined by the World Bank as "the growing integration of economies and societies around the world," is a system supported by Muhammad Yunus. "I support globalization ... but it must be the right kind of globalization," he said in his Nobel Prize acceptance speech. [p]

Globalization has undoubtedly helped many people and brought the world closer together, but is far from being without controversy. In the 2004 U.S. Presidential election, outsourcing was a hot-button topic with candidates. By outsourcing certain jobs, large companies in the West have been able to cut payroll costs while employing highly skilled individuals. This system has allowed workers in countries like India earn higher salaries without having to leave their families for work in the West. In an August 2004 poll conducted by Zogby International, 71% of American voters reported believing that "outsourcing jobs overseas" hurt the economy, while another 62% believed that the U.S. government should impose some legislative action against companies that transfer domestic jobs overseas, possibly in the form of increased taxes on companies that outsource. [q]

In his book, *The End of Poverty*, [7] economist Jeffrey Sachs talks about the "ladder of economic development," which he defines as "a ladder with higher rungs representing steps up the path to economic well-being". He uses examples from Malawi, Bangladesh, India, and China to illustrate his point. According to Sachs, these four countries are on different rungs of the ladder, with Malawi being the lowest, followed by Bangladesh, India, and China. With China's détente with the West and economic reforms in the 1970s, the average Chinese has seen greater material possessions and greater disposable income, two indicators Sachs cites in his defense of globalization.

Instead of thinking of outsourcing as a zero-sum game, Sachs argues that outsourcing can be a positive opportunity where, for example, Indian workers are providing goods and services to consumers in the West, while using goods from Western companies. When consumers call a toll-free hotline for help, the person answering the call in India is using a Dell computer with Microsoft software. As salaries of these workers rise, they will buy more Western goods, benefiting the U.S. and European economies. Globalization, Sachs insists, is not something to be scared of, but something to be embraced.

The neoliberalist view is that globalization and free trade allow for fair trade. It is not always as simple as that, however. In the 1990s, the North American Free Trade Agreement (NAFTA) was signed into law with much fanfare, promising free trade and flow of goods between the United States, Mexico, and Canada. This was groundbreaking because nations with such diverse development had not had a trade agreement of this nature.

A major criticism of globalization suggests an exacerbation of poverty and an increase in microfinance needs. The International NGO, Oxfam, blames NAFTA for allowing "US agricultural subsidies to impoverish Mexican corn farmers." [r] Because of United States government subsidies to large Mexican farms, small farmers in Mexico are unable to compete and are forced to move from their land in search of alternative forms of employment. These farmers sometimes end up applying for microloans and, if they're not careful in selecting a proper microfinance institution, they can get involved with loan sharks and end up in a downward spiral of never-ending, exorbitantly high-interest loans. [s] If it is true what Oxfam alleges—that NAFTA has plunged previously financially independent people into the cycle of microloans—then this possesses a major problem for microloans and its goal to provide financial independence.

Criticisms of Microfinance

Some critics of microfinance suggest that making small loans doesn't help communities as much as it sets up individuals for failure, since these entrepreneurs are usually uneducated and lack the skills to build their small businesses into larger enterprises. It would be better and more successful, they say, to make larger loans (around $100,000 or so) to individuals with the capability to start large businesses (such as factories) to employ more people. [5] However, this creates a class structure that would not exist if people were in charge of their own businesses and could make their own financial decisions.

Adding a new layer to any discussion about microcredit is the definition of success. Success is difficult to define because it may mean anything from a large bank account to a personal feeling of accomplishment. Microloans allow people to have greater disposable income, which allows them independence when making their own financial decisions. It allows for a degree of financial freedom.

How is success measured? At a certain level, the success of microfinance depends on the individual assisted, and traditional measures may not be the best way to gauge effectiveness. Sam Daley-Harris, director of the Microcredit Summit Campaign, explains the far-reaching impact microfinance has made in parts of the world:

> *"Several years ago two friends of mine were speaking with a group of 40 clients at a micro-bank in South Asia. Through the translator, they asked the 40 women what impact the bank had had on the husbands of the non-borrowers; not their husbands, but the husbands of women who are not with the bank. The clients said, 'Before we took our loans, our husbands were day laborers, working for others whenever they could find work. When we took our loans our husbands stopped being day laborers and worked with us - bicycle rickshaw, husking rice, growing garlic on leased land. This caused a shortage of day laborers in this area, so the husbands of the non-borrowers who were day laborers, their wages went up.' That was the impact of this bank on the husbands of the non-borrowers."* [t]

Illustrating how far microfinance help can reach, CGAP's research shows that,

> *"By reducing vulnerability and increasing earnings and savings, financial services allow poor households to make the transformation from "every-day survival" to 'planning for the future.' Households are able to send more children to school for longer periods and to make greater investments in their children's education. Increased earnings from financial services lead to better nutrition and better living conditions, which translates into a lower incidence of illness. Increased earnings also mean that clients may seek out and pay for health care services when needed, rather than go without or wait until their health seriously deteriorates."* [u]

Is microfinance successful?

According to the UNCDF,

> *"Microfinance helps very poor households meet basic needs and protect against risks; The use of financial services by low-income households is associated with*

> *improvements in household economic welfare and enterprise stability or growth; By supporting women's economic participation, microfinance helps to empower women, thus promoting gender-equity and improving household well-being; For almost all significant impacts, the magnitude of impact is positively related to the length of time that clients have been in the program."* [v]

More quantifiably, the CGAP shows:

> *In Bangladesh, Bangladesh Rural Advancement Committee (BRAC) clients increased household expenditures by 28% and assets by 112%. The incomes of Grameen members were 43% higher than incomes in non-program villages.*
> *In El Salvador, the weekly income of FINCA clients increased on average by 145%.*
> *In India, half of SHARE clients graduated out of poverty.*
> *In Ghana, 80% of clients of Freedom from Hunger had secondary income sources, compared to 50% for non-clients.*
> *In Lombok, Indonesia, the average income of Bank Rakyat Indonesia (BRI) borrowers increased by 112%, and 90% of households graduated out of poverty.*
> *In Vietnam, Save the Children clients reduced food deficits from three months to one month."* [w]

A lot of microfinance successes are intangible. Cheston and Kuhn write that microfinance institutions "have stories of women who not only are better off economically as a result of access to financial services, but who are empowered as well." These women also experience "improved status and gender relations in the home." Research showed "women's financial contributions helped them earn greater respect from their husbands and children, and ... women perceive more respect from their communities than they did before joining a microfinance program."

Margaret Asare, a microfinance client in Ghana tells her story, "At first, my family members did not count me worthy to be called when there was a problem or decision-making, but now ... I am numbered among human beings."

At the G8 Summit on June 10, 2004, the G8 leaders endorsed what they termed "Key Principles of Microfinance" and which is now universally used.

> *1. Poor people need a variety of financial services, not just loans. In addition to credit, they want savings, insurance, and money transfer services.*
> *2. Microfinance is a powerful tool to fight poverty. Poor households use financial services to raise income, build their assets, and cushion themselves against external shocks.*
> *3. Microfinance means building financial systems that serve the poor. Microfinance will reach its full potential only if it is integrated into a country's mainstream financial system.*
> *4. Microfinance can pay for itself, and must do so if it is to reach very large numbers of poor people. Unless microfinance providers charge enough to cover their costs, they will always be limited by the scarce and uncertain supply of subsidies from donors and governments.*
> *5. Microfinance is about building permanent local financial institutions that can attract domestic deposits, recycle them into loans, and provide other financial services.*
> *6. Microcredit is not always the answer. Other kinds of support may work better for people who are so destitute that they are without income or means of repayment.*
> *7. Interest rate ceilings hurt poor people by making it harder for them to get credit. Making many small loans costs more than making a few large ones. Interest rate ceilings prevent microfinance institutions from covering their costs, and thereby choke off the supply of credit for poor people.*

8. The role of government is to enable financial services, not to provide them directly. Governments can almost never do a good job of lending, but they can set a supporting policy environment.
9. Donor funds should complement private capital, not compete with it. Donor subsides should be temporary start-up support designed to get an institution to the point where it can tap private funding sources, such as deposits.
10. The key bottleneck is the shortage of strong institutions and managers. Donors should focus their support on building capacity.
11. Microfinance works best when it measures—and discloses—its performance. Reporting not only helps stakeholders judge costs and benefits, but it also improves performance. MFIs need to produce accurate and comparable reporting on financial performance (e.g., loan repayment and cost recovery) as well as social performance (e.g., number and poverty level of clients being served). [x]

Conclusion

Microfinance is most successful when it works as a system to help people rather than profit off them. One of the Key Principles of Microfinance addresses limits on interest rates charged by lending institutions. With the average worldwide interest rate being 31%, it is evident that some institutions charge very high rates. The rationale is valid for a higher-than-usual rate, but it should not be abused. With some institutions charging as much as 120% interest on loans [y], interest rates should be monitored because it has the potential of ruining more lives than it helps.

If used as intended, microfinance helps people emerge from life-long and generational poverty. Studies show that the longer people stay in these financial programs, the more they are helped—and this does not always mean materially. People are helped in both tangible and intangible ways, and success does not have a single definition. When used in the purest sense, as a system designed to get people out of the depths of poverty, microfinance can work wonders. When used as a way to make a profit off "the bottom of the pyramid" [6], problems arise.

It is no secret that globalization has exacerbated poverty, but it has also paved the way for economic independence in countries with a large middle class. Because globalization as an economic system has produced intended and unintended consequences, it merits further study.

Footnotes:

[a] Interview With Former President Bill Clinton, *The Charlie Rose Show: Transcripts*, December 15, 2007.

[b, c, d, e, f] Muhammad Yunus. Grameen Bank At A Glance. October 2007, http://www.grameen-info.org.

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[h, p] Robinson, Simon. "Banker to The Poor." Time International, December 25, 2006: 86.

[i] Shri Mahila Sewa Sahakari Co-operative Bank, http://www.sewabank.org.

[j] Rosenberg, Tina. "How to Fight Poverty: 8 Programs That Work". The New York Times, November 16, 2006.

[k] ACCION International, http://www.accion.org.

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[n, o, u, w, x] Consultative Group To Assist the Poor, http://www.cgap.org.

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[8] Yunus, Muhammad. Banker to the Poor: Micro-Lending and the Battle Against World Poverty. New York: PublicAffairs, October 14, 2003.

Bridgman and Shewhart

By

Beth Blankenship and Dennis Hribar

Why This Topic?

"This book contains the charts of my first journeys into the territory of new science-those hypotheses and discoveries in biology, chemistry, and physics that challenge us to reshape our fundamental world view. I wandered in this new land as a stranger, one who had been trained not in science, but in organizational theory and practice. The more I explored, the louder grew the siren's song. This new territory contained powerful images, metaphors, and ways of thinking that asked me to seek new ways of comprehending

the issues that trouble organizations most:

chaos, order, control, autonomy, structure, information, participation, planning, and prediction."

Margaret Wheatly, *Leadership and the New Science*

Newton's World

A world of

Order

and

Understandability

A New Awareness

“It was as if the bottom had dropped clean out!”

Percy W. Bridgman, *The Logic of Modern Physics*

A Game of Pool

"It has received implicit formulation in the "Principle of Uncertainty" of Heisenberg, a principle which I believe is fraught with the possibility of greater change in mental outlook than was ever packed into an equal number of words."

Percy W. Bridgman, *The New Vision of Science, Harpers*

Failure of the law of cause and effect

"The precise reason that the law of cause and effect fails can be paradoxically stated; it is not that the future is not determined in terms of a complete description of the present, but that in the nature of things the present cannot be complete described."

Percy W. Bridgman, *The New Vision of Science, Harpers*

What is possible to really know?

"But here is a situation new and unthought of. We have reached a point where meaning must stop because of the nature of knowledge itself: beyond this point meaning ceases."

Percy W. Bridgman, *The New Vision of Science, Harpers*

Operational Analysis

A new

Conceptual Framework

for physics

A Note in Memorial to Bridgman

"He prepared us to meet new facts with flexible minds. Bridgman helped to free us from the compulsive need of the preceding generation of physicists to find mechanical explanations for all the phenomena of nature. He made no direct contribution to the development of quantum theory, but his point of view did much to alleviate the initial confusion over the paradoxical combination of wave-like and corpuscle-like properties of radiation and matter with which quantum theory is concerned."

Percy Bridgman,

Source – Dissertation Harry Payne, Ph.D

Western Electric

An environment poised for a great discovery!

Shewhart's Memo

Shewhart, an Original Genius

“How far can man go in controlling his physical environment?”

Walter A. Shewhart,

Statistical Method from the Viewpoint of Quality Control

A Unifying Quotation

"A situation like this merely means that those details which determine the future in terms of the past may lie so deep in the structure that at present we have no immediate experimental knowledge of them, and we may for the present be **compelled to give a treatment from a statistical point of view based on considerations of probability**."

Percy W. Bridgman

Making Connections

"The consideration of the three component acts of control (**Specification, Production, Inspection**) as steps in scientific method provides a means of visualizing the act of control as a scientific one. …Since the outcome of the repetitive act in mass production, like that of the repetitive one of measurement under the same essential conditions in science, can not be predicted with exactness, we must introduce into scientific method **statistical hypothesis, statistical experimentation, and statistical tests of hypotheses**. … Viewed as an illustration of the role of statistical method in scientific control of the physical world, what is said about the application of statistical theory in the control of quality has an intriguing generality. However, my discussion has been concerned primarily with showing how **the theory and practice of statistical control may be made to provide the highest standards of quality of manufactured goods at any given cost….The adjectives continuing and self-correcting are also the essential characteristics of the scientific method**."

Walter A. Shewhart, *Statistical Method*

The American Experience

"Thus research science is given an important position, but it is not the most important thing for the world at large. It is the engineers "who go out into the world and are part of it." **The engineer** faces a different task from that of the scientist, as Dunn defines him. He **must face the test of practicality applicability and economy**. As Dunn says, he must be able to do with one dollar what any fool could do with two dollars. It is because the engineer must be measured by this economic test that "he is bound into the great business structures of society, and being bound into this structure he must be a man among men"

Harry Payne, Ph.D, *Dissertation*

W. Edwards Deming

A **physicist**,

a **statistician**,

a **practitioner**

and

a **pioneer**.

Questions for the Future

What are the boundaries of knowledge?

What is it possible to know?

What is meaningful?

What is real?

THE DETRIMENTAL EFFECTS OF INCENTIVE PAY ON MOTIVATION IN THE WORKPLACE

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Abstract

Most managers and human resource professionals are using compensation as a tool to motivate employees, yet are still finding that they are achieving results that are less than desirable. What we are seeing in today's corporate world are commissions for salesmen, bonuses for finance teams, and enormous benefit and option packages for executives. This paper examines the detrimental effect that incentive pay has on motivation, an examination of motivation itself, and some alternatives to incentive pay such as workplace enrichment.

Introduction

"Company politics, unclear expectations, unnecessary rules, unproductive meetings, internal competition, withholding information, criticism, tolerating poor performance, unfairness and unrealized capacity" (Whittlesey, 1999) are some common factors that lead to demotivation in the workplace. What is still unclear is what motivates workers. Most managers and human resource professionals are using compensation as a tool to motivate employees, yet are still finding that they are achieving results that are less than desirable. What we are seeing in today's corporate world are commissions for salesmen, bonuses for finance teams, and enormous benefit and option packages for executives. Companies often hold on to these practices because: 1.) they are accepted; and 2.) they believe that they have no alternatives. Some alternatives to remunerative bonuses currently being used in the workplace include travel and quality-of-life perks (Nelson, 2001). There is essentially no difference between these incentive plans and commission or bonus plans because they are attempts to externally control workers. The question then becomes what effects does incentive pay have on motivation in the workplace? This paper proposes that it is essential for corporations to remove pay-for-performance plans in order to better satisfy the needs of its shareholders, employees, vendors and customers by moving away from externally regulated motivation, and promoting an environment where internally regulated and intrinsic motivation can thrive.

Corporations have long held onto the practice of rewarding their sales force with commissions and incentive bonuses. The incentive bonus is a plan created by management aimed at increasing productivity (Orsini, 1987). It appears logical to offer employees a reward for greater productivity. Incentive bonus plans come in two major types. The first type has objectives that are structured around corporate goals. This type can be applied to divisions or individuals. When applied to a division, often the division managers meet with a senior officer such as the CEO to outline goals or objectives for improvement of productivity. These goals usually take the form of a percentage of growth or improvement such as 20% more sales than the previous year or a 10% reduction in dropped clients. Likewise, when applied to the individual, usually the manager of a division sets objectives for individual employees that are aligned with the goals of the corporation or department. The second type of incentive bonus entails competition between divisions or individuals. Division competition sets the various divisions against one another. The divisions compete to achieve a numerical goal such as 200 contracts earned in a sales department or perhaps 10 new employees placed in an HR department. The bonus can be paid at the end of a specified term.

Negative Effects of Incentive Pay

What follows is a description of some of the negative effects that incentive pay can have on motivation and business in general. Kohn describes six points that show the costs of an incentive program (Kohn, 1993). His first point, "pay is not a motivator," a comment made by W. Edward Deming, is meant to convey that money buys what people need and want, but is not an active motivator. Kohn says that "there is no firm basis for the assumption that paying people more will encourage them to do better work or even, in the long run, more work". Too little money can demotivate workers because it can be demoralizing. Just because this last point is true does not necessarily mean that paying someone too much, or extra money would motivate them. This coincides with Herzberg's (1968) views on job satisfaction and dissatisfaction.

The second point that Kohn (1993) makes is that rewards run along the same lines as punishment. "Punishment and rewards are actually two sides of the same coin. Both have a punitive effect because they are manipulative." Punishment equates to "if you do this you'll be punished" whereas a reward implies "if you do this you'll be rewarded". They both are essentially the same thing and attempt to change the behavior of an employee, but do not really address what motivates the employee. Furthermore, as with punishment, an employee can begin to resent an employer and other colleagues due to punishments and rewards or, more probably, lack of rewards.

Kohn's (1993) third point which states "rewards rupture relationships" sums up these problems between fellow employees and between employees and employers. When incentives are implemented, competition arises between salesmen and often diminishes opportunities for cooperation. Employees will often see their colleagues as being in their way, and as opponents in achieving their goal. Further, when rewards are offered to employees, they now feel that they must always be "working optimally", and avoid asking for help or hide problems that they might be having. They might build up reserves from one period to the next in case they come up short in the preceding period. This degrades the relationship and coordination between employee and employer. Without cooperation, the system and quality will eventually falter. This point can be gleaned from one of Dr. W. Edward Deming's teachings regarding breaking down barriers between departments and people (Deming, 1982).

Incentives and rewards also do not take into account what the causes of a problem are. Rather they are an attempt by management to coerce their employees into producing a desired outcome. The manager should instead be looking at why the system does not produce what is intended. Management should question: "Are employees inadequately prepared for the demands of their jobs? Is long-term growth being sacrificed to maximize shot-term return? Are workers unable to collaborate effectively? Is the organization so rigidly hierarchical that employees are intimidated about making recommendations and feel powerless and burned out?"(Kohn, 1993)

Rewards and incentive pay present further detriment for business because they create a situation of conflict of interest between the needs of the company, and the needs of the customer. Kurland (1991) presents the ethical problems that arise from this agency relationship between the agent (salesman) and the principal(s) (employer and/or client) when operating within a straight-commission compensation system. This relationship exists when an agent is a party that acts to benefit some principal. Agency theory addresses two different *perceived* problems that occur within this relationship: "adverse selection" and "moral hazard". Adverse selection occurs when the agent is in the position to misrepresent his ability. The principal is able to observe the agent's behavior, but is unable to judge the optimality of that behavior. Moral Hazard involves a lack of effort on the agent's part and occurs when the principal can judge the level of performance, but cannot observe it. Firms use a straight-commission as opposed to a salary/commission compensation plan because it is an efficient way to solve these two problems (if one assumes that agency theory is true). Under the assumption that employees are self-interested, a straight commission plan is efficient because in theory, it provides incentive for the agent while the principal does not need to monitor the agent (Kurland 1991).

Kurland (1991) further asserts that while working in a commission-based system, the agent effectively works for two principals. The first is the employer because they pay the agent's wage. The agent is working to sell as much of what the firm has as possible. On the other hand, the customer can also be perceived as the principal because they are also offering the order to the agent and paying in the form of commission. This is where a conflict of interest for the agent can arise. If the agent is employed to serve the interests of the principal, to whom does the agent remain faithful when the two principals' interests oppose each other? Take for instance the case of an automobile salesman. The salesman is considered the agent and the automobile manufacturer and the customer purchasing the car are the two principals. The salesman has been told by the automobile manufacturer that he must sell ten trucks or they will rescind his franchise sponsorship. Further, he has been told that he will receive 5% more commission on trucks than on any other vehicle in the lineup. On the other hand, the consumer wants to buy the family sedan because it fits their needs better. The salesman must attempt to sell trucks ahead of any other vehicle in order to keep his franchise. This does not line up with the needs of his customer. What does the salesman do? He will probably attempt to sell the customer the truck.

This presents more of a problem for the customer than the employer in the short term. However in the long term, it is detrimental to the employer because the customer might not come back for more business, or tell others not to shop with that vehicle brand and salesman. Further problems for the employer/salesman can include an appearance of being untrustworthy due to the fact that customers think that salesmen working on commission are less trustworthy (Straughan & Lynn, 2002). A reputation for honesty is important in developing trust between a salesman and his customer. Customers want to trust the people they are purchasing from, so when a salesman appears dishonest in the customer's eyes, they will attempt to purchase goods or services elswhere.

Another result that incentives can have is that that like "rigid hierarchy", they too discourage discovery, thinking outside of the box and risk taking. "In a word, the number one casualty of rewards is creativity." (Kohn, 1993) When managers implement incentive programs, employees stop examining better solutions and other possibilities, and instead concentrate on supplying the results or numbers that provide them with the incentive. In line with this, employees will sometimes even produce fraudulent results. "Given a system within which to work, [managers] will always find a way to give the company the results that trigger the bonus, even though there may be no *real* gain for the company." (Orsini, 1987)

Kohn's final point describes the effects that incentives have on basic interest. Studies have been conducted that show that external motivators such as commission and bonuses undermine intrinsic motivation (Deci, Ryan & Koestner, 1999). It has been stated that external motivation does not have an effect on intrinsic motivation (Eisenberger & Cameron, 1996), but other authors argue that extrinsic motivation can be detrimental to intrinsic motivation (Deci & Ryan, 2000; Deci, Ryan, & Koestner, 1999; Deci, 1971).

In 1971, Deci conducted one of the first studies to take a look at the effects of external rewards on motivation. He hypothesized that money, as an external motivator, would reduce intrinsic motivation, whereas verbal reinforcement, as an external motivator, would increase intrinsic motivation. He created three experiments to measure the effects of each. The first two experiments were conducted in a laboratory setting and the third experiment was examined in a real-world setting. This paper will only examine the laboratory experiments.

The experiments were designed to take place during three distinct periods. In the first period both the experimental and control subjects (college students) were to engage in a puzzle without any clear external rewards given. During the second period, the experimental subjects would be given the external reward (either money or verbal reinforcement) for working on the puzzle, and the control subjects would be given nothing. During the final period, the rewards would be removed for the experimental subject. For all of three periods, there was an allotted amount of free time where the subject could either practice with the puzzle or read magazines that were in the room. Researchers measured the amount of time that each subject spent during the free time practicing with the puzzle. The control group practiced with the puzzle for nearly equal amounts of time during all three free periods. The experimental group worked on the puzzle for nearly the same amount of time as the control group during the first free period, but after it was understood that they would receive money for producing the correct puzzle arrangements in the second period, they spent a greater amount of time during the free period working on the puzzle. For the third period, the researchers told the experimental subjects that they would no longer receive money for the puzzles they would arrange. During the third free period, the experimental group spent much less time working on the puzzle than in the other two periods. What was observed was that money appeared to be detrimental to intrinsic motivation because it caused the subjects to reevaluate why they were performing the task. Deci (1971) hypothesized that the subjects felt that the once intrinsically-motivated task became one which was motivated by the expectation of money.

In support, Deci, Ryan and Koestner (1999) did a review of 128 meta-analytic studies conducted by other researchers that examined the effects that extrinsic rewards have on intrinsic motivation. The rewards used in these studies could be tangible or verbal, and expected or unexpected. Deci et al. divided the studies into different contingency-based segments to analyze how the contingency of the reward affected the intrinsic motivation of an individual. Rewards could be contingent upon engagement, completion, or performance. All of the studies examined different combinations of contingencies and reward types, and it is noteworthy that overall, most of the studies agreed that extrinsic rewards resulting from any contingency were detrimental to intrinsic motivation.

Motivation

Motivation can be thought of as the "why" people initiate any kind of activity or behavior. Researchers have divided motivation into two types, extrinsic and intrinsic motivation (Deci and Ryan, 2000). Extrinsic motivation can be thought of as motivation that results from an external source such as an employer who offers commission. Deci and Ryan (2000) describe intrinsic motivation as the "natural inclination toward assimilation, mastery, spontaneous interest, and exploration…that represents a principal source of enjoyment and vitality throughout life" (Ryan, 1995), or in other words, motivation that comes from within one's self.

Herzberg (1968) examined what leads to job satisfaction as well as what leads to job dissatisfaction among employees, and the correlation between satisfaction and motivation. Herzberg found that there are certain factors such as achievement, recognition, responsibility, advancement, growth, and the job itself that all act as satisfiers in the workplace, and rarely produce job dissatisfaction. He also found that another set of factors including company policy and administration, supervision, relationship with one's supervisor, work conditions, salary, relationship with one's peers, and personal life that could lead to job dissatisfaction. Herzberg called these two sets of factors respectively "motivators" and "hygiene" factors. The hygiene factors are higher order needs-based than the motivational factors. Humans need salary, comfortable relationships with peers and supervisors, and a happy personal life in order to lead a decent and comfortable life. Bad situations in any of these areas may lead to dissatisfaction with one's job, but more of any of these will not necessarily lead to motivation. What leads to motivation are other factors such as achievement and recognition because they satisfy a person's need to grow psychologically. Often companies try to enrich the workplace by adding more work to the employee yet fail to realize that they are just adding more meaningless work to already meaningless work rather than *actually* enriching the work. Herzberg calls this horizontally loading employees work, or adding more motivationally detrimental work to the work they are already doing. Rather, companies should vertically load work, or enrich the type of work employees are participating in.

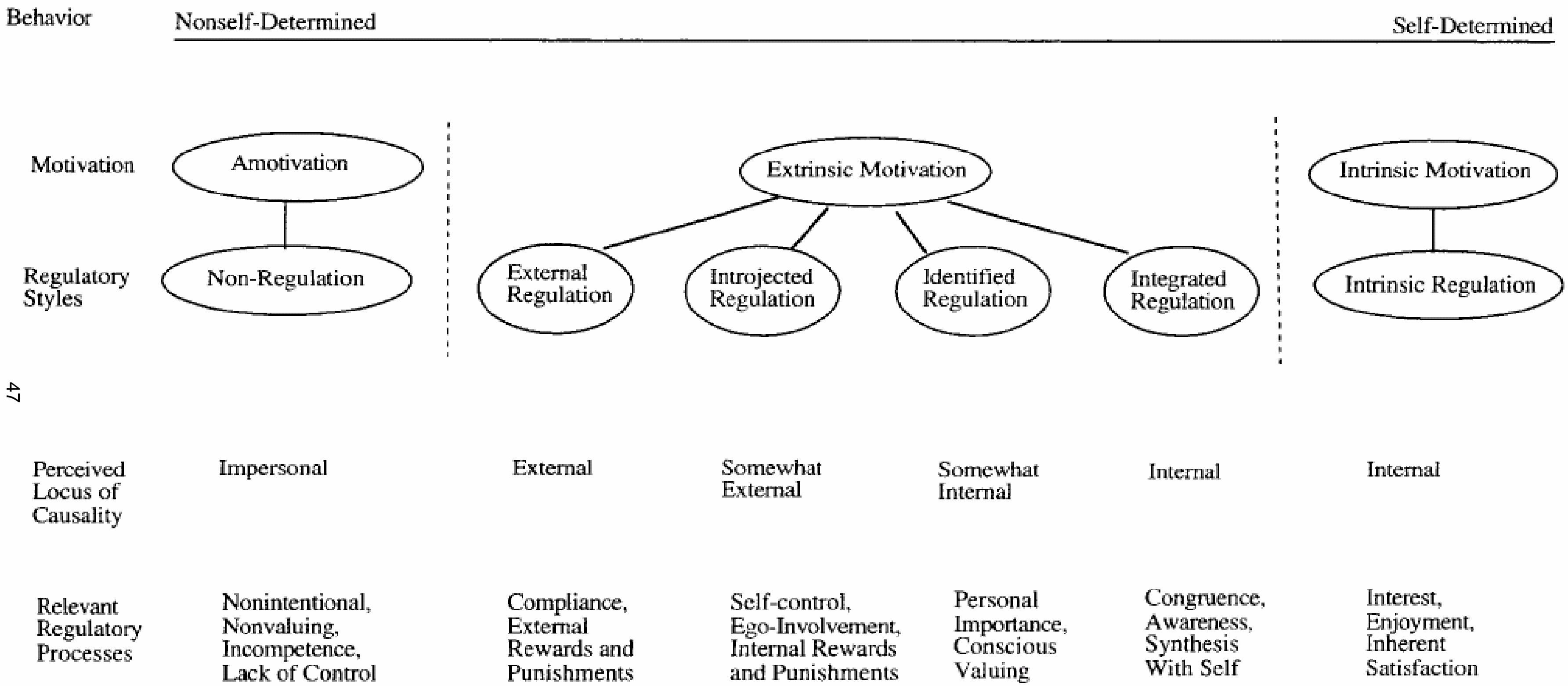
Comparisons between external motivators and internal motivation reveal that those that are internally and intrinsically motivated perform better and are more persistent and more creative than extrinsically motivated individuals when each possesses the same degree of confidence (Deci & Ryan, 2000). Deci and Ryan (1985, 2000) developed self-determination theory (SDT) which stipulates that it is more optimal for people to be internally and intrinsically motivated than externally controlled.

Deci and Ryan (1985) used theories underlying motivation to develop SDT. The theory examines the amount of volition and endorsement people associate with their beliefs and actions. The theory is based on the belief that human beings have three major needs regarding motivation: the needs for competence, relatedness and autonomy. Deci and Ryan theorize that when these basic needs are met, intrinsic motivation is nurtured and people begin to integrate external motivators by adopting them as internal to their self. As such, people become more optimally motivated.

In order to further elaborate on what kinds of motivation individuals and organizations should concentrate in order to create a more intrinsically motivated environment, Deci and Ryan (1985) developed organismic integration theory (OIT). OIT groups motivation by type with amotivation at the low-motivation end of the spectrum, and intrinsic motivation as the highest degree of motivation as reproduced from Deci and Ryan (2000) in Figure 1. Between these two there is extrinsic motivation which is further divided into four main types of regulation: external regulation, introjected regulation, identified regulation and integrated regulation.

It should be noted that other researchers (e.g., Vallerand, 2000; Vallerand, Guay, & Blanchard, 2000) are in agreement, albeit using a different hierarchical model, that intrinsic and extrinsic motivation are not in a specific dichotomy, but rather display varying degrees on a continuum. The main difference between Deci and Ryan's continuum and Vallerand et al. is that Vallerand et al. further present the continuum as taking place in three different hierarchical levels of generality being global, contextual and situational. The general goal of OIT is to facilitate the migration of a person's motivation from being externally regulated to being internally regulated, hopefully even being integrated with their self.

Figure 1
The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes



Conclusion

Incentive pay aims to motivate workers through only one factor, a person's need for money. Money is a motivator that is used to externally regulate what employees do. What Herzberg's (1968) research finds is that this is not motivating employees because it is only addressing a hygiene factor. Some research (Deci & Ryan, 2000; Deci, 1971) has shown that attempts at external regulation can be detrimental to intrinsic motivation. What all this research suggests is that incentive pay is doing nothing to motivate workers, and might even be demotivating them. Removal of incentive pay should be the first item on any sales organization's plan for motivational reform. Removal of incentive pay will eliminate the agency problem that Kurland (1991) described and be a step in the right direction towards optimizing motivation in the organization. When incentive pay is removed, the salesmen will be able to work toward the benefit of both his employer and his customer.

Just removing incentive pay from a sales organization will not simply fix the motivational problem amongst the salesmen, but it is the place to start. Management must implement measures that take aim at bolstering the intrinsic motivators internal to the salesmen by satisfying their needs for autonomy, competence and relatedness (Deci & Ryan 2000), while at the same time limiting the detrimental effects of "hygiene" (Herzberg 1968) factors within the workplace. In order to move workers and salesmen along Deci and Ryan's (2000) continuum of motivation, managers must take steps to improve the content of the salesmen's work. Herzberg's (1968) principles of vertical job loading are a good start to migrating sales force motivation.

Principles of vertical job loading[i]*:*

1.) Removing some controls while retaining accountability [Responsibility and personal achievement]
2.) Increasing the accountability of individuals for own work [Responsibility and recognition]
3.) Giving a person a complete or natural unit of work (module, division, area, etc.) [Responsibility, achievement, and recognition]
4.) Granting additional authority to employees in their activity; job freedom [Responsibility, achievement, and recognition]
5.) Making periodic reports directly available to the workers themselves rather than through supervisors [Internal recognition]
6.) Introducing new and more difficult tasks not previously handled [Growth and learning]
7.) Assigning individuals specific or specialized tasks, enabling them to become experts [Responsibility, growth, and advancement]

Herzberg's principles fit with SDT because the principles aim at promoting the three needs of autonomy, competence and relatedness. Greater autonomy is achieved through principles 1, 2, 3, 4 and 7. Competence is bolstered by the personal achievement, recognition, advancement and learning in all seven principles. Relatedness or a perceived sense of belonging to the group can be achieved through principles 4 and 7. Removing incentive pay and working with these principles and self determination theory rather than tinkering with different ways of compensating employees can be a better way of motivating salesmen and all employees.

End Notes

[1] The terms in brackets signify the motivator factors that the principles enhance.

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RESTRUCTURING THE UNIVERSITY COLLEGE OF EDUCATION TO SUPPORT IMPLEMENTATION OF DEMING K-12 CHARTER SCHOOLS

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Abstract:

Despite major governmental reform initiatives conducted since the A Nation at Risk report was published in 1983 and investment of billions of dollars in public education, American students are faring so poorly in math and science education compared to their international peers that one education economist described the situation as “child abuse”. Drop out rates for high school students are 50% or greater especially in urban schools. It is increasingly evident that public school systems are unable to change a curriculum that produces such mediocre levels of student academic achievement. These findings contrast with the results of a 2003 longitudinal study conducted with students who graduated from a W. Edwards Deming based high school program. The study found that the students achieved greater school-to-work and school-to-college success than their peers who did not participate in the same course of study. The Deming program suggests that American students will be able to compete in a 21st century global economy if they can participate in the appropriate curriculum. This paper proposes that university colleges of education are in the best position to take responsibility for the transition from a traditional school curriculum to a quality learning curriculum. Three requirements are necessary to meet the demands of the new curriculum. First, education majors will need to obtain certification in a content area and complete a cognate in quality learning. Second, a Deming university laboratory school must be established that offers a comprehensive quality learning curriculum where Deming teachers can translate their coursework in learning theory into practice. Third, a Deming charter school must be in place. The intense pre-service curriculum work and practice teaching that teachers receive at the undergraduate level will be utilized to meet the learning needs of students. Deming students are expected to demonstrate academic success and positive social skills throughout their K-12 experience.

Three major education reform movements enacted since 1983 have failed to produce any measurable increase in student achievement levels of American public school students. A Nation at Risk Report 1983, The Goals 2000: Educate America Act 1994, and No Child Left Behind 2001 each addressed and identified specific areas of public school inadequacies. The Goals 2000: Educate America Act and No Child Left Behind identified goals that school districts would need to achieve within specified periods of time. Billions of dollars were legislated and allocated for both of these educational reform initiatives.

Of the three major reform efforts it is most interesting to review the legislative purpose of The Goals 2000: Educate America Act 1994. Title I of the Act defined a set of eight National Education Goals, and the rest of the law was intended to provide a framework for meeting those goals. The goals appear below.

1. SCHOOL READINESS By the year 2000, all children in America will start school ready to learn.

2. SCHOOL COMPLETION By the year 2000, the high school graduation rate will increase to at least 90%.

3. STUDENT ACHIEVEMENT AND CITIZENSHIP By the year 2000, all students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern economy.

4. TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT By the year 2000, the Nation's teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the next century.

5. MATHEMATICS AND SCIENCE By the year 2000, United States students will be first in the world in mathematics and science achievement.

6. ADULT LITERACY AND LIFELONG LEARNING By the Year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

7. SAFE, DISCIPLINED, AND ALCOHOL AND DRUG-FREE SCHOOLS By the year 2000, every school in the United States will be free of drugs, violence, and the unauthorized

presence of firearms and alcohol and will offer a disciplined environment conducive to learning.

8. PARENTAL PARTICIPATION By the year 2000, every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children.

The United States Chamber of Commerce 2007 Report Card unfortunately reveals that most if not all of the ambitious goals that were developed and included in The Goals 2000 1994 report were not met. The 2007 Chamber of Commerce report states: "the United States in the 21st Century faces unprecedented economic and social challenges, ranging from the forces of global competition to the impending retirement of 77 million baby boomers. Succeeding in this new era will require our children to be prepared for the demands of the modern workplace and a far more complex society. Yet the evidence indicates that our country is not ready. Despite decades of reform efforts and many trillions of dollars of public investment, U.S. schools are not equipping our children with the skills and knowledge that they and the nation so badly need."

Andrew J. Coulson of the Mackinaw Center for Public Policy in Michigan reported in 2005 that "the latest international math and science test results show the U.S. lagging other industrialized nations. America's school problems are far-reaching, and the test scores of even our brightest students cannot be explained away by common objections to international comparisons." Coulson further states in another report that "many nations that typically outscore the United States in math and science at the eighth grade level did not compete in the Third International Math and Science Study (TIMSS) 2003. However, eight of those nations competed in another test of math and science: the 2003 Program on International Student Achievement (PISA). Tellingly, every one of the eight countries significantly outscored the United States on the PISA test. In math Canada beat us by 49 points, while Finland outscored us by 61. In science, France and Switzerland outscored us by 20 and 22 points respectively. If all of these nations had participated in TIMSS 2003, it seems likely that the U.S. performance at the eighth grade level would have been considerably further below the average of industrialized nations."

Michael Hodges who is the author of the Grandfather Economic Report Series noted that "our education quality in math and pure sciences (physics, chemistry, etc.) must improve by huge amounts. We are more than ever in a global economy that is high tech. Our young will grow up to compete for living standards and national security with more foreign students than any prior generation. The fact that they score below all others in math and science could be labeled 'child abuse' and a threat to the nation."

In a June 6, 2006 USA Today article Gregg Toppo wrote "Students in a handful of big-city school districts have a less than 50-50 chance of graduating from high school with their peers, and a few cities graduate far fewer than half each spring…the findings present a bleak picture and are sure to generate controversy as lawmakers and others push to keep U.S. students competitive globally."

W. Edwards Deming, the American statistician, college professor, author, lecturer, and consultant is widely credited with improving production in the United States during World War II. He is perhaps best known for his impact on Japanese manufacturing and business that produced innovative high-quality products and increased the country's economic power.

After attending a Deming lecture, David Langford, a teacher at Mt. Edgecombe School in Sitka, Alaska returned to the school and used Deming's quality principals in his classroom. Within a few years Mt. Edgecombe was transformed from a poor-performing school to a high achieving school. David is now a national and international consultant who conducts Total Quality Learning Seminars for school districts and businesses. Other quality consultants and authors such as James F. Leonard, Lee and Sandra Jenkins, and Jeff and Jacquie Burgard have also taught the concepts of systems theory, variation, Plan–Do– Study-Act, and use of quality tools to school board members, administrators, and teachers. These quality consultants unquestionably have the right approach to transforming schools. Unless there is strong leadership from top administration to change, however, it is difficult if not impossible to change the school culture.

The Ingham Intermediate School District (Mason, Michigan) in partnership with General Motors and the United Auto Workers operates the Lansing Area Manufacturing Program (LAMP) in a General Motors plant in Lansing, Michigan. LAMP curriculum is Deming based and quality driven.

12th grade students from a tri-county area attend the project based team oriented program. Quality curriculum standards are used to grade students. Student teams achieve a "quality" grade if the standards are met and a "not quality" grade if they are not. Once student teams have learned and been exposed to the quality curriculum they use their knowledge and improvement theory in the automobile assembly plant. Under the supervision of GM staff teams of students are assigned specific process improvement projects to work on for 12 weeks. At the end of the assignment the project teams report out their findings to an audience of community dignitaries and interested parties. It is estimated by LAMP administration that project teams over a twelve-year period have saved General Motors approximately 1.5 million dollars.

Author Keith MacAllum, Karia Yoder, Scott Kim and Robert Bozick published the study "Moving Forward: College and Career Transitions of LAMP Graduates. Findings from the LAMP Longitudinal Study." (Published August, 2002)

The progress of three cohorts of LAMP student graduates; 20 graduates of the class of 1998, 54 graduates of the class of 1999, and 54 graduates of the class of 2000 were compared to that of groups of students who graduated from the same high school. Compared with the comparison group LAMP graduates: pursued postsecondary education at higher rates, demonstrated a level of persistence in higher education, pursued wider fields of study, demonstrated high rates of employment while enrolled in LAMP, and despite the higher rates of employment LAMP student cumulative grade-point averages were comparable to the comparison group.

The overall conclusion of the study was the LAMP program has proven effective in helping students make successful school-to-work transitions and school-to-college transitions.

Ingham Intermediate School District and Lansing area hospitals partnered to launch the Capital Area Health Care Education Program (CAHCEP) in Fall of 2007. The CAHCEP is open to 11th and 12th grade students from a tri-county area. Students who are interested in pursuing health-related careers are selected to attend this program. CAHCEP uses all of the Deming curriculum elements that appear in the LAMP curriculum. It is the expectation of community health care officials that graduates of the CAHCEP will have an employment advantage over non-CAHCEP graduates not only because of their training in various health occupations but also the exposure to quality learning philosophy, principles, and tools that they will receive.

Jenks Public Schools, Jenks, Oklahoma was awarded the Malcolm Baldridge National Quality Award Recipient for Education in 2005. Four pillars serve as the curriculum model for the district. The four pillars include continuous improvement, strong quality leadership, customer focus, and systems/process flow. The districts' student achievement levels rank among the highest in the state.

The Star Institute is operated by Lansing Public Schools and Lansing Community College in Lansing, Michigan. A Quality Assurance instructor is assigned to the program which has Deming principles incorporated in the curriculum. The program prepares high school students for high technology jobs.

One of W. Edwards Deming more famous sayings is, "We have learned to live in a world of mistakes as if they were necessary to life. It is time to adopt a new philosophy in America." Dr. Deming of course is right. New public school policies and curriculum are needed not only to correct but reverse the downward academic trends over the past 20 years of United States students. If school districts continue with their same curriculum approaches it can be predicted that students will fall even further behind their international peers placing the American economy and way of life in jeopardy.

There is substantial data that governmental and quality learning consultation reform efforts have not produced any noticeable system change or increase in student achievement or lowering of high school drop-out rates. Neither has structural changes such as reduced class size, increased day and school year hours, grade configurations, block schedules, raising the mandatory school attendance requirement, linking graduation to driver licenses, and numerous other reform measures.

The question must be asked. If Dr. Deming's economic principles and philosophies can turn around an entire nation (Japan), can those same principles and philosophies turn around the American public education system? There is evidence that it can in Mt. Sitko, Alaska; Lansing, Michigan; and, Jenks, Oklahoma.

The change in the new teaching, learning, and curriculum philosophy must begin in the university college of education. Education majors, in addition to declaring a major in a subject matter area, need to earn a cognate in Quality Learning. There are numerous sources from which to draw upon to develop the Quality Learning curriculum. For example, the American Society of Quality; Becky Starnes at Austin Peay State University, School of Technology and Public Management; Deming Library; Ingham Intermediate School District, Capital Quality Initiative and other related sources are available.

A Deming laboratory school will need to be established where aspiring Deming teachers can practice and refine their skills. Over 100 United States Colleges and Universities have various types of laboratory schools. Some of the laboratory schools could be benchmarked for operational purposes. Under the new teacher-student relationship teachers would exercise a teacher facilitator role similar to the methodology used by Montessori School teachers in the very successful Montessori schools. Students would collaborate in teams and assist each other with learning the content in their respective academic classes.

The charter school movement has taken hold in every state. Charter schools can be found in urban, suburban, and rural districts. An initial Deming charter school would be established in the university community where a Deming college of education and a Deming laboratory school reside. The school would open with grades K-2 and add two grades each year until it became a K-12 school. Teachers would move up to the next grade for the next school year and mentor the teachers who succeed them. The “small school” concept advocated by Bill Gates would limit the total enrollment to approximately 600 students. In addition to revenue generated under a state aid act, planning, development, demonstration and dissemination grants would be applied for to underwrite the costs of the Deming model.

A reputable educational management organization would be responsible for the business and human resource departments and be the steward of the Deming budget and adhere to all Generally Accepted Accounting Principles (GAAP).

According to Dr. Deming the first step that leads to the transformation of a system is finding out what is wrong with the current one. Educators and education policy experts illuminated some of the more troubling issues facing public school administrators, teachers, and students in this paper. The next logical step in the transformation process is to adopt a new curriculum. Future education majors will need to be certified in a content area and acquire a quality learning cognate. As a requirement of their pre-service training, students will practice and refine their quality learning skills in a Deming laboratory school. It is imperative that Deming K-12 charter schools be open in the near future so American students can participate in a world class curriculum. Dr. Deming’s reputation for personal and professional integrity mirrors his reputation as a brilliant economist. It is not unreasonable to expect then that graduates of Deming charter schools will be self assured, self starters, learned, outstanding citizens, and provide the leadership necessary to generate solutions for the unprecedented global economic and domestic social challenges of the 21st century.

SEEING THE BIGGER PICTURE: COMPETITION VERSUS COOPERATION

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Abstract

Business is dominated by traditional competition. In the past century, a growth in business was accomplished not by competitive nature alone, but through cooperation. This paper will review some possible influential origins and determine a better approach for the future of competition and cooperation examined through the home video format wars.

Introduction

Companies throughout the world in practically every industry are fueled though the idea of winning. Competition drives companies to better their competitors. Even in describing companies similar to each other, are named "competitors". Sometimes competitors achieve success through a new product, technology, or innovation. If one or more companies create a new technology, the race begins to patent and then market the advantage to consumers. Ultimately, a winner arises to claim the greatest profit. A winner of competition usually means one entity. As the global economy grew and progressive ideas of sharing information and technology became more commonplace, new ideas evolved into new innovations and technologies at a faster rate with more revenue. Thus an evolution of human nature translates to business interactions between companies. Could cooperation harness more profits to all companies involved?

Cooperation and collaboration between companies are nothing new, but what happens when you have two or more companies that have a similar idea but design a product based on different technology that result in similar, yet slightly different capabilities? When there are dependent markets that are based off the technology formats, you develop a division of markets and eventually a division of profits. What drives companies and individuals to create new technology or a new process? What are the motivations of companies that want to spend so much money, staff, and effort for development of a new technology or process? If well planned, executed, and a little lucky, new technology could be an advantage. If the planned design, strategy, tactics, and execution are done poorly with a little bad luck, the idea of having a new technology or process could be a burden.

Corporations in certain industries are driven to develop new technology, innovation, and new processes for competitive advantage and sometimes for survival. As much as competition can help propel the results for success in creating innovation, new technology or process, competition could hamper advancement and may cost more in resources during development and marketing. Cooperation as a balance to competition in polarity was previously understood in many academic circles as wasteful, slow, costly, and unrealistic. Further observation into the motivation of companies to either cooperate or compete in different situations is an interesting phenomenon that will be further analyzed in this paper.

Competition

Competition is associated heavily with theories, philosophies, and ideas of the past. In modern business, there are more tactics to actively execute strategies. Many philosophies of economics, marketing, politics, war, and even biological evolution established competition as a fact of life. In economics, Adam Smith gave competition a famous validation as the "invisible hand" that drove competitors to lower prices more favorable to consumers. Darwin introduced competition in part of the understanding of survival of species. A deeper look into what motivates people toward competing with one another wraps Darwin's "Survival of the Fittest" with Hobbsian influenced "Game Theory"[1]. Is competition embedded into our DNA and psyche?

Competition was and still is referenced as a necessary good to the practice of commerce and deemed an important aspect of business. Many students, economists, politicians, business people, and countless others have either studied or read the work of Adam Smith in, An Inquiry into the Nature and Causes of the Wealth of Nations. In The Wealth of Nations, Adam Smith references the "invisible hand"[2]. There are many references to the "invisible hand" as to mean many things. Most economist generally interpret the term to mean a phenomenon that occurs when the motivation of an individual to maximize one's revenue works to better maximize the revenue of one's society, resulting in maximization of total revenue without the influences of outsides forces.[3] In stretching the conventional interpretation of "the invisible hand", the individual is motivated to do their best to profit, and thus Adam Smith's writings find the human approach as to compete with one another and others outside of their society for scarce resources.[4]

As the works of Adam Smith caught traction with academia, well known philosophers and economists throughout the past and present helped shape what modern capitalism is today. Adam Smith stated that the individual did not need government to involve itself in the maximization of revenue when it is the motivations of individuals themselves that would right the economic system from distortions in commerce. The individual motivation to maximize commerce will prevent collusion in essence and there would be no need to correct any aberrations. Adam Smith had derived a revolutionary belief based on the human motivation that a person will strive to best maximize their position. Competition is the vehicle that would correct itself to the system as what we now know as capitalism. Collusion amongst supposed competitors would not exist with competitive drive destroying any potential of companies working together. Competition requires no government intervention and is self-regulatory. Competition does work to benefit consumers in eliminating possibilities monopolies.

Adam Smith's understanding of the way of life through his eyes was significantly due to the events of his time. The presiding thought of his times dealt with strife in economics and politics and thus many understand survival as the most important in a hard and nasty world. Adam Smith's writing also pressed the idea of freedom from external influences to the individual, mainly meaning government. Adam Smith was born in Scotland on 1723, and died in 1790. The Wealth of Nations was written and released in 1776. During this time there was American independence and free trade looked very bleak with the Americans.
Adam Smith had the underlining thought of the "invisible hand" through the motivation of man, almost to the point of instincts for survival. Charles Darwin established the theory of evolution through principles stating an organisms' ability to adapt to its environment, survive it, and to able to thrive in it. The phrase, "Survival of the Fittest" is a key component placed with Darwin's idea of evolution, but it was stated by Herbert Spencer and not by Darwin. Darwin himself never explicitly stated competition as a component of natural selection or survival of a species.[5] This is an important point. Survival may require competition, but competition is not required to survive. Stephen Jay Gould, a well known evolutionary biologist stated the following:

> *The equation of competition with success in natural selection is merely a cultural prejudice…Success defined as losing more offspring can… be attained by a large variety of strategies – including mutualism and symbiosis – that we could call cooperative. There is no a priori preference in the general statement of natural selection for either competitive or cooperative behavior.*[6]

Much of the principles are based on the observations Charles Darwin made of certain species with specific traits being able to survive through a quality that is different or stronger than of other animals. At some point a logical jump was made possibly by those in academia or in the business arena, that Darwin's theory worked for companies. The fittest companies survive, and survival is based on what companies can do to stay alive or based on the belief that destroying the threat of existence extends the companies life. In essence, Darwin is stating competition is programmed in all animals or companies to live.[7]

Grasping the competitive drive in animals is observably seen through the fight for food, shelter, water, land, and mate. The human response can be more elusive. The ability to fight the animal instinct is difficult, but humans have the will and ability to accomplish the feat.[8] If human beings have the ability and the will, would humans not want to further their own life as long as possible, even when not so obvious? What I believe is beneficial to understanding motivation, is to understand the situation at hand. What is the environment or what is the status of fulfillment of necessary needs, is there a scarcity?

Thomas Hobbs may have an answer or at least an insight to why human nature behaves or are motivated to do what they do, when they do it. Thomas Hobbs is known more in political science academic studies, but perhaps lays the foundation of the situation of man historically. Hobbs became infamous for his work called, Leviathan. In Leviathan, Hobbs describes the state of nature as, "solitary, poor, nasty, brutish, and short"[9]. Is it possible that Hobbs' description of the state of nature is accurate? Hobbs draws a very morbid future, but he only describes for what he experienced. Thomas Hobbs lived from 1588 to 1679. During his lifetime he lived through the English Civil War. As conflict is experienced throughout history and all geographies, the lack of resources by a group or its survival, slowly becomes a motivating factor for competition.

As Adam Smith used his work to explain the need to survive in business through Darwinism and Hobbsian outlook, he related the nature of man and state of political-economic atmosphere to economics. Excluding Not-for-Profit organizations, most companies are motivated by profit. Companies will attempt many things for it to survive. The companies that figure out the best way to survive become innovative and/or prolific. When life is short as Hobbs describes it, you do what you can to do to dominate now. In modern business, the motivation to conduct business is not based on a short life, but on a long one. As an added benefit, collusion cannot exist by all competitors, and is not a factor. What becomes paramount, is the ability to Plan, as it becomes increasingly important to a successful long career. Competition could be healthy for efficient use of resources and for a short-term outlook, but may not translate for long term goals. Competition motivates some individuals to do their best, almost in a sense to survive. Survival may bring out instincts that lead to competition in the animal, but competition is not a requirement to survive, in fact could be an impediment to cooperation and survival in the future.

Cooperation

Modern business was and is built on the idea of companies competing for ideas, resources, and market share. In the past forty years, there have been more collaboration and cooperation between companies within and outside of industries, possibly displaying a parallel evolution of society, nations, and businesses. Understanding the motivation of war between countries and alliances, came to take center stage on a global level with the conclusion of World War I and II. People and societies began to realize the reasoning of why countries went to war and how to prevent future conflicts. The Cold War began, but the seeds of cooperation were laid down during reconstruction throughout the world. The time and situation was ripe for a new way of relating between people, nations, and even businesses. As cooperation between countries grew, advancement of technology brought individuals together for the information boom of the 1970s through the present day. As the reasoning for competition changed, so did the ideas for cooperation. Competition reigned as the main philosophy of the motivation of man, nations, and business, but times are changing.

Cooperation perhaps came to acknowledgement via a reaction to competition. It is also possible that cooperation grew within the frameworks of competition. One way or another, cooperation developed more positive exposure in the past fifty years. There could be several reasons for increasing popularity in working with "competitors" through cooperation. Two significant philosophies come to mind, "Game Theory" and Deming's "System of Profound Knowledge". Both ideas were born around a similar time and circumstances, specifically World War II and Post World War II reconstruction. After understanding how both philosophies give motivation toward cooperation, historical examples could then be realized.

Game Theory has been in some form for many years. For the purposes of this paper, the focus will be what was published by John Von Neumann and Oskar Morgenstern in 1944, known as, Theory of Games and Economic Behavior[10] and other works that supplement the paper. The publication dealt with cooperative strategic interaction. The early forms of game theory focused on the cooperation rather than just analyzing the actions between entities in a scenario.

Game theory allows observers to see prospective results through the needs of each player to maximize their own benefit in the interaction of all players in a given game. What is the payoff for cooperating between rational players or what is the payoff for being self-serving?[11] Observation of the interaction could be through the use of a several models. The most popular game theory display of observing the interaction between two players is through the theoretically gaming in a matrix known as "Prisoner's Dilemma".

Prisoner's dilemma was first introduced in its earliest form by Merrill Flood and Melvin Dresher, and then later formalized by Albert Tucker with a prison scenario and its scaled payoffs (See Figure 1). Prisoner's Dilemma evolved later to add an element of historical results and behaviors.[12] The original game was with only one round of interaction, but in the evolved model, the two parties had previous experience with one another and would have a history of decisions made and thus a reaction to the past decisions. Prisoner's Dilemma with players and previous decisions that go for multiple rounds is called, "Iterated Prisoner's Dilemma" made famous by political science professor Robert Axelrod. Axelrod had Tournaments at Michigan University to play out the scenarios. The best process of analysis was developed by Anatol Rapoport, who introduced, "Tit-For-Tat". Rapoport gives a reasoning of how players could behave with the previous interactions of past rounds[13].

	Prisoner B Stays Cooperates	**Prisoner B Defects**
Prisoner A Cooperates	Each serves six months	Prisoner A serves ten years Prisoner B goes free
Prisoner A Defects	Prisoner A goes free Prisoner B serves ten years	Each serves five years

Figure 1. Matrix of Prisoner's Dilemma.

There are other models and matrices that explain game theory and in different forms and formats. Each gaming model has specific format for a scenario focus. There are general two types of games zero-sum and non zero-sum games, each for different understandings. A zero-sum game states that there is a loser and a winner. A non zero-sum game can also have one loser and one winner, but allows for the possibly of both players to be either winners together or losers together. The iterated prisoner's dilemma model was introduced by Robert Aumann in 1959. The Nobel Prize winning Aumann displayed in his paper the results of rational players in a longer game with memory of past games and many rounds covered.[14] The iterated prisoner's dilemma game was to observe players with a history of decisions that resulted in hurting or benefiting each player depending on the actions of each player. Later games of game theory explored in Evolutionary Game Theory, were to express the actions of irrational players. Irrational players would make decisions that were not always in their best interest.

Game theory shows the impact of cooperation v. competition. It was the first significant quantifiable way to express the impact of the decisions by players in a game or during the Cold War, or in business situations.[15] Rational choices are important in decision making, but are you thinking about the next time? Is the rational choice always the best choice? Are you looking at the whole system and how it affects others within the system? Game theory attempts to answer questions in cooperation, competition, and in staying neutral. Game theory gives cooperation its first teeth in validation.

Game theory was a revolutionary way of observing and measuring, and was used as a tool to understand and predict the actions of nations during World War II.[16] After the official end of World War II, the United States began its aid to Japan in reconstruction. After learning from the results of the Versailles Treaty in World War I, the victors of World War II did not make the losers pay for everything and punish them, but lend a hand to help bring them back on their feet. The victors of World War II realized more is won through cooperation, than be not supporting the weakened countries would be sowing the seeds of hate for the eruption of the next world war. After the creation of the powerful and insightful proponent for cooperation in game theory, the works of Dr. Edwards, Deming was influential in supporting cooperation between suppliers and competitors. The impact of both game theory and Dr. Deming helped plant the ideas of future business collaborations and cooperation amongst companies, universities, and nations.

Focusing on Japanese reconstruction, the loss of life and economy by the dropping of two atomic bombs was immense for Japan. The United States understood for many reasons, it was important for Japan to get back on its feet as a nation. One of the primary concerns was for Japan to get their economy back to running order and healthy enough to support itself and East Asia as a region. Japan attempted to continue some industries as they were before the war. The Japanese government involved itself in aiding its developing industries. As to help with Japanese Reconstruction, Dr. W. Edwards Deming was introduced to Japan. Japan afforded an opportunity for the ideas of Dr. W. Edwards Deming to become famous.

Dr. W. Edwards Deming was involved with the Japanese census in 1951. While in Japan, Dr. Deming developed a relationship with the Japanese, more specifically with the business and engineering communities. The Japanese were already familiar with the reputation of Dr. Deming as a quality expert. While Dr. Deming helped with statistics, analysis there of, productivity, he also shared his System of "Profound Knowledge". Explaining cooperation the idea of "Appreciating a System" is the focal point from the System of "Profound Knowledge". Within observing the system as a whole is where there is more insightful beliefs of competition and cooperation.

Dr. Deming had an understanding of how powerful the idea of cooperation is in a system with a whole approach toward competitors was. Dr Deming wrote the following:

> *"Efforts by competitors, acting jointly or together, aimed at expanding the market and to meet needs not yet served, contribute to optimization for all of them. When the focus of competitors is to provide better service to the customer (e.g., lower costs, protection of the environment), everyone comes out ahead."*[17]

Dr. Deming brings up two significant points: 1) cooperation between competitors is something good for the benefit for all; 2) let us not forget that benefit to the client or customer serves everyone involved best. An argument could be made that both points actual deal with a singular point, but that would not explain why to cooperate and the significance of doing so.

Too much emphasis is given to the market share in a specific industry. In the time and energy companies spend in expanding the market, each company could have improved their product or services and expanded a once thought of, limited market. Working together helps to expand the market and every company benefits. Dr. Deming expresses his observation in the United States in an example from his time through the following passage:

> *The three automotive companies in this country had together in 1960 a virtual monopoly. The management of the three companies spent time worrying about share of market. Where are we? How are we doing compared with our competitors? Better or worse than last month?*
>
> *Better had all of them worked to expand the market, to make automobiles for a huge market not then served by the American companies. At that very time two million people in this country needed automobiles at lower first cost, dependable, and cheaper to run. Japanese auto makers came in and filled this market.*[18]

While reviewing the results of actions between competitors within an industry and its clients or customers, there are other relationships that Dr. Deming does not forget when thinking within a system. What happens to all the companies in all the other industries that are either suppliers, supporters, or use the products to be integrated with their products for the benefit of the clients or customers? When thinking of the whole system, competition within one group of companies in a given industry may affect the whole system of other companies not in direct competition to become competitors within the same system. If competition begins to develop between suppliers and other companies that either support or receive products or services become competitors the destruction of a system follows.[19] The system is bigger than just your company. In everything that is created, distributed, and then sold involve not just your company.

One important point against collaborating or more cooperating is what Adam Smith pointed out in The Wealth of Nations concerning collusion. The "invisible hand" allows for sheer competition to manage an industry without the interference of government. The government does not have to involve itself in rectifying collusion in an economy that is based on competing entities with one another. If a collection of companies become too comfortable with cooperating, there is a possibility that the cooperating companies could take advantage to monopolize a technology or process for their benefit to the detriment of consumers. In conclusion government would then have to bring anti-monopolistic legislation to correct the system. Cooperation should be specific to problems, companies see as obstacles in further advancement to benefit consumers. Cooperation cannot be toward taking advantage of proprietorship.

The ideas of game theory and Dr. Deming all support the idea that cooperation brings the best results for a given company. The idea of cooperating with your competitors no longer became taboo. In changing the momentum of economic, social, and political belief that competition as we were taught through school, work, and everyday life was not always the ideal prospective when proceeding in a given practice. Interesting enough, in the times after the development of game theory and the philosophies of Dr. Deming with the occurrence of the Cold War, the 1960's began a time of free thought in the youth of the United States. Not far to follow was the beginning of the computer age or what some people like to name as the information age. Silicon Valley soon became a place of cooperation for the sake of technology and in the benefit of the user. The personal computer best served its customers to progress technology into the digital age. Collaboration from technology wizards all over the world using the internet to share technology and ideas helped to further better technology and the end user. Not to limit all new inventions to Silicon Valley, but information could now be shared anywhere there is a computer and the internet. There is evidence that human nature has learned and evolved to move forward through cooperation rather than relying on a select few through competition.

The Format Wars

The explosion of taping and watching videos came in the 1970's with several formats between several electronics companies. Most have heard of the home Video Cassette Recorder and it become synonymous with multiple formats. It is very important to state that the format wars are particular to home usage, not professional usage. In the early days of home video usage the companies that created multiple formats engaged in a bitter battle to become the dominant format with the VHS as the resulting winner. In the mid 1990's we moved to understand the peaceful cooperation between makers of the format known as DVD. The DVD was an excellent example of cooperation amongst the many creators and makers of the DVD players, a cooperative development by the same companies that fought for format standards in the 1970's and 1980's. Recently a new format battle has begun between the HD DVD and Blu-Ray. Different formats for accomplishing the similar results are not special to the home video and audio storage, but are unique to this rollercoaster of an industry.

After an unstable format battle in the 1970s to 1980s, companies understood and cooperated to work together in creating the DVD format. Why did companies splinter again and agree to disagree for newest format of HD DVD and Blu-Ray? Perhaps it is just innate in human beings the companies they lead? Cooperation showed it could work as well, but yet companies involved in the home video player industry decided to compete again. Is technological competition holding companies back or does it help? What is most interesting is the history or harsh competition evolving to cooperation, but then returning to disruptive competition in repeating its own history. To further understand the ever changing relationships between the companies involved, the background of the formats and interplay between companies will be reviewed. The desired results will try to explain the unique industry's voyage to the present next generation home video and audio players.

The invention that started the home video format competition started with the VCR from Philips in 1972. The VCR stands for Videocassette Recorder system. The early version of the VCR from Philips was unreliable and very expensive. Although the VCR format was far from perfect, it was something that was very different and new for its time. In 1975, Sony introduced the Betamax format to the world. The tape used in Betamax had a rectangular shape and was smaller than the VCR tape format. Compared to other format players and mediums, Betamax had superior video and audio quality in the late 1970s and early 1980s, and with the highest price tag. JVC entered into the home video cassette format competition with its VHS in 1976. VHS stood for Video Home System. The most unique property of VHS was its constant growth in tape recording time. Although the initial time lapse for a VHS tape was short, by the 1980's, companies that licensed the VHS technology were making tapes and players that lasted longer, and it surpassed every format in cost and length.[20] To clarify, all the different formats were referred to as VCRs for general reference, but were referred to by the format name when spoken directly of.

Table 1.
Half-Inch VCR Production Shares (1976-1983)[21]

Half-Inch VCR Production Shares (1976-1983)				
	1976	1978	1980	1983
VHS Group				
Matsushita	28.7	35.8	28.7	28.7
JVC	8.7	18.8	18.3	16.4
Hitachi	1.4	5.1	18.8	11.1
Sharp				8.5
Mitsubishi				3.4
Tokyo Sanyo				3.6
Others				3.3
VHS Total:	***38.8***	***59.7***	***65.8***	***74.9***
Beta Group				
Sony	55.9	27.9	22.4	11.8
Sanyo	5.3	12.5	11.1	7.7
Toshiba				3.6
Others				2
Beta Total:	***61.2***	***40.4***	***33.5***	***25.1***
Total:	*100%*	*100%*	*100%*	*100%*
Units (1000)	***286***	***1,470***	***4,441***	***18,217***

By the mid 1980's licenses of VHS technology of players and tapes were made relatively more available in acquisition and cost, compared to Betamax. On the other hand, Sony was more reluctant to license its Betamax technology, and pressured its competitors for higher licensing fees. The costs to buy VHS players and to purchase blank tapes were cheaper. More manufacturers were also reluctant to sign on with Betamax because of its pending lawsuit with Universal[22]. Shortly after Betamax was introduced to the market, a lawsuit named Sony as defendant in a case involving copyright infringement. Universal as the plaintiff stated that the Betamax machines and blank tapes could be used to tape movies illegally. Interestingly enough, Sony was the only named defendant in the lawsuit. By 1984, the ruling was in favor of Sony. The favorable decision cleared the way for all VCR makers to continue as they were, but many manufacturers were reluctant to license the production of Betamax. Although the quality never quite reached Betamax status, VHS with its licensing arrangement and costs made it the favorite format for makers of the VCR machines (See Table 1). The longer tape time and the availability of the VHS players in retail, slowly but surly won over consumers throughout the world. Eventually even Sony made its version of VHS and halted its production of Betamax format lines. It is important to note that it took up to the late 1980s for the VHS format to be the agreed standard.

The thought comes to mind of why Sony decided to fight the favored VHS format industry trend for such a long time in a losing battle. Why does Sony put itself in the position to fight every format battle for every electronics products? Why does Sony have so many proprietary licenses that are ad hoc exclusive to just Sony products? Sony has a reputation of being a pioneer and innovator in technology and marketing. Sony produced the first effective transistor radio in 1958 and the first all-transistor television in 1960. In the 1970s, Sony created the first video recorder and then came out with the Walkman. Entering the next decade with the success of the Walkman followed then CD Walkman and the MiniDisc. Not to forget Sony's success with television, DVD, hi-fi technology, and with its own game system, the Sony Playstation.[23] Sony invests a great deal of their budget toward research and design that usually resulted in new technology or innovation. Product innovation and technology comes with great care for its proprietary ownership. Sony's belief in the quality of their products and dominance in the consumer electronics industry in the Betamax situation did little to promote other manufactures to buy into their format. To put more support of the Betamax failure, Sony did not want to further develop Betamax with other companies while JVC was willing to work with its competitors to improve its VHS format.[24] Sony has a practice of not following the trends or investing in market research, because they feel they are the leader in their industries and that it could determine what is possible and the public does not.[25] Sony conducts itself as a trend setter in electronics and computing industry. When Sony has a new design that it wants to promote, it does not hold back, but puts a great deal of resources toward the product success.

After losing the format war of the 1980s with its Betamax miss, Sony decided to share technology and licensing royalties, and work with its competitors for the development of the next generation of home video, the DVD format. DVD stands for "Digital Video Disc" or "Digital Versatile Disc", both are accepted with the latter being more presently popular. The DVD standard was able to compact the space of the medium and hold more data. The DVD format debuted in 1995 with technology from Toshiba, and other competitors created the most successful home video format ever. The DVD format also expanded and stabilized the sales and rentals of movies all over the world, from Hollywood to Japan. The previous format wars created confusion and instability in the video rental and retail markets. Consumers had to choose to buy a movie for a format with no promises that the format they bought will be supported or exist in the future. The cooperation of all the electronics companies seemed to all benefit through cooperation. Sony had learned an important lesson when it developed its own proprietary format without cooperation in development with other manufacturers from experiences in Betamax. Although Sony eventually agreed to terms with other manufacturers in agree to the DVD format, Sony and Philips almost pulled out of their agreement in the late 1990's to push their newer version of DVD. Sony continues to create a less than perfect record of cooperation with its competitors even when attempting to cooperate. The act by Sony and Philips will not be forgotten in the next round of format wars. Remember the multiple rounds of Game Theory and history of defection or cooperation. The format wars eventually did look like history, and all in the system would move onto bigger and better technology for the future, but format wars did not end with VCR, VHS, and Betamax.

In 2005, negotiations for cooperative technology for the next generation of DVDs did not go so well. The industry is currently split into two formats, Blu-Ray and HD DVD. The Blu-ray corner is led by Sony and the HD DVD corner lead by Toshiba. Much of why negotiations between the two corners had failed was not made public, but many believe it was due to royalty rights.[26] After success with one format, conventional wisdom would lead one to predict cooperation for the next generations of DVDs. Both HD DVD (High Definition DVD) and Blu-ray use blue light technology and will have backward compatibility to DVD (old format DVDs could be played on both. HD DVD will have three times more storage capacity than DVDs with improved video-compression software that will further increase capacity, and has the backing of a DVD forum. Having a DVD forum will help keep costs down due to being the official successor to DVD, meaning little modifications on the current DVD production lines. Blu-ray will have five times the capacity of DVD (almost upward to double the amount of HD DVD), meaning approximately two hours of high-definition video or thirteen hours of regular video.[27]

Now other manufacturers, and computer makers and suppliers are taking sides in the new format wars. Sony also happens to own Sony Pictures Entertainment (films, television, and DVD distribution) and is has a highly affiliated relationship with Sony Playstation. As the format wars began to get hot, Sony has already made distribution of Sony films for home viewing through the Blu-ray format only. The Sony Playstation was delayed several times to make the format decision of playing discs in Blu-ray format. Looking at the bigger picture, Samsung and Dell have swung their support for Sony. In reaction to Sony's tactics, Microsoft (makers of X-Box 360, a Sony rival product) and Intel have made their choice of format as HD DVD. Hewlett Packard originally sided with Blu-Ray, but will now support both formats. Time Warner recently stated that they will now exclusively release movies on Blu-Ray, possibly upsetting the balance toward the side of Blu-Ray. Universal has not re-signed with HD DVD, possibly stating their diminished confidence for HD DVD. It is not limited to movie and computer data software products that are affected. Retailers are not pleased with the format wars of second generation DVD. Shelf space and display will now be split between the two formats. The format war polarizes the second generation DVD industry and other industries that have business with the manufacturers. The biggest casualty is the consumer. In all the companies' drive to develop new technology and improve the markets, the consumer loses. The movement of the high definition movie format seems to be moving toward supporting Blu-Ray and that may mean a loss for the companies that supported HD DVD. This could mean a fatal hit on companies that supported HD DVD and perhaps the end or diminish existence of these companies. The lack of stability will prevent the mass consumers to commit to one format or another in the mean time. The companies have ignored the bigger picture of the whole system, and new grudges will open old scars and create new ones.

Conclusion

There are reasons why people and companies decide to work in a competitive atmosphere. Not all people enjoy it, but feel it is necessary to extract the best out of people from the best people. It is also possible that competition is something that is taught to us as children and constantly reinforced in our many societies. Not to state all people were raised the same. Competition can be solitary and thus may be the most comfortable to individuals. Competition may seem more natural and perhaps programmed into our psyche. Nature may point us in the direction of competition, but as humans we can decide to think and progress in our actions. In the past century, humans have shown growth in working toward improving and advancing society rather than competing for it.

The home video format wars were to show an example of how competition and cooperation can both occur. The format wars between the electronic consumers industry was unique for the purposes of this paper. There are other examples of competition and cooperation in the automobile and pharmaceutical industries, yet there was usually a common competitor or costs that influence the companies to work with another. After the format wars for VCR occurred, the DVD format years were almost a monopoly in the manufacturing of technology. Still the companies in the home video industry had reason to feud into the second generation of high definition DVDs.

The most interesting occurrence was the cooperation of companies for the DVD format and the success it brought. The most important fact learned is how individuals, nations, and companies do not live in vacuums. Although cooperation may seem to be the difficult step forward for the advancement of society, it cannot exist without willing participants. Competition is necessary for the survival of some companies, especially within an industry that has no desire for cooperation. Cooperation can be pivotal in the advancement and benefit of an industry when done for good reasons, i.e., for the benefit of the consumer. It is important that the system must be intact and be functioning. Without competition for the improvement for consumers, and the purpose of not eliminating all competitors are key to a balance within an industry. Cooperation cannot occur without willing participants in the system. Competition is no better or worse than cooperation. The situation at hand is the key to determining what is best for an industry.

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HOW DOES FEAR NEGATIVELY AFFECT PERFORMANCE IN THE WORKPLACE AND HOW CAN MANAGEMENT REDUCE IT?

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Abstract

W. Edwards Deming was the prevailing thought leader on the idea of driving out fear in the workplace. One of his "14 Points for Management" centered entirely around the subject. This paper includes a review of Deming's observations on fear, as well as those of other prominent authors in the field, including Gerald Suarez, and Ryan and Oestreich, who view loss of voice in the workplace as a manifestation of fear.

Introduction:

Fear, as defined by Webster's Dictionary is "an unpleasant, often strong emotion caused by awareness of danger." (2007b, p. 1) People experience this unpleasant, strong emotion every day of their lives. There are many types of fear that affect us in our daily lives. The word "fear" brings to mind statements like; "I am afraid of heights…", or "I am scared to walk the streets of my neighborhood at night." Psychologists tell us that no matter what the stimulus, we experience an autonomic arousal, and then a conscious feeling like fear. As the evolutionary theorists like Darwin believed, our emotions are largely innate reactions to stimuli (2007a, p. 241). Although the physical reactions are similar, fear in your personal life can present differently from fear in the workplace. Workplace fear is unique to the situations that arise at work. It can be detrimental to the productivity and survival of an organization.

W. Edwards Deming presented his ideas on driving out fear in his book *Out of the Crisis*, as one of his "Fourteen Points for Management." The eighth point in the Fourteen Points states: "Drive out fear so that everyone can work effectively for the company." Deming thought that an employee would not "put in his best performance" unless he felt safe and secure in his position. (1982, p.58) Additionally, he believed a tell tale sign of presence of fear was "impaired performance and padded figures." Unfortunately, Deming was not widely known in U.S. businesses until the 1980's, when the TV special, entitled, "If Japan Can, Why Can't We?" aired on NBC. It was only then that American companies started to inquire about what Deming had already taught in Japan. Even when companies began to recognize the importance of Deming's work, they still did not put forth much effort on the eighth point. American business has taken pieces of Deming's philosophy, such as some of the statistical methods, but not all of his theories on good management.

More recently, the leading contributors on the subject of fear in the workplace are Ryan and Oestreich, and Gerald Suarez. Ryan and Oestreich's book *Driving Fear out of the Workplace*, was a pioneering work on the subject of fear in the workplace. Prior to their book, Deming had been the only other author to publish similar ideas. They believe that fear in the workplace is manifested in an employee's lack of "speaking up." They also have suggestions on what managers can do to prevent a fearful environment in the workplace. Gerald Suarez is a prominent consultant. Suarez offers an array of workshops that can help managers understand fear in today's corporations. Suarez has come up with seven elements of fear that leaders should assess, and he has suggestions on how to create a "fearless environment."

As Deming stated in his discussion on fear, one of the signs managers should be on the look out for is padded figures. In a study from a large American corporation, the evidence demonstrated just that. To avoid an outcome they feared, workers changed the operational definitions, so that they could avoid punishment, or bad performance reviews. These types of employee reactions to fearful environments are detrimental to the productivity of any organization. Managers need to take into consideration the type of setting they have created, assess whether it is creating fear for their employees, and if it is, make the necessary changes. If not, the performance of the company will suffer.

The following sections will take a closer look at the works of prominent authors in the area of fear in the workplace. A case study of a large corporation will provide evidence supporting the authors' theories. Finally, the case study and authors suggestions will provide an opportunity to discuss solutions for driving out fear in the workplace.

<u>The Eighth Point in "Out of the Crisis"</u>

In 1982, W. Edwards Deming published his book, *Out of the Crisis.* The goal in writing the book was to provide managers of American companies with direction on transforming the current style of management. He believed that American managers did not "plan for the future." As a result, there was "waste of manpower, of materials, and of machine time." Deming did not simply criticize the current practices of American managers, but he outlined specific "diseases" that present themselves in companies. Furthermore, his Fourteen Points for management are a starting point for managers to begin the transformation towards a company that wants to "stay in business by providing product and service that have a market." (1982, p. xi) In chapter two of his book, Deming has a condensed version of the Fourteen Points. He states that managers must adopt and act on these points if they intend to "stay in business and protect investors and jobs." It was Deming's work in Japan in the 1950's that gave him the basis for his teachings. Deming identifies a need for "constancy of purpose;" the entire organization must determine their goals, and constantly strive toward meeting them. Further, the points place a large responsibility on managers to provide proper training, leadership, and loyalty. Management must stop relying on trying to achieve short term goals, and look at the larger picture. Finally, it is not only the job of management to accomplish this transformation, but it is the responsibility of everyone in the company.

Deming's eighth point of the Fourteen Points for Management centers around the effect fear has on the organization. Deming states that unless we drive out fear, everyone in the company will not be able to work effectively. He begins the explanation of the point by describing the Latin origins of the word 'secure' (se means without, and cure means fear or care). Security is important for an employee to be able to do their best work. If an employee is not secure then they may not express themselves. Insecurity may be expressed when employees do not give ideas, or are afraid to ask questions. In Deming's experience, fear was often manifested in organizations through "padded figures." (1982, p. 59) For example, suppose an employee of a manufacturing company was told that his quota for the day was to make twenty-five widgets. Management mandated that if twenty-five widgets were not produced in that day, the employee's wages would be reduced a percentage. The employee would then determine what it required to actually build twenty-five widgets in a work day. Once the employee had become acclimated to the process, he would be able to anticipate issues or obstacles. Thus, on days when issues were not present he could make additional widgets to cover for the days when it was not possible to make twenty-five parts, and not have to worry about lost wages, resulting from arbitrary quotas. A second "loss" due to fear in an organization, according to Deming, is that employees will not be working toward the best interests of the company, and only for short term measurements, or to get out of risky situations. Deming gives a number of examples of this sort of behavior. One describes a foreman who is afraid to halt production when he notices that a bearing is about to go out. The foreman knows that the product must ship out that day; if it does not, he may lose his job. Thus, instead of shutting the line down for a short amount of time to replace the bearing, he lets it go on, in hopes that he will make the quota for the day. Instead, the bearing freezes, and production is stopped for a number of days (1982, p. 102). Evidently, the fear of losing his job caused the employee to put his own priorities in front of what would have been best for the organization.

Deming also explains that management may try to make employees fearful. It is a tool that managers may use to try and gain better results out of their employees. Deming also made the following statement about how the annual rating of performance contributes to fear and other negative effects on the employee:

> *It nourishes short-term performance, annihilates long-term planning, builds fear, demolishes team-work, nourishes rivalry and politics. 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.* (1982, p. 268)

Deming clearly thought that performance appraisals were a tool to manage by fear. Management should not be using fear as a tool to make their employees work better. Often, when managers blame employees for errors, the employee is doing the best they can with the system they are working in. It is management's responsibility to be accountable for the faults of any system. If a company is lucky enough to have employees that feel secure enough in their role to make suggestions for improvement, it is management's role to follow up. Deming feels that if managers begin to work this way, it will help toward the transformation of American companies.

<u>The Fear of Speaking Up…Using Your Voice… Employee Silence…</u>

Kathleen Ryan and Daniel Oestreich published a book entitled *Driving Fear Out of the Workplace* in 1991. They reference Dr Deming's work as providing reinforcement to their belief that quality work is impossible if employees are not able to tell the truth. They took this belief further by saying that in the workplace fear is manifested when employees are afraid to "speak up." More specifically, their definition of fear is as follows: "Fear is feeling threatened by possible repercussions as a result of speaking up about work-related concerns, ideas, and suggestions for improvement." (1998b, preface) Their interest centered on what impact not speaking up had on "personal and organizational performance."

The authors consider that there are two extremes in types of organizations, on one side the "high trust" organization, and the other, a "high fear" organization. In a study they conducted, they used a set of questions to determine if an organization was more closely associated with one of the previously mentioned categories. Some of the questions asked were as follows:

- *Do a high proportion of people in your organization frequently hesitate to speak up about certain issues?*
- *Does fear of speaking up exist at many levels in your organization?*
- *Are people in your workplace associating managers and supervisors with the presence of fear?*
- *Are leaders in your organization exhibiting behavior that causes employees to be afraid?*
- *Is fear having an impact on work and how it is getting done?* (1998b, preface)

For each of these study questions, the participant's responses led the authors to place the organization in one of the two categories. It was clear that some organizations were highly fear based, while others relied more on trust. In all the responses, the fear that the employees experienced was somehow related to management. Either they felt the boss ran the show and they did not want to step on anyone's toes, or their bosses were creating a fearful environment, sometimes intentionally, and sometimes unconsciously. One rather startling statistic stated that sixty percent of the study participants' responses involved strong negative emotions about not speaking up. Furthermore, when the authors asked the participants what affect the negative emotions had on them, they stated that it was causing lower quality, less quantity, and less efficient work (1998b, p. 8)

The book also describes how an organization can become a fear based one, or not. Their research found that what was most important was what the leader's outlook was for the company during its inception, more specifically "management's philosophy." There were two extremes in this judgment. One of these was a high probability of success, which would mean that the key leaders believed their staff was honorable and capable. On the opposite end of the spectrum were organizations whose key leaders thought there was a very low probability of success and the history of the company showed no inclination to trust employees.

A second set of studies by Janssen, Thea de Vries, and Cozijnsen, analyzes the interaction of personality and environment to the voice behavior of employees. In their article, "Voicing by adapting and innovating employees: An empirical study on how personality and environment interact to affect voice behavior," the authors describe the importance of the "upward voicing of ideas", to solve issues at work. The authors indicated that research had shown that many factors could affect the upward flow of employee ideas, but they wondered whether anyone had considered that it could be individual employee personalities that also affected this flow of information? For the study, the authors discussed two categories of people. The first, "adaptors," are people who follow the set guidelines and procedures. The second group, the "innovators," take the guidelines into consideration, but try to invent new solutions that challenge the norm in the organization. Their theory is that the adaptors "reinforce" the existing conditions of the organization, and will not try to create organizational change, not using their voice upward towards management. On the other hand, the innovators will challenge the norms, try to implant their new ideas into the organization, therefore, using their "voice." According to the authors, three personality factors contribute to this: originality, efficiency, and conformity. (1998a, p. 959)

The studies concluded that their hypothesis was correct. The employees that were determined to be adaptors stated that they would be more likely to voice the conventional ideas, like "refining rules, procedures, and strategies", that would fall within the norms the organization had established in the past. Meanwhile, the innovators described how they would be more likely to voice "unusual experiments and radical organizational changes." However, the authors also indicated that there were two factors that could occur in an organization that would nullify the difference between an adaptor and an innovator. If employees were working in an environment in which both adaptors and innovators were dissatisfied, but had "effective voice managers," they would both be as likely to use their voice upward in an innovative way. The manager's role in employee voice will be discussed later in the paper.

Milliken, Morrison, and Hewlin published an article in 2003, entitled "An Exploratory Study of Employee Silence: Issues that Employees Don't Communicate Upward and Why." They also believed that silence is how employees display fear in the workplace. The focus of their study was to bring to the surface the types of issues that stop employees from stating their concerns. Additionally, they aimed to identify why these employees decided to stay quiet. Their initial aim was to determine what employees' "cognitive maps" looked like. Each employee created a map of their organization in their own mind, which determined whether or not they could speak up or not. In their literature search they found a large amount of evidence that employees are hesitant to speak because they don't want people, or bosses, to have a negative image of them. The authors were interested in why this occurred. They believed that not only were employees fearful to speak up, but often they saw the efforts as futile, because of "information sharing, social contagion, and collective sense-making." The authors conducted a study of 40 full-time employees who worked in various fields. The results of the study were consistent with much of the research in this paper. Eighty-five percent of the employees in the sample said they had at one time felt unable to speak about an issue to their bosses, even though it was important to them. The authors broke the issues the employees did not want to speak about into eight categories, and they calculated the percentage of employees in the study who did not want to raise that issue:

Concerns about a colleague's or supervisor's performance	37.5%
Problems with organizational process/suggestions to improve	35.0%
Concerns with pay	27.5%
Disagreement with policies or decisions	22.5%
Personal or career issues	20.0%
Ethical or fairness issues	20.0%
Harassment or abuse	17.5%
Conflict with coworker	15.0%
Other issues	20.0%

Additionally, the study also determined a list of reasons for the employee silence. Some of those reasons included; "fear of being viewed negatively," "fear of damaging a relationship," "feeling of futility," and "fear of losing their job." The most prevalent of the reasons, with 30% of the employees identifying it as a reason, was the fear of being viewed negatively. The study concluded that employees had learned to be silent from the culture of the organization. Some of the limitations of the study the authors mentioned included the fact that the study was based on a small sample, and the respondents were all relatively young and inexperienced employees. (2003, p. 1460)

All of the primary research maintained that the majority of employees have felt fearful at work at some point in their careers. Additionally, they manifested this fear by not using their right to speak up. Their employee voice was stifled by the notion that it was useless to say something, or their superiors would think negatively of them. The research also agrees that companies are negatively affected when employees are fearful of talking about their concerns. Therefore, it is logical to examine what the authors of these studies believe are helpful tools for managers and companies in general to create an environment without fear.

Management's Role in Reducing Fear

According to W. Edwards Deming, there are clear guidelines a manager should follow with respect to driving out fear in the workplace.

1. Break down class distinctions between types of workers within the organization
2. Discontinue gossip
3. Cease to blame employees for the problems of the system
4. Hold managers responsible for faults of the system
5. People need to feel secure to make suggestions
6. Management must follow through on suggestions (1982, p.1462)

Deming is very clear that management is responsible for driving out fear in any organization.

Ryan and Oestreich, the authors of *Driving Fear Out of the Workplace*, discuss ideas that are similar to Deming's; however, they refer to creating a "Trust-Based" workplace. They first cite the relationship that an employee should have with their supervisor. Some of the qualities of the relationship should be: mutual helpfulness and understanding, willingness and ability to work through conflicts and disagreements, and straightforward communication. The next steps in creating their trust-based workplace include some qualities the managers should possess. Those qualities include taking responsibility rather than making excuses, openly sharing information, and collaborating on important issues. Not only must a manager be able to perform in this manner, but it must be done on an everyday basis. Although some level of management must exist, the authors think that if there is “high trust”, and “high performance,” then fear will be less present. The authors’ final recommendations on what management can do to drive out fear is to have a clear vision. If all levels of employees are clear on what the vision is for the company, then they will have a better understanding of the reasoning for some of management’s decisions, again creating a more trusting environment.

Another prominent name in the field of fear in organizations is Gerald Suarez. His article, “Managing Fear,” not only describes the types of fear employees experience, but he also has identified three elements that he feels serve as a “catalyst” to create an environment where employees can “cope with fear.” The first element is leadership. Suarez states it the responsibility of managers to create a place where subordinates voice concerns. The managers must then respond quickly to those concerns. Finally, “cooperation, innovation, heroic efforts, and real contributions” must be rewarded. The second element is trust. Suarez indicates that employees need a trusting environment, otherwise, cooperation and communication will not occur. Trust also leads to stability in an organization, versus a non-trusting organization where “uncertainty and defensiveness” develop. The final element is a vision statement. This statement should let the employees gain understanding of the leader’s future goals. The vision statement will provide employees with direction, a key in any transformation. (1996, p. 3)

The papers discussed earlier also contained suggestions for management. Janssen et al suggest that management needs to be trained on how to manage employees to voice upward. Some of characteristics of that type of manager would seeking and addressing employees’ concerns. Millikin et al also focused on employee silence as the prominent effect of fear in organizations. Therefore, the suggestions to management focused on this area. Their suggestion is to have managers convince their members that they are serious about listening to the concerns of their employees, thus making their company a “learning organization.” In these types of organizations upward movement of information must be encouraged (2003, p.1467). Much of the published material regarding fear in the workplace suggests that managers create a trust-based environment to facilitate employees using their “voices.”

Case Study: Evidence of Fear in a Large Organization

An employee of a large corporation was given an assignment to conduct an analysis for the IT organization. More specifically, they were told to research the root cause for each “severity one” system outage from 2005 to 2006. After the analysis was completed, the employee was to provide recommendations to senior leadership that would help the IT organization reduce system outages and improve the system availability. The first step the employee took was to understand what a “severity one” system outage’s operational definition was, and how it fit into the larger system. The employee determined that there were four types of outages that occurred in the company. The one in question by the company was Severity 1. A Severity 1 outage meant that a significant portion of the organization was not computer functional for a certain length of time. Severity 2 signified that one entire division in the company was down, for a shorter length of time than for a Severity 1 outage. An outage was labeled a Severity 3 when a small division or section of the company was down. And finally, a Severity 4 outage occurred when a worker in the company submitted a help desk ticket to the IT department if they had some sort of individual issue with their work computer.

The employee had been told that between the years of 2005 and 2006, the Severity 1 system outages were on the rise. These were the most costly outages, and senior management wanted to quickly figure out what was going on, and start solving the issues. The employee began by looking at the data during the given time period. It turned out that the average number of outages a month was about 1.6, and there was no clear evidence that Severity 1 outages were on the rise (See Exhibit 1). Senior management then told the employee not to worry about the inquiry any longer, that the issue was solved. The employee was not convinced of this, and started digging around for more data that included the entire system of severity outages.

It was very clear after looking at the data from 2004 through 2006 that Severity 2 outages had actually increased (See Exhibit 2). The employee felt it was important to first speak with the workers who were in charge of classifying these outages when they occurred. A series of interviews was done, and at the end the employee was confident that after being reprimanded by management the workers were afraid to call any outage that occurred a Severity 1. Therefore, they started calling more of the outages Severity 2s, even though some of the outages when reviewed clearly fit the former definition of a Severity 1. The employee at this point made recommendations to senior leadership to create concrete definitions of all severity outages. Furthermore, more analysis would have to be done to see what was going on in the system. It was not necessarily the workers' fault that there were increases and decreases in the outage numbers, and it was certain that the behavior of management had to change in order for the workers to feel comfortable in their positions again. Nevertheless, the employee had uncovered a concrete example of what fear can do in the workplace, and it is management's job to see that it is addressed in that specific organization.

Conclusion

Fear is present in today's workplaces. Research has indicated that fear manifests itself in a number of different ways. The two most prominent signs of fear in an organization are "padded figures" and a lack of employee voice. The first, padded figures, were evident in the case study. In that large organization, employees changed the operational definitions so as not to be penalized by management for the high cost outages. The second, loss of employee voice, was supported by the numerous studies and research discussed in the body of this paper. The general consensus in all of the research with regard to employees not speaking their minds centered around the fact that fear in the workplace most often causes people to not want to contribute ideas and problems to their managers.

Deming created his Fourteen Points to begin transformation in an organization. One of those points focused on driving out fear. Researchers in the field of fear in the workplace had suggestions for management on how to drive out fear. Suarez, Ryan and Oestrich, and some of the other researchers quoted in this paper agreed that building trust was the most important way for employees to begin voicing their ideas. All of the researchers indicated that the majority of the responsibility to build trust rested with the managers in any organization. There was a small school of management theory, called 'fear management' that discussed some positive affects that fear could have on performance. Machovek and Smith wrote an article that discusses theories that man is "most dependably alert" when in the presence of some sort of fear (1982, p. 9). Therefore, one could infer that performance could increase in the presence of fear because the worker would be more alert. Nevertheless, majority opinion believes managers need to create a trustful environment, and then act on the issues when employees raise them. Finally, the researchers all agreed that when employees are fearful at work, it can have a large negative effect on the organization.

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Appendix

Exhibit 1.

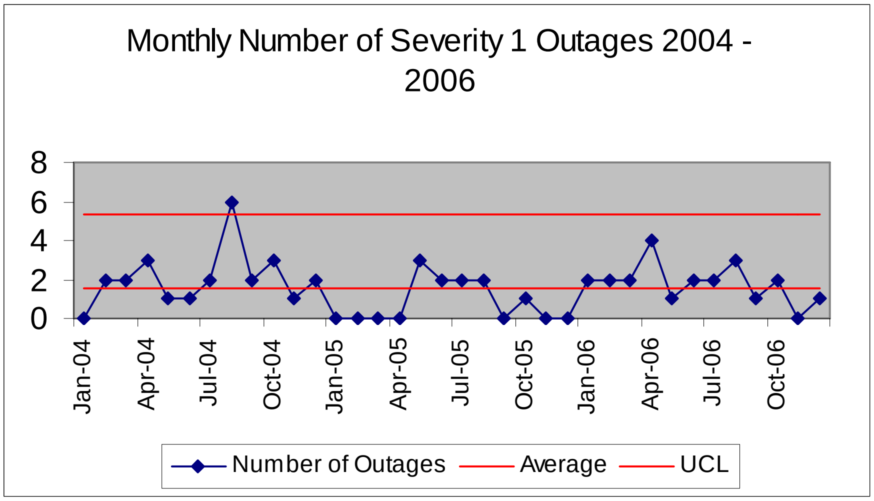
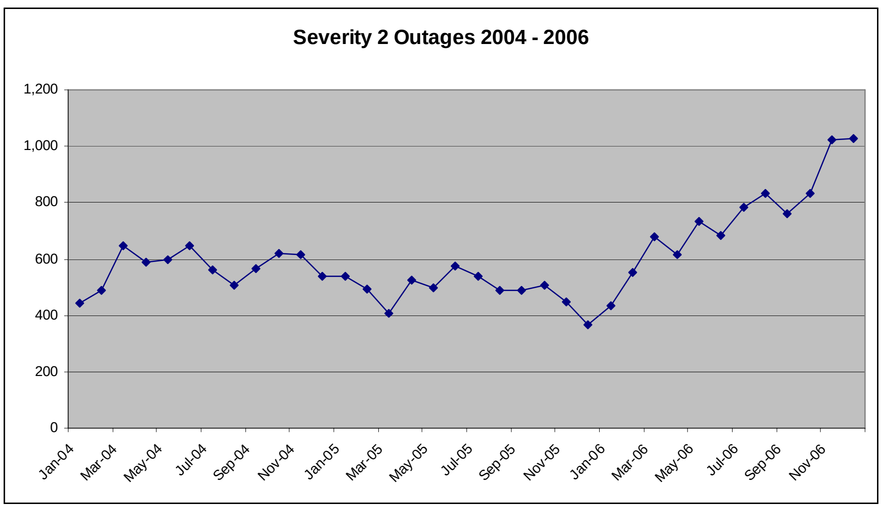


Exhibit 2.



INCORPORATING ORGANIZATIONAL JUSTICE THEORIES INTO DR. W. EDWARDS DEMING'S MANAGEMENT TEACHINGS

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Abstract

Organizational justice theories explain how managers and organizations which are perceived as being more fair than their counterparts tend to have more productive and more satisfied workers. The methods for implementing organizational justice in a company connect well with Dr. W. Edwards Deming's points on the Role of a Manager of People. This paper will review organizational justice theories and show how they dovetail with Deming's managerial teachings.

Introduction

Research into the field of organizational justice has shown clear correlations between an employee's perception of organizational justice and his or her motivation, job satisfaction and productivity. Because the implementation of organizational justice theories is focused on communication with employees, involvement of employees and treating employees with respect and dignity, organizational justice closely aligns with W. Edwards Deming's points on the Role of a Manager of People, as outlined in *The New Economics.*[1]

Organizational justice theorists have developed methods for implementing their findings, giving managers an opportunity to put Deming's theories on people management into practice. Through an understanding of organizational justice, especially the differences between distributive justice and procedural justice, managers will be better able to implement the teachings of Deming with regard to the management of people.

This paper will provide a review of organizational justice theory and also will show the gains a company can make by using organizational justice theory. The benefits of using organizational justice theory are significant. Studies have shown that organizations that are perceived as just have fewer problems with theft, turnover, motivation, and other managerial problems.

The Basics of Organizational Justice

Organizational justice is the study of how people perceive fairness in an organization. The more fairly an organization is perceived by its employees, the more likely its employees will accept the outcomes of organizational decisions.[2] In this paper, organizational justice refers to the way employees perceive fairness from their managers, fellow employees and the company. Studies have shown that people perceive fairness of three types: distributive justice, procedural justice, and interactional justice. Research has shown that these three types of justice are closely related and often play a joint role in determining if an organization is perceived as just.[3] Some researchers also do not view interactional justice as a separate form of justice but instead they view interactional justice as only an important component of procedural justice. For the purpose of clarity in this paper, however, interactional justice will be treated as a separate type of justice.

Distributive Justice

Distributive justice refers to how people perceive the fairness of an outcome of a process. For example, distributive justice teaches that an employee won't care how a company decides who gets a promotion as long as the person who receives the promotion is perceived as the most deserving. A company or manager will be seen as fair as long as the ends are justified. The means are less important. Most distributive justice theory in a business environment has focused on how pay or resources are allocated.[4] The fairness of the decision depends on how employees view the outcomes from the points of view of competition, equity, parity and needs.[5] Not all organizational justice theorists cite competition as a valid point of view in regard to justice. A competitive view of distributive justice is a fairly simple aspect of distributive justice theory. The person with the perceived greatest performance receives the greatest reward, regardless of any comparison to others' inputs or equality of distribution.[6] Many use equity, parity and needs as the only three evaluation metrics for distributive justice.[7]

People who take an equity view of distributive justice examine the ratios of their own decision process outputs to their own inputs to the process.[8] Thus, a person who works 20 hours on a project would expect to receive twice as much reward as a person who worked 10 hours on a project. If the 20-hour worker receives less than twice as much of a reward as compared to the 10-hour worker, the 20-hour worker will feel the process was unjust and will consider himself or herself to be underpaid. From an equity perspective, the 10-hour worker will feel the decision was unjust as well. When the input/output ratio is unequal, even in the case of over-reward, the over-compensated worker will have feelings of guilt in regard to the decision. Studies have shown that both underpayment and overpayment can create perceptions of unfairness in both parties, but the perceptions of an unjust situation are far greater in the underpaid party than the overpaid party.[9]

Some studies of the equity view of distributive justice have shown that employees will adjust their behaviors when confronted with inequitable outcomes. When workers felt they were underpaid compared to their work efforts, they lowered their performance while overpaid workers raised their performance. These reactions were theorized to be reactions to the perceived inequities in reward distribution and were attempts to rebalance the scales of justice.[10]

Those who follow a parity view of justice will consider an outcome to be just if all the participants receive an equal share of the outcome. Parity views make no distinction between differing inputs or needs. Everyone who took part in a process receives the same output.[11]

Evaluating distributive justice from a needs or Marxian perspective takes into account the situations of individuals and creating outcomes based on those unique needs. When determining who has to work evening or overnight shifts, it would seem more just from a needs perspective if the workers with children are given day shifts to make child care decisions easier as opposed to the single workers who don’t have a reason not to work odd shifts.

Justice theory states that a needs-based distributive system is more effective among groups with strong ties between the individuals. Workers who know each other well might be more likely to accept a needs-based distribution of rewards as just while more distant workers will not.[12] A close friend might empathize with another’s situation and be more willing to make sacrifices that might seem unjust to others without such a close relationship. The more distant the relationship, the more likely the individuals will seek a parity view of distributive justice if the other workers are seen as individuals and an equity view of distributive justice if the other workers are viewed according to the role they perform. For example, if you view your fellow worker as just another tax accountant, a parity view of justice will be common. If the fellow worker is seen as the tax accountant who tends to work on the easier accounts, an equity view of distributive justice would prevail.[13] Research also suggests that an equity view of distributive justice dominates most people’s perception of distributive justice while parity and needs rules become more important when equity rules seem to be violated.[14]

Early studies of organizational justice focused solely on distributive justice but during the course of their research, theorists began to understand that outcomes alone were not enough to explain all perceptions of justice. The way decisions were made was also critical to determine people’s perception of justice within an organization. The fairness of the procedures or methods to determine an outcome is known as procedural justice. Even if the individual receives an unfavorable outcome, he or she would still evaluate the outcome more positively if the procedures for determining the outcome were viewed as fair.[15]

Procedural Justice

Procedural justice refers to how people perceive the fairness of the actual steps of a process. For example, if an employee believes the system by which a company determines who receives a promotion is fair, the employee will perceive the company or manager as fair. The ends do not justify the means in procedural justice. Procedures are judged to be more fair when those affected by the procedures have more input into the decision making process.[16] This input is known as “voice.” The more chances a person affected by a decision has to offer input, suggest changes, and understand how a decision will be made, the more likely that person will view the procedure as fair and thus, the organization will be seen as fair.[17]

As employees are offering input and seeking to understand a procedure, the way they are treated by management can play an important role in how they evaluate the procedure. This evaluation of how an employee is treated is known as interactional justice. It can be viewed as a part of procedural justice, or its own separate form of justice. The author of this paper recognizes the strong ties between interactional and procedural justice, but believes that interactional justice should be treated as a separate form of organizational justice from the management perspective since implementing procedural justice and interactional justice requires management to concentrate on different aspects of management.

Interactional Justice

Interactional justice theories focus mostly on how an organization communicates with its employees. There are two types of interactional justice: interpersonal justice and informational justice. Interpersonal justice deals with the degree to which employees are treated with respect, dignity and politeness during the implementation of procedures. The better employees are treated by management during determinations of outcomes or evaluations, the more fair the outcomes will seem. Managers who treat employees with respect and dignity can expect employees to feel that they are sensitive to their needs and understand the negative aspects of outcomes. This may make employees feel better about an unfavorable outcome. Interpersonal justice deals primarily with situations that involve distributive justice since interpersonal justice seeks to affect the reaction of an employee to an outcome.[18] Employees who are treated with higher levels of interpersonal justice tend to view their managers as more fair and just, but interpersonal justice seems to have little effect on employees' justice views of the overall organization.

It is important to remember, however, that procedural justice is not about allowing employees to dictate exactly what they want. Decisions will have to be made that won't always be most favorable for employees. By giving employees a voice, however, they at least have the opportunity to be heard and feel like they are part of the process. "Process fairness doesn't ensure that employees will always get what they want; but it does mean they will have a chance to be heard."[19]

Informational justice is the measure of how well an organization explains its decisions and procedures. It tends to interact with procedural justice situations because it tends to alter how employees view the process behind making a decision. When the reasoning behind decisions is explained, the decisions and procedures will be seen as more just.[20] Employees may not like layoffs or plant closures, but if management clearly and honestly explains the reason behind the decision and the steps taken to avoid an unjust outcome, employees may be more likely to view the organization as just despite the negative outcome of the process. Employees who are treated with higher levels of informational justice tend to view overall organizations as more fair and just, but informational justice seems to have little effect on employees' justice views of individual managers.

Obviously, these three ways of perceiving justice are closely connected. An organization that treats its employees rudely and provides little information will be less likely to be perceived as just regardless of the outcomes or procedures. A polite organization with apparently fair decision-making procedures will not be perceived as just if the ultimate outcome of the decision is seen as grossly unjust. This is especially true when the unfair procedures lead to a lower-than-expected distribution of a reward. When rewards are high or meeting expectations, recipients tend to overlook unfair procedures. When rewards are low, unfair procedures are more likely to cause anger and resentment.[21] On the other hand, fair procedures result in perceptions of a just organization regardless of the size of the reward.

Since companies cannot always predict whether or not they will be able to issue high-level rewards and thus overcome any perceived unfairness in the reward-determination process, companies should strive to always implement just procedures and eliminate the chance of unfair perceptions of an organization based on the reward level. Companies must strive to score highly in all three measurements of organizational justice to be perceived as a fair organization.

Deming's Theories on the Management of People

In *The New Economics*, Deming rejects the system of ranking, rating and assigning blame to employees, which he says too many companies use to manage workers. He calls the system of rewarding and punishing employees a "prison" and calls for companies to manage employees by recognizing their place in a system and the need for more individualized treatment to bring out the best in its people.[22]

Deming identifies fourteen aspects of the role of a manager of people. Managers who establish a just organization for workers seem to be viewed well by Deming. Several of these managerial roles fit well into organizational justice. They, and which aspects of organizational justice theory they align with, are:

> 1. A manager understands and conveys to his people the meaning of a system. He explains the aims of the system. He teaches his people how the work of the group supports these aims.
> 2. He helps people to see themselves as components in a system, to work in cooperation with preceding stages and with following stages toward optimization of the efforts of all stages toward achievement of the aim.[23]

Interactional and procedural justice theories are clearly tied to these points. When making a decision, the "system" is the decision-making process. Deming views businesses as systems which need to take into account multiple inputs such as suppliers, employees, customers, etc. when producing a product. Businesses should constantly be seeking inputs and reactions from all the stakeholders in a process in order to be constantly refining and improving the business process. The decision-making process should also be understood through Deming's view of business as a system.

The decision-making process cannot be kept separate from the employees who will be affected by the decision. An output cannot just be dumped out of the end of the process without regard to how that outcome will be accepted. Employees should have the opportunity to voice an opinion on how the decision will be made. This "voice" is an important component of procedural justice. As the employees are given their chance to offer input they should be treated with respect, which is an important part of interpersonal justice.

Once the decision has been made, a manager should clearly explain how the decision was made and what the reasons behind the decision were. This explanation is a key to establishing informational justice and will also help employees understand how they fit into the decision-making process. Employees should also be given the opportunity to offer suggestions on a better outcome of the decision and to possibly change the outcome. This feedback loop is a critical component to Deming's view of businesses as systems and an important part of how employees evaluate procedural justice.[24]

> 3. A manager of people understands that people are different from each other. He tries to create for everybody interest and challenge, and joy in work. He tries to optimize the family background, education, skills, hopes and abilities of everyone. This is not ranking people. It is, instead recognition of differences between people, and an attempt to put everybody in position for development.[25]

Companies which strive to implement all three aspects of organizational justice theory will recognize that not all employees view justice in the same way. Some will place more importance on procedural justice while others are more concerned with the outcomes over the methods. These differing views on justice can be tied to the differing ethical frameworks through which employees view the world. A 1997 study showed that ethical formalists were sensitive to procedural justice differences while ethical utilitarians were more sensitive to distributive justice differences.[26]

An ethical formalist is concerned with the process through which decisions are made. Individuals follow a set of rules or procedures for guiding behavior. Actions are ethical or unethical depending on whether they conform to those rules. An ethical utilitarian is concerned with results and outcomes. The greatest net social benefit is determined to be more ethical than any outcome that that creates a lesser benefit. The ends clearly justify the means for a utilitarian. The means are irrelevant and cannot be judged from an ethical perspective. Only the end results are relevant.

For example, assume that three people are trapped in a raft. It will take one week for the raft to reach the nearest island. There is only enough food and water on the raft for two people to live for an entire week. If three people are on the boat, everyone will die in five days. An ethical utilitarian would say that two of the people should throw the third person overboard so at least two people will survive. It is a greater social benefit for two people to live and to kill one person than for all three to die of starvation. The ethical formalist would say that killing the one person just to ensure the survival of two would not be an ethical decision. It is easy to understand why an ethical utilitarian would be more concerned with distributive justice while an ethical formalist would be more concerned with procedural justice. The parallels between the ethical views of the world and the social justice theories are obvious.

The use of formalism or ethical utilitarianism, however, is not a matter of black or white. A person is rarely just an ethical formalist or just a utilitarianist in all situations. Instead the two ethical philosophies exist on opposite ends of a spectrum with blends of two viewpoints in between. A person may lean more toward ethical formalism but still understand and expect some degree of utilitarianism in his or her evaluation of ethical decisions. Thus it will be rare that an employee will dismiss all aspects of procedural justice in favor of only distributive justice just as it will be rare for procedural justice to triumph over all concerns with distributive justice.

A person's situation in life and his or her job title may also impact how he or she perceives justice. Studies of job satisfaction with regard to pay have shown that "most people are initially concerned with their absolute amount of pay, but at higher levels of pay, relative comparisons and procedures used in pay distribution often become major determinants of pay satisfaction."[27] This relates to the theory that money fulfills a need for people. Once that need is fulfilled, money becomes less important and other factors such as work culture and respect become more important than a monetary reward.[28] Thus distributive justice may be more important to young employees while procedural justice and interactional justice may be more important to older employees.
Explanations of outcomes or procedures may be more important at different stages in a person's career. A manager should recognize this and tailor his style to meet these changing views of justice. A manager who recognizes differing views of justice and adapts his approach to each employee based on their personalities and views of the world will have employees who view the organization as more just.

> 5. He is a coach and counsel, not a judge.[29]

Organizations which strongly emphasize procedural justice will have managers who are viewed more like coaches and counsels rather than judges because those managers will involve employees in the decision making process. Judges sit up high and rule without input or advice. A manager practicing organizational justice theory, especially by using interpersonal justice and informational justice, will actively seek advice and input from his employees while making decisions. The manager is still ultimately responsible for the decision, just like any other authority figure, but by involving his employees in the process, he will not be viewed as a distant judge but instead as a coach or counsel seeking to help his employees improve.

> 10. He creates trust. He creates an environment that encourages freedom and innovation.[30]

A 2005 study shows that organizations with high levels of procedural and distributive justice also had high levels of organizational and managerial trust. Procedural justice was an especially high indicator of managerial trust.[31] In order to create an atmosphere of trust, which Deming believes will lead to an environment encouraging freedom and innovation, a company must be viewed as fair and just.

Creating trust in an organization is primarily the manager's responsibility because, in a superior-subordinate relationship, the superior is always in a position of power with the ability to control the subordinate's employment status. The manager is also the one who defines job responsibilities and duties. Studies have shown that the strongest indicators of trust in a manager were job satisfaction, perceptions of organizational effectiveness, and the information which subordinates receive about their jobs.[32]

Organizational trust is separate from managerial trust and can manifest itself in employees' belief in the abilities of the organization to attain its stated objectives and to act in the best interests of its employees. When organizational trust is lacking, employees report lower job satisfaction and lower performance.[33]

Thus, it is easy to see why establishing trust in a manager and in an organization is an important goal. Managers and organizations which implement organizational justice theories may be perceived as trustworthy by their employees.

Distributive, procedural and interactional justice can all lead to higher levels of managerial trust. Of the three, procedural justice was found to be the strongest indicator of managerial trust with interactional justice being the weakest indicator in a study conducted by Hubbell and Chory-Assad.[34] While employees have stated that communication and respect are areas they use to evaluate managerial trust, it seems to be more of a supplement to procedural and distributive justice when making a final trust decision. If managers are not using just procedures to create just outcomes, it doesn't matter how well the manager treats employees or how well things are explained, employees will have lower levels of trust for a manager. So it is clear that for a manager to follow Deming's teachings and create trust, he must also create a working environment with fair outcomes and procedures.

Distributive, procedural and interactional justices also play a role in organizational justice, according to the study. Procedural justice is by far the greatest indicator of organizational trust, however. Distributive and interactional justice had nearly insignificant affects on organizational trust.[35] Employees who see companies using fair procedures will assume that procedures will remain fair into the future. The distribution of rewards may change depending on economics and the personal skills of organization leadership may change depending on who is in charge, but the decision systems and methods for coming to conclusions are harder to change and more likely to endure. If a system is fair now, employees will trust that the system will remain fair into the future. On the other side, if a decision system is unfair now, employees will also believe that it will remain unfair in the future[36] and will have lower levels of trust in an organization. For organizations to earn trust from their employees, they should implement a fair decision system and make sure their employees understand the system.

> 12. He listens and learns without passing judgment on him that he listens to.
> 13. He will hold an informal, unhurried conversation with every one of his people at least once a year, not for judgment, merely to listen. The purpose would be development of understanding of his people, their aims, hopes, and fears. The meeting would be spontaneous, not planned ahead.[37]

Deming has been extremely critical of performance evaluations and their negative affects on workers. Organizational justice theorists have examined performance evaluations and determined that Deming's emphasis on increased two-way communication with employees can help increase the perception of fairness in regards to performance evaluations.[38] When employees were given the opportunity to challenge or rebut their evaluations, they perceived the evaluations as more fair, regardless of the nature of the evaluation or if their challenges or rebuttals actually resulted in changes to the evaluation, according to the findings of Greenberg.[39]

If an evaluator spoke with the employee before the evaluation and gathered input from the employee, the resulting performance evaluation was also seen as more fair. This fits well with Deming's urging of managers to hold informal conversations with employees at least once a year to determine how they are feeling about the work. Although in the case of the organizational justice studies, the ultimate goal of these conversations was to produce a performance evaluation at some point in the future; these conversations would at least be a step in the direction of Deming's proper management technique.

<u>Implementation of Justice Theories</u>

Procedural justice can be improved in an organization through several means proposed by justice theorists. Through a process-control model of justice, "procedures are perceived to be fair when affected individuals have an opportunity to either influence the decision process or offer input."[40] As seen in the previously stated example of performance reviews, when employees have an opportunity to discuss an evaluation procedure or dispute the outcomes of a procedure, they will view it as more fair. Decisions that are handed down without input tend to be viewed as less fair. It is also important what managers do with this information. Once they have the information on how employees think a decision should be made, managers should design a decision process that follows several clear steps to ensure a fair perception by employees.[41]

1. Decisions should be made consistently.

Procedures that change from person to person and from moment to moment will be viewed as unfair. Outcomes from a decision process are expected to change depending on the individual and the company's financial situation but the procedures should remain the same. Constantly changing procedures will result in lower perceptions of organizational justice, as discussed above in regard to organizational trust.[42]

2. Decisions should be made without personal bias.

Interpersonal justice can play a large role in eliminating bias perceptions. Employees who are treated with respect and dignity may be less apt to perceive bias in the treatment of one employee compared to another.[43] Studies have also shown that when people believe that everyone has an equal chance of receiving less desirable work or extra scrutiny, it is perceived as being more fair than if work is distributed or extra scrutiny is given with a bias.[44]

3. Decisions should be made with as much accurate information as possible.
Studies have shown a strong correlation between using accurate information in a procedure and the perception of the fairness of that procedure. In the case of performance evaluations, managers who consulted individual performance diaries for each employee when creating performance evaluations were perceived as being more fair than evaluations without performance diaries. These diaries were seen as being more accurate than the memories of managers and more likely to lead to a fair evaluation.[45]

4. Decisions should conform to ethical and moral standards.
Honesty, and other aspects of interpersonal justice, is especially important when evaluating procedures from a moral and ethical perspective. "Correctness, sincerity and believability" of the person involved in making the decision all scored as high predictors of organizational justice perceptions.[46]

5. Decisions should be made in a way that the outcome can be modified.
In a study of drug-testing in employment screenings, the tests were perceived as more fair when any positive tests were resubmitted for a second test.[47] It was also seen in performance evaluations that evaluations with an appeals process were seen as more fair than evaluation processes that did not give employees an opportunity to challenge their evaluations.[48]

6. Ensure opinions of affected groups are taken into account.
The importance of communication and feedback cannot be overemphasized when discussing organizational justice. Job applicants who took a computerized pencil and paper test for a job expressed more resentment toward the results of the job search than applicants who had a one-on-one interview with a recruiter.[49] The opportunity to express opinions was one of the strongest predictors of perceived justice. Managers who open lines of communication with employees may be more likely to create an organization which is perceived to be just.

<u>Impact of Justice on the Success of an Organization</u>

Creating an organization which is perceived as just has clear business implications. Studies have shown that increases in perceptions of organizational justice can reduce employee deviance, increase satisfaction with pay raise decisions, and lead to better acceptance of large-scale change.

Studies have shown that employee deviance – including theft, fraud, embezzlement, vandalism, sabotage, violence and unexcused absenteeism – occurs in 33 to 75 percent of all workplaces and cost companies billions of dollars.[50] Reducing employee deviance could save companies money and increase productivity. A 1999 study showed that increased perceptions of organizational justice led to decreases in employee deviance.

Organizations that were perceived as being interactionally just had lower incidents of organizational and interpersonal deviance. Organizational deviance is defined as "acts directed against the company or its systems." Interpersonal deviance is defined as "acts that inflict harm upon specific individuals."[51] Thus companies which treat their employees with respect and dignity will have fewer incidents of theft, sabotage, workplace harassment and workplace violence. The strong correlation between lower workplace deviance and higher levels of respect shows the importance of emotion in the workplace. People who feel that they have been treated rudely or inappropriately are more likely to act out in a deviant manner.[52]

Distributive justice was also shown to reduce interpersonal deviance, but procedural justice was not shown to have any great affect on either organizational or interpersonal deviance.[53] Distributive justice from an equity perspective was especially important with regard to employee theft. Employees who feel they are being underpaid with regard to their job inputs may seek to redress the imbalance through theft. A 15 percent pay reduction at one company led to more than twice as much employee theft.[54]

Deming argued many times that pay increases are not a motivator for greater productivity. Organizational justice theory shows it is not an indicator of satisfaction either. A 1989 study showed that greater raises do not necessarily increase the sense of pay satisfaction in employees. A just distribution system for the pay raises and a fair procedure for determining raises was a far better indicator of pay satisfaction and organizational trust.[55]

Individuals who had a stronger perception of distributive justice with regard to their raise had a higher sense of satisfaction with their pay raise than those who had a lower perception of distributive justice, regardless of the actual amount of pay. Individuals who rated their organizations higher in the fairness of the procedures used to determine pay raises also had stronger senses of organizational trust and were more committed to their company.[56]

Explanations for pay-raise decisions also play an important role in determining how employees perceive the fairness of the decisions. One study dealt with one company where high pay raises were accompanied by praise, low raises were accompanied by apologies and explanations of how to earn more money next year and average raises received no explanation. When asked to rate the fairness of the raises, the highest and lowest earners rated the raises most just while the average earners rated the raises as unfair.[57] The importance of informational justice with regard to communicating the reasons behind pay raise decisions is supported by this finding.

Companies which practice organizational justice could potentially reduce their benefit costs by improving the fairness of their pay evaluation procedures. Companies could possibly give smaller raises through more fair and just procedures and distributions by practicing organizational justice theory.

Acceptance of large-scale change can also be improved through organizational justice theory. When a company announces a decision to relocate facilities, it can lead to an immediate exodus of employees soon after the announcement and reduce productivity between the time of the relocation's announcement and the actual relocation. A 1994 study of seven facility relocations found that employee retention was improved by greater perceptions of distributive and procedural justice. Distributive justice played a much greater role in increasing employee retention but procedural justice also had an impact.[58] Thus a company practicing organizational justice may have lower costs associated with implementing large-scale change.

Conclusions

Deming does not mention organizational justice theory in either *Out of the Crisis* or *The New Economics* but it is clear that he used the concepts behind the theory when he recommended the proper ways for managers to treat employees. Open communication, honesty and a willingness to adapt outcomes based on new information are foundations of Deming's management principles and the driving forces behind organizational justice theory.

Those that practice organizational justice theory may not be aware of Deming and companies that implement Deming's teachings may not know about organizational justice theory. However, the close ties between the two theories show that both groups could benefit from a study of the other. Organizational justice shows a clear path for creating the trust between manager and subordinate that Deming says is critical for the management of people. And while organizational justice theory shows a better way to deliver performance evaluations, Deming pushes even further and advocates the elimination of performance reviews. An understanding of the theories and concepts of both schools of thought could lead to more productive companies.

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[1] Deming, 1994, pg. 121-125
[2] Latham, Pinder, 2005, pg. 504-506
[3] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 427
[4] Hubbell, Chory-Assad, 2005, pg. 49
[5] Lerner,1982, pg. 249-277
[6] Greenberg, 1987b, pg. 13
[7] Gilliland, 1993, pg. 696
[8] Greenberg, 1990c, pg. 400
[9] Gilliland, 1993, pg. 696
[10] Greenberg, 1990c, pg. 401
[11] Greenberg, 1987b, pg. 13
[12] ibid
[13] ibid
[14] Gilliland, 1993, pg. 696

[15] Schminke, Ambrose, Noel, 1997, pg. 1191
[16] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 427
[17] Greenberg, Jerald, 1987b, pg. 17
[18] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 427
[19] Brockner, 2006, pg. 124
[20] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 427
[21] Greenberg, 1987a, pg. 59
[22] Deming, 1994, pg. 121-125
[23] ibid 125
[24] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 426
[25] Deming, 1994, pg. 125-126
[26] Schminke, Ambrose, Noel, 1997, 1199
[27] Mitchell, Mickel, 1999, pg. 571
[28] ibid
[29] Deming, 2004, pg. 126
[30] ibid 128
[31] Hubbell, Chory-Assad, 2005, pg. 63
[32] ibid pg. 51
[33] ibid
[34] ibid pg. 58
[35] ibid
[36] Greenberg, 1987a, pg. 59
[37] Deming, 2004, pg. 128
[38] Greenberg,1986, pg. 341-342
[39] ibid
[40] Gilliland, 1993, pg. 696
[41] ibid
[42] Colquitt, Conlon, Wesson, Porter and Ng, 2001, pg. 426
[43] ibid pg. 427
[44] Gilliland, 1993, pg. 705
[45] Greenberg, 1986, pg. 342
[46] Gilliland, 1993, pg. 707
[47] ibid pg. 705
[48] Greenberg, 1986, pg. 341
[49] Gilliland, 1993, pg. 708
[50] Aquino, Lewis and Bradfield, 1999, pg. 1073
[51] ibid pg. 1074
[52] ibid pg. 1088
[53] ibid pg. 1085
[54] Greenberg,1990a, pg. 565
[55] Folger, and Konovsky, 1989, pg. 122
[56] ibid pg. 125
[57] Greenberg and McCarty, 1990b, pg. 583
[58] Daly and Geyer, 1994, pg. 634

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THE CONSEQUENCES OF EXTRINSIC MOTIVATION: PREDATORY LENDING AND THE SUBPRIME MORTGAGE CRISIS

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Abstract

This paper discusses a possible relationship between extrinsic motivation and the Subprime Mortgage Crisis. The analyses and explanations distinguish the difference between a mortgage broker and a predatory lender, the external motivating factors of the predatory lender, the increased borrower cost of a Subprime mortgage by a predatory lender, and the broader impact of the Subprime Mortgage Crisis.

Introduction

The idea of extrinsic motivation stems from Deci and Ryan's Self-Determination Theory, which states, "When extrinsic rewards are introduced for doing an intrinsically interesting activity, people tend to feel controlled by the rewards, prompting a shift in the perceived locus of causality for the behavior from internal to external." (Deci and Ryan 2000) Over time, mortgage lenders who are rewarded by additional fees and commissions can become controlled by such devices, leading to performing their duties to receive such rewards regardless of consequence. The application of extrinsic motivators can lead to a loss of intrinsic motivation for one's job. However, the impact of extrinsic motivation can be much broader, extending to peers, customers, and financial markets.

Subprime lenders should not be confused with predatory lenders. Subprime lending, also referred to as near prime or second-chance lending, is the practice of providing loans to individuals who do not qualify for the best (lowest) market interest rates because of a deficient credit history. A Subprime loan is offered at a higher interest rate due to the excess risk the financial institution must bear. The intention of Subprime lending is to provide the opportunity for homeownership to those who could not qualify for a prime mortgage loan. A predatory lender can be defined as a lender who deliberately "preys" on people for their own personal gain. The methods of obtaining personal gain by a predatory lender will be discussed in a later section of the paper.

There are two reasons for conducting this study. There is little literature identifying the dangers of extrinsically motivated behavior of employees in the Financial Services industry. In addition, this study is being conducted to identify a possible root cause of the current Subprime Mortgage Crisis (SMC). This paper tackles the questions surrounding the dangers of extrinsic motivation and the causes of the current SMC. This paper suggests that one of the root causes of the current SMC is behaviors exhibited by mortgage brokers such as excessive fees, prepayment penalties, and yield spread premiums all of which provide personal gain to the broker.

The paper is organized as follows: first, a background on the current SMC will be provided, followed by a discussion of extrinsic motivation from the perspective of Deci and Ryan's Self Determination Theory and the motivation theories of Herzberg. Then, evidence will be presented to suggest the effect of extrinsic motivation on the mortgage brokers, which led to customer deception. In addition, secondary research will be presented to support the author's connection between extrinsic motivation and current mortgage broker practices, which could have led to the current SMC. In conclusion, a brief summary of the findings will be provided along with evidence to support the claims made in the paper.

Literature Review

This section summarizes findings that are in support of or in disagreement with extrinsic motivation and Self Determination Theory. In addition, this section includes some findings related to the causes of the current SMC. The articles in this section will be discussed in chronological order.

Frederick Herzberg's 1987 paper, *One More Time: How Do You Motivate Employees*, states that employees cannot become motivated to do their jobs through external rewards. Furthermore, receiving large wage increases as a form of motivation will only motivate employees to attain the next wage increase, not to perform their jobs well. The employee is able to be motivated by having interesting work, challenge, and responsibility. Herzberg's interest is in designing jobs that provide these conditions that enhance intrinsic motivation. Herzberg objects to the idea of horizontal job loading. He states, "to enrich certain jobs, management often reduces the personal contribution of employees rather than giving them opportunities for growth in their accustomed jobs." (Herzberg 93) Refer to Appendix I to view Herzberg's method for enriching a job using vertical job loading.

Edward Deci and Richard Ryan's 2000 paper, *The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior*, states that "Self-determination theory (SDT) maintains that an understanding of human motivation requires a consideration of innate psychological needs for competence, autonomy, and relatedness." (Deci and Ryan 227) According to Deci and Ryan, the need for competence is addressed through intrinsic motivation and positive feedback and negative feedback decreases intrinsic motivation. The need for autonomy is the employee's motivation to perform based on his interest, not from a threat or deadline. The need for relatedness is the employee's need to feel as though their work is contributing and not worthless. In summary, intrinsic motivation "involves people freely engaging in activities that they find interesting, that provide novelty and optimal challenge." (Deci and Ryan 227) When "extrinsic rewards are introduced for doing an intrinsically interesting activity, people tend to feel controlled by the rewards, prompting a shift in the perceived locus of causality for the behavior from internal to external." (Deci and Ryan 234)

In contrast, Gary Latham and Craig Pinder's 2005 book, *Work Motivation Theory and Research at the Dawn of the Twenty-First Century*, states "…goal-setting, social cognitive, and organizational justice theories are the three most important approaches to work motivation to appear in the last thirty years." Latham and Pinder explain that people are motivated to attain goals and to fulfill biologically innate needs for "acceptance and approval, status, power, control of resources, and predictability and order" (Latham and Pinder 488) all of which can be argued to be extrinsic factors in the view of Deci and Ryan.

Patricia McCoy's 2005 paper, *A Behavioral Analysis of Predatory Lending*, attempts to explain from a behavioral economic point of view why so many borrowers were deceived by predatory lenders. McCoy focuses on borrowers expected utility and loss aversion by using an experiment conducted by psychologists Daniel Kahneman and Amos Tversky:

> *For example, when people were asked to choose between an 80 percent chance of losing $4,000 or a certain loss of $3,000, the majority of the subjects preferred the 80 percent gamble on losing $4,000 to losing $3,000 for sure. The desire to avoid a loss led the subjects to overweight the certain outcome - losing $3,000 - and to opt for the risky choice, despite a bigger expected loss (0.8 x -$4,000 = -$3,200). Conversely, when subjects were asked to choose between an 80 percent chance of winning $4,000 or a certain win of $3,000, the majority of subjects preferred the sure gain of $3,000 to an expected but risky gain of $3,200.* (McCoy 2)

The experiment highlights the tactic of loss aversion used by predatory lenders. Loss aversion is why people take significant risks to avoid loss. In addition, people can focus on reducing out-of-pocket expenses, rather than on opportunity costs. The results of this experiment demonstrate that some people will react differently when confronted with either a gain or a loss. In addition, the results show that some people are so loss-averse that they will take on substantial risk to avoid any loss, even if their total expected wealth would be reduced as a result of their decision.

Souphala Chomsisengphet and Anthony Pennington-Cross's 2006 paper, *The Evolution of the Subprime Mortgage Market*, discusses the origins of Subprime mortgages and their increased popularity in the 1990s and 2000s. Beginning in 2002, interest rates decreased and as a result, the real estate market became very active and the number of homes sold increased causing the price to increase. At the time, the rate on a 30-year fixed-rate mortgage was at the lowest levels in approximately forty years, and this was an opportunity to gain access to a cheap source of equity. In order to gain prospective borrowers, mortgage brokers would advertise Subprime mortgages with a special low interest rate that would last for the first two years of the mortgage and the remainder of the loan period there would be an adjustable-rate mortgage. Since interest rates were very low at the time, the broker would suggest that after the first two years of the mortgage, the borrower refinance to reduce the impact of the rate increase. This suggestion was based on the assumption that interest rates would not increase in the subsequent years. Chomsisengphet and Pennington-Cross focus on high costs and interest rates associated with Subprime mortgages as compared to prime mortgages. In addition, a connection is established between high costs and interest rates and an increased high level of foreclosures on properties and mortgage defaults.

Howell Jackson and Laurie Burlingame's 2007 paper, *Kickbacks or Compensation: The Case of Yield Spread Premiums*, addresses the fundamental question of whether mortgage brokers are unjustly compensated for Subprime mortgages. Jackson and Burlingame define a yield spread premium as a payment made by "lending institutions to mortgage brokers based on the rate of interest charged on a borrower's loan. The higher the interest rate, the larger the yield spread premium." (Jackson and Burlingame 289) Furthermore, Jackson and Burlingame conduct an empirical study of approximately three thousand mortgages issued from 1996 to 2001 from a major nationwide lending institution operating through a network of independent mortgage brokers and also lending directly. An in-depth explanation of the study will be provided in the Analysis and Results section. The data for the study was obtained through discovery in litigation where one of the authors acted as an expert witness.

Analysis and Results

This section will discuss the steps used to determine the relationship between Subprime mortgages and extrinsic motivation provided by commissions based on high yield spread premiums. A yield spread premium is defined as the cash rebate paid to a mortgage broker based on selling an interest rate above the par rate for which the borrower qualifies.

A Subprime borrower can be characterized as having two or more loan payments paid past 60 days due in the last 12 months; one or more loan payments paid past 90 days due in the last 36 months; judgment, foreclosure, repossession, or non-payment of a loan in the prior 48 months; bankruptcy in the last 7 years; or a credit bureau risk score (Fair Isaac and Co. or FICO) of 620 or below. Some borrowers tend to be loss averse. The aversion to losing one's home is suggested by data showing that homeowners are seven times less likely to file for bankruptcy than people who do not own homes[1]. An example to demonstrate a borrower's level of loss aversion is:

> *All of the choices would make the subjects $400 richer, but for one group the choices were framed as gains and for the other as losses:*
> *Scenario A: Assume yourself richer by $300 than you are today*
> *You have to choose between a sure gain of $100 or a 50% chance to gain $200 and a 50% chance to gain nothing.*
> *Scenario B: Assume yourself richer by $500 than you are today*

You have to choose between a sure loss of $100 or a 50% chance to lose nothing and a 50% chance to lose $200.

In Scenario A, of 126 people surveyed, 72% chose a sure gain of $100 and 28% chose the 50/50 wager. In Scenario B, of 128 people surveyed, 36% chose the sure loss of $100, while 64% chose the 50/50 wager. (McCoy 3)

This demonstrates that some people were risk-averse depending on whether the outcome was a gain or loss. Mortgage brokers or more specifically predatory lenders may advertise their loans as gains and obscure chance for possible loss.

Empirical evidence provided by Jackson and Burlingame indicates that predatory lenders will recommend a loan to a borrower resulting in a higher yield spread premium and commission to the broker and higher cost to the borrower. The study was of approximately three thousand mortgage loans issued between 1996 and 2001 from a major lending institution that operated through both independent mortgage brokers and direct lending. The study concludes that a mortgage broker's compensation and cost to the borrower can be substantially higher on a Subprime mortgage containing a yield spread premium. The higher costs resulted in a higher level of foreclosure. The resulting high foreclosure level and collateralized debt obligation securities backed by Subprime mortgages led to billions of dollars in write-downs by large financial institutions in 2007 (see Appendix II).

Subprime mortgages originated with good intentions, so that households with poor credit or low income could own property. The purpose of the mortgage broker is to find the best or the lowest priced Subprime mortgage for the borrower. However, evidence shows this is not always the case. In this situation, a mortgage broker may become a predatory lender. The predatory lender will recommend and sell a loan based on their level of commission, which is based on the yield spread premium. The predatory lender is motivated not to help the borrower with poor credit, but to exploit that borrower in order to attain a higher commission. The predatory lender is controlled by the commission prompting a shift in the causality of the behavior from internal to external. In the words of Deci and Ryan, "monetary rewards undermined people's intrinsic motivation leading to a level of postreward behavior." (Deci and Ryan 233)

In the mortgages analyzed by Jackson and Burlingame, approximately 87.7%[2] of the loans were found to have a yield spread premium attached to the mortgage broker's compensation. These data can be seen in Appendix VI, Table 2. Next, the magnitude of the yield spread premium for loans where the YSP was paid was determined. These data can be seen in Appendix VI, Table 3. When yield spread premiums existed, this added an additional $1,440 to $1,800[3] to the price of the loan. Next Jackson and Burlingame approximated the total level of compensation a mortgage broker receives for loans with yield spread premiums versus without. These data can be seen in Appendix VI, Table 4. When yield spread premiums are used, the mortgage broker's compensation ranges from $2,500 to $2,858[4] depending on the loan type compared to $1,649[5] when yield spread premiums are not used. The final section of the analysis is the average borrower cost. These data can be seen in Appendix VI, Table 5. When the loans contain yield spread premiums, average borrower cost is within the range of $4,078 to $4,288[6] depending on the loan type while the loans without yield spread premiums are within the range of $1,000 to $3,209[7].

The predatory lenders not only target Subprime borrowers, but Prime borrowers as well. A study performed for the Wall Street Journal[8] of approximately $2.5 trillion in Subprime mortgages made from January 2000 to June 2007 indicates that the level of Prime borrowers with Subprime mortgages has increased. The mortgages included in the study were all Subprime mortgages that were later securitized. At the beginning of the study, Prime borrowers accounted for 41% of the Subprime mortgages and by the beginning of 2007, Prime borrowers accounted for 58% of all Subprime mortgages that were securitized. These data can be seen in Appendix VII. Many Prime borrowers may have been convinced by aggressive marketing of Subprime mortgages or the easier and faster approval process compared to a Prime loan. In contrast, mortgage brokers contend that there are multiple reasons for a Prime borrower to receive a Subprime mortgage. Examples can be borrowing a higher percentage of income or home value, without proper documentation of income or assets, and relating to real estate speculation, where a borrower is looking to purchase properly at a low price and sell at a higher price in a relatively short period of time.

Predatory lenders that are motivated to provide loans with high yield spread premiums to borrowers can have a broad impact on a company and the financial markets. The predatory lenders recommend and sell loans to borrowers that may be too costly and can result in a default. In recent months, many financial institutions have taken large positions in securities known as Collateralized Debt Obligations (CDO). A CDO is a structured credit note, which is an investment-grade security backed by a pool of bonds, loans and other assets. The CDO divides the credit risk by tranches. Each tranch has a different maturity and risk associated with it. There are CDOs backed by Subprime mortgages as well. In the past, CDOs backed by Subprime mortgages have performed well due to low interest rates and low levels of delinquency payments (see Appendices III and VI). However, with the rise of interest rates in the past 2 years, Subprime rates have risen, (see Appendix III). This has caused delinquency payments and foreclosures to increase (see Appendices IV and V). As a result, many financial institutions have taken write-downs of their CDO positions. A write-down is a reduction in the book value of an asset because it is overvalued compared to the market value. Since September 18, 2007, financial institutions have lost over $45 billion[9] due to write-downs in the values of their CDOs backed by Subprime mortgages (see Appendix II). The massive level of write-downs has led to the resignations of the CEOs at Citigroup and Merrill Lynch and the resignation of the co-president of Bear Stearns[10].

The argument that Deci and Ryan and Herzberg make in their articles is that workers who are extrinsically motivated by their commissions, are controlled by their commissions. In this study, the transformation of a mortgage broker to a predatory lender occurs when the broker becomes controlled by his or her commission. The role of the mortgage broker is to provide the best loan for the borrower, which can equate to a low interest rate, low cost, or prepayment options. The broker works in the interest of the borrower. However, the predatory lender is basing his or her recommendation on the highest commission he or she will receive, regardless of how it affects the borrower.

Conclusion

"The effect of incentive pay is numbers and loss of focus on the aim. (Deming 1994) A relationship between extrinsic motivation and the Subprime Mortgage Crisis appears to exist. If one accepts the arguments of Herzberg and Deci and Ryan about the controlling effects of extrinsic motivation, then this could explain the transformation of mortgage brokers to predatory lenders. Predatory lenders become controlled by their commission, which can be largely based on the yield spread premium on the loan. The predatory lenders are recommending loans to borrowers that do not maximize the utility of the borrower, but maximize their own compensation. The resulting factors are larger commissions for predatory lenders, larger average borrower cost, higher levels of delinquency payments, higher foreclosure rates, billions of dollars of write-downs associated with collateralized debt obligations backed by Subprime mortgages, and the resignations of executives from large financial institutions.

The elimination or reduced dependence on commissions associated with yield spread premiums will not resolve the current SMC, but would reduce future impacts on the economy. Mortgage brokers should recommend mortgages that will benefit the borrower in terms of the lowest possible interest rates and costs, not based on the level of compensation the broker will receive from the transaction.

Endnotes

1. Refer to Ian Domowitz and Robert Sartain, Determinants of the Consumer Bankruptcy Decision, 54 J Fin. 403, 413 (1999) for data.
2. Refer to Jackson and Burlingame 2007 for figures.
3. Refer to Jackson and Burlingame 2007 for figures.
4. Refer to Jackson and Burlingame 2007 for figures.
5. Refer to Jackson and Burlingame 2007 for figures.
6. Refer to Jackson and Burlingame 2007 for figures.
7. Refer to Jackson and Burlingame 2007 for figures.
8. Refer to Brooks and Simon 2007 for figures.
9. Refer to Wall Street Journal Subprime Earnings for figures.
10. Refer to Boessenkool and Sidel, Langley, and Enrich articles for executive resignation articles.

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Appendix I - Herzberg's Principles of Vertical Job Loading

Principles for Job Loading

Principle of Vertical Job Loading	Motivators Needed
A. Removing some controls while retaining accountability	Responsibility and personal achievement
B. Increasing the accountability of individuals for own work	Responsibility and recognition
C. Giving a person a complete natural unit of work (module, division, area, and so on)	Responsibility, achievement, and recognition
D. Granting additional authority to employees in their activity; job freedom	Responsibility, achievement, and recognition
E. Making periodic reports directly available to the workers themselves rather than to supervisors	Internal Recognition
F. Introducing new and more difficult tasks not previously handled	Growth and learning
G. Assigning individuals specific or specialized tasks, enabling them to become experts	Responsibility, growth, and advancement

Source: Frederick Herzberg's "One More Time: How Do You Motivate Employees?"

Horizontal loading can be defined as challenging the employee to increase production amounts or adding another meaningless task to the existing one.
Vertical job loading can be defined as removing controls while keeping accountability and introducing new and more challenging tasks not previously handled.
Motivators needed (table heading) can be defined as motivating factors management should provide to their employees.

Appendix II - Write-downs of Financial Institutions in 2007

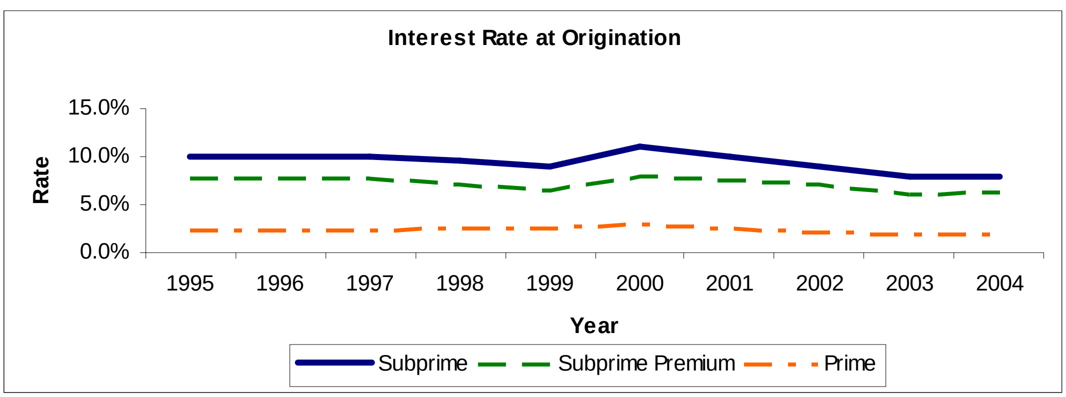
Write-downs Relating to Subprime Mortgages		
Date	**Company**	**Amount**
09/18/07	General Electric	$350,000,000.00
10/01/07	Citigroup*	$11,000,000,000.00
10/15/07	Nomura	$621,000,000.00
10/17/07	JP Morgan Chase	$1,300,000,000.00
10/24/07	Merrill Lynch*	$7,900,000,000.00
10/26/07	Countrywide	$1,200,000,000.00
10/31/07	Deutsche Bank	$2,300,000,000.00
11/01/07	GMAC	$570,000,000.00
11/01/07	Credit Suisse	$1,900,000,000.00
11/06/07	IndyMac Bancorp	$575,000,000.00
11/07/07	Morgan Stanley	$3,700,000,000.00
11/07/07	AIG	$2,500,000,000.00
11/09/07	Wachovia	$1,100,000,000.00
11/13/07	Bank of America	$3,000,000,000.00
11/14/07	Bear Stearns*	$1,200,000,000.00
11/14/07	HSBC	$3,400,000,000.00
11/15/07	Barclays	$2,700,000,000.00

*CEO resigned (Citi & Merrill)

*Co-President resigned (Bear)

Source: Wall Street Journal, http://www.wsj.com

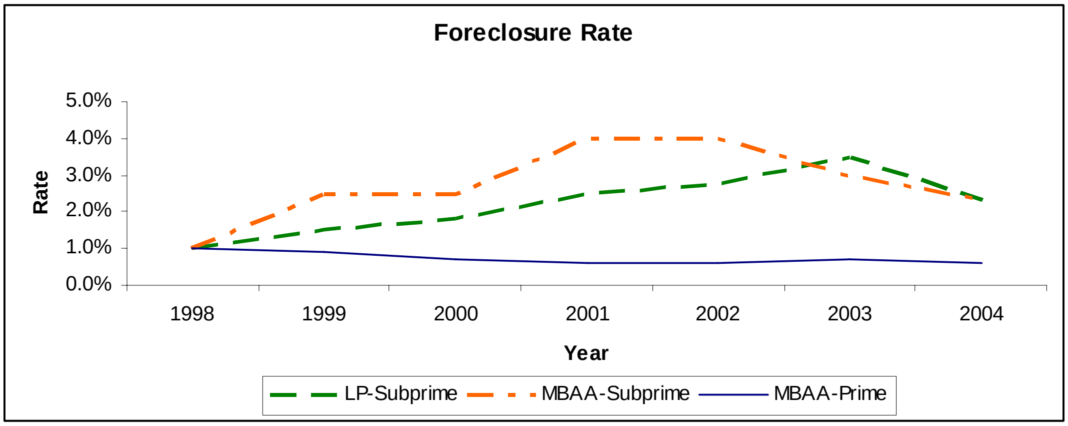
Appendix III - Interest Rates at Origination



Sources: Freddie Mac Mortgage Market Survey, LoanPerformance, and *The Evolution of the Subprime Mortgage Market.*

Prime is the 30 year fixed interest; Subprime is the 30-year interest rate at origination. The Subprime Premium is the difference between the prime and Subprime rates.

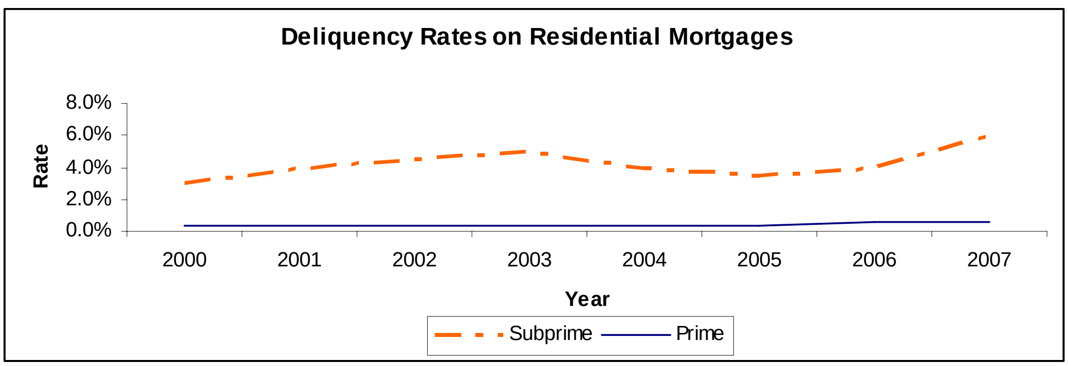
Appendix IV - Foreclosures in Progress



Sources: Mortgage Bankers Association of America (MBAA), LoanPerformance (LP), and *The Evolution of the Subprime Mortgage Market*.

The rate of foreclosure in progress is normalized to 1 at the beginning of 1998.

Appendix V - Rate of Delinquency on Residential Mortgages



Source: Mortgage Bankers Association of America and *Credit Quality of Subprime Residential Mortgages*

Appendix VI - Summary Tables from the Jackson and Burlingame Study

All tables are from *Kickbacks or Compensation: The Case of Yield Spread Premiums* and are used with permission. The data in the study were obtained through document discovery in litigation that was subsequently settled. One of the authors of the Jackson and Burlingame study served as an expert witness on behalf of the plaintiff class.

Definition of Terms in the Following Tables

1. Original Sample refers to the one hundred eleven loans used in the study that the defendant institution originated by a single mortgage broker.
2. Plaintiff's Sample refers to the eight hundred loans selected under the supervision of the court on behalf of the plaintiffs.

3. Above Par refers to a loan that bears a slightly higher interest rate for which a lender is willing to pay more than one hundred cents on the dollar. Typically the excess over par is paid to the mortgage broker in the form of a yield spread premium.
4. Par refers to a loan that a lender funds at one hundred cents on the dollar, providing the exact amount of money needed to cover the borrower's loan.
5. Below Par refers to a loan that bears a slightly lower interest rate for which a lender is willing to pay less than one hundred cents on the dollar. The borrower would pay "discount points" to the lender to cover the difference between the loan amount and the total price. A portion of the discount points (depending on the loan) were retained by the mortgage broker as a portion of his or her commission.
6. Retail refers to a loan a lender made directly to a borrower without a mortgage broker. No yield spread premiums were paid on retail loans.
7. Defendant's Sample refers to the approximately two thousand, one hundred loans selected under the supervision of the court on behalf of the defendants. All of the loans in the defendant's sample originated through a mortgage broker and contain above par, par, and below par loans.
8. Loans with YSP refers to loans where a yield spread premium was paid to a mortgage broker.
9. Loans without YSPs refers to loans where no yield spread premium was paid.
10. True Par Loans refers to a loan at par.
11. Retail Subsample refers to a loan a lender made directly to a borrower without a mortgage broker. No yield spread premiums were paid on retail loans.

Table 1

Loans Available for Analysis				
	Original Number	**Available for Analysis**	**Matched with Database**	**Reclassified Based on Price**
Original Sample	112	111	108	108
Plaintiff's Sample	802	764	745	745
Above Par	202	202	202	190
Par	200	191	191	186
Below Par	200	183	182	199
Retail	200	188	170	170
Defendants' Sample	2,137	2,110	2,092	2,092
Total Loans	**3,051**	**2,985**	**2,945**	**2,945**

Table 2

Incidence of Yield Spread Premiums					
	Loans in Group	**Loans with YSP on HUD-1**	**% of Loans with YSP**	**Loans with YSP Reported on Database**	**% of Loans with YSP Reported**
Original Sample	108	98	90.74%	99	91.67%
Above Par Subsample	190	182	95.79%	190	100.00%
Defendants' Sample	2,092	1,728	82.60%	1,806	86.33%
Total Loans	**2,390**	**2,008**	**84.02%**	**2,095**	**87.66%**

Table 3

Magnitude of YSP for Loans Where YSPs Were Paid			
	Average (% of total loan)	Average (US$)	Total (US$)
Original Sample	1.16%	$1,442	$142,743
Above Par Subsample	1.54%	$1,878	$356,731
Defendants' Sample	1.54%	$1,848	$3,337,585

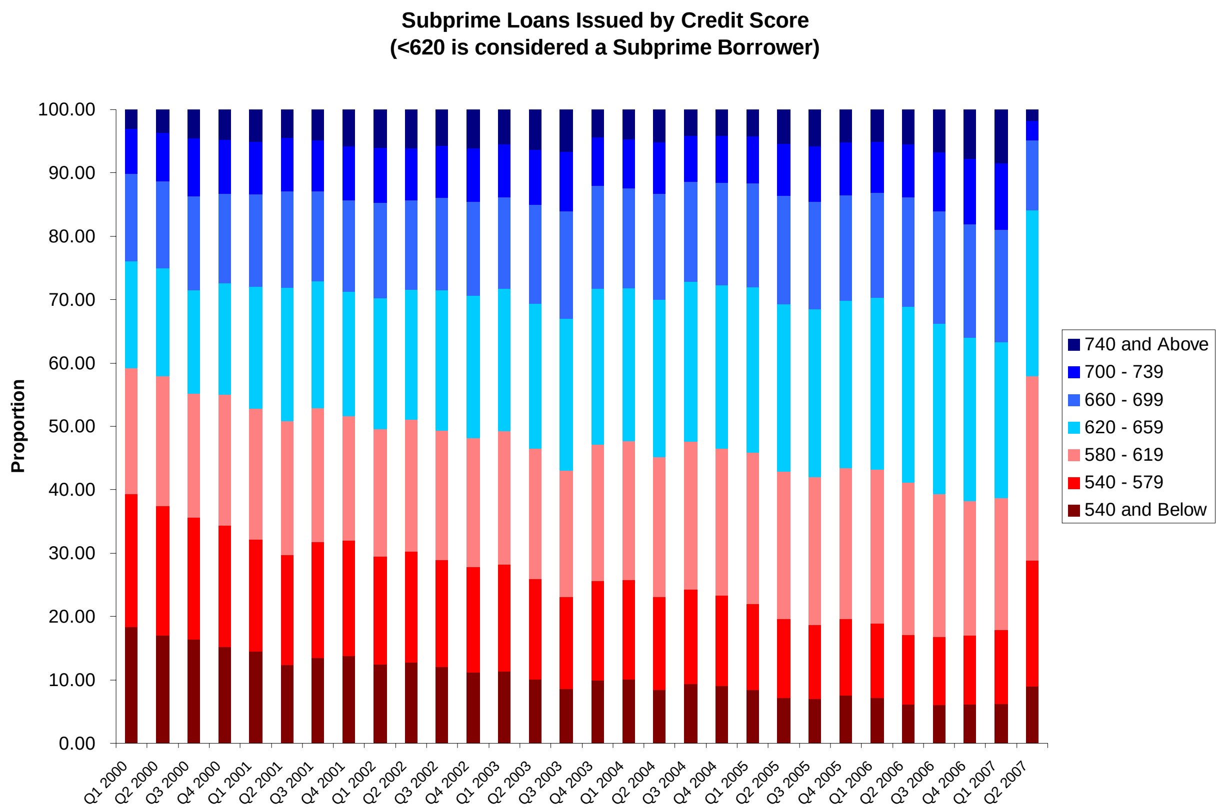
Table 4

Average Mortgage Broker Compensation					
	YSPs	Origination Fees	Other Compensation	Credits	Total Mortgage Broker Compensation
Loans with YSPs					
Original Sample	$1,442	$1,194	$402	($180)	$2,858
Above Par Subsample	$1,878	$541	$347	($236)	$2,530
Defendant's Sample	$1,848	$466	$378	($192)	$2,500
Loans without YSPs					
True Par Loans	$0	$1,361	$352	($64)	$1,649

Table 5

Average Borrower Costs					
	Total Mortgage Broker Compensation	Mortgage Broker Itemized Expenses	Lender Fees	Other Pass Through Costs	Total Borrower Costs
Loans with YSPs					
Above Par Subsample	$2,530	$221	$252	$1,075	$4,078
Defendant's Sample	$2,500	$200	$259	$1,329	$4,288
Loans without YSPs					
True Par Loans	$1,649	$185	$287	$1,088	$3,209
Retail Subsample	($48)	$0	$671	$377	$1,000

Appendix VII - Proportion of Prime and Subprime Borrowers who have Subprime Loans



Sources: LoanPerformance and *Subprime Debacle Traps Even Very Credit-Worthy*

UTILIZATION OF HANDHELD COMPUTING TO ENFORCE PROCEDURAL COMPLIANCE

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Abstract

Elevating human performance and simplifying compliance is an ongoing challenge for owners and operators of nuclear facilities. Enforcing procedural compliance in the workplace with a new set of processes that simplify communication to and from the field, and improve information flow, will be vital to addressing this issue.

1. Introduction

Standards and procedures are necessary and vital in any industrial setting. With ongoing public scrutiny and the severe consequences of failure, nuclear contractors must be particularly rigorous in monitoring and documenting the outcomes of all work. Employees at the workface are expected to be intimately familiar with procedures governing practices and it is often the expectation that procedures are followed verbatim with a completed work record tracked and signed off, including independent verifications at key junctures.

What is the fundamental source of non-compliance?

When procedures are not followed, questions are raised as to how the work was conducted and why the procedures were not followed. Human performance deficiencies are the fundamental source of non-compliance and the need perpetually exists to evaluate new alternatives to increase compliance.

What are the real costs of non-compliance?

Typically increased costs and time to deliver are the key indicators most projects are concerned with. While the cost and schedule impacts are immediately visible and tangible, there are many other significant risks propagated by non-compliance issues, including:

- Risk to License to Operate (This is equally true for Contractors and Operators)
- Penalties assessed by Regulators
- Mandated Inspection Frequency Increases
- Potential removal from bid lists
- Decreased workplace morale

Will more procedures help?

A common misconception is that more procedures at the workface will increase compliance. Business processes require procedures, however when excessive, they may actually lead to increased non-compliance. What is truly required is an overarching set of processes to communicate information from and to the field, which rapidly reveal non-compliance or preferably demonstrate compliance.

What are ideal processes?

The ideal process communicates clear instructions in a timely fashion to a properly trained, qualified and equipped work force. These processes allow rapid communication, of concerns and objective evidence of compliance back to the owners and regulators. Additionally the processes assist with proper checks and balances to ensure suspected non-compliances are immediately identified and resolved.

How can handheld technologies improve processes?

Handheld technologies have the ability to empower the worker in the field and elevate human performance with:

- embedded and enforceable procedural requirements
- rapid and clear communication of achieved status, work force concerns and suspected non-compliance
- transparent objective evidence of compliance

This paper will focus on three key questions:

1) What known factors contribute to non-compliance?

2) What current practices can and should be optimized to increase procedural compliance, empower the workforce and reduce rework?

3) How can the utilization of handheld or mobile computing at the workface increase procedural compliance?

2. Factors Contributing to Non-Compliance

As discussed in Section 1, a key contributor to non-compliance at the workface is negative human performance. This can encompass any number of categories of human behaviour based on the chosen categorization method. We will discuss a variety of these in the following sections.

2.1 Cognitive Reliability and Error Analysis Method (CREAM)

This process developed by Hollnagel [1], identifies a number of general categories of human performance and their impact on non-compliance at the workface. This study focuses on operational aspects of a nuclear facility, however, the same factors are observed in maintenance and construction.

The categories identified through CREAM are as follows:

- Maintenance failure,
  - e.g. equipment (controls, resources) does not function or is not available due to missing or inappropriate management.
- Inadequate quality control,
  - e.g. lack of resources or supplies.
- Management problem,
  - e.g. the line of command is not well defined and control of the situation may be lost.
- Design failure,
  - e.g. the interface is inadequate, and the cause is clearly a design failure.
- Inadequate task allocation,
  - e.g. the organisation of work is deficient due to the lack of clear rules or principles.
- Social pressure,
  - e.g. the individual's understanding of the situation is guided or controlled by the group. [2]

Hollnagel's categories are important to the discussion on human performance and its role in non-compliance; these methods place a specific focus on the cognitive aspects of human behaviour. It can be seen from each of the 6 categories defined that an overall lack of appropriate processes in place to manage the information flow is a root cause for each of the breakdowns in a given event.

2.2 Measurement and Classification of Rework

The direct result of non-compliance incidents at the workface is rework – examples of rework as defined in this study, include re-engineering a part that did not meet specifications or re-performing a task that was not completed according to the defined procedures. Love et al. (1997) proposed a rework classification system from preliminary study findings of two construction projects: residential development and industrial development. They classified rework into three principle groups: (1) People, (2) Design, and (3) Construction [3], as illustrated in Figure 1.

They demonstrated that a number of causes were encountered for each group. The majority of rework causes are common causes, which can be attributed to the system (process). They further conclude that some causes are interrelated due to complexity of construction operations [3].

Figure 1 illustrates that a focus on improved processes and communication methods can have a significant impact on reducing the amount of rework in the field. Timely and effective communication of goals, abilities, responsibilities and challenges as encountered would address or mitigate the majority of "People" based issues as well as identify and minimize the effects of the construction and design issues.

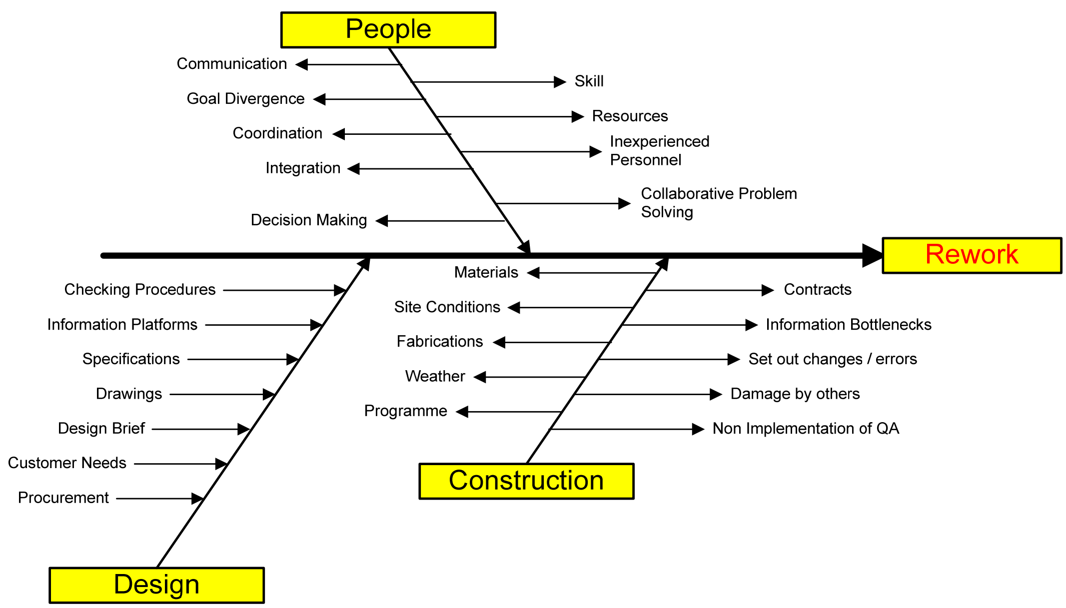

Figure 1 - Generic Cause and Effect Rework Diagram
Derived From Qualitative Data, [3]

Figure 2 expands upon the framework of rework contributors defined by Figure 1. This diagram provides a more detailed view of the three general groupings provided. The 'People' grouping can be divided further into two sub-groupings: Human Resource Capability and Leadership & Communications. There is a gap between the capability of resources in the field and the communication of requirements by the leadership team.

Figure 2 further illustrates improved information flow processes between engineering and the field provides a similar improvement opportunity. There is a gap between communicated changes in work and the ability of resources in the field to react – the result being increased rework. The information flow gap, shown here, needs to be closed.

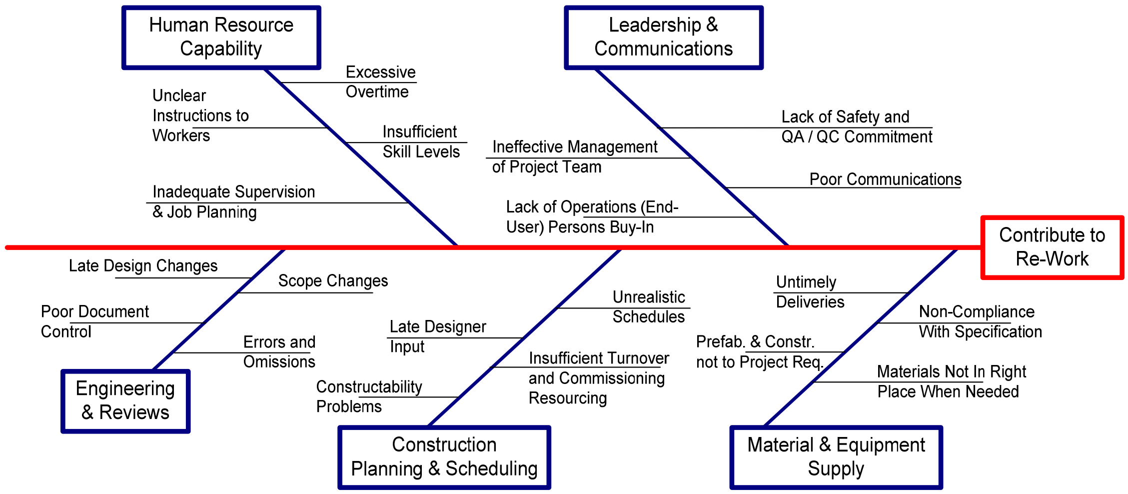

Figure 2 – Fishbone on Rework Cause Classifications (updated in 2002), [3]

3. Development of Industry Practices

The origins of quality processes

Early quality control efforts were self-imposed sets of rules; if you were making a product or tool, it was most likely for yourself and the only requirement was for it to perform as intended. The arrow point you were chipping had to be fit for your intended purpose or you might well starve. When craftsmen entered the picture, they started to create goods and provide services to customers for fair retribution – this led to the formation of Guilds. These Guilds managed to self-police and institute minimum standards of training and quality.

Quality problems resulting from more complex items being assembled by an unskilled or under- trained work force in World War I necessitated the introduction of Quality Control Inspectors (QCI). At present, the process of ensuring conformance and gathering results has changed little in the past 80 years with the QCI figuring prominently in the process.

Current processes for ensuring compliance

The primary evolution in the processes has occurred in how the efforts of the QCI are directed. The following methods have grown in industry:

- Written Standards assist in defining acceptance and rejection criteria or fitness for purpose
- Statistical Quality Control methods allow us to detect when a process is "going off the rails"
- Advances in inspection technology allow us to more completely examine a given item for which consequences of failure are high
- Management processes governing organizational structures, training, qualifications, procedures and documentation establish "laws" which the QCI can then "police"

The effect of these improvements has been to dramatically improve the quality of goods and services available, which allows industries like Nuclear Power Generation to exist.

Information Overload

While these improvements have allowed very complex critical activities to be completed, the drawback to these advancements has been a steady surge in information and requirements being pushed to the workface with a corresponding increase in required documentation of objective evidence of compliance.

The information required to perform and document maintenance and construction tasks in the nuclear industry is growing to such an extent the ability of the performer to comply with the defined process has become severely compromised. Construction and maintenance personnel will be expected to comply with hundreds of instructions or procedures, many of which are considered “continuous in-hand” - meaning to be followed implicitly with specified independent verification activities during the activity.

With sufficient skilled labour the existing processes can manage the workflow and attendant documentation, however it is clear the current situation at the workface is not ideal and improvements must be made.

Skilled labour shortage

With a greying trade population and the resurgence of large complex projects, we are looking at a workforce in their 20’s and their 50’s. One group has minimal experience; the other has no legs. The American Welding Society predicts that by 2010 demand for skilled welders may exceed supply by about 200,000. With the current age of welders averaging 54, and climbing, welding schools and on-site training programs are not producing replacements fast enough. This is true for all skilled trades.

Statistics Canada predicted skilled-labour shortages in Western Canada five years ago based solely on the country's biggest demographic trend: the aging of the baby boomers [4]. This was without knowledge of the soon to be overheated Alberta economy. Currently, quality control inspectors in Alberta with minimum qualifications are billing as much as $10,000.00 weekly in Fort McMurray. Even taking into account the $300,000 mobile homes, this is a significant inducement for tradespersons especially when factored against the nuclear industry’s favored 40 hour workweeks.

4. Handheld Technology and Procedural Compliance

With the resurgence of the nuclear industry, technological innovation will be necessary to assist operators in achieving cost effective compliance. The identified growth in the complexity of procedures at the workface calls for processes that reduce the impact of human performance-related non-compliance incidents and improve communication and information flow.

Handheld technologies at the workface show a significant opportunity to meet both objectives. Implementing new technologies at the workface to streamline and simplify existing processes, without further straining project budgets, will become a fundamental necessity for all nuclear projects.

It is important that any new technology introduced meet these key requirements:

- Reduces process complexity
- Has a short learning curve for field workers
- Is a cost effective solution

There is evidence that procedural compliance is more likely when staff view procedures as being useful and describing the “quickest and most efficient way of doing the job” [5]. Any new technologies introduced that are difficult to learn will be viewed as more complex and inefficient than current methods and will be met with resistance.

4.1 Impact of Handheld Technology on Effective Communication

Key developments in Technology Allowing Mobile Computing

Mobile computing and handheld technology has made significant strides towards closing the gap between the current and the expected level of human performance. In 1965 Gordon Moore postulated computers of a given size and price would double in performance every 2 years. Since then the prediction has held true with an even shorter interval of 18 months and is just one of the technological advancements allowing the workforce of today to be equipped with these tools.

Areas Benefiting From the Utilization Handheld Technology

Handheld technologies can aid in supplementing management processes. Inserting simple applications to improve current processes directly into the existing workflow can achieve a net benefit of significantly improved communication. These applications can assist field workers remain compliant through a number of mechanisms such as:

- Ensuring key information is in hand
- Utilizing forms with detailed instructions embedded
- Gating forms to enforce required actions
- Allowing worker to take credit for completed work
- Date and time stamping operations
- Automating detection of and highlighting suspected non compliance
- Elimination of transcription errors
- Easing document revision control concerns
- Facilitating remote review of results
- Speeding results archiving

Non-Compliance Indicators Addressed With Handheld Technology

Recall the categories defined in Section 2.1 relating to human cognitive behaviour and its effect on non-compliance. An analysis of each category shows opportunities to improve process management and human resource capabilities through handheld technology:

1) Maintenance failure, e.g. equipment (controls, resources) does not function or is not available due to missing or inappropriate management:

Handheld technology can identify these issues earlier in the process during detailed walk downs of work conducted utilizing forms equipped with required reference material and easily populated responses to anticipated variables. Walk down personnel take ownership of the process by accepting all of the attributes they have verified. Unverified or unacknowledged attributes prompt immediate follow-up.

Management is alerted to problems with resources or controls during the planning phase when it is possible to reassess the work as opposed to during the execution. The status of walk down activities is easily formatted to provide progress reporting to determine actual state of readiness leading into the execution phase.

2) Inadequate quality control, e.g. lack of resources or supplies:

Documentation can be gathered electronically, through intelligent forms, bar code readers, RFID, digital cameras or other handheld technology by performer, peer reviewer or QCI at the work face.

This information can be screened for acceptability through automated processes or remote reviewers, significantly reducing the amount of time and effort spent on QC checks. This same information can be used to provide true status reporting on accepted work.

3) Management problem, e.g. the line of command is not well defined and control of the situation may be lost:

Senior management can communicate requirements simultaneously throughout the organisation to supervision and trades at the workface receiving repeat backs and providing documented evidence of three way communication.

4) Design failure, e.g. the interface is inadequate, and the cause is clearly a design failure:

Handheld technology can identify these issues earlier in the process through a detailed walk down of work conducted utilizing forms equipped with required reference material and easily populated responses to anticipated variables.

5) Inadequate task allocation, e.g. the organisation of work is deficient due to the lack of clear rules or principle:

Inequities in task allocation are readily detected due to transparent real time reporting. With reporting slaved to accepted and documented task completions or by peer reviewed reporting senior management is looking right at the workface.

6) Social pressure, e.g. the individual's understanding of the situation is guided or controlled by the group:

Utilizing smart forms with embedded procedural requirements and detailed explanations of expectations available in picture, sound or video, culminating in individuals signed acceptance or questioning of the assigned task allow individuals the freedom truly exercise a questioning attitude.

Reducing Rework Resulting From Non-Compliance

Beyond the impact on human performances leading to non-compliance, the utilization of handheld technology can greatly reduce the communication gap between the project leadership and the field resources. Streamlined information transfer reduces confusion at the source and supports staff by putting the needed information at the workface. Controlled back-end processes allow the Leadership team to focus on putting the correct up-to-date procedures with supporting documentation, into the hands of field resources directly at the source of the workflow.

Further, the utilization of handheld technology can significantly reduce the information flow gap between engineering and the field. Implementing a workface process to notify the project management team of design-related issues, such as non-compliance with defined procedural specifications when they are discovered eliminates, the time spent tracking down issues that are often lost in the paperwork chain.

Addressing the communication and information flow gaps found in existing procedural operations will significantly impact the contribution of human performance non-compliance to rework performed in the field.

Managing Information Output

Managing the information flow from the field is a key to process improvement and successfully reducing non-compliance long-term. Proper document management systems and ongoing records are a necessity to reduce memory loss on a project. Records of work are maintained indefinitely; a process must be in place to ensure proper tracking of all operations and a record must exist to show all procedures were properly adhered to.

Handheld technology managing output at the workface improves the overall information management system by putting records directly into the system. This has intangible benefit of reducing the time spent tracking and filing paperwork, reducing the stress on the organization to monitor records and ensuring if issues arise, the documents are readily accessible. By funneling documentation from the workplace directly into the organization’s database, project scheduling can be improved and deficiencies in management procedures can be quickly identified.

5.0 Conclusion

Opportunities exist for improvement within existing methods that handheld technology can supplement. With the documented challenge to ensure project compliance, the opportunity exists for new technologies to augment and aid the compliance efforts.

The surge of handheld technology into the mainstream combined with the maturity of software available for such systems in recent years have increased the accessibility to your project as a cost-effective solution.

The ideal process meets the following criteria:

- Communicates clear instructions to the workface in a timely fashion
- Remains flexible with the ability to adapt to change immediately
- Reduces process complexity for the field resources
- Reduces the time spent on management checks and reviews
- Places ownership of quality process in the hands of field personnel
- Provides objective evidence of compliance for key stakeholders
- Communicates between stakeholders, to ensure key expectations are understood before work is conducted
- Provides consistent means to measure, audit and communicate all field activities
- Reduces paperwork and improves the efficiency of document turnover
- Creates searchable records for usable OPEX
- Minimizes archiving costs and effort

Utilizing handheld technologies to aid clear, concise communication at the workface will help mitigate non-compliance spurred by negative human performance.

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REPLACING PERFORMANCE REVIEWS TO IMPROVE PERFORMANCE:
The Continuous Development of People Process

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Abstract

The Environmental Laboratory (ELS) at the State of Delaware began a process of continuous improvement in January 2001. By 2002 the managers realized that their current performance review process was undoing much of the benefits of the continuous improvement initiative. They decided to stop conducting performance reviews even though they were mandated by the State. They called an all-hands meeting and decided, as a team, to methodically counter the process by developing a new and more effective process. This was deemed to be a protest and caused quite a stir among state authorities.

To demonstrate the need for change, ELS conducted an internal survey regarding the effectiveness of the current performance review process. The results of this survey clearly showed that the traditional policy was not fulfilling its purpose.

In 2003 the Laboratory received permission from the State Human Resource Office to conduct a pilot redesign of the performance review process. A cross functional team came together to accomplish this task. The result was a new process that was consistent with Dr. Deming's Theory of Profound Knowledge. They called it *The Continuous Development of People Process or CDPP.*

The laboratory implemented the CDPP and conducted a new survey. The results exceeded all expectations. Today, they continue to improve using CDPP process along with other processes in the laboratory. This paper describes how they did this and the results they achieved.

Text: The Meeting
In January 2002, approximately 12 months after beginning a new quality improvement journey, approximately 33 people (both managers and staff) convened a meeting in a small conference room shared with the Human Resources Office. The Environmental Laboratory Section (ELS) is part of the Division of Water Resources (DWR) in the State of Delaware, Department of Natural Resources and Environmental Control. The Laboratory faced a difficult problem. The annual performance review was due. The DWR Director was becoming disturbed because none of the Laboratory Managers, including the Laboratory Director, Dr. Sergio Huerta, had completed or submitted annual reviews as required by State Policy. The policy required performance reviews for every employee to be submitted no later than January 31st of each year. Dr. Huerta had stalled the submission of documents because he was not yet ready to present concrete facts that told a complete and compelling story about organization-wide cultural change and improvement. The Laboratory Managers were also determined to hold a "performance review mutiny," if necessary, to avoid returning to the traditional State Performance Review Process, which they found counterproductive. They were concerned that it would damage the levels of trust within the lab they had worked so hard to improve over the past year.

History
In 2001, those same managers began a process, as a team, to change the culture, improve morale, improve the quality of work, and the overall productivity of the lab. The pains of change were intense in 2000. This was not a great year for the laboratory. Yet deep inside, the Managers and the Laboratory Director knew that it was an essential move for survival. At that time, the Human Resource Office was located adjacent to the lab. It was visited at least 1 to 3 times per week, by disgruntled employees who "needed" to vent about the "horrible" conditions in the lab and how some lab manager(s) needed to be fired. The DWR Director and the ELS (Laboratory) Director found

themselves in the middle of myriad emotional employee issues. The Academy of Management estimates that the average manager spends at least 30% of their time on unproductive conflict. The Laboratory Director experienced at least that much if not more.

Trust levels were so low that the DWR Director had to become personally involved. He ordered an investigation of the Laboratory Director (Dr. Huerta). Internal facilitators were brought in with the purpose of finding out what was wrong with the management of the laboratory. This initiative further pitted employees against management. The investigation made everyone a 'suspect.' The preexisting gap in communication and trust between employees and management widened even more. Although the intentions were good, the investigation made for a worsening environment.

For safety reasons, lab employees worked in areas that had tile floors while Laboratory Managers worked in carpeted areas. Employees referred to managers as "the carpets" and to themselves as "the tiles." These labels defined the essence of the rift and reinforced already damaged relationships and low levels of trust between people. Some key managers threatened to quit because they could not see how this potentially disastrous situation could be improved. People in the Laboratory felt as if they had reached "bottom." Now, the question was - How could the lab begin to make the necessary improvements. Who would help? Was it worth the effort? Should the Laboratory be closed and the work outsourced?

The '99 Delaware Quality Conference, in Newark, Delaware was a place to find help. This is where the Laboratory Director and the Laboratory Managers met Wally Hauck for the first time. Wally presented a breakout session that was consistent with Dr. W. Edwards Deming's philosophy of Profound Knowledge titled *"How to Create a Culture of Trust and Motivation."* The presentation inspired the five lab managers who were in the audience. They realized that this could be applicable to the Laboratory. That day, they decided to begin their journey and work with Wally and the *Values and Systems Problem Management Model*.

The *Values and Systems Problem Management Model* developed by Wally is based on research by Rob LeBow and Dr. W. Edwards Deming, which suggest that when faced with an organizational problem, leaders need to begin by asking a single question: *Is this problem a <u>values</u> issue, or <u>system</u>s issue?*

When a problem is due to *values* issue, it involves a purposeful break in integrity like: lying, sabotage, being disrespectful or failing to perform as agreed. Problems that are values based are behavioral, which means individuals have choices as to how they can react or behave. For example, telling or not telling the truth is a choice. Being respectful in the face of disrespect is a choice. Values issues are very serious because they lead to an emotionally charged environment, which often puts good relationships at risk. This is exactly what managers in the laboratory were experiencing.

When a problem is due to a systems issue, they include mistakes, oversight, forgetting, poor training, poor quality, poor performance or lack of motivation. One of Dr. Deming's premises is that the root of a problem is due to a problem in the system in at least 94% of instances and that it manifests on the surface as a "people" problem. This was happening in the lab.

What is the Current Performance Appraisal Process?

Performance appraisals have become a fact of life in the business world especially over the past sixty years. Authors Tom Coens and Mary Jenkins, in their book <u>Abolishing Performance Appraisals</u>, estimate that at least 90% of organizations conduct performance reviews in some form or another even though performance appraisals add no measurable value because of their focus on judging and criticizing employees rather than on evaluating and improving the methods and processes used by employees to deliver products and services.

A performance appraisal is defined as a management tool to *judge* the behaviors, characteristics, and traits of an employee. It is a managerial control technique that has five key characteristics:

- Employee performance, behavior, and traits are rated (judged) by someone other than the employee
- The ratings, judgments and descriptions relate to a specific time period (not a project or process or the organization's overall success)
- The tool is systematically applied to all employees, as individuals

- It is mandatory
- Results are often kept by the organization for future reference

Performance appraisals come in different forms. They may range from the simple written appraisal of an employee's performance by his or her manager, to a more intensive method called the 360 degree feedback instrument in which all those who "surround" the employee - customers, boss, colleagues and direct reports – give a rating (a grade). Employees are rated (or graded) most often on a scale of 1 to 5.

There are six very important functions of the appraisal:

- Improve the performance of the organization
- Improve individual development and performance
- Compensation decisions
- Career development and staffing decisions
- Improve communication and relationships (supervisor to employee)
- Legal protection of the organization whenever termination of non-performing or troublesome employees is necessary.

Are appraisals fulfilling their functions?

Although organizations that rely on performance appraisals have the best of intentions, those intentions often go unfulfilled. Employees don't see value in performance appraisals. A recent Watson Wyatt survey revealed that only three out of ten U.S. workers say their company's performance management program actually does what it is intended to do: improve performance. Only two out of ten workers say their company helps poorly performing workers improve. A survey by the Society for Human Resource Management (SHRM) revealed that only 61% of their members are satisfied with their performance appraisal systems.

Why is the appraisal process failing?

Performance appraisals fail to achieve the intended purpose because they are based on the subjective judgment of employees by a manager or supervisor, rather than based on concrete facts (data) and evidence of employee processes and observed behaviors. Performance appraisals give employees a 'grade' that can determine their pay and/or promotional opportunities. Even when the employer's intention is positive - improving motivation and performance -, employees often end up feeling unfairly rated and unfairly judged. This uneasy feeling about being judged reduces levels of trust and often reduces an employee's willingness to contribute improvement ideas, to have fun, and to be more productive. This is the opposite of what employers hope to accomplish through performance appraisals.

There are several reasons why making a subjective judgment about a person, as opposed to using concrete data and direct observations about their methods, undermines the appraisal process:

1. **People don't like to be judged.** Try this at home: announce to your "significant other" that it's time for you to do a performance appraisal of them. Let them know that you've decided that improving their performance will help to enhance your (family) well-being and improve your relationship. What kind of reaction do you expect to get? Nearly 80% of employees feel that they are among the top 25% within their group. Any rating below that will cause disappointment and damage motivation and trust.
2. **Judgment is subjective, not objective**. Judgment is either an opinion or an interpretation. Employees need proof in the form of facts (data, direct observations) in order to be willing to improve. Since managers are busy and short of time, they rarely collect enough facts or useful information to provide constructive feedback and deliver credible observations.
3. **Judgment represses creativity and productivity; it deteriorates trust and communications; it gives rise to fear.** Employees fear damaging their reputation through the loss of credibility, professional standing, and embarrassment when they are judged to have poor performance in an appraisal. These may affect their employability, their work relationships, and ability to advance. Employees who fear a low rating will take few risks and suggest few new ideas. They "play it safe."
4. **It is difficult if not impossible to distinguish between employee performance factors and employee situational factors.**

The circumstances surrounding an employee can significantly affect their performance. However, as important as this is, it is difficult to evaluate fairly at the time a person is being subjectively rated. “Stuff” happens that can negatively or positively affect a person’s performance. For example, a report could be late because the person did the extra work to ensure accurate information. How can a manager rate an individual poorly if they made sure that the report was precise and accurate? Would an inaccurate report be preferable just to meet the deadline? Judgments by a manager will seem unfair from the employee’s perspective.

5. **The problem may be the process, not the employee.** In most cases, employees are doing the best they know how. Performance problems often result from faulty processes or poor training, rather than from an individual’s actions. Judging employees instead of evaluating workflow methods and processes is unfair to the employee. At the same time, it prevents managers from focusing on improving processes and training.

Consider the following: A company hired a receptionist to answer the phone and perform basic customer service tasks. They hired her as a temporary employee; did not provide training; and asked other customer service employees to judge her overall performance and track mistakes. After two months, they decided to fire her. Her performance reflected the impossibility of overcoming an already dysfunctional system more than her skills as a receptionist. The basic theory upon which appraisals are based is flawed.

Systems thinking started to be embraced in the early 1980’s when Lloyd Dobbins broadcast a documentary titled *If Japan Can, Why Can’t We?* It helped people understand Dr. Deming’s philosophy of Profound Knowledge and to appreciate the concept of a system. Systems thinking call makes assumptions that run contrary to the made by ‘command and control’ forms of management. Some of these are summarized in the following table:

Command and Control Model Assumptions	**Values and Systems Model Assumptions**
Improving *individual* performance improves organizational performance	Improving *processes* improves organizational performance
Evaluating employees improves employee performance	Evaluating employees most often destroys intrinsic motivation, commitment, risk taking etc.
Employees have control over factors that contribute to their assigned goals (often set by others)	The system impacts the results of an organization more than 94% of the time
Managers can fairly, accurately, and consistently evaluate employees separately from their contributions to the system and from others on their team	It is impossible for a manager to fairly, accurately and consistently remove stereotyping, favoritism, bias, or other errors during the performance appraisal process
Evaluations cover an arbitrary period of time (year or months) to give feedback about the employee’s performance over that period of time	Evaluation cover and happen at the end of a process cycle or at the completion of recent, memorable, or significant events in order to promote learning rather than after an arbitrary period of time when significant details of achievements may be forgotten
Evaluations need to be mandatory because employees would not request them	People want fact based feedback rather than criticism to learn from this and to improve (intrinsic).
Everyone can be evaluated the same way with the same procedure and forms – “One size shoe fits all” approach	Different people have different needs and desires. These must be acknowledged and honored.
Performance reviews motivate employees to do a good work	Performance reviews can destroy motivation by emphasizing short-term performance, enhancing competition (win-lose rather than win-win) and leaving people feeling crushed and despondent

“When organizations begin to recognize the ineffectiveness and damaging effects of their appraisal system, they embark on fixing it. Usually the “fixing” focuses in one of two areas: (1) improving the design of the process (e.g.

new criteria, new scales, more interaction, more raters, and more frequent appraisals) or (2) improving the implementation (e.g., better training, stricter rules to ensure timely execution, checking raters for consistency and bias tendencies). These improvement initiatives do little to help, however, because the problem with appraisal is neither in the design or implementation-it is beneath the surface in the form of underlying assumption, i.e., the basic premises and beliefs upon which the appraisals are built."[i]

An Alternative to Performance Appraisals
If managers cease to judge and rate employees, what should they do instead? The answer is - rather than focusing on rating the employee as an individual, focus on the employee's methods and processes. In a word, "eliminate the rating."

First, recognize the need to replace judgment with data. Collect concrete data and also help the employee collect data. Then use that data to assess performance. For example, if a manger is concerned about an employee's mistakes, that manager can share with the employee a tool to collect data and encourage the employee to make suggestions about how to reduce or eliminate those mistakes. People generally try to avoid making mistakes. By focusing feedback on those mistakes, a manager is effectively emphasizing the negative (mistakes) rather than the positive (eliminating mistakes). Giving a "grade" emphasizes the negative even more powerfully.

Second, 'coach' rather than 'threaten' with a grade. Help the employee work cooperatively with others to improve workflows processes. If a manager wants an employee to answer more calls per hour, help the employee collect data about calls, coach them in ways to reduce wasted phone time, and prompt them to provide suggestions about how to improve call response.

Third, a manager must be willing to evaluate themselves realistically. Not all managers have the skills and abilities to be a god manager. If an employee is failing, the manager must ask him or herself -" What have *I* done that may prevent this employee from being successful? "and "What can I do now to *facilitate* this employee's success?"

Managers must change their focus from first judging people to first judging themselves – their own management principles and practices – and then the methods used by their employees. It is all about methods, processes, and systems rather than about people themselves. Instead of using performance appraisals that rate employees, managers should rate the methods that are being used – and change those methods when necessary to promote the success of the individual and the organization. Motivation, productivity, creativity and fun increase when managers stop judging people and start evaluating the methods that result in good products and services. This is exactly what the laboratory did with their new process called the *Continuous Development of People Process* or *CDPP.*

Trust and Deming
In September, 2003, the International Association of Business Communicators Research Foundation, a not-for-profit 501© corporation that serves as the research and development arm of IABC, conducted a study about trust in the workplace. The Foundation provides knowledge and understanding to help organizations become more effective through communication. It believes that 'trust' is more than a social virtue. It is an economic and effectiveness imperative for organizations that are growing and competing in the global marketplace. Given today's dynamics of change and global competition, high levels of predictable trust are an imperative to have a viable organization.

The authors of this research define trust as the *willingness to be appropriately vulnerable with another (individual or group) based on the presence of competence, integrity, concern about others and the sharing of common objectives.* Trust matters because research shows that the presence of high levels of trust improve organizational effectiveness by creating measurable economic performance; increasing cooperation; reducing opportunistic behavior; increasing participation; reducing crisis; enabling conflict to be productive (not destructive); improving adaptability (handle change); decreasing transaction costs; reducing litigation costs; reducing unnecessary bureaucratic control; reducing administrative expenditures and expensive overhead; and increasing information flow and the quality of information.

This research also suggests that information flow can improve the relationship with supervisors and managers. Increasing the quality and volume of communication has a direct impact on job satisfaction. High levels of trust develop because there is increased behavioral integrity; behavioral consistency; sharing of control; and more demonstrations of concern for others and for work (quality, timeliness, etc.).

The IABC definition of trust is compatible with Dr. W. Edwards Deming's fourteen Points[ii]. The following shows how the Deming points can be organized to align with the IABC definition:

IABC - Integrity (openness, honesty and consistency):
Deming Point 7: "Institute leadership". Deming makes a distinction between *supervision* and *leadership*. The former is quota and target-based; the latter is not.
Deming Point 9: "Break down barriers between departments". Another idea central to TQM is the concept of 'internal customer' and that each department serves other departments that use their outputs rather than management.
Deming Point 11: "Eliminate management by objectives". Deming saw production targets as encouraging the production of poor-quality goods.

IABC - Competence (reliability):
Deming Point 3:."Cease dependence on inspection". If variation is reduced, there is less need to inspect items for defects. Resources can be spent on prevention of defects instead of correcting them after they have occurred.
Deming Point 4: "Move towards a single supplier for any one item." Multiple suppliers of raw materials, supplies, and services lead to increased variation.

IABC - Concern for others:
Deming Point 6: "Institute training on the job". If people are inadequately trained, they will not all work the same way, and this will introduce or increase variation.
Deming Point 8: "Drive out fear". Deming saw management by fear as counter-productive for the long term because it prevents workers from acting in the organization's best interests.
Deming Point 12: "Remove barriers to pride of workmanship". Many of the problems already outlined reduce worker satisfaction.
Deming Point 13: "Institute education and self-improvement". This is self-evident.

IABC - Shared common objectives (goals, values and vision):
Deming Point 1: "Create constancy of purpose towards improvement". Replace short-term reaction with long-term planning.
Deming Point 2: "Adopt the new philosophy". Management must first adopt and follow any new philosophy. To merely expect the workforce to do so is a double standard of practice that demoralizes the workforce and lessens trust.
Deming Point 5: "Improve constantly and forever". Constantly strive to reduce variation.
Deming Point 10: "Eliminate slogans". People try to avoid making mistakes. More often, it's the process (operating procedure) they must follow that leads to mistakes. Harassing the workforce without improving the processes is counter-productive.
Deming Point 14: "The transformation is everyone's job". This is self-evident.

This alignment of Deming points with the IABC definitions of trust lead to the conclusion that implementing Deming's Theory of Profound Knowledge can reduce discouragement and increase trust, pride, and performance. This is what happened in the Environmental Laboratory.

"Trust matters! Trust is related to profits, innovation, successful international business, organizational survival and a variety of crucial worker perceptions and behaviors.. Trust is more than a social virtue. It is an economic imperative for business resilience in a global marketplace."[iii]

Dr. Deming's Theory of Profound Knowledge and the Fourteen Points are prescriptions for high levels of trust. Deming describes a different way of thinking about an organization and about leadership. He proposes that management focus on the context of the organization and the systems within the organization rather than on trying to improve each individual employee - *"A basic principle here is that no one should be blamed or penalized for performance that he cannot govern. Violation of this principle will only lead to frustration and dissatisfaction with the job, and lower production."*[iv] Managers need to spend less time managing individuals and more time managing the organizational environment or its context. The context of an organization can be defined as the environment created by the culture. Organizational culture comprises the attitudes, values, beliefs, norms and customs of an organization.[v] The context for work is created by senior leaders and will either discourage or encourage specific attitudes, behaviors, and impact results and the 'bottom line."

Deming said, *"In place of judgment of people, ranking them, putting them into slots (outstanding, excellent, on down to unsatisfactory), the aim should be to help people optimize the system so that everybody will gain."*[vi]

Deming's Theory of Profound Knowledge can create an effective context for an organization because the focus is on system performance not on individual performance: *"Don't Fix Employees, Fix the Process"*

After implementing the Values and Systems Model, the laboratory began to experience short term wins. Laboratory Managers could see how using the traditional State Performance Review Process was going to propel the Laboratory back to unproductive times by undoing all the successes achieved. They were unwilling to allow that to happen and so they took a stand, as a team.

What happened at the Lab? – Back to *The* Meeting

The managers openly discussed their concerns with the Laboratory Director, Dr. Sergio Huerta. Trust levels in Laboratory had consistently and significantly increased over the past three years as shown by the results of the employee survey (Attachment A). If forced to use the traditional state performance review, the staff would lose trust and degrade relationships and cooperation with the Laboratory Administration because the State of DE performance management process evaluated the performance of individuals and was therefore inconsistent with the Values and System Model. The state process would become a barrier to continuous improvement in the Laboratory.

The Laboratory Managers decided to ask the staff for help in taking a stand and in supporting a performance review "mutiny." The managers and staff conducted an open dialogue and discussed questions such as, *"How do you think our improvement process is progressing now? Is it important we continue our progress? What are your concerns?"* Managers listened to the opinions. Staff and management aligned. Both wanted to continue with the Values and Systems Model. None wanted to participate in the traditional State performance review process.

The State's performance review process had a five point scale: 1= Unsatisfactory; 2= needs Improvement; 3= Meets Expectations; 4= Exceeds Expectations; and 5= Distinguished. Both Laboratory Managers and staff agreed on that day, as a team, that everyone in the Laboratory would be rated as a **3** (Meets Expectations). The managers compiled the forms needed and every person in the Laboratory signed the blank employee performance plans forms. Each blank form was then signed by the Laboratory Director. All forms were then presented by the Laboratory director to the Division Director. The Division Director reacted poorly. He could not accept that everyone received a "meets expectations."

He protested and returned the Laboratory Director's submittal. However, laboratory management and staff anticipated and were prepared for this response. They requested an all-hands meeting with the Division Director to discuss their position. The Division Director listened to staff and decided to support the effort.

The lab management and staff agreed to develop and prove the concept of a new performance management process. This process became the *Continuous Development of People Process*. They pursued and received funding and approval from the State Personnel Office to develop the new Performance Planning Process as long as it was consistent with Federal and State laws and with the basic Human Resource Policies and Procedures. At this point, the Laboratory again solicited the help of Wally Hauck.

How the Continuous Development of People Process (CDPP) Was Created

Wally Hauck and the Laboratory staff formed a process improvement team which included the Laboratory Director, a top Laboratory Manager, the Manager of Human Resources for the Department and the Manager of Labor Relations for the State of Delaware. This group defined a six step plan that included:

Step 1: *Study the present condition*. This step included collecting data that showed the need for a new performance management process. A survey of staff and managers was done online. It showed the current attitude toward the existing performance policy.

Step 2: *Introduce a "Big Why" for the actions, the strategic initiatives, and the process for creating the Continuous Development of People Process*. Staff needed to understand the context and the history of why this next step was critical to their future and to the future of the lab. Without understanding the "Big Why," staff might have assumed that this effort was intended to further strengthen or promote their State process. In addition, the lab staff was asked to participate and provide assistance in developing the new policy.

Step 3: *Train the key team members in the theory and the method.* For alignment purposes, the project team wanted to have a clear and detailed understanding of why the State performance management process did not meet the desired outcomes for the Laboratory. The team attended a workshop that introduced the theory and the methods used to develop policies. Among these are *Emotional Intelligence* by Daniel Goleman, *Lasting Change* by Rob LeBow and William L. Simon, the works of Dr. W Edwards Deming and *Punished by Rewards* by Alfie Kohn.

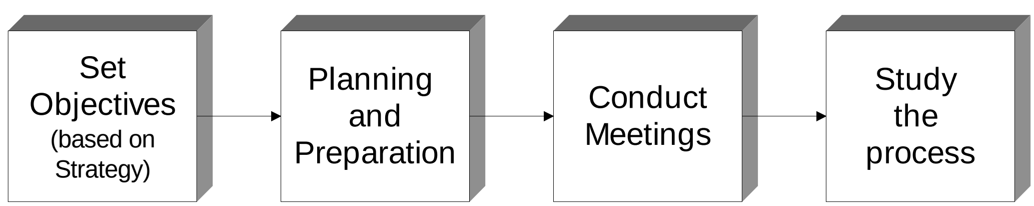
Step 4: *The Team designed the CDPP process.* Once the key knowledge elements, the vision, and the alignment were in place, the project team was able to function with clear objectives and responsibilities toward a new process. The team defined the process and the guiding principles and guidelines to optimize the process once implemented.

Step 5: The *Team presented the redesigned process, along with an implementation plan, to all staff for feedback.* The implementation plan for the new process was rolled out. The Laboratory Director and Managers piloted the new process within the lab and refined it. They provided feedback to the team for additional improvements.

Step 6: *The new process was monitored and revised to become predictable.* An on-line survey of staff and managers will measure attitudes toward the new policy and compare those with the old policy.

The New CDPP
Here are the steps of the CDPP:

Continuous Development Of People Process



Step 1 – Set Objectives: It was critical to create a set of common objectives and clear strategy for the laboratory. These objectives were then communicated to all staff. The objectives were clear and focused for each function within the labs. For example, reducing cycle time was one strategic objective. To do this, the specific objective for the Glassware Cleaning Branch differed from that for the Field Operations Branch. However, each Branch focused on what they could do to reduce cycle time.

Step 2 – Planning and Preparation. In this step, employees and managers complete a set of questions. Forms were created to simplify the discussion of answers and to create an environment of trust with open and honest dialogue. There were three forms created:

(1) Management Self-Awareness see Exhibit B
(2) Employee Self-Awareness Documents see Exhibit B
(3) The Management Coaching Form – See Exhibit C

Step 3 – This is where the employees and managers met to discuss issues and make specific agreements toward common goals.

Step 4 – In this step, people provided feedback about how to change the CDPP in order to improve outcomes. The Laboratory Director and the Laboratory Managers collected suggestions from all involved and made changes to the process so that the intended functions of the performance appraisal would be predictably met. These were:

- Improve the performance of the organization
- Facilitate individual development and performance
- Make fair and useful compensation decisions
- Make career development and staffing decisions and agreements
- Improve the quality of communications and relationships (supervisor to employee)
- Provide legal protection for the organization during termination of non-performing or troublesome employees

The process was then compared to the original process. The managers and staff answered questions in a survey to *show* if there was improvement (Exhibit D).

Exhibit A

Survey Measure (scale of 1-10)	**May-01**	**Dec-05**	**% Improvement from Baseline**
We **trust** each other	4	6.4	60%
I have **pride** in my work	6	7	14%
Management is committed to **quality**	6.4	6.9	7%
I can speak openly **without fear**	5.8	6.8	15%
We look for root causes and **don't blame**	4.3	6.4	33%
We work as one **team**	4.9	6.6	26%
We **cooperate**	5	7.1	30%
Employee **input** is encouraged	5.6	7	20%
We see our **personal contribution**	6.5	7.5	13%
We have a **sense of progress**	5.9	7.2	18%
We experience a **sense of challenge**	6.3	7.4	15%

Exhibit B

CDPP

Management Self Assessment ***(Completed by manager to prepare for Performance Review Agreements Meeting – one is needed for each meeting)***

Directions: *Circle the number in the column that best describes what you have observed in your organization.* If the rating is below 3 please make notes to explain in preparation for the meeting. ***Assessment Statement***	Strongly	Disagree	Somewh	Agree	Strongly	Don't Know
1. My employee trusts me.	1	2	3	4	5	
2. I trust the employee.	1	2	3	4	5	
3. My employee treats others with the utmost respect and integrity.	1	2	3	4	5	
4. My employee works as a team player without being asked or expecting incentives.	1	2	3	4	5	
5. My employee shows they care about quality by continuously improving what they do without being asked or expecting incentives.	1	2	3	4	5	
6. My employee continuously makes suggestions without being asked or expecting incentives.	1	2	3	4	5	
7. I promptly evaluate and implement their suggestions.	1	2	3	4	5	
8. My employee is proactive in his/her approach to work (not reactive).	1	2	3	4	5	
9. When my employee makes a mistake he/she lets the appropriate people know without hesitation.	1	2	3	4	5	

10. When a mistake is discovered, he/she is more concerned about fixing the mistake and learning from it than about blaming anyone.	1	2	3	4	5	
11. My employee and I are aligned on the purpose and vision of the unit/section.	1	2	3	4	5	

CDPP

Employee Self Assessment

(Completed by Employee to prepare for Performance Review Agreements Meeting)

Directions: *Circle the number in the column that best describes what you have observed in your organization.* If the rating is below 3 please make notes to explain in preparation for the meeting. ***Assessment Statement***	Strongly	Disagree	Somewhat	Agree	Strongly	Don't Know
1. My Manager trusts me.	1	2	3	4	5	
2. I trust my Manager.	1	2	3	4	5	
3. My Manager treats others with the utmost respect and integrity.	1	2	3	4	5	
4. My Manager works as a team player, is aware of my activities, and supports me without being asked or expecting incentives.	1	2	3	4	5	
5. My Manager shows they care about quality by continuously improving what they do without being asked or expecting incentives.	1	2	3	4	5	
6. My Manager makes helpful suggestions and is supportive of my efforts to do my job without being asked or expecting incentives.	1	2	3	4	5	
7. My Manager listens to my suggestions and promptly evaluates and implements them.	1	2	3	4	5	
8. My Manager is proactive in his/her approach to work (not reactive).	1	2	3	4	5	
9. When my Manager makes a mistake he/she acknowledges it, accepts responsibility, lets the appropriate people know without hesitation.	1	2	3	4	5	
10. When a mistake is discovered, my Manager is more concerned about fixing the mistake and learning from it than about blaming anyone.	1	2	3	4	5	
11. My Manager and I are aligned on the purpose and vision of the unit/section/Division.	1	2	3	4	5	

Exhibit C

Coaching Assessment Form

Directions: Please circle the number on the scale that best describes your experience and opinion.

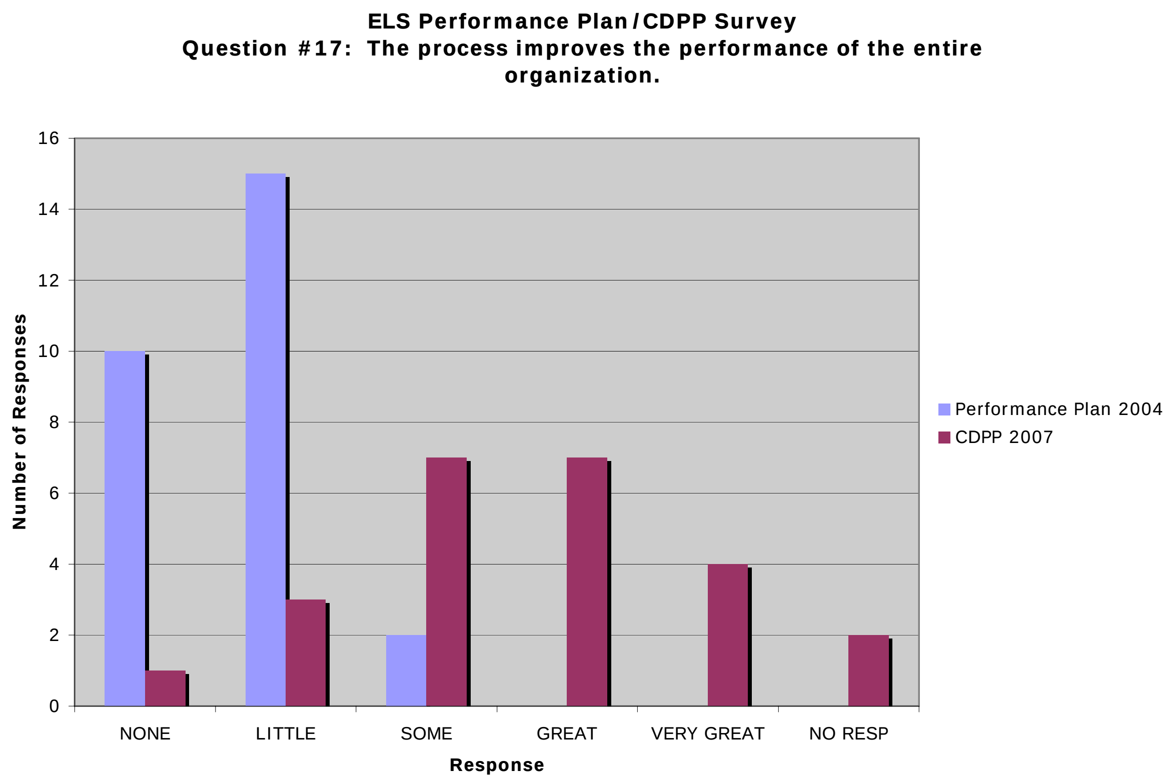
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	My skills and education match my current role/job responsibilities.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	I am clear about what is expected of me in my role/job responsibilities.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	I am clear about the Values and what is expected of me in following the Values.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	I have all the resources I need to perform my role/job responsibilities.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	I have a clear career plan that will help me achieve what I want.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	I am continuously learning in my current role/job responsibilities.
Completely Disagree · Somewhat Agree · Completely Agree 1 2 3 4 5 6 7 8 9 10	Employees are following values with me.
Completely · Somewhat · Completely	Management is following values with me.

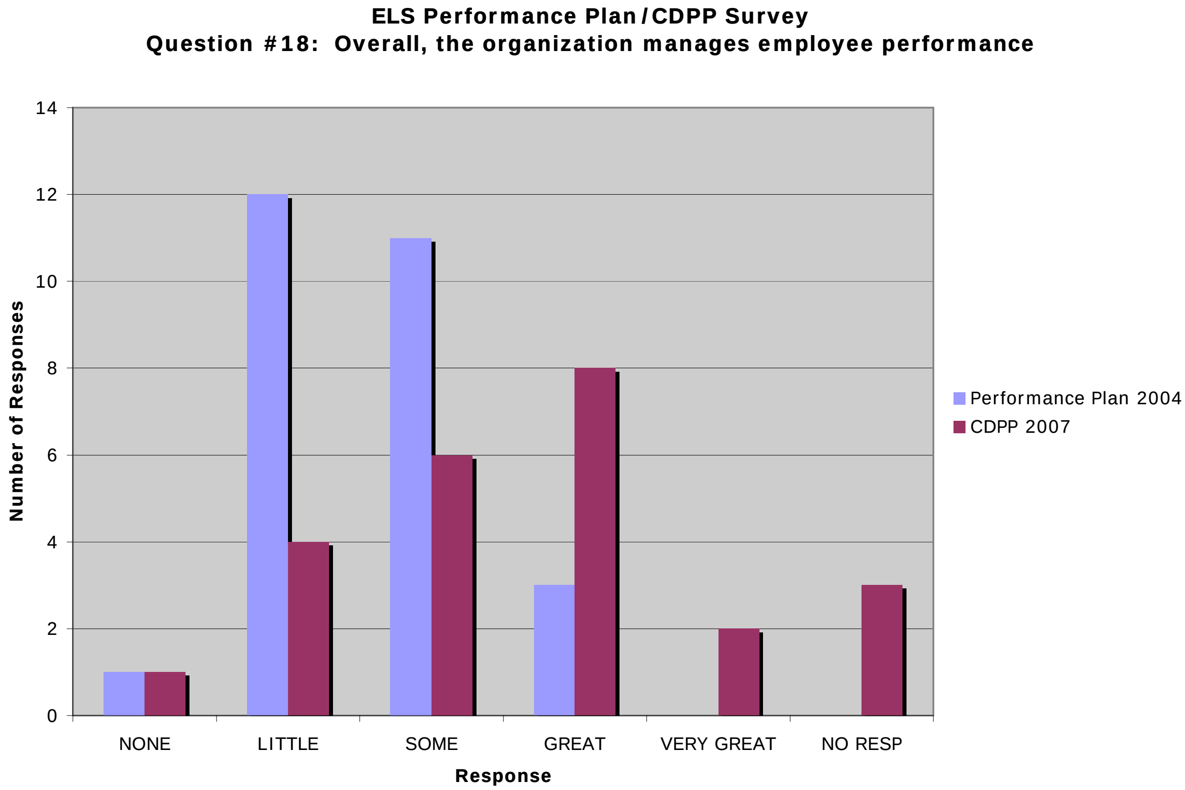
Disagree Agree Agree 1 2 3 4 5 6 7 8 9 10	

Conclusion

The managers and staff of the Environmental Laboratory Section of the Department of Natural Resources and Environmental Control in the State of Delaware formed a courageous team that challenged the state personnel system to preserve their organizational improvements including high managerial-employee trust levels. Just as the Laboratory helps to protect human and environmental health in the State of Delaware, their actions influenced changes in the entire Department of Natural Resources. The Laboratory is still using its new process successfully. It is the only organization within the State of DE that is able to consistently meet its obligations and conduct performance reviews on-time.

By eliminating the rating of people and by embracing the Values and System Model (Deming) the laboratory was able to maintain the levels of trust among people and improve performance. They applied for the 2008 Malcolm Baldrige Delaware State Quality Award and are among the finalists (final results pending at this time).





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i Abolishing Performance Appraisals by Tom Coens and Mary Jenkins page 20

ii Out of the Crisis, Dr. W. Edwards Deming, Page 23-24

iii IABC Research Foundation, ©2000, Measuring Organizational Trust, Page 5-6

iv Out of the Crisis, Dr. W. Edwards Deming, Page 251

v http://en.wikipedia.org/wiki/Organizational_culture

vi The New Economics, Dr. W. Edwards Deming, Page 128

DEMING AND PEACE

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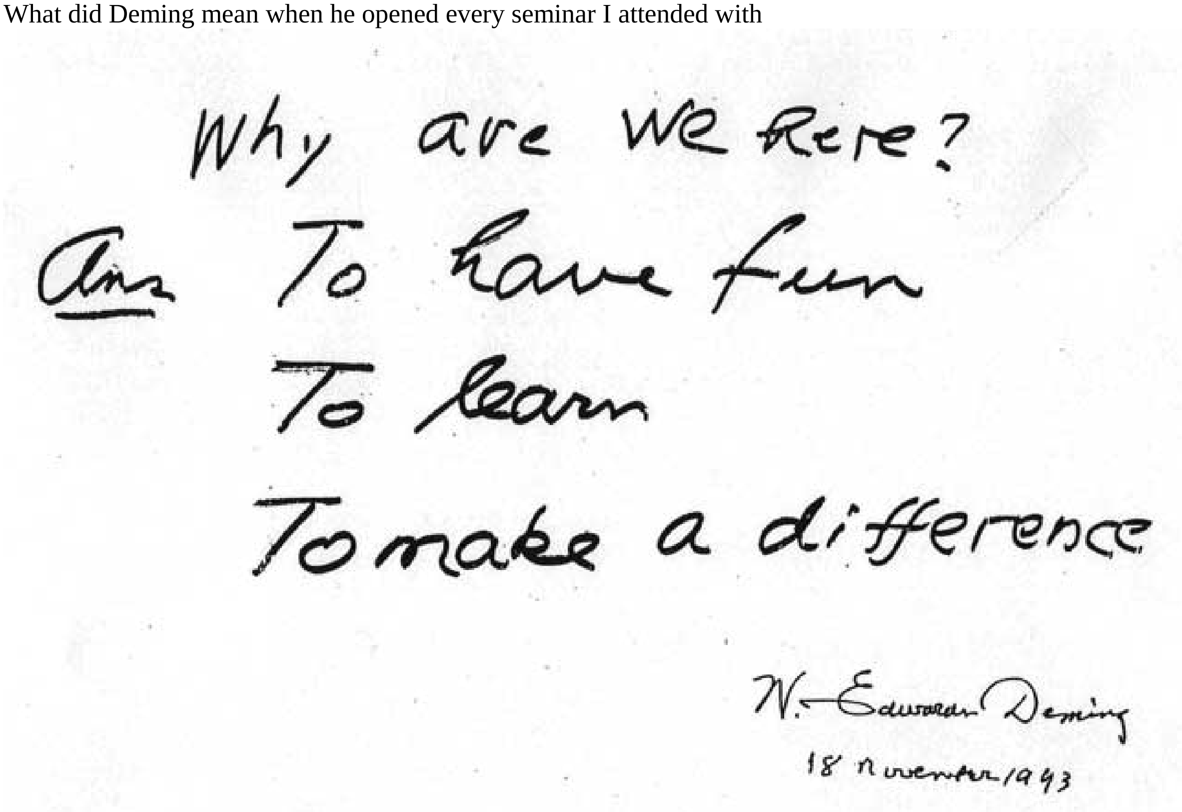
Abstract

The aim of The W. Edwards Deming Institute is to foster understanding of The Deming System of Profound Knowledge ("SofPK") for the advancement of commerce, prosperity, and peace. The focus of this presentation is the application of Deming's SofPK as a roadmap for Spaceship Earth to get out of its crisis, create a world that works for everyone, and achieve peace.

Introduction

What did Deming mean when he opened every seminar I attended with



I used to think that he was only talking about the seminar - I now realize that the question is a fractal and it applies to a meeting or seminar, to why I am at my company, and all the way up to why I am on Spaceship Earth. Likewise Deming's Theory is a fractal applying from small scale projects all the way up to the world working for everyone, peace, and the survival of Spaceship Earth.

I have been studying Deming's System of Profound Knowledge for over 20 years and just realized in the last three months that it actually could provide guidance beyond industry, government, and education. **Deming's System of Profound Knowledge is a roadmap for Spaceship Earth to get out of its current crisis** - to create a world that works for everyone, peace, and the survival of Spaceship Earth.

It was as if I was studying a caterpillar and never saw the scenario butterfly. What takes the time in learning is not getting it. A butterfly can't fly unless it goes through the process of getting out of the cocoon, which strengthens its wings, so that once it get out it is able to fly. It is through strengthening my understanding that I have these new insights.

This paper will cover why we are here (to have fun, to learn, and to make a difference), purpose, key points of Deming's SofPK, Toyota's application of SofPK, my inspiration for this project, some results from my research so far (this is a work in process, not a finished project), and my current conclusions.

Why Are We Here - To Have Fun

For me having fun is:

- Just being - being husband, being Grandpa Karl, being present
- Playing - being spontaneous
- Making a difference - being fully engaged in worthwhile endeavors - there are important things to be done.

Why is fun important? - the BIG why in my experience:

- When having fun one is almost always much more creative
- When laughing one is more open to learning - it is very hard to resist when laughing
- Fun provides energy.

Why Are We Here - To Learn

R. Buckminster Fuller ("Bucky"), an American visionary, designer, architect, poet, author, consultant, inventor, and "Grandfather of the Future," said the function of humans was to learn and veritas which means "progressively minimizing the magnitude of our veering to one side or the other of the star by which we steer, whose pathway to us is delicately reflected on the sea of life . . ." (1).

At the American Society for Training and Development's 1992 Conference Peter Senge, the author of <u>The Fifth Discipline</u>, gave a speech about learning:

> Learning is about the enhancement of our capacity for effective action - i e "I know how to walk" and "I know a little bit about how to be a friend." Human beings are designed to learn, there is a deep and abiding hunger in all of us to live our lives as learners, to continually enhance our capacity to create the types of things we really want to create (i.e. the relationships we want, the impact at work we want, the world we would really like to live in). Unfortunately, the predominate institutions in our culture are about controlling, not learning. Deming is right, the destruction does start with toddlers and what is being destroyed is our hunger for learning.
>
> Nowhere in the world is the American system of management seen as being preeminent. Increasingly we are seen as out of touch. Great question - What happened to our passion for learning? Edward Hall said "The

> drive to learn is more basic than the drive to reproduce." It starts earlier in life and lasts longer. The first years of life are all about learning.

Thus learning enhances one's ability to take effective action and make a difference.

Why Are We Here - To Make a Difference

How do you start to make a difference? You act. Where does one start to make a difference? "Where ever you are" - Werner Erhard in his famous est seminar.

Part # 4 of Deming's SofPK says people are "intrinsically motivated, want to do a good job, contribute, and make a difference."

Why is striving to make a difference important? (the BIG why):

- Deming said that transformation is everyone’s job
- Even small changes can make a big difference.

We are all here for a reason. Having fun, learning, and making a difference are all intrinsic and important parts of being human.

> “This is the true joy in life, the being used for a purpose recognized by yourself as a mighty one; the being a force of nature instead of a feverish little clod of ailments and grievances complaining that the world will not devote itself to making you happy. I am of the opinion that my life belongs to the whole community and as long as I live it, it is my privilege to do for it whatever I can. I want to be thoroughly used up when I die, for the harder I work the more I live. I rejoice in life for its own sake. Life is no “brief candle” to me. It is a sort of splendid torch which I have got hold of for the moment, and I want to make it burn as brightly as possible before handing it on to future generations.”
>
> George Bernard Shaw

Aim or Purpose

Deming said "a system must have an aim" and "the aim must include plans for the future" (2). Having an aim is a fractal that applies to me as an individual, to companies and other organizations, and even all the way up to Spaceship Earth.

Deming's purpose was to serve mankind by advancing commerce, prosperity, and peace. **Dr. Deming was an example of what one man can do** - these are my observations, not confirmed by him:

In my experience W. Edwards Deming was **a very caring individual** - the best personal example was back when I was taking his courses at NYU and I hadn't been there for five or six weeks (my pattern was once every three or four weeks and we would have lunch together) he called to ask if I was OK.

In my experience W. Edwards Deming was also **a great listener** - he was hard of hearing the years I knew him - he would lean forward, cup his ears with his hand to help him hear, and he just listened to you (the only person in my experience who listened as intensely as Deming was Werner Erhard). Dr. Deming also asked great questions and loved dialogue (the exploring of ideas from many perspectives).

In my experience W. Edwards Deming was **a great life long learner** - two phrases I heard him say over and over again were: "I want to learn too" and "Can't I learn too?"

In my experience W. Edwards Deming was **a very good observer** - he could see what was going on in an organization.

I believe, as Bucky described in "Mistake Mystique (3)," that Deming "responded and conformed only to his own most delicately insistent intuitive awarenesses of what the truth seemed to him to be based on his own experiences and not on what others have interpreted to be the truth."

Deming clearly was a Positive Deviant - he had no respect for the prevailing style of management in America and for what was being taught in our business schools. He spent the last 50 years or so of his life trying to transform the way most managers think. It wasn't easy for him as there was very little agreement that he was right - those "in-the-know" disagreed - that was his life as a revolutionary.

And in my experience **the essence of Deming was to serve mankind by advancing commerce and prosperity** - he had a vision of a better world - a belief that together, with humility, we can and will make a difference in the quality of life for everyone.

In my opinion his passion to make a difference was what drove him and I think that helped keep him alive as he wasn't willing to stop working on his vision, teaching his last four day seminar just ten days before he passed at the age of 93.

R. Buckminster Fuller (Bucky) - another example of what one man can do:
Bucky's purpose was to answer the question "How do we make the world work for 100% of humanity in the shortest possible time through spontaneous cooperation without ecological damage or disadvantage to anyone?" (3).

Bucky was an American visionary, designer, architect, poet, author, consultant, inventor, and referred to as "Grandfather of the Future." Throughout his life, Bucky was concerned with the question "Does humanity have a chance to survive lastingly and successfully on planet Earth, and if so, how?" (5) Considering himself an average individual without special monetary means or academic degree, Bucky chose to devote his life to this question, trying to find out what an individual like him could do to improve humanity's condition that large organizations, governments, or private enterprises inherently could not do - that was Bucky's being.

> "Something hit me very hard once, thinking about what one little man could do. Think of the Queen Mary - the whole ship goes by and then comes the rudder. And there's a tiny thing at the edge of the rudder called a trim tab. It's a miniature rudder. Just moving the little trim tab builds a low pressure that pulls the rudder around. Takes almost no effort at all. So I said that the little individual can be a trim tab. Society thinks it's going right by you, that it's left you altogether. But if you're doing dynamic things mentally, the fact is that you can just put your foot out like that and the whole big ship of state is going to go. So I said, call me Trim Tab" (6)
>
> \- Bucky

Fuller saw being the trimtab as a powerful metaphor for individual leadership: small, strategically placed interventions can cause profound change.

Purpose provides a context - people need to understand why they are doing something ("the BIG Why") - to paraphrase Neitche (a former prisoner of war) - "Given a BIG enough why, one can absorb any how."

Abraham Maslow introduced a model of psychology called Maslow's Needs Hierarchy that has become very well known in the field of psychology, management, and other human sciences. It describes six developmental stages based on what Maslow calls human needs (7). At the top of Maslow's Needs Hierarchy is self-actualization - attaining one's full potential as a human being in the world - seeking and expressing justice, wisdom, concern, and creativity - and self-transcendence which includes leaving a legacy - I believe these are human needs - it is important for one to define one's purpose in order to reach one's fullest potential.

What's your purpose? Do you have a personal mission statement?

The purpose of my company, Optimization Works, is to help companies and other organizations put Dr. Deming's System of Profound Knowledge to work and, thus, bring quality to life.

More re My Purpose

In the late 70's John Denver started my journey of thinking deeply about peace, humanity, and Spaceship Earth - the most impactful was his introduction to and the song "I Want To Live" now available on the album "Live at the Sydney Opera House":

> It is a very interesting time in the history of life on the planet earth - there are decisions being made and actions being taken which are going to affect not only our lives but the lives of all future generations - in fact the potential of life itself on this planet.
>
> I think that it is critically important that whatever occurs, that it is an honest and true reflection of who we all are as human beings. Whether the struggle is to end hunger in the world, or to stop the senseless slaughter of the great whales, to disarm the nuclear bomb that hangs over all of us, or to preserve the right of any and all people to their natural heritage.
>
> The responsibility is ours - the time is now . . .

I was really moved by John Denver's thinking and his songs. Reflecting back I put thinking deeply about the world working for everyone and actually doing something about it "on the back burner" because (1) it seemed so overwhelming, (2) I figured Spaceship Earth would at least last my lifetime, (3) I didn't think I could make a difference, (4) it was someone else's job, and (5) I was busy and had to live my life (do my job, etc, etc).

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Then on 09-11-01 terrorists blew up the World Trade Center and destroyed the Italian Restaurant where Dr. Deming and I frequently had lunch on Mondays before his class at NYU. This awakened me to a problem on Spaceship Earth that I thought couldn't / wouldn't effect me - I was wrong in my thinking.

On 03-10-03 my granddaughter was born and all of a sudden the question of the world working for everyone and Spaceship Earth getting out of its crisis took on new meaning for me and my thinking intensified.

My purpose now is to optimize me and help optimize my family, my larger o'hana (Hawaiian word one's larger family), my clients, as many in industry, government, and education as I can, and Spaceship Earth. This will involve getting as many people as I can to see Deming's System of Profound Knowledge as a roadmap for Spaceship

Earth to get out of its current crisis and start using SofPK as a lens to first understand and then optimize Spaceship Earth.

Deming's System of Profound Knowledge (Deming's Theory)
(based on Deming's The New Economics for Industry, Government, Education)

The overarching point of Deming's System of Profound Knowledge (SofPK) is that **management's job is to optimize the entire system over time**. SofPK consists of four parts, each of which impacts the other.

Part # 1 - Appreciation for a system

- It's important to realize that a system is a network of interdependent components (activities or processes) that work together to try to accomplish the aim of a system.
- You need to understand the interdependencies of the system - how one component affects the others.
- Deming said that 94% of our troubles and possibilities for improvement belong to the system, and you can only get what the system will deliver (so don't blame the people).

Part # 2 - Theory of Variation - use data to guide action

- Variation happens, but it is important to shrink variation - reducing it almost always reduces costs. A stable system is a predictable one.
- It's important to recognize variation and distinguish that which is special cause (not part of the process) and common cause (part of the process).
- Use data and statistics to show patterns and types of variation so you can more effectively manage them.

Part # 3 - Theory of Knowledge

- Importance of theory - a way of thinking leads to way of doing.
- Everyone needs to hold on a little looser to what they know in order to be open to learning.
- There's a need for working and operational definitions so that information is definite and not relative.
- Use the Plan Do Study Act (PDSA) cycle of learning.

Part # 4 - Psychology

People want to contribute and do a good job - it's important to tap into their intrinsic motivation (self-esteem, dignity, and desire to learn).

- Drive out fear by building trust and providing leadership.
- Recognize differences in people and use such differences to optimize.

Deming's Theory As a System - Deming said to use the System of Profound Knowledge as a lens to first understand and then optimize a system. Each part is necessary, interrelated, inseparable, and together synergistic.

I now believe Deming's System of Profound Knowledge also provides a lens through which to understand and optimize Spaceship Earth. The overarching point, the four parts, and the fact it works as a system all seem to apply based on my experience and the research that I have done so far (although I haven't found anyone who has written specifically on this point). I am going to continue to think about and research "By What Method?" - how specifically can Deming's System of Profound Knowledge impact the world working for everyone?

Resources I have identified so far in this effort include John Hunter's www.curiouscat.com, the WEDI website, the Deming Electronic Network, and Deming's two books The New Economics for Industry, Government, Education and Out of the Crisis - see Appendixes A and B.

Toyota - An Example of the Power of Deming's Theory

The best example of the power of Deming's Theory (Deming's System of Profound Knowledge) is Toyota - from the Toyota website (8):

> Since Toyota's founding, our fundamental mission has been to contribute to society by creating value, primarily by manufacturing high-quality automobiles and providing related services. The company's seven guiding principles, adopted in January 1992 and revised in April 1997 support that mission:
>
> 1. Honor the language and spirit of the law of every nation and undertake open and fair corporate activities to be a good corporate citizen around the world.
>
> 2. Respect the culture and customs of every nation and contribute to economic and social development through corporate activities in local communities.
>
> 3. Dedicate ourselves to providing clean and safe products and to enhancing the quality of life everywhere through our activities.
>
> 4. Create and develop advanced technologies and provide outstanding products and services to fill the needs of customers worldwide.
>
> 5. Foster a corporate culture that enhances individual creativity and teamwork value, while honoring mutual trust and respect between labor and management.
>
> 6. Pursue growth and harmony with the global community through innovative management.
>
> 7. Work with business partners and research and creation to achieve stable, long-term growth and mutual benefits, while keeping ourselves open to new partnerships.

Toyota's managerial values and business methods, based on these core principles, are known collectively as the Toyota Way. The Toyota Way is an ideal and a guiding beacon for the people of the global Toyota. It defines how the people of Toyota perform and behave in order to deliver Toyota's values to customers, stakeholders, associates, business partners, and the global community. The two pillars of the Toyota Way (9):

I. Continuous improvement

1. **Challenge** - we form a long-term vision, meeting challenges with courage and creativity to realize our dream.

2. **Kaizen "continuous improvement"** - we improve our business operations continuously, always striving for innovation and evolution.

3. **Genchi genbutsu "go see for yourself"** - we go to the source to find the facts to make correct decisions, build consensus, and achieve our goals.

II. Respect for people

4. **Respect** - we respect others, make every effort to understand each other, take responsibility, and do our best to build mutual trust.

5. **Teamwork** - we stimulate personal and professional growth, share opportunities of development, and maximize individual and team performance.

What if all companies thought and acted the way Toyota does?

Inspiration and Guidance

To provide inspiration and guidance for my new journey I am going to reconnect / revisit with the people who have been most influential in my life - John Denver, Werner Erhard, Marshall Thurber, Bucky, Tony Robbins, Tom Crum (an Aikido Master - see appendix A), and W. Edwards Deming.

I also will have as my theme "The Job's Not Done!" - I borrowed this picture of Spaceship Earth:

Source: John Denver's Windstar Foundation

Research in Progress (and resources identified so far)

In order to apply Deming's SofPK to making Spaceship Earth work successfully, I first wanted to get an appreciation for the world system and understand its interdependencies. I started by examining some of the most serious challenges the world faces today.

Bucky's thinking:
As Bucky said, “We are not going to be able to operate our Spaceship Earth successfully nor for much longer unless we see it as a whole spaceship and our fate as common. It has to be everybody or nobody” (10). Until we view the world as a whole instead of through the lens of our own agenda, we can’t expect things to get better.

The nuclear bomb that hangs over all of us:
On August 6, 1945 the Atomic bomb made its international debut and the world became all too aware of the level of destruction possible through the execution of human imagination. Now the nuclear bomb is more than just a card the United States holds - states such as India, Pakistan, and North Korea have gathered nuclear capabilities and it is difficult to tell who else may hold such technology - rumors surround Israel, Iran, and others. Weapons could be up for grabs to the highest bidder and available to anyone with financial means.

Terrorism:
Since 9-11, terrorism has a new focus on the world stage. It seems that previously acts were committed by numerous small bands of rebels or activists in small sections of the world, mainly for political gain or to be recognized. Terrorist networks now have their own armies, their own militias, millions upon millions of funding, and have changed the way we will fight our wars forever. Force doesn't work against a network.

Country Reports on Terrorism compiled by the National Counter Terrorism Center (NCTC) and published by the Department of State estimates 11,153 incidents of terrorism and 74,217 people killed as a result of terrorist acts in

2005 (the NCTC only includes non-combatants in its terrorism figures). These numbers are even higher for 2006. 2007 results will not be out until April of this year, but the numbers are in an upward trend and these numbers don't even consider the increasing numbers of troops being killed in the "War on Terror" every day.

War is not the answer:
Bucky said that "war is the ultimate tool of politics" (11). War has been long used as an instrument of foreign policy, excused under the condition of national threat, or founded on the basis of humanitarian outreach. Where people cannot or refuse to compromise, war has become the inevitable answer. Rather than searching to understand the root causes of situations, force is used. Also United States' struggles in Afghanistan and Iraq demonstrate that force (war) cannot beat a network.

What the world wants:
The results of peace could be staggering - a 25% reduction in world military budgets could eradicate hunger and poverty on the planet - both those in extreme poverty and also those living in moderate poverty (lack of clean water, sanitary facilities, basic health care, decent shelter, education)- in total approximately 40% of the world's population (12).

Peace is not the absence of war:
Peace is a positive thing that you can produce. The problem right now is the effort to produce peace is a national effort, rather than an international effort, because of the gap in responsibility at the international level (13).

World hunger:
The Hunger Project is a global, strategic organization committed to the sustainable end of world hunger. They have pioneered low-cost, bottom-up, gender-focused strategies in each region where hunger persists. These strategies mobilize clusters of rural villages to create and run their own programs that achieve lasting progress in health, education, nutrition and family income (14).

Global warming:
In his Nobel Lecture on December 10, 2007 in Oslo, Al Gore warned that "we, the human species, are confronting a planetary emergency. . . the climate crisis is not a political issue, it is a moral and spiritual challenge to all of humanity." Gore stated "we must understand the connections between the climate crisis and the afflictions of poverty, hunger, HIV-Aids and other pandemics. As these problems are linked, so too must be their solutions. We must begin by making the common rescue of the global environment the central organizing principle of the world community."

Disregard for the environment (some recent examples I am aware of):

- Senseless slaughter of the great whales - Japan still exploits a loophole in a 1986 international moratorium on commercial whaling to kill the whales for what it calls "scientific research" while admitting the meat from the hunt ends up on dinner plates. Japanese whale hunts see about 1,000 of these creatures slaughtered each year (15).

- U.S. Navy sonar training off the coast of California - environmentalists and the U.S. Government have been battling over the Navy's use of sonar which is potentially harmful to whales and dolphins in training exercises off the California coast (16).

- Hawaii Superferry - in Hawaii there is a major battle between environmentalists (including the Pacific Whale Foundation, surfers, and native Hawaiians) and Hawaii Superferry over, among other issues, the potential of killing humpback whales.

Preserving the right of any and all people to their natural heritage:
This is a major problem in many parts of the world. I personally feel a connection to the Native Hawaiian issue - preserving the rights of Native Hawaiians to their natural heritage.

A global energy grid:

The Global Energy Network Institute ("GENI") was founded in 1986 by Peter Meisen to investigate Bucky's idea that a global electric energy grid was the number one priority to solve many of the world's most pressing problems. GENI conducts research and educates people about the critical viability of the interconnection of electric power networks between nations and continents. GENI focuses on linking renewable energy resources around the world using international electricity transmission. GENI's research shows that linking renewables between all nations will mollify conflicts, grow economies, and increase the quality of life and health for all. The benefits of this sustainable world power solution include: decreased pollution from fossil and nuclear fuels, reduced hunger and poverty in developing nations, stabilized population growth, increased trade, cooperation and peace (17).

Conclusions

Deming's System of Profound Knowledge applies beyond industry, government, education to Spaceship Earth - it is the roadmap for Spaceship Earth to get out of its crisis, have the world work for everyone, and peace.

I will take action - I will start by:

- Doing Al Gore's list of ten easy things to do to help reduce Carbon Dioxide emissions (18).

- Buying reusable shopping bags - it is estimated that over 14 billion plastic bags are used in the U.S. each year (19) and it takes 12 million barrels of oil to produce them (20). Plastic bags don't biodegrade, they photodegrade - breaking down into smaller and smaller toxic bits contaminating soil and waterways. Paper bags use natural resources and recycled paper is better used for something else.

- ECO-friendly-ing my house.

I will continue researching the topics identified above.

I will start where I am by making speeches, writing a book, and using Network Science to geometrically increase my impact.

Everyone can make a difference - please join me - if not us, who? - you can be just another passenger on Spaceship Earth or you can choose an aspect of Spaceship Earth for which you have a passion and have fun, learn, and make a difference!

> "Miracles are to come. With you I leave a remembrance of miracles: they are by somebody who can love and who shall be continually reborn, a human being; somebody who said to those near him, when his fingers would not hold a brush 'tie it into my hand' " - e.e. cummings

Footnotes

1 - "Mistake Mystique" from Intuition by R. Buckminster Fuller, pages 91 to 100, 1970

2 - The New Economics for Industry, Government, Education by W. Edwards Deming, 1993, page 50

3 - "Mistake Mystique" from Intuition by R. Buckminster Fuller, pages 91 to 100, 1970

4 - http://www.geni.org/

5 - Bucky at The Future of Business Conference, 1981, Kirkwood, CA

6 - "Leadership by Design: How One Individual Can Change the World; Leadership Principles of Buckminster Fuller" by Medard Gabel and Jim Walker, 2006

7 - "A Theory of Human Motivation," Psychological Review 50 by A.H. Maslow, pages 370 to 396

8 - Toyota website: http://www.toyota.com/

9 - Lessons from Toyota's Long Drive - an interview with Toyota President Katsuaki Watanabe - HBR July-Aug 07

10 - Bucky at The Future of Business Conference, 1981, Kirkwood, CA

11 - Bucky at The Future of Business Conference, 1981, Kirkwood, CA

12 - A Spiritual Agenda for World Peace, Soami Divyanand at the "Peace Forum" held at UN on June 22, 2006

13 - "Designing a Replacement for the UN" co authored by Russell Ackoff, Jim Shea, and Ghar Ajedhehi in Rescuing the Enlightenment from Itself edited by Janet Macentire-Mills, New York, Springer, 2006

14 - http://www.thp.org

15 - Foreign Associated Press - "Japan Urges legal action against anti-whaling activists" - 01-22-08

16 - "Navy undertakes efforts to protect sea life; sonar devices that may be a danger to marine mammals are turned off during war games" - Los Angeles Times - 01-28-08

17 - http://www.geni.org/

18 - http:// www.climatecrisis.net/

19 - ABC News - December 9, 2003

20 - "Reusable Bags Tackle Plastic Bag Mess - Organic Trade Association - http://www.theorganicreport.com/

Appendix A - Favorite Websites

1. Tom Crum Associates - go to http://www.aikiworks.com/

2. Buckminster Fuller Institute - go to: http://www.bfi.org/

3. John Hunter's Curious Cat website - go to http://www.curiouscat.com/

4. The W. Edwards Deming Institute - go to http://www.deming.org/

5. The Deming Electronic Network - go to http://deming.eng.clemson.edu/pub/den/

6. The Global Energy Institute - go to http://www.geni.org/globalenergy/index2.shtml

7. The Pacific Whale Foundation - go to http://pacificwhale.org

8. John Denver's Windstar Foundation - go to http://www.wstar.org/

9. ChaosOver - a powerful process for improving one's personal productivity - go to www.chaosover.com

Appendix B - Other Suggested Readings

1. "Lessons from Toyota's Long Drive: A Conversation with Katsuaki Watanabe", HBR Jul-Aug 2007, by Katsuaki Watanabe, Thomas A. Stewart, and P. Raman

2. "Time-and-Motion Regained", HBR Jan-Feb 1993 by Paul S. Adler
3. "Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility", HBR Dec 2006, by Michael E. Porter and Mark R. Kramer
4. "Leading Change: Why Transformation Efforts Fail", HBR Mar-Apr 1995 by John P. Kotter
5. "Redefining Corporate Social Responsibility", HBR OnPoint Article Collection, Feb 2007 by Michael E. Porter, Mark R. Kramer, and Simon Zadek
6. The New Economics for Industry, Government, Education by W. Edwards Deming
7. Out of the Crisis by W. Edwards Deming
8. The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer by Jeffrey K. Liker
9. How Toyota Became #1: Leadership Lessons from the World's Greatest Car Company by David Magee
10. The Toyota Way Fieldbook by Jeffrey K. Liker and David Meier
11. Toyota Talent: Developing Your People The Toyota Way by Jeffrey K Liker and David P. Meier
12. The Future of Management by Gary Hamel
13. Re-creating the Corporation - A Design of Organizations for the 21st Century by Russell L. Ackoff
14. What Were They Thinking? - Unconventional Wisdom About Management by Jeffrey Pfeffer
15. The Difference - How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies by Scott E. Page
16. Leadership by Rudolph W. Giuliani
17. "Designing a Replacement for the UN" co authored by Russell Ackoff, Jim Shea, and Ghar Ajedhehi in Rescuing the Enlightenment from Itself edited by Janet Macentire-Mills, New York, Springer, 2006

COMBINING THE WORK OF DEMING, GLASSER AND ARISTOTLE:

Thomas F. Kelly, Ph. D.

Since more than three decades of School reform have resulted in no significant improvement in student achievement nationally, it is time to reconceive the process. There already exist sources of different and creative solutions in the work of three great thinkers: W. Edwards Deming, William Glasser and Aristotle. This article will briefly outline each.

I W. Edwards Deming – a new framework for organizational behavior.

W Edwards Deming is the great systems thinker and father of the Quality movement who showed the Japanese how to improve their cars. His basic premise is quite simple. Organizational problems that are persistent are not caused by the workers. They are structural or systemic. Unless and until we identify and change these structural causes, despite whatever else we may do or spend, we will continue to experience their problematic effects.

Indeed our efforts to "tinker with the system" rather than restructure it will probably make matters worse, as we see in the education reform movement. While achievement has remained stagnant, student discipline and drop out rates have increased dramatically.

An example involving the waste of more than $200 billion (and counting) would be the federal remedial program, Chapter I (AKA Title I). Initiated as part of the Great Society in the mid 1960's, it was created to help the millions of students who were failing in reading and mathematics. Because they were seriously deficient in basic skills, they were lost in the rest of their school curriculum and falling further behind each year.

Chapter I created special small classes to provide remediation for 90 minutes a week to these students. Teachers received additional training and class size was dramatically reduced. Frequently the teacher was assigned an aid or teaching assistant. They were "pulled out" of their regular classes to attend these sessions.

In the 1990's the federal government noticed (after 35 years) that Chapter I students nationally were not improving. In fact, most continued to fall further behind their grade level peers in reading and mathematics. State education departments were directed to create teams to investigate any school that had title I students who's reading and/or mathematics scores had gone down three years in a row. I was recruited to participate in such a team.

I observed all Chapter I classes in reading in the New York City intermediate school to which I was assigned. To my surprise, every Chapter I class I observed was very well conducted. And yet, the scores of these students had declined for three straight years. I remembered Deming's basic premise. Persistent problems are caused by the structure of the system, not the workers.

When we apply Deming's idea and look at the structure, the reason these students reading scores went down is obvious. These remedial students were placed in Chapter I for 90 minutes a week because they could not function in the regular program. 90 minutes per week is 4% of their time in school. And what happened to them for the other 33 and 1/2 hours each week, 96 % of their time in school? They returned to the regular program in which they could not function to begin with. Four percent of students' school time effectively learning and 96 percent spent in frustration, failure and becoming discipline problems.

Four percent of student time spent in an effective program vs. 96 percent in a program that does not work for them. Failure is built into the structure of the program.

To address the ineffectiveness of Chapter I the conventional solution since its inception has been to increase the budget each year. This is the standard "more money" solution. Nothing has improved for almost 40 years. Nothing will unless the program is restructured. What is needed is restructuring of the regular reading and mathematics programs so that they work for all students all week long.

The above is just one example of how the current school structure builds in failure. This one example alone has wasted hundreds of billions of dollars on a program designed to fail. There are many such systemic structural flaws in the educational system. None of the present reform strategies deal with assessing and improving the systems' structure. Recognition of the need to do this and pursuit of such change will bring significant improvement in student achievement.

2 William Glasser – a new framework for Individual behavior/psychology.

Deming points out the need to understand human psychology as part of restructuring an organization. For more than 50 years western culture has been dominated by behavioral psychology (AKA stimulus – response or S – R psychology). This pessimistic, mechanistic and deterministic view of behavior sees human beings as the products or victims of their environments. People are motivated by external rewards and/or punishments, carrots and/or sticks. Stephen Covey appropriately calls it "jackass psychology."

The whole rationale of the reform movement is driven by this view of human motivation. Without realizing it, all of its strategies, methods, regulations and laws are totally consistent with this false "victim psychology" that teaches people they have no control over their behavior and therefore are not responsible. It attempts to “motivate the system by rewards and punishments.

Obviously the reward of ever increasing funding has not worked. Neither have the punishments of public humiliation, threats and ever increasing rigid requirements set for all students at set points in time despite their tremendous individual differences.

William Glasser offers a positive, liberating and accurate psychology that teaches us our motivation comes from five basic human needs within us and common to all people. We have choices for our own behavior and can control ourselves. Glasser’s “Choice Theory” (AKA Control Theory) delineates in voluminous detail, with countless clear examples, both why human beings behave and how they can control their behavior. Obviously, the world of conventional S – R psychology totally rejects his work and resists its teaching at many if not most colleges and universities.

Glasser’s psychology offers us a whole alternative paradigm for understanding and improving individual behavior, Glasser’s motivation theory teaches us that we are all motivated by the same five internal basic human needs: survival, power, freedom, belonging and fun. If we want to improve student achievement restructuring the system in terms of satisfying these needs will bring dramatic improvement.

Of particular importance is the concept of empowering teachers to teach and students to learn. Glasser gives many examples of strategies to do this. I am also working on a book that will provide many more.

3 Aristotle – a timeless framework for ethical behavior.

If you go to the teachers’ room in virtually any school and ask them what their greatest concern is (after the numerous impediments that the state and federal reform movement imposes) they will tell you student discipline. While student achievement has not changed over the last three or four decades, student behavior most definitely has, and not for the better. This is true not only in inner city schools but in those in middle class and wealthy areas as well.

Aristotle is the third great thinker who offers us solutions to improving behavior at both the individual and organizational levels. Since the expanded application of the concept of separation of church and state has effectively removed virtually all references to religion in our schools, it is not surprising that traditional western morality which is historically rooted in Judeo Christian teachings has disintegrated. The challenge now is to reestablish effective ethical standards that can be culturally neutral and acceptable to all religions and atheism as well. (Aristotle’s “standards” can even be applied internationally.)

Aristotle created the theory of Natural Law almost 2500 years ago. While it is consistent with Judeo Christian teachings, it is capable of standing on its own. It offers a pluralistic society a set of behavioral standards that are acceptable to all who are interested in ethical behavior.

The root of our problem is found in a logical fallacy called categorical confusion. When we fall into this fallacy, we treat things form different categories as if they were in the same category. For example, if we viewed animals and plants as if they were in the same category, we would be unable to deal with either rationally.

The categories we are confusing here are virtues and values. They are not distinct in popular culture. We tend to see them as interchangeable, virtually the same. Aristotle teaches us that the first step in logic is definition of terms. We need to define virtues and values.

Value: something that I want.

Virtue: a behavior that makes me good.

In a nut shell, the theory of Natural Law can be outlined so:

VIRTUES ARE NATURAL LAWS

VIRTUES: BEHAVIORS THAT MAKE ME GOOD

HUMILITY	MODERATION
COURAGE	PATIENCE
DISCIPLINE	PERSEVERANCE
FORGIVENESS	PRUDENCE
GENEROSITY	RESPECT
GRATITUDE	RESPONSIBILITY
HONESTY	SIMPLICITY
HOPE	SPIRITUALITY/FAITH
JUSTICE/FAIRNESS	TOLERANCE
KINDNESS	WORK

LOYALTY

The above list is self evident and universally recognized as “morally good.” Some of the values we frequently confuse with virtues are: male, female, ethnicity, culture, family, religion, black, white, young, old, rich, poor, athletic, good looking, stylish, etc., etc., etc. While values may be of great importance, they are not as important as virtues in terms of behavior. My religion and my family are more important than my life but neither one makes me good. Only my behavior makes me good or bad. If I behave virtuously I am a good Catholic, A good father, etc. If I behave in violation of these virtues, I am not.

The essence of natural law is always put virtues before values. When I put values before virtues the consequences are always negative.

On an individual level for example, when put the value of money ahead of work, justice, or responsibility, I hurt my self image or self respect (Glasser points out the obvious: we like ourselves when we are good).

On an interpersonal level for example, when I put the value of my self interest ahead of patience, kindness and respect, I hurt my relationships.

On an international level for example, when I put the value of religion ahead of respect, justice and tolerance, we get wars, genocide, ethnic cleansing, etc.

Instead of basing our standards for behavior on values, we must base them on virtues.

Conclusions

Deming, Glasser and Aristotle offer us specific strategies to improve our schools (among other things). All have been tested and found to be effective. We need to immerse ourselves in the work of these three geniuses and utilize the tools they offer to us.

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BRIDGES AND TUNNELS AND SCHOOL REFORM:
IT'S THE SYSTEM STUPID

To be published in Phi Delta Kappan Fall 2007

The problem is at the policy level and its correction must start there. Present policy is defeating its own purpose of improving schools

Thomas F. Kelly, Ph. D.

After almost three full decades of school reform nationally student achievement is about where it was when we started and student behavior has declined dramatically. Numbers of drop outs, especially in our cities and among the poor and minorities are much higher. This despite the fact that reform efforts have involved many billions of dollars, countless professionals, honest and extensive amounts of work, endless state and federal legislation, regulation and mandates, and no end to good intentions. After thirty years of failure, its time for something different.

W. Edwards Deming has pointed out that persistent problems in organizations are due not to the workers but the system; the structure of the work, systemic practices, policies, methods and conventional thinking. Toyota is one outstanding example of how his methods can take an inferior company to excellence and dominance.

When I was a young teacher I lived in New Jersey and worked in the Bronx. Each morning I would drive to the George Washington Bridge and cross the Hudson River to the Bronx. If all went well (no breakdowns, accidents, bad weather), my usual delay was about ½ hour. In the evening I reversed the process again hoping all went well.

While I sat in my car wasting gas and polluting the air, I frequently cursed the toll takers (blamed the workers). In retrospect I now understand that they could not have improved traffic flow more than ever so slightly even if every toll taker operated at 100% efficiency all of the time.

What caused the dramatic improvement we now see in the river crossings (and now being extended to toll roads all over the country)? Reconsidering the structure of the system and changing it not only helped but transformed the results. This is essentially the same process that transformed Toyota from a third rate product to world class.

The structure of work at the bridge was essentially the same for over 50 years. Then one day someone reconsidered the whole toll taking system/structure and made a startling observation. If tolls were eliminated on one side of the bridge and doubled going the other way the same amount of revenue would be collected and delays would be cut by more than 50 % since extra toll takers were transferred to places on the collection side. The consequences of this creative systems thinking are many, all positive and in effect to this day:

1. Delays were significantly reduced.
2. The same amount of revenue was collected.
3. Toll taker productivity was dramatically increased.
4. This was accomplished with the same or even less resources.
5. We could also generalize and do the same thing for all of the bridges and tunnels up and down the river.
6. We could even do the same things to collect tolls and improve all of the above in other parts of New York State and all across the United States.
7. Reduction in driver stress and related medical and emotional problems, health care costs, etc.
8. A great reduction in air pollution.
9. A great reduction in use of gasoline.
10. Many more peaceful and enjoyable dinners at home.
11. Reduction in family stress, conflict and prevention of some divorces.
12. Happier drivers.
13. Happier toll takers.

This change was actually continuous systemic improvement # 2. (The first improvement was the advent of exact change lanes. This change resulted in collection of the same amount of revenue while requiring fewer resources.)

Having made such a simple brilliant systemic improvement, the leaders at the bridges and tunnels did not stop. They continued to try to improve the system? In fact they committed to continuous self improvement of the system? How did they know what to improve? They committed to continuous self assessment of the system to find out. All involved in the system are welcome and encouraged to suggest ways to improve it. The sources of such suggestions are not limited to the bureaucratic hierarchy.

Adhering to Deming's principle of continuous improvement, subsequent changes have been made:

Continuous systemic improvement # 3 was Easy Pass. Again productivity was further significantly increased while decreasing resources.

Indications are this commitment is permanent. Why stop?" Continuous systemic improvement # 4 was Express Easy Pass. Even greater productivity was achieved with even less resources.

What next? We wait in hopeful anticipation.

Is there a message here for school reform?

Compared to the bridges and tunnels in terms of systemic change the schools are at the stage before exact change toll lanes were instituted to increase production. While the bridges and tunnel process was unchanged for 50 years, the structure of K – 16 education is basically unchanged from its origin well over 100 years ago. It is producing what it was designed to produce. If everyone in the system performs to the maximum there can be no more than marginal improvement.

We can learn a great deal from what they did not do:

1. Raising taxes annually to improve the productivity of the toll takers would not have improved traffic flow (productivity).
2. A merit pay plan for toll takers would not have helped.
3. Giving all toll takers more money (even if you paid each toll taker a million dollars) would not have helped.
4. Years of state and federal toll taking legislation, regulations and mandates would not have helped.
5. Increasing toll taker accountability would not have helped
6. Increasing certification requirements for toll takers would not have helped
7. Taking away toll taker tenure and firing toll takers would not have helped.
8. Removing tenure and firing toll taker supervisors would not have helped
9. Toll taker reform programs to improve the toll takers' performance in the existing structure would not have helped.
10. New assessments (even authentic assessments) of toll taker performance and productivity would not have helped.
11. Raising standards for toll takers would not have helped.
12. Reporting poor toll taker performance in the newspapers would not have helped.

School improvement is not happening because the present system prevents it. Ironically both state and national reform efforts intended to improve the schools reflect the 12 futile practices listed above and add to the inertia of the system to frustrate and block improvement. The very measures now employed to reform education have not only failed consistently but will continue to fail as long as they are employed.

What can we do? The knowledge needed to improve the schools already exists.

1. Leadership must recognize the indisputable fact and accept the failure of current school reform policy in terms of causing increased student achievement, no matter how well intended.
2. Leadership, starting with the United States Department of Education and fifty State Departments of Education, must recognize, practice and advocate the systems ideas of W. Edwards Deming including his 14 Points to start.
3. Leadership must advocate and model continuous self assessment and self improvement of all professional educators, stating with leadership. Excellence is a choice. It can not be mandated. The only person in the world who can make me excellent is me.
4. Leadership must advocate and model continuous collective self assessment of all educational organizations including departments of education, school boards, and schools.

5. Leadership must advocate and model commitment to continuous self improvement of all educational organizations including departments of education, school boards, and schools.

In addition to improving student achievement, public education in America faces a funding crisis. For almost two full decades the rate of increase in school budgets has consistently exceeded the rate of increase in income levels of our citizenry. These two lines of contingency are near crossing. In some areas they already have crossed. We must learn to increase achievement while reducing and even cutting costs or risk forcing our citizens to seek cheaper alternatives. Systems thinking can enable us to do this.

The problem is not lack of concern or good intentions. The problem is at the policy level and its correction must start there. All students are capable of learning far more than they presently do. Constructive policies that empower teachers to teach and students to learn and restructure the system to remove obstacles to improvement must be enacted and implemented. Present policy that is defeating its own purpose of improving schools while constantly driving up costs must be abandoned and those failed policies must be replaced with the proven systems ideas of Deming. When they are applied to education we will experience a learning renaissance and decrease per student costs at the same time.

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SHOULD I STAY OR SHOULD I LEAVE?

COMPENSATION AND JOB SATISFACTION AS SIGNIFICANT FACTORS OF EMPLOYEE RETENTION IN SENIOR SERVICES

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Abstract

Employee retention underpins each management principle espoused by Deming, yet despite vast research on the nursing and professional service industries, limited literature exists for the rapidly growing senior living and hospitality organizations. We created multivariate logistic models using a dataset 32,004 former and current employee observations at multi-state locations of Erickson Retirement Communities. In untangling the relationship between employee retention and factors such as wages, benefits, job satisfaction, employee demographics, and the local economy, we find that both absolute and relative wages are significant, as are several (but not all) facets of job satisfaction, such as pride in working at the organization and clear job expectations.

Introduction

In most organizations, especially those who practice the Deming principles, retaining employee talent is a top priority for success.[i] In service industries, such as healthcare or hospitality, employee retention is especially critical, underlying quality of care, customer satisfaction, and the containment of human capital investment costs.[ii]

Previous studies have found that companies practicing employee retention strategies show over 22% higher revenue growth, over 23% higher profit growth, and over 66% lower turnover compared to companies who do not engage in retention strategies.[iii] However, when we look at the senior services industry, research is scarce. Most studies focus on one type of employee, not a comprehensive workforce, and most of these reports characterize the plight of nurses and care aides.[iv] Other studies show that innovative models in long-term care, such as the Program for All-Inclusive Care for the Elderly (P.A.C.E.), seem to retain its workers better than traditional nursing homes.[v]

Shortages in the workforce that serves seniors are undeniably becoming a larger and larger issue: the population ages at an unprecedented rate, with one out of five individuals in the U.S. projected to be over age 65 by 2030. This is a frightening situation, as an aging population means decreased labor force participation coupled with increased care and personal needs.[vi] In an Urban Institute study of the long-term care workforce, the researchers discovered little quantitative work was available:

> A review of the [recent] literature reveals that little empirical research on workplace interventions has been done…Most of the research has been conducted in nursing homes and tends to be descriptive, rather than analytical, describing various management/job redesign efforts, training activities, and financial and nonmonetary reward programs.[vii]

Having highlighted this space as an opportunity for more exploration, we introduce the objectives of our project: to study the factors of retention using a proprietary dataset of 32,392 observations spanning nine years, gleaned from the data collection systems of the largest Continuing Care Retirement Community (CCRC) chain in the U.S., Erickson Retirement Communities.

Background and Literature Review

Erickson Retirement Communities

Established in 1983 with the Charlestown campus in Baltimore, MD, Erickson has since expanded into a national network of nonprofit senior facilities and services. With twenty-two communities in twelve states, Erickson has over 11,000 employees. Of these, 1,400 individuals work at the largest location, the Charlestown campus and the on-site Corporate offices.[viii] Each community is run as though it were a small town, with restaurant staff, cleaners, administration, and so forth.

Like many service and healthcare organizations, Erickson struggles with employee retention, which ranges from 50-100% per year, depending on the department and geographical location, not including temporary or student workers. With turnover at 0-50% with an average of 30%, the operational implication is that on any annual basis, Erickson loses one out of every three employees, a tremendous loss of talent and costs to the organization.

Before analyzing the data from Erickson, we must first understand the work that has been done to understand the factors of employee retention arena. We begin with the big picture theories of labor economics, then explore managerial and gerontological studies.

Labor Economics

We begin the overview of the labor economics research by noting that much of it is limited in its abilities due to the simplifying assumptions that must be made when researchers create labor models.[ix] At the same time, economists have cast their intellectual nets broadly, exploring popular topics such as short-run and market fluidity theories in the 1970s, human capital in the 1980s, and games and contracts in the 1990s.[x]

To summarize many of the economic theories, the root idea of a labor market means that there are incentives that are monetary as well as those that are non-monetary. Individual worker decisions, then, are affected by the acts of the employer, or the principal in the principal-agent model,[xi] and are made based on indifference curves of preferences. For example, a female worker may prefer more flexible work hours when in a tradeoff with higher pay, whereas a male worker might prefer higher pay to flexible hours. High job satisfaction or finding a higher purpose in a job, such as working at Erickson and serving middle-income seniors, might be other non-pecuniary forms of incentive for workers to stay.[xii]

When considering personnel economics, it is also important to consider the human capital aspect of the topic, including improvement investments individuals make in themselves, much like infrastructure investments governments make for the macroeconomic environment of their countries. In a labor market that is not governed by clear and understandable contracts, unions have the upper hand in forcing wage increases; this act, however, tends to decrease worker training as firms reallocate their investments from training to pay.[xiii] At the same time, with a lowered amount of training for the job and in their specific industry, employees are more likely to leave because they have less invested in their current role.[xiv]

What results, then, is a vicious downward cycle for the individual worker (unless they invest their pay into training) of not having skills and being paid less than if they had skills: the tradeoff between compensation for skills or responsibility is one that tilts in the direction of paying for skills, as in the example of a pro golfer with high skills and low responsibility, compared to a elementary school bus driver with low skills and high responsibility.[xv]

We learn, then, from the labor economics field, that we must evaluate the Erickson data accounting for the factors that increase human capital, along with the tacit contracts and nonpecuniary incentives that may be in place for each individual. At the same time, we must not slow down in the quagmire of looking at factors in isolation. Individuals in certain job categories will potentially aspire to work in higher job categories; younger employees may be compensated less in lieu of paying older (or more senior) employees more, yet younger workers aspire to gain the seniority of older workers. In short, the labor market in senior services is not a system on an island: both endogenous as well as exogenous factors influence individual worker decisions of staying or leaving the organization.

Management Research

Moving to the managerial and senior industry journals, we find that these research beds overflow with research on how to develop an effective talent pool, consisting of more than "just a portfolio of off-the-shelf components such as competency-profiling tools, 360-degree feedback, and online training."[xvi] Talent is an integral piece of the popular business management framework called the Balanced Scorecard,[xvii] and research organizations have tied employee satisfaction and retention to improved business results, as measured in productivity, profitability, and customer satisfaction.[xviii]

To begin, we find that several conceptual models which try to explain the decision-making process behind staying or leaving an organization. The basic models explore the antecedents leading to whether an employee stays or leaves: they propose that employee turnover is due to the employee's perception about job satisfaction (formerly coined "desirability" of the job) and how difficult or easy it would be to find another job.[xix]

In the 1977 Mobley model, he theorized that thinking about quitting is the first step, leading one to search for other opportunities which in turn then become realized alternatives. A few years later in 1981, Steers and Mowday proposed that in addition to intention to leave, the interaction between job experiences and organizational characteristics (i.e., the quality of the supervision, whether the individual has a friend at work, the organization's culture) are the drivers for employee turnover. The last major model for employee turnover came in 1994 with the article by Lee and Mitchell on an unfolding decision-making process to leave an organization, including shocks to the personal system as well as the gap between images (of what one as an employee should have and what one actually has).

Several studies illuminate these models with quantitative data, empirically charting models for turnover at large, non-senior sector organizations. A study of 445 employees of financial institutions found a circular pattern in the employee retention cycle, with the antecedents, main variables, and dependent variables tightly linked: the antecedent to job satisfaction is attitude on the job, both of which are linked to employee retention and turnover.[xx]

In a different study, 904 recent college graduates were tracked after they joined one of six large accounting firms: the effect of a good organizational culture (good interpersonal relationships, individual behaviors tied to rewards for completing tasks) on retention seemed stronger than external influences and employee characteristics, resulting in a $6 million difference in turnover savings between the best-culture and worst-culture firms.[xxi]

An interesting research project of 13,890 North Carolina teachers in the *Journal of Human Resources* looks at the impact of salaries on teachers and divides the subjects into those with higher opportunity costs of staying in teaching, as measured by performance and innate abilities, and lower opportunity costs. It was shown that higher salaries do indeed lead individuals to stay in teaching for a longer duration of time; yet, teachers with higher opportunity costs stay in teaching less long.[xxii]

Senior services research

In a big surprise, other than nursing and long-term care employee literature, we were not able to find other work in the senior services sector. What this means is that little research exists on employee who work with seniors, including areas such as dining services, maintenance, security, and other non healthcare settings. With the publication of this research, we hope to begin a first step in populating this noted gap in the literature.

Turning our attention to the publications that do exist, we discover that much has been documented on turnover in the long-term care setting, and especially in its upper positions. Several insightful findings have come from studies in the SNF area: that increased turnover of management is tightly linked with increased turnover of frontline staff and that nursing home administrators who have unstable employment patterns, less community and organizational attachment, and low facility performance are much more likely to leave than other administrators.[xxiii]

In the non-nursing home setting, such as independent and active living, little research exists on workers in general senior settings, with the exception of a few studies of homecare workers in L.A. and of females who work with older adults.[xxiv] Looking at the non-management ranks, or those employees who do not have subordinates and spend a majority of their work time serving the customer's needs, we find that frontline staff is defined as those employees who have no subordinates and work directly with the customers; those who have direct reports but still work with customers are dubbed the "first and second level leaders."[xxv]

A critical category of frontline staff are the nursing aides who work both in the nursing home setting as well as in the house setting. Collectively, nursing aides in the different types of locations numbered over 1,500,000 in the U.S. in 1998, with an expected shortage in the near future. Regional economic conditions as well as managers discussing or getting advice from the aides both contributed to significantly lower turnover rates by approximately 33%. In addition, while financial rewards resulted in lower turnover, by 11-44%, the same report claims that job qualities such as relationships at work are more important.[xxvi]

Variables to analyze

In addition to these factors, many variables have been identified by summary studies as correlates to turnover, including external variables such as the regional unemployment rate, internal organizational variables such as base pay, performance reviews, and overall employee satisfaction, and personal characteristics such as age, gender, education, marital status, and the number of dependents.[xxvii]

These three aforementioned types of variables are more readily measurable – that is, without an employee survey. In addition, there are many other variables that are "softer" and less likely to be measured during an organization's regular data-collecting process, including aptitude and ability, intelligence, and behavioral intentions. Other factors shown to be related to employee retention and employee turnover but which may be more difficult to measure in this proposed project include:

- Job characteristics and the employee's perceptions of "fit" with the job; this is the category that encompasses the perceived work environment[xxviii]
- Autonomy of decisions on the job[xxix]
- Career-related factors, such as getting recognition for a job well done and career opportunities[xxx]
- Family and community-related perceptions of the employee's job[xxxi]

In 2002, the Gallup polling organization published a comprehensive study covering twenty-five years of surveying employee satisfaction and relating various areas of satisfaction to business success, as measured by profitability, growth, and productivity. Twelve questions quickly rose to the top to be statistically significant correlates of business success. We will attempt to map these twelve areas to the Erickson employee survey to use in the data analyses, then add three additional areas of satisfaction, or overall satisfaction, pride in working for the organization, and seeing oneself at the organization in five years. The Gallup twelve are as follows:

1. Do I know what is expected of me at work?
2. Do I have the materials and equipment I need to do my work right?
3. At work, do I have the opportunity to do what I do best every day?
4. In the last seven days, have I received recognition or praise for doing good work?
5. Does my supervisor, or someone at work, seem to care about me as a person?

6. Is there someone at work who encourages my development?
7. At work, do my opinions seem to count?
8. Does the mission/purpose of my company make me feel my job is important?
9. Are my co-workers committed to doing quality work?
10. Do I have a best friend at work?
11. In the last six months, has someone at work talked to me about my progress?
12. This last year, have I had opportunities at work to learn and grow? (Forbringer 2002)

In reviewing the literature on employee retention, what makes this research interesting is the controversy about what factors matter in whether an employee stays or leaves. For instance, pay seems to be one of the more controversial independent variables when it comes to turnover/retention. A survey of HR professionals suggests that wages alone do not make an employee leave or stay.[xxxii] However, in other studies, pay is found to be a direct correlate of turnover.[xxxiii] And so, the objectives for this paper include modeling the factors of retention, especially those that management can change, and contrasting the factors of retention for frontline employees versus managerial employees.

Methodology

As previously described, the primary dependent outcome variable in our statistical models is whether or not an employee stays working at Erickson, a multi-state retirement community. The independent variables include those that have been found to be significant in previous research, including individual-level demographic variables, work-specific variables, satisfaction variables, wage variables, and external economic variables. Part of this project will be to look at the frontline staff and test whether the factors of retention of these employees is different from the non-frontline staff.

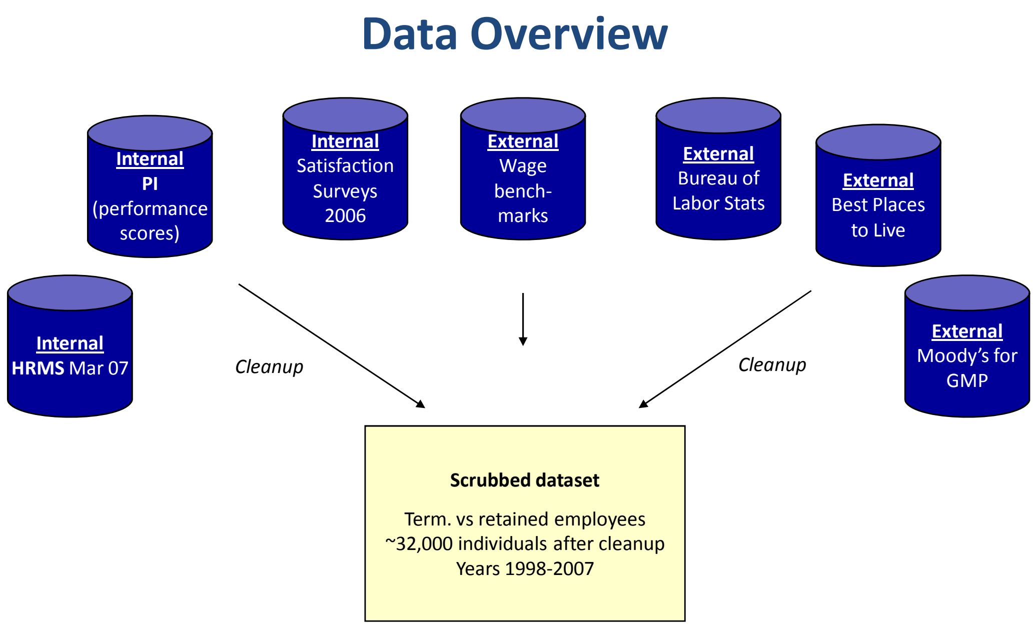
A cursory look at the literature on employee turnover will reveal dozens of ways that turnover is calculated. For the purposes of this paper, we will define turnover as the number of voluntary terminations divided by the total number of full-time as well as part-time employees during the same time period, normally calculated at the end of the year. As for retention, it will be calculated as one minus the percent of turnover for full-time and part-time employees. The reason we are defining retention this way (and turnover to be 100% minus the retention rate) is because Erickson as an organization defines retention and turnover this way, and this study would like to be able to triangulate its calculations against those produced by the Erickson Human Resource department.

Sample population

The population used is the entire dataset of employees who work or have worked at Erickson Retirement Communities from the years 1998 to 2007. Hence, this is not a "sample" – we have all or nearly all of the population. However, we should also note that the Erickson population is not a random sample from the entire population of workers in senior care. The results, then, must be through the lenses of internal and external validity.

Types and sources of data to be gathered

Figure 1 on the following page depicts the data sources and collection process. The sources included internal Erickson operational systems, surveys conducted by the Holleran consulting group (anonymous surveys, so results are matched to individuals at the sub-department level), the Bureau of Labor Statistics, Moody's, and the Best Place to Live reports. Data cleanup was conducted to remove observations where data entry clouded key variables such as age, years of work experience, and tenure (none of these variables are naturally negative values and such cases are removed from the dataset.)



Methodological challenges

One of the largest challenges to this project is that the normal OLS regression models may have a low R-squared value, meaning the independent variables explain a small percentage of the dependent variable. The logit R-squared equivalent of the OLS regression may also be low. In empirical employee retention models, the adjusted R-squared is approximately 20-25%, which may or may not be low depending on the readers' perspective and previous experience.[xxxiv]

The reason for this possible challenge is that we do not have personal data on unplanned events for each person in the dataset, such as a divorce or spouses getting a new job requiring relocation, health issues, and so forth. It has been shown that these unplanned changes in one's personal life negatively interrupt labor force participation.[xxxv] Granted, these personal changes may affect certain types of workers disproportionately, but we likely will not be able to discern these factors from the analyses.

In addition, we may be limited in the N in some analyses, as we have more than a dozen geographical locations which need to be held constant; some locations are new and do not have thousands of employees yet. Drilling down to departmental, e.g., General Services, or sub-departmental, e.g., Transportation, levels may not result in a large enough sample size to see statistically significant results. For this paper, we will analyze across the workforce in full, reserving multi-level analyses for future research.

Statistical analyses to be conducted

Because our dependent (y) variable is a binary variable, we will use a multivariate logistic regression. To translate the results:

% effect of a P-value<0.05 variable on retention = e ^ (coefficient value of logit)

It should be noted that since several of the independent variables may be highly correlated, such as having health insurance benefits and having retirement benefits, performance score and bonus amount, and full-time status and having benefits, we will need to investigate individual models. This paper reports on the base wage findings, along with satisfaction variables, external variables, and individual demographic factors.

Basic Models

The basic multivariate logistic model is as follows:

Retained (0|1) = $\beta + \alpha_1$*age + α_8*education + α_3*gender + α_2*experience + α_{22}*inflation_adjusted_pay_per_year + α_{25-36}*gallup12questions + α_{37}*erickson3questions + α_{37}*gmp + α_{38}*pay_relative_to_market

Marital status is a variable that is not clarified by looking at the part-time to full-time breakdown, nor is it explicated by taking high school student employees out of the data. We will not use this in the modeling until we determine whether the data is reliable. Education was inserted in preliminary models, but the results were unstable, and so we will table this dependent variable until it can be researched in more depth.

Furthermore, in running a preliminary set of logistic regression models, surprisingly, neither the employee performance review scores not that of the supervisor seems to be statistically significant in different versions of the model, so we shall table these variables from the models presented in this paper. Lastly, we will not, in this paper, consider the difference between voluntary versus involuntary terminations of employees; it is important but difficult to extract out of the Erickson dataset.

This basic logistic model will be run several times, replacing certain variables that may be correlated with another independent variable so that we run models with these variables separated in order to avoid the problem of multicollinearity. (Note: in using this basic logistic model, we will need to make sure that observations are independent of each other: that one employee's departure does not affect the departure of another employee. If they are not independent, then we will need to standardize error terms.)

A power analysis shows that the power approaches 100% at a 5% confidence level when we compare the difference between two data percentages that are 1% apart (the difference between 70% and 71%, for instance). The reason for this high power is likely due to our large sample size of over 32,000 observations. Since not all variables have 32,000 cases, sample sizes may vary but generally are over 1,000 observations.

The data and analyses described will be executed with STATA as the main statistical software, with additional analyses conducted with SAS JMP.

Findings

To discussing the regression model findings, we need first to understand the data analyzed. Table 1 displays the key variables and the sample size available, mean of the variable, standard deviation, minimum and maximum values.

Table 1: Summary Statistics

	N	Mean	SD	Min	Max	Notes
Age	30104	30.2	14.7	14.1	83.2	Stated in years
Gender	30133	64.2% (F)				
Education Level	21891	63.2% (H)				63.2% High S. or Less; 13.1% Coll & Higher
Ethnicity	30133	48.4% (W)				48% noted as White/Caucasian
Marital status	28919	23.2% (M)				Includes dining students (low % married)
Annual pay	30133	$ 17,735	$ 21,211	$ -	CEO's pay	CEO pay undisclosed
Annual pay adj for inflation	30133	$ 18,661	$ 21,724	$ -	CEO's pay	CEO pay undisclosed
Tenure at Erickson	30133	1.9	2.5	-	23.7	Stated in years
Tenure in position	30133	1.1	1.5	-	10.7	Stated in years

Looking at the above table may be slightly misleading, however, as it incorporates both full-time and part-time employees. We must dissect the dataset to understand parts of it more fully. For instance, average full-time annual pay is approximately $35,000, whereas the average part-time annual pay is less than $8,000. Both figures are adjusted for inflation over time as well as the cost of living differences between metropolitan regions in the United States.

We cannot, though, stop there in understanding the data. To explore the wage variable in greater depth, we must calculate the average number of hours worked per week. For full-time employees, as expected, the average is 40 hours per week (full-time employees are usually salaried employees and are exempt from overtime pay). On the other hand, part-time employees in the Erickson dataset average 14.2 hours per week.

We model employee retention with the dependent outcome variable defined as two states: whether an employee stays or leaves. In the basic model of using pay and job satisfaction to "predict" the outcome variable of overall employees (not divided by frontline or non-frontline workers), we find that wages do indeed matter, but interestingly, the employees who are higher paid and/or who work more hours are those who tend to leave. The wage variable in these models is the annual wage, which accounts for the full-time, part-time mix of employees. Some of the job satisfaction criteria are correlates of retention, but together these wage and satisfaction factors account for less than 10% of the variability seen in the data.

When we control for some of the employee demographic characteristics, including age, education, work experience, and gender, not only are they almost all significant factors in employee retention, but the variability explained shoots up to over 50%. Controlling for external variables such as the local economy and the wage level relative to market benchmarks, we find that wages are very significant, both on an absolute as well as relative level.

As we build a model to explain the variability in employee retention in the frontline staff, or those employees who do not have subordinates and spend a majority of their time on activities directly affecting the customer, we find that many of the factors previously found to be significant, also matter: wages, external factors, demographic variables such as age, education, and work experience, along with believing in the mission/purpose of the company, and having pride in the company to expect to stay working at Erickson in future years. Interestingly, when we isolate the managerial staff and look at their factors for retention, we find that keeping them at Erickson is mostly related to relative wage levels and demographic factors. Table 2 displays the results of the logistic models.

Future models of this data need to account for variables such as the local unemployment rate, ethnicity, tenure at the organization, and marital status. Furthermore, we should explore the interaction effects between variables as well as the impact of dependent variables correlated with base pay (retirement plans, health insurance, bonus), which were excluded from this study to avoid the effects of multicollinearity.

Table 2: Nominal logistic regression models

[redacted]

Limitations

Most studies chronicle their potential strengths and limitations due to study design. Our most obvious weakness is that this is a retrospective secondary data analysis rather than a specially-design prospective study with experiment and control values. In addition, given the 9-years of data from Erickson Retirement Communities, the findings are certainly more relevant for Erickson because of a controlled, standardized environment than for other senior services providers, unless their culture and unmeasured business policies are similar to those of Erickson.

Considering the possibility for external validity of the findings, we will have to be careful when attempting to generalize: the senior managers of an organization who want to use these findings must have a culture, environment, and work policies similar to those of Erickson. Moreover, these findings will not account for the possible selection bias of individuals who choose to join one organization versus another, for reasons other than the controlled variables and to include factors such as personal referrals and family or life-changing situations. Moreover, the job postings are not censored for who can or cannot see them and apply for the positions; therefore, there is information bias in who has the information to apply for certain job positions.

For future research, we may need to analyze the data in two parts, both more recent and less recent, to observe whether there are differences in the factors of retention over time, due to exogenous factors as well as changes in Erickson practices.

We should also point out the limits of reliability of the findings. Erickson, as a growing organization, is constantly changing, in ways both tangible and intangible: to cite one concrete example, the Erickson Way values are currently being rewritten. Moreover, the data covers a specific set of years. Thus, analyses of this particular dataset may not be reliable in ten years or even three years, after workplace and labor policies have changed.

Moreover, if this proposed study reveals that it is workplace changes that are related to helping to increase employee retention, any strides made by an organization requires extra labor (and/or funds) and the changes can only be realized over time, by which point other factors in the workplace may have changed to eliminate the effect of any initiatives taken.

We should note that we might find certain employee characteristics which are related to retention, but it is both unethical and illegal to change recruiting and hiring practices to accommodate these characteristics (particularly the variables of age, gender, and ethnicity).

Implications and Conclusion

The implications of this study can be examined from both a short-term as well as a long-term perspective. The immediate business and management implication of these findings is that we can, within a confidence interval, predict changes in retention if we change certain significant factors, such as wage levels or satisfaction rates (the latter being harder to change and measure.) An example is illustrated below. Because wages are revealed to be an important and statistically significant variable related to employee retention, when we adjust overall wages, we would expect and in fact can predict a correlative changes in overall employee retention.

Assumptions:

Sample:	6,000 employees
Number who leave each year:	1,800 employees
Average wage:	$18,000/year
Amount of wage saved if someone stays:	50% (could range between 0 and 100%)

Projections using model:

If raise wages by 10%, we would expect 25% more employees to stay (rather than leave)

We would save:

$4.5M

(calculated as $18,000 x 50% x 1,800 employee who leave x 25% increased retention)

Wages would increase an additional:

($10.8M)

(calculated as $18,000 x 10% x 6,000)

Wage change expected to net to:

($6.3M)

(subtracting -10.8 from 4.5)

P-Value <0.05

Of course, the above calculation can be optimized on those employees who would be more impacted by a wage adjustment, thereby decreasing costs but still maintaining most or all of the increased retention. In addition, we can look at the expected percentage savings from an additional employee deciding to stay, be it from higher productivity or decreased paperwork time, and it could range between 0 and 100%. For the example above, we chose 50%, but the model and expected savings from retention is very sensitive to changes in this input variable.

For research overall, the contribution of this work to the field of employee-employer research is that many of the factors previously found to be important to employee retention are indeed significant, including the local economy, individual characteristics such as education and age, absolute wages as well as those relative to market. This research also illuminates the areas of job satisfaction that may be important to the frontline staff, but more research is needed to validate and expand on these results.

Footnotes

[i] Cappelli 2001

[ii] Newman 2001; Harrington et al 2000; Clingermayer et al 1997

[iii] Pomeroy 2006
[iv] Goode 1993; Diallo 2004; Andrews and Dziegielewski 2005; Rajecki 1991
[v] Friedman, Daub, and Cresci 1999
[vi] Meisinger 2006; Kujawski 2007
[vii] Wiener and Stone 2001
[viii] Erickson interviews, May-June 2007
[ix] Lazear 1996
[x] Gibbons 1996
[xi] Laffont and Martimort 2002
[xii] Lazear 1996; Gibbons 1996
[xiii] Grout 1984
[xiv] Neal 1995
[xv] Lazear 1996
[xvi] Cohn 2005
[xvii] Kaplan and Norton 2007
[xviii] Forbringer 2002
[xix] March and Simon 1958; Jackofsky and Peters 1983
[xx] Lee and Mowday 1987
[xxi] Sheridan 1992
[xxii] Murnane and Olsen 1990
[xxiii] Castle 2005; Singh and Schwab 2000
[xxiv] Kiyak and Namazi 1997; Zawadski and Radosevich 2003
[xxv] Priestland and Hanig 2005
[xxvi] Stone and Wiener 2001
[xxvii] Meisinger 2007; Altonji and Usui 2005; Cotton and Tuttle 1986
[xxviii] McEvoy and Cascio 1985; Mobley 1982
[xxix] Price and Mueller 1986; Weil and Kimball 1995
[xxx] Cordero, DiTomaso and Farris 1994; Cotton and Tuttle 1986; Kerr and Slocum 1987; Porter and Steers 1973
[xxxi] Abelson 1996; Mobley 1982; Mowday et al 1982
[xxxii] Leonard 1998
[xxxiii] Cotton and Tuttle 1986
[xxxiv] Lee and Mowday 1987
[xxxv] Williamson and McNamara 2003

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WE DO THAT ALL THE TIME! – A COSTLY GOOD-FAITH BLUNDER

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Abstract

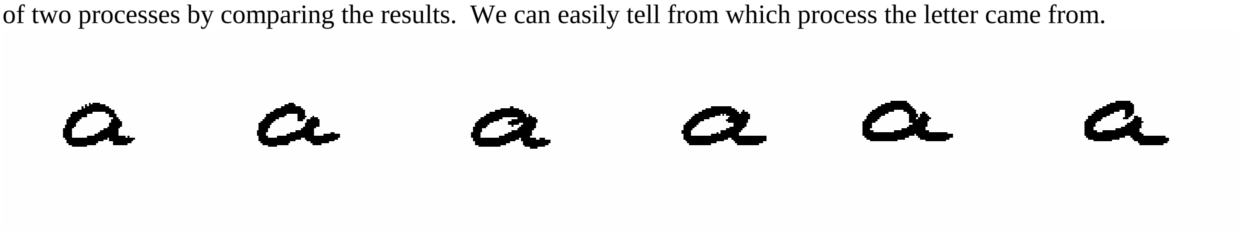
We will examine a real-life process data, analyze the potential factors contributing to the observed variation, and link those observations to established management principles. As a result of the analysis some recommendations are made to alternate ways to manage the process under study.

Concepts Covered In This Paper

The arguments made in this paper are based on a few main principles established by accomplished experts in their respective fields, Dr. W. A. Shewhart, Dr. F. Hertzberg, and Dr. W. Edwards Deming. In the section where we analyze the process in more detail, we will also study the works of Drs Taguchi and Juran. First we will examine the main principles in order to form a basis for our argument.

Dr. Shewhart described the problem of controlling process variation by using the metaphor of one of the most casual tasks of his time – hand writing. He described the human inability to make things exactly alike by writing a series of letter a's on a paper. This metaphor illustrates any process that is designed to produce a repeatable output. Even without a specific measurable characteristic, the amount of variability is readily observable in the output – we simply seem unable to produce letters without variation, as seen in the Figure 1 – Process #1. However, the variation appears controlled within range, each letter classifies as a.[1]

Furthermore, when comparing the output of two processes in Figure #1, it is easy to distinguish between the outputs of two processes by comparing the results. We can easily tell from which process the letter came from.



Process #1

Process #2

Figure 1

For the purpose of this discussion, the important aspect of this illustration is the fact that the observable difference in the outputs is a clear signal that the cause systems underlying the processes are different, i.e. the Process #1 has one set of main contributing factors, such as the pen, the paper, the table height, the angle of the hand, the fatigue of the

[1] Shewhart: Economic Control of Quality of Manufactured Product. P 5.

writer, etc. These are some of the elements of the unique cause system that creates the quality of the output for the Process #1. The same is true for the factors specific for the Process #2. By studying the output, it is easy to tell that the two series of letters came from different cause systems.

According to Hertzberg's Motivation-Hygiene Theory, workers are not satisfied with just achieving the lower-order needs, i.e. minimum salary, safe and pleasant working conditions, etc. Rather, what appears to motivate us workers are achievement of goals, recognition, responsibility and advancement. The following excerpt is from an article describing Hertzberg's research on this topic.

> "Briefly, we asked our respondents to describe periods in their lives when they were exceedingly happy and unhappy with their jobs. Each respondent gave as many "sequences of events" as he could which met certain criteria including a marked change in feeling, a beginning and an end, and contained some substantive description other than feelings and interpretations.
>
> The proposed hypothesis appears verified. The factors on the right that led to satisfaction (achievement, intrinsic interest in the work, responsibility, and advancement) are mostly unipolar; that is, they contribute very little to job dissatisfaction. Conversely, the dis-satisfiers (company policy and administrative practices, supervision, interpersonal relationships, working conditions, and salary) contribute very little to job satisfaction."[2]

The important part of this discovery for our current discussion is the fact that goals and achievement of the goals have a strong influence in how we perform at work, and we appear to thrive to achieve them.

In Dr. Deming's famous 14 Points for the Management, the Point #1 is – "Create a constancy of purpose toward improvement of product and service with the aim to become competitive, stay in business, and provide jobs."[3] In so many ways this insight is a cornerstone of customer oriented business model. It has implications to many of the key policy decisions a corporation has to make. However, for our current discussion, two important aspects are:

1) What is right today should not be wrong tomorrow. Once the process has been established, follow it, and take a disciplined, long-term approach to process improvement.

2) As observed by Scherkenbach, once the organization has established its constancy of purpose and communicated it to the employees, the problem becomes to maintaining the spread of individual perceptions, as illustrated in below, in such a way that prevents people from wondering off doing their own things.[4]

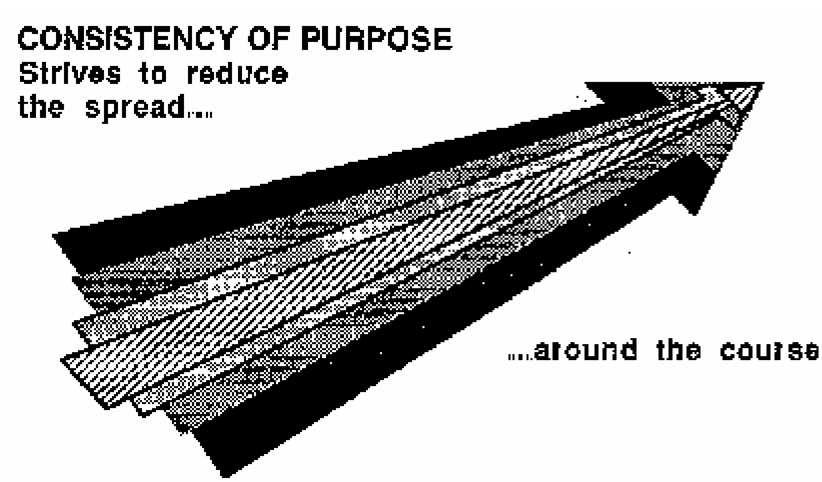


Figure 1-4 [5]

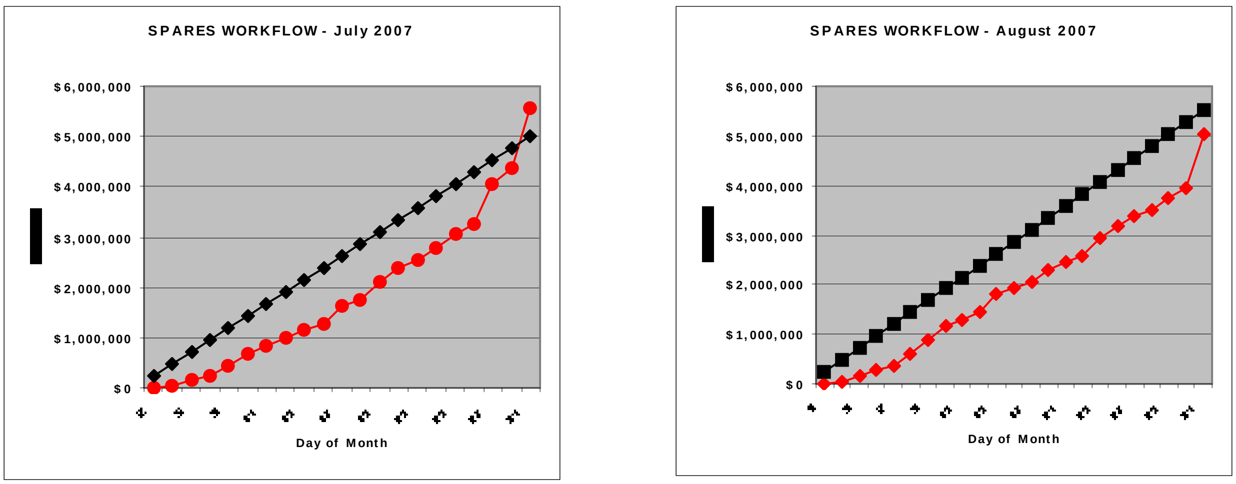
[2] Herzberg: The Motivation-Hygiene Concept and Problems of Manpower, pp. 3-7.
[3] Deming: Out of the Crisis, page 23.
[4] Scherkenbach: The Deming Route to Quality and Productivity – Road Maps and Roadblocks, pp. 13-14.
[5] Scherkenbach: The Deming Route to Quality and Productivity – Road Maps and Roadblocks, p. 14.

Figure 2

Work Process Under Study Described

In this case we are studying a process of delivering spare part orders to the customers. The process itself is very straightforward and has a rapid throughput time with moderate to high volume of individual transactions. When a customer order is received, the delivery time is confirmed based on the availability of the unrestricted stock. At the time when the customer order is due, the work order is released, the parts pulled from the stock, they are packaged, and shipped to the customer.

As mentioned in the section where Hertzberg's work was described, people appear to be goal oriented. Therefore, in a good-faith effort to help people working in this process, the management has set a numerical goal. The goal is a monthly $ value of parts shipped through this process. The goal, broken down in daily increments, is shown as a sloped line in Figure 3, and the accomplishment toward the goal is tracked in a daily basis as illustrated below.



Tracking charts for spare part shipments for two months

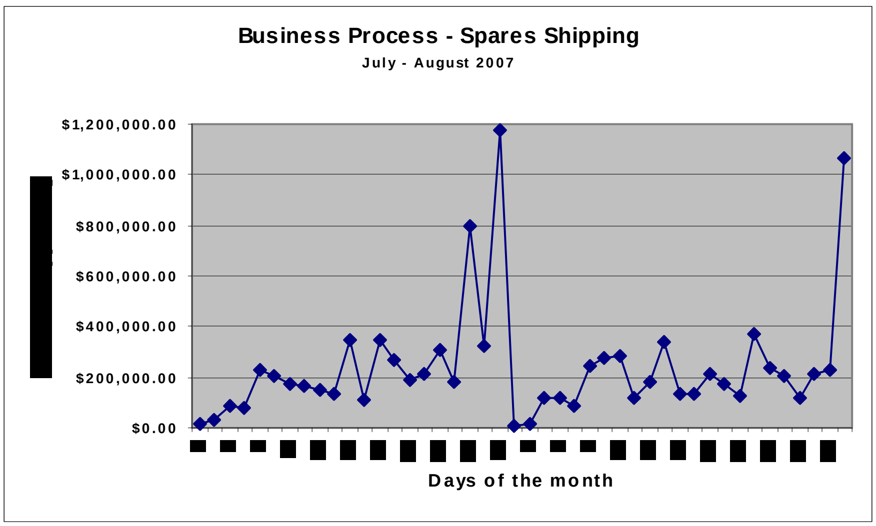
Figure 3

These types of tracking charts make a simple and powerful management tool. They display the expectations clearly, and break the overall goal into manageable subtasks. As these types of charts are reviewed in daily meeting, the managers and supervisors can easily see how they are progressing towards their respective goals throughout the month.

Achieving The Goals – At All Cost

Once they have set their mind to their goals, people are capable of solving problems, overcoming process obstacles, such as rigid and complicated procedures as well as surmount shortcomings, and such as lack of tooling, training and supervision in order to achieve their goals. Therefore one word of caution when setting goals: “be careful what you are asking for, you may just get it”. In the other words, we need to realize that how we accomplish things is as important as what we actually do.

It is evident without any further statistical analysis from the run chart below, that the process under study, the spare part workflow, is not stable; it has cycles built into it. The peaks in the output coincide with the end of the month when the achievement of monthly shipment goal is assessed as seen in Figure 4.



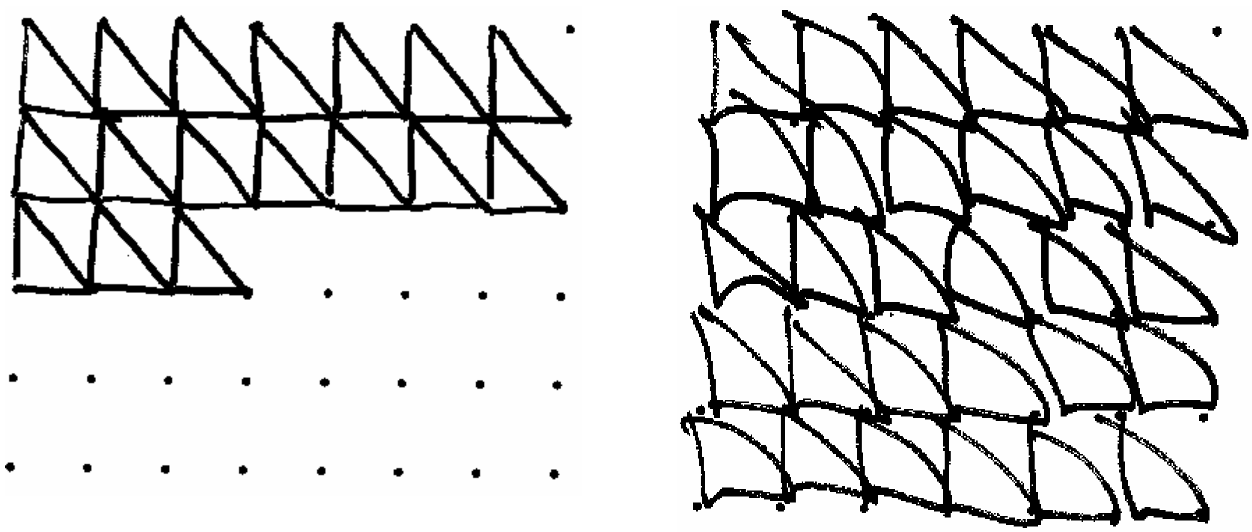
Run chart of the daily spare part shipments

Figure 4

A short technical explanation is that there are forces in play during the high output shipping days that lead into alteration of the underlying cause system, and a subsequent change in the output – in the other words, the process has changed.

There is a simple illustration/team activity that highlights the point made here. This activity is called “Straight Lines and Square Corners” exercise.[6] In this game, two groups (work teams) of three people are tasked to produce triangles on a dotted sheet of paper for a period of 90 seconds. The task for the team members is to take turns in making triangles one at the time by connecting the dots, and filling the rows on the paper from left to right. Each team will have a supervisor to oversee the operation and adherence to the procedures. The procedure as it is explained to the participants is to “produce triangles with straight lines and square corners as fast as you can”. The results are shown in Figure 5.

[6] Orsini, J. /The W. Edwards Deming Institute: 2 ½-day seminar – “How to Create Unethical, Ineffective Organizations That Go Out of Business.



Team #1 results

Team #2 results

Figure 5

The teams have the same tools, the same task, the same information, and the same procedure. Only difference is the supervisor's interpretation of the instructions. Team #1 supervisor directed his team to make "STRAIGHT LINES AND SQUARE CORNERS", while team #2 supervisor directed his team to go "AS FAST AS YOU CAN". The difference in the supervisor's interpretation may appear subtle, but it has a profound effect to the results. By examining the triangles, much the same way we examined the series of letter a's, it appears that the triangles came from two different processes.

There are at least two interpretations to this exercise:

1) Contrary to common belief, this example suggests that procedures are more individual, and subject to interpretation, than they are "Standard Operating Procedures". In the other words, the individual's interpretation of the work instruction can be a major contributing factor to the process variation.

2) At different times, depending on the level of pressure or stress, the same individual can choose to interpret the same Standard Operating Procedure in two different ways. In the other words, pressure, internal or external, can change individual's interpretation of the work instruction, even though the actual work instruction has not changed. This change in perception can be a major contributing factor to the process variation as well.

Spare Parts Shipping Process Analyzed

For the purpose of our current discussion we omit the mathematical aspect of the analysis, and apply the visual method we used in analyzing the two previous examples; writing letter a's and making triangles. Based on the analysis of the process output shown in Figure 3, we can see that there are three phases in this process during each month. In the other words, the process changes during the month from one mode to another twice, and then those phases repeat themselves the following month. Those phases, or separate processes for one month, are identified in Figure 6, shown below.

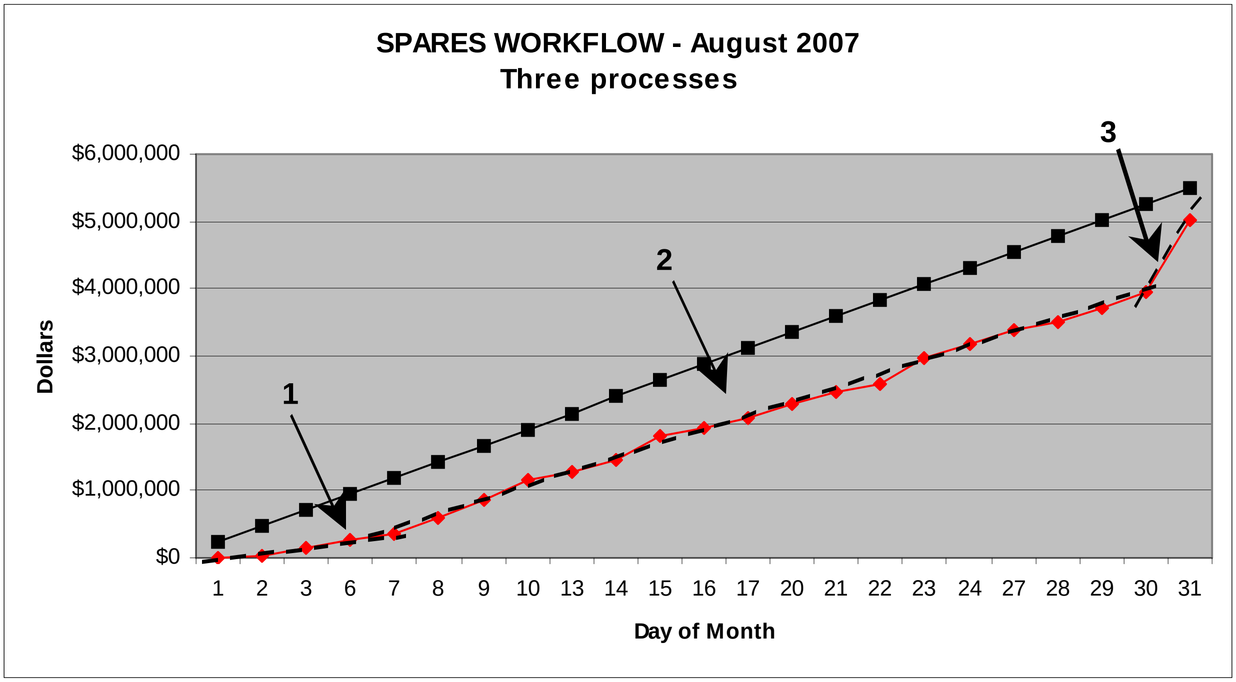


Figure 6

Let us examine closer what the process data is trying to tell us. From the overall shape of the graph we can tell that there are two changes that take place during the month. One of the changes is more abrupt than the other, and has lead some people to describe the graph as a hockey stick. Upon closer examination the hockey stick seems to be double ended, which will make it look more like a snowboard. We are now ready to describe each of the processes in greater detail.

Process #1 – In the beginning of each month, the spare part order process is purged from all, or close to all orders, in the quest to meet the numerical goal for the previous month. As a result, for the first several days the process is not capable of producing the output it is designed for.

Process #2 – WIP (work-in-process) has been built back up to the normal levels, and the work flows through the process at or near the designed capacity.

Process #3 – As the end of the month draws near, and the goal is still within reach by working faster, and longer hours, everyone effected by the goal is "doing their best" to achieve the goal. According to Hertzberg, this gives us bride and job satisfaction.

Analyzing the Unplanned Cost Associated with the Process

Every fiscally responsible organization, especially a publicly trade one, has a cost accounting system that provides a foundation for pricing and profit planning. This planning is often based on the Standard Cost for the products. The Standard Cost for a given product is calculated based on the prices of purchased parts, cost of labor for the planned activities required to manufacture the item, and the overhead cost of the organization.

For the planned activities the associated cost are often calculated based on some kind of work standards, and possibly time studies. Once this cost is determined, it is used as part of operations planning, specifically in planning for operating margin, or contribution that the organization uses to cover the overhead cost, cost of capital and the profit. Based on this information the pricing decisions are made and communicated to the customers.

The cost associated with each of the phase/process:

1. Output less than the available capacity (man hours) in the first part of the month. This is due to the fact that the process was purged at the end of the previous month to achieve the numerical goal set by the management. This phase is the source of the negative labor variance.
2. This section is best described as the core, repeatable process that is in place, when the line is properly loaded, and the output is predictable. This phase also provides the data and the basis for labor standards, make or buy decisions, cost accounting and budgeting.
3. Expedited mode of operation at the end of the month, where the process capacity has been increased by longer working hours and by adding extra capacity (more man hours), in order to accomplish the goal. The main associated direct cost is the unplanned overtime.

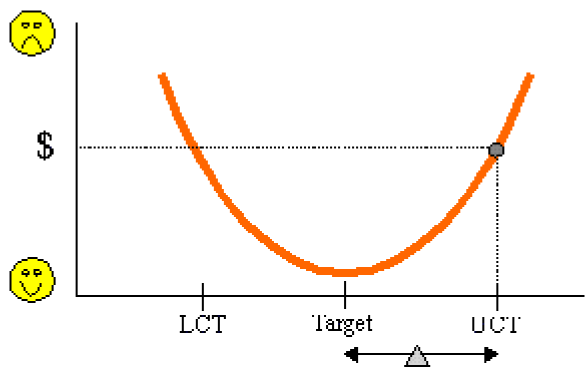
The indirect costs associated with this mode of operation.

1. Prevention cost:
    a. Quality and process engineering staff – wages and benefits. The problem solving efforts become less effective when it is unclear to the problem solvers which process is the source of the problem. In the other words, if the root cause analysis is performed on process #2, when in fact it was process #3 that caused the problem, the preventative actions are likely to be ineffective, and the problem will reoccur in the future.
    b. Documented quality system – procedures and work instruction. The phenomenon illustrated in the Straight Lines, Square Corners exercise illustrates the hidden cost embedded in documented quality management systems. The effort put worth in the attempt to standardize the operating procedures is limited in its effectiveness when such a contrast is in place interpreting the procedures.

2. Recovery and replacement cost – continued RMA processing cost. Just by cheer volume, most of the defects are shipped during process #3, and it is the most elusive of the processes to study, since it is not in place all the time. The inability to get to the root cause of these defects will guarantee the continued flow of customer returns.

Closely related to the expenses stemmed from the process variation is the concept Dr. Taguchi has presented. His main contribution was the enhancement of the traditional “Go – No-Go”, or “Good vs. Bad part thinking” so closely related to engineering specifications. What he suggested instead is the idea that all the process variation has a loss associated with it. In the other words, he realized that when we set arbitrary limits of variation, such as Specification Limits, there is no connection between those limits and the consequences, or loss as he called it, which stems from that variation. He suggested instead, that incremental increase in variation increases the loss that incurred as a result of the deviation from the optimal target. This concept is known as the Taguchi Loss Function.

Many management experts recognize Taguchi’s idea. Dr. Deming refers to it in his work. "a minimal loss at the nominal value, and an ever-increasing loss with departure either way from the nominal value."[7] This concept is helpful in explaining how the JIT and Lean Production concepts give such an economic advantage to the companies, which have been able to implement them successfully. Figure 7 below illustrates the main idea.



[8]

Taguchi Loss Function

Figure 7

As the point on the exponential curve demonstrates, when the deviation from the target value increases, the associated losses increase exponentially. These losses include both the measurable and the un-measurable losses. Examples of areas that would be impacted by less variation:

- More predictable operations and related costs,
- Reduced inventories and related carrying costs,
- More stable cash flow and Accounts Receivable and related financing costs,
- Improved material flow to the customers, reducing their need for inventories.

We are now in position to apply this thinking to our specific situation. The spare part shipping process data was used to construct the graphs shown in Figure #8. The distribution on the left has the entire data in it and the Standard Deviation is chosen as a measure of dispersion. Simple calculation gives us a Standard Deviation of $234,066.17. For comparison purposes the data on the distribution graph on the right has been scrubbed, where it contains only process #2 data. The purpose of removing process #1 and process #3 data is to illustrate the month-end effect. The Standard Deviation for process #2 only is $125,861.57. The results are shown in Figure #8.

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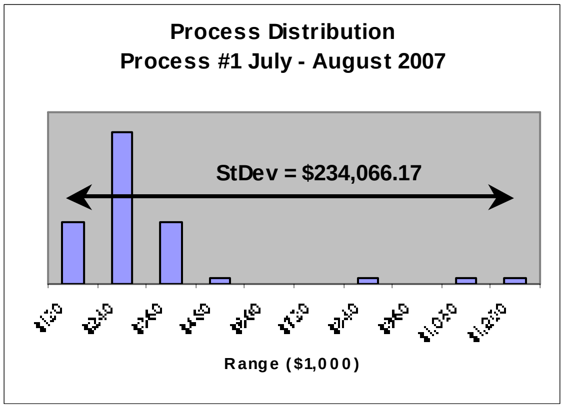
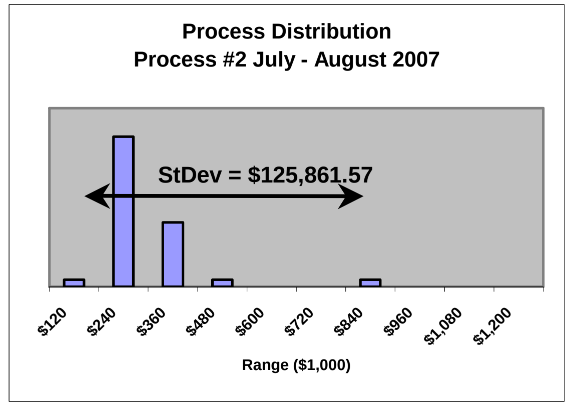
[7] Deming: Out of the Crisis. p.141

[8] Hunter: Curious Cat Management Improvement Library.



Process data from Spares Shipping



Process data – Process #2 only

Figure 8

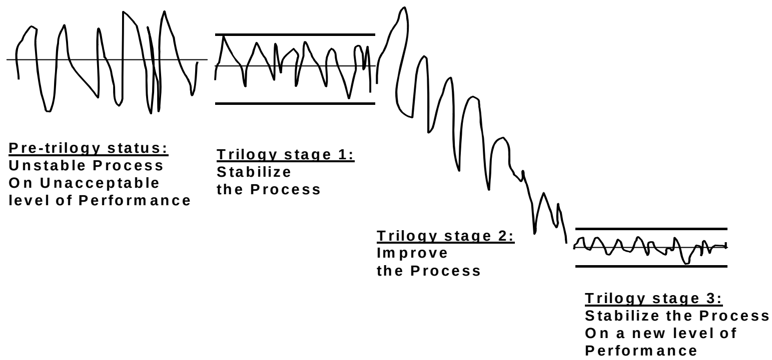
Following the thinking behind the Taguchi loss function, we can equate the Standard Deviation with some kind of a loss, measurable, or not measurable. In this case the process #2 has 46% less variation than the original Spare Part Shipping process. This suggests that the types of cost listed in the previous page would be reduced under that mode of operation.

There is one additional management insight provided by this example. Suppose that everyone working in this particular process has a performance goal that is related to the output, measured in dollars. As discussed earlier, there is a strong tendency for people to work towards their goals. However, if the process is operated in the manner that has the snowboard effect built into it, everyone working in the process can achieve his or her operational goals, except the person who has the P&L responsibility. This is mainly due to phenomena captured in Taguchi loss function. The operating profit margin will suffer from any deviations to the goal line (standard cost for this type of work), due to either a negative labor variance, or overtime pay required at the end of the month.

When one cannot meet both his revenue targets and operating profit margin targets, two dilemmas will raise:
1) During the performance appraisal, who will get the raise?
2) How to compensate for the lost operating profit margin that was not budgeted?

Juran Trilogy

As mentioned earlier in this paper, Deming advocated long-term approach to process improvement as stated in Point #1 of his 14 Points for Management. This would be an alternate way of thinking as opposed to setting short-term stretch goals, and trying to squeeze the performance required out of the resources. To give some structure and to add methodology to his thought, we will now look at a supporting concept that was developed by another quality control expert, Dr. Joseph Juran. The objective of Juran's principals is to achieve sustained processes that will consistently meet the customers' expectations. Let us examine the details of Dr. Juran's concept illustrated in Figure 9.



Juran Trilogy[9]

Figure 9

It is not uncommon that when a process catches management's attention, it is because of all the problems it is producing. At that time the process performance is not repeatable, and it is performing on unacceptable level of cost and defects. This is called Pre-Trilogy Status.

In our haste to yield quick results, we jump into immediate improvement actions. When doing so, we fail to realize that without a stable process, we do not have a cause system that can be studied. In that case, we are indeed shooting from the hip and hoping that we hit something. For more effective problem solving, the system must be stabilized first. That is the Stage One in Juran Trilogy: Create a Stable Process.

Once we have a stable process, we can study it, and experiment with different factors. These are the types of activities that will ultimately yield the insight required to improve the process. During this step organization's ability learn is the key factor in achieving success. This is the Stage Two in Juran Trilogy: Improve the Process.

When the improvements identified during the improvement cycles will be instituted in the process, and it will perform on the new level of performance. This is the Stage Three in Juran Trilogy: Stabilize the Process on a New Level of Performance. Once the new level of performance is achieved and stabilized, it is important to institutionalize the gains. By that we mean not only training the people, and updating the processing instructions, but also equally importantly update the standard costing associated with the process, and the Value Stream Maps used to plan the operations.

Conclusion

Based on the concepts discussed earlier, an alternative way to manage the process is to create targets that are more closely related to the tasks in the process, rather than desired end results. An example would be a TAKT – time type of throughput goals, which are more immediate in focus, i.e. output per hour or output per day. This change in time span will realign the focus, remove the snowboard effect, and reduce the associated costs. Furthermore, this type of target setting facilitates problem solving on the shop floor level and is a cornerstone of self-directed work force.

[9] Juran Institute: Juran Management System.

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INNOVATION AT THE FIRM LEVEL

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Abstract

This paper is a discussion of innovation as it affects organizations and corporate culture through management, types of innovations and barriers to innovating within an organization. Two types of innovations, sustaining and disruptive, are considered. Barriers to innovation that exist within an organization and management's mishandling of the innovation process will also be discussed.

Introduction

In the past, innovation has been associated with companies investing heavily in the Research and Development department in order to generate new ideas, creating an internal research lab facility to stay ahead of the game, and especially hiring the "best and the brightest" in order to have these idea generators in house. Innovation at the firm level can be defined as the application of new ideas to a product or process and commercialization of the result. Innovation is more than just an invention. It can include the creation of a new product or service, a new application of an existing product or service, or a new development to the process of producing a product or service.

In recent years, firms have emphasized the need for innovation within the company in order to stay ahead of competitors. The concept of innovation has been around for many years, so why is it just now receiving so much attention? Firms are competing to be the most innovative with awards such as *Business Week Magazine's* annual "Top 20 Innovative Companies in the World" awards, and the magazine's weekly "Innovation of the Week." With this media focus, it isn't surprising that many companies claim to strive for innovation, incorporating the word "innovative" into their mission statements. As the idea of innovation makes its way into the firms of more and more industries, how has this affected corporate culture?

Many companies claim to be innovative, but are they following the necessary steps to innovate successfully? Because of the vast range of products and services available, it is difficult for a company to simply come up with a new invention and succeed. Now it is vital to a firm's success to fully understand the needs for and uses of a product or service in order to innovate and meet customer needs. The original concept of R&D and hiring the best and the brightest is not outdated; however, management must understand how to utilize these two important factors in order to innovate successfully. The company must first understand how they are currently meeting customer needs, and to what satisfaction level. Firms must ask themselves, "When a person or another company needs something done, how do we make sure they think of us (or our product) to get the job done?" This paper will discuss innovation as it affects organizations and corporate culture through management, types of innovations and barriers to innovating within an organization.

Types of Innovation

The process of innovation is simple in theory but difficult in application. Clayton M. Christensen, author and Harvard Business School professor, classifies innovations into two categories, sustaining and disruptive. Other types of innovations also exist such as radical and incremental innovations that are similar to Christensen's innovations, however this paper will focus on sustaining and disruptive innovations (2002, p. 212).

Sustaining Innovations

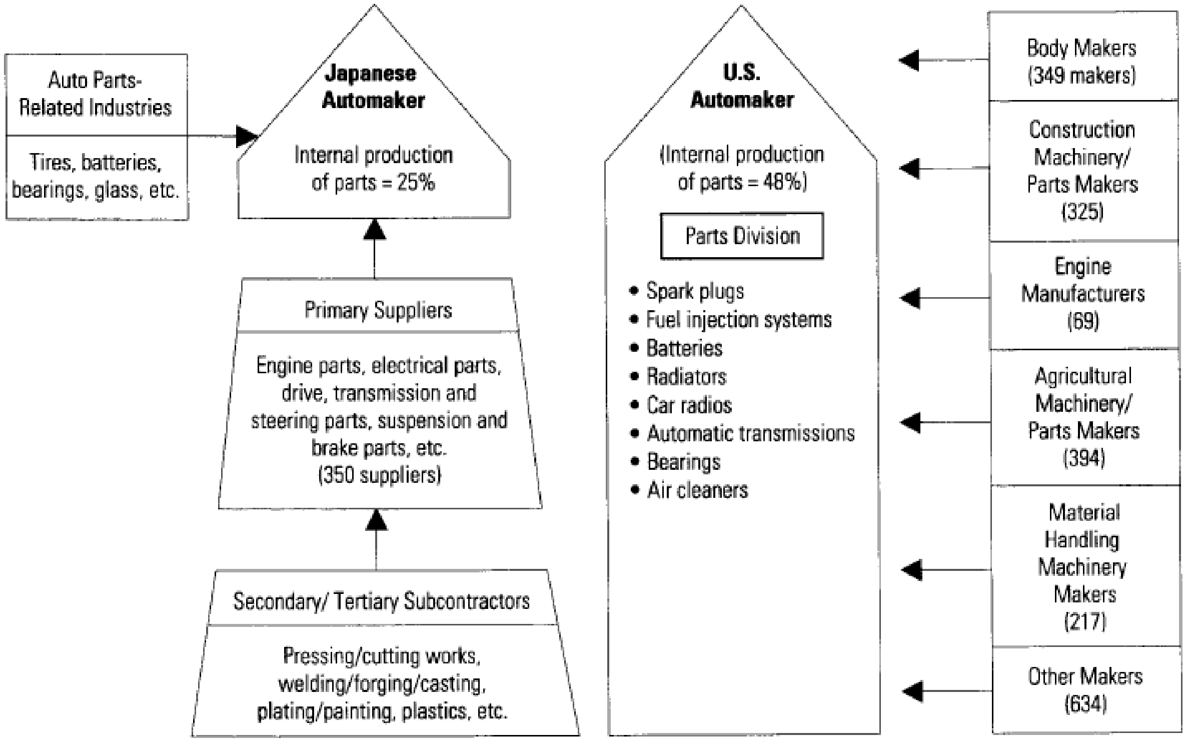
When a firm improves the performance of an existing product or service using improvements to the prevailing technology, continuously meeting the needs of customers and working toward meeting customers' developing needs, they sustain the firm's position in the market, and the innovations they make are identified as sustaining. Sustaining innovations are the ones that current customers want. By improving the existing technology, the firm's changes to the product or service can be described as innovative; the firm has secured its place in the market by continual improvement, providing the customer with the same value proposition. This type of innovation will be discussed in relation to W. Edwards Deming's discussion of Walter Shewhart's Cycle for Learning and Improvement. A disruptive innovation, however, is different. The disruptive innovation can be an innovation that creates new markets for one firm, but becomes "disruptive" to another. The disruption is usually the result of a technological advancement that changes the nature of the product or service and possibly the needs it serves. Digital photography is an example of a disruptive innovation. The digital technology provided a substitute for the use of film, therefore changing the value proposition for the customer.

Disruptive Innovations

Disruptive innovations usually consist of a cheaper alternative product or service to what is currently offered and leading the market. Because of the lower cost and quality, disruptive innovations target the consumers who were forced to pay for additional technology they did not need. With the alternative product or service of a different cost and quality, a new market is created. The innovator has developed a nonexistent and non-competitive market since the consumer was not willing to pay for the existing offerings in the marketplace. If managed properly, disruptive innovations should not affect the current players in the market at the outset. Ignored disruptions can mean that the current players in the market do not see the disruption as a threat as they are aware of the technological deficiencies in the offering and lower profit margins for producing it. The current customer values the high end product and bases their purchase solely on the product's desirable attributes. Therefore, it makes little or no sense for the firm to invest in the disruptive innovation when their current customers do not need it and producing it will result in less revenue than currently generated. If the firm chooses to ignore the disruption, it is understandable because of the current and short term insignificant affects on revenue and profits; however the firm must be willing to face possible future consequences. The disruptive technology creates channels to use a past innovation in a new application. Managers who plan ahead and consider the effects of the disruption will not immediately restructure the current product or process, but rather reach out to its consumers in order to discover how the customers feel about the disruption. Once feedback is received, the firm may discover that it is not a threat but takes action to improve the aspects of the product that the customer values.

An example of a low end disruption is the entry of Japanese auto companies into the United States. Japanese auto makers were able to provide an efficient product for a lower price. Even with the lower price, quality was not sacrificed at the time because American customers rated the satisfaction level of Japanese cars 50% higher than their US counterparts. In the United States at the time, the demand for cheaper cars surpassed the demand for luxury cars. From 1965 to 1989, Japanese automakers' share of the world's passenger car market grew from 3.6% to 25.5%, and U.S. firms share had dropped from 48.6% to 19.2% (1991, p.14). How were Japanese manufacturers able to do this when U.S. manufacturers had been around longer? Japanese automakers can attribute their success to their innovative process that is more vertically integrated and far more efficient compared to U.S. automakers. U.S. firms had more in house production but that did not prove to be more effective. They were receiving up to 3,000 individual parts from outside suppliers while the Japanese automakers were buying entire subsystems only using about one tenth of the suppliers used by the U.S. manufacturers. Japanese automakers were innovative in their value chain process as illustrated below. The Japanese automakers introduced a disruptive innovation to the U.S. by providing a similar product for a lower cost. However, while some innovators are able to overlook a disruption, U.S. car makers were not because of the equal or better quality level of the Japanese products. This posed a threat to U.S. automakers and now they needed to innovate their process or product. Initially, the Japanese cars were not a threat because they were reaching out to a new market: younger buyers with less money to spend. Once the U.S. automakers realized how wide a client base the Japanese automakers were able to reach it was too late.

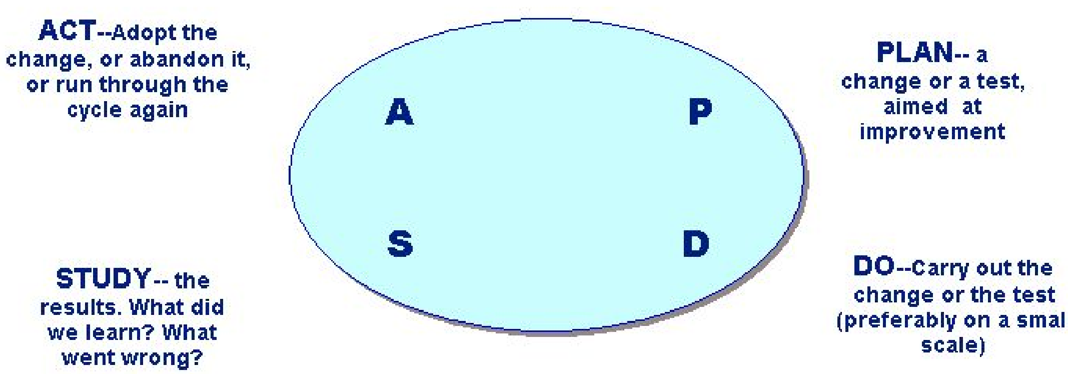
Figure 1: Differences in Japanese & U.S. Automaker Value Chain Structures (1987, p.36)



Deming and the PDSA Cycle

Deming touched on innovation in his Fourteen Points. His first point was to "create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs." Deming went on to say, "Establishment of constancy of purpose means acceptance of obligations like the following: a. Innovate." In order to further improve a company's processes, products, and services, Deming advocated the use of Walter Shewhart's Cycle for Learning and Improvement, the PDSA Cycle.

Figure 1. Deming's PDSA Cycle & Shewhart's Cycle for Learning and Improvement (1994, p.132)



Deming advocated the use of Shewhart's cycle in Japan, and eventually in the U.S. The cycle is a continuous process of learning that can lead to innovation. Step 1 is to *plan* a change or test with the goal of improvement. The change may be costly, or ineffective, but in order to determine this, the idea needs to be presented and planned out. This then leads to step 2, *do*. Do is the step in which the plan is carried out or a test is run. Step 3 is to *study* the results. By studying the results the investigator can answer, "Are the results what was anticipated?" and "what went wrong?" If the results are surprising or there are doubts to the way the plan was carried out, the investigator may realize that it may be necessary to carry out another test. The last step of the cycle is step 4 to *act* on the basis of what was learned in the first three steps. Step four can result in adopting a change, abandoning the idea, or running through the cycle again perhaps under different conditions.

An example of Deming and Shewhart's work in application is recounted in Deming's book, *Out of the Crisis*:

> *Taken from a speech delivered in Rio de Janeiro, March 1981, by William E. Conway, president of Nashua Corporation:*
>
> > *At Nashua, the first big success took place in March 1980; improvement of quality and reduction of cost in the manufacture of carbonless paper.*
> >
> > *Water-based coating that contains various chemicals is applied to a moving web of paper. If the amount of coating is right, the customer will be pleased with a good consistent mark when he uses the paper some months later. The coating head applied approximately 3.6 pounds of dry coating to 3000 square feet of paper at a speed of approximately 1100 linear feet per minute on a web 6 or 8 feet wide. Technicians took samples of paper and made tests to determine the intensity of the mark. These tests were made on the sample both as it came off the coater and after it was aged in an oven to simulate use by the customer. When tests showed the intensity of the mark to be too low or too high, the operator made adjustments that would increase or decrease the amount of coating material. Frequent stops for new settings were a way of life. These stops were costly.*
> >
> > *The engineers knew that the average weight of the coating material was too high, but did not know how to lower it without risk of putting on insufficient coating. A new coating head, to cost $700,000, time lost for installation, and the risk that the new head might not achieve uniformity and economy of coating much better than the equipment in use.*
> >
> > *In August 1979, the plant manager asked for help. It was found that the coating head, if left untouched, was actually in pretty good statistical control at an average level of 3.6 dry pounds of coating on the paper, plus or minus 0.4.*
> >
> > *Elimination of various causes of variation, highlighted by points of outside the control limits, reduced the amount of coating and still maintained good consistent quality. The coater had by April 1980 settled down to an average of 2.8 pounds per 3000 square feet, varying from 2.4 to 3.2, thereby saving 0.8 pounds per 3000 square feet (3.6-2.8), or $800,000 per year at present volume and cost levels. …*
> >
> > *With statistical control achieved, engineers and chemists became innovative, creative. They now had an identifiable process. They modified the chemical content of the material used for coating and found how to use less and less. Reduction of a tenth of a pound means an annual reduction of $100,000 in the cost of coating.*
> >
> > *The engineers also improved the coating head, to achieve greater and greater uniformity of coating. All the while, statistical control of the coating was maintained at ever-decreasing levels of coating, and with less and less variation (1986, p.9).*

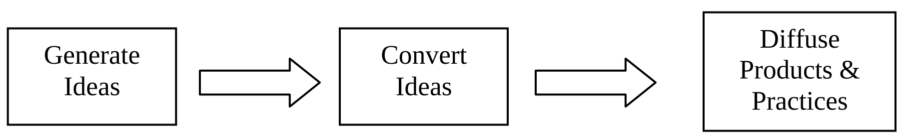
Nashua was able to save the expense of a new coating head and reduce the cost of materials by $100,000 per year by reducing variation and enabling the engineers and chemists to further improve the process by introducing innovations.

Handling Innovations

Deming describes innovation of an already existing product, service, or process. How should firms combat disruptive innovations? How were GE and Ford supposed to combat the disruption of Japanese automakers eventually stealing their mid-level and high-level customers when they entered the market to serve the low-end car buyer? The way to combat a disruptive innovation is to be a sustaining innovator. In order to stimulate growth and prevent disruptions, the organization needs to innovate new ideas to improve current products and services, or beat a potential competitor in creating a disruption in order to dominate the market.

One way to be a sustaining innovator is to use the innovation value chain as described by Hansen and Birkinshaw. First, the organization must understand what resources and processes they have and what values they consider to be important during the process of innovation. Resources include anything that the company buys or uses. It includes people, cash, equipment and products. Processes involve how the company works such as marketing, manufacturing, research, R&D, and training. Values are the criteria the firm uses to make decisions and to evaluate customer demand, risk, and cost structure. Understanding those basic three elements and where the company stands in terms of strengths and availabilities is the beginning to avoid failing because of a disruptive innovation. In order to manage growth strategies and continue to combat potential disruptions, firms need to view innovation as a three part value chain as shown in Figure 3.

Figure 3. The Innovation Value Chain (2007 b)



In order to combat existing innovations the firms must first generate new ideas. Executives understand that ideas are usually generated within the organization and groups; however, the challenge lies in cross unit collaboration. Combining knowledge from different groups from one organization provides better insight and understanding to generate good ideas of value. Bertelsmann, a German global media company took three years to catch up to Amazon’s launch of its online bookstore. The problem was in the decentralized organization; the company’s autonomous publishing house, book and music, and distribution and multimedia divisions did not collaborate on a new business opportunity putting the company years behind its competitors. Aside from generating ideas within the organization, the company needs to also realize when it is necessary to bring in outside assistance. Organizations may have a dry spell in their innovation process or be lacking in resources and technology. In these circumstances, the company needs to recognize when it is time to seek outside consultation.

The next step is to convert the ideas into products or services. In order to begin the conversion process the firm must screen the idea, run a cost benefit analysis, and decide whether or not to kill the idea or pursue it. This can be the most challenging step for some organizations. Without proper screening or funding mechanisms, new ideas can create a bottleneck in the organization. Without proper screening the company can face many ideas and have no understanding of how the ideas fit with the overall corporate strategy and goals. For example, during the high demand for energy-efficient lighting, consumer appliances and heating systems, General Electric invested in a small energy management services business in Canada during the 1990’s (2007 b, p. 125). Even though the company was successful in winning market share and contracts, there was no fit with GE’s consumer product focus. The business struggled with the misfit for a couple of years before being shut down and GE missed the opportunity for an early advantage in a growing industry. Other than improper screening, problems that organizations face during the conversion step are a lack of funding, or conventional thinking. However, if the financials are calculated correctly and the money exists within the organization for development, the company is halfway through the innovation process.

The final step of the innovation value chain is diffusion. After the project has been sourced, funded and developed, distribution is the final obstacle the company faces. While customer buy-in is crucial, before trying to gain customer approval and acceptance the company needs to obtain internal support. Organizations are challenged by much red tape, especially in larger firms. For example, Proctor and Gamble has an extensive product and market testing system in order to prove “superior total value” and needs the final approval of the national brand manager before being launched (2007 b, p. 126). These policies slow down the diffusion of the product which was visible with the launch of Pampers diapers in France five years after the product was first introduced in Germany. During the five year delay, P&G's competitor Colgate-Palmolive, took note of P&G's success in Germany, and launched a similar product in France two years before P&G reached the French market. Proper diffusion is crucial to the success of an innovation as evident with the Proctor and Gamble example.

Barriers to Innovation

Corporate barriers make up 91.5% of all barriers affecting innovation. Others include local, regional, national and international barriers. Barriers on the firm level include (2007 d):

- Short term thinking. The firm emphasizes the present rather than preparing for the future. The organization's management does not lead the organization to think about what may come and plan ahead. Business development units need to speculate about how the market will change, and what opportunities and challenges they might have to face. Organizations often look for a "quick fix" or quarterly results. The focus and emphasis is on the short term outcome and not enough time is spent on developing the plan for the future.

- Poor communication. Innovation cannot be done well in an organization if the organization does not communicate business plans and ideas clearly. The best idea will reach a road block if it is improperly executed including a lack of communication to carry out the idea. Problems of communication within the organization can go up and down from management to employees or laterally, across functions. There needs to be collaboration among departments in order for a product or service to be successful.

- A lack of cross functional understanding. Effective innovation requires coordination and cooperation among the groups and functions that have a role in design, production, funding, and marketing a product or service. Company policies can stand in the way of innovation because the process of fulfilling an innovative objective is faced with internal obstacles. The technical, marketing and sales departments need to be aligned in order to have successful innovation (1992, p. 183).

- Dominance of financial reporting. The corporate financial system can drive the business to focus on quarterly and/or monthly financial statements which, in turn, leads to short term thinking. The emphasis is on the report timing rather than the overall goals of the organization.

- Fear. There can be a fear of failure with the idea and process of innovation, fear of humiliation and ridicule, the fear of speaking up, as well as the fear of taking risks. The fear of taking risks also ties in to the fear of humiliation and failure because of the risk taken.

Companies can overcome these barriers by checking for inconsistencies between the strategy, goals and objectives and the policies and procedures of the organization, as well as identifying needs for coordination and cooperation between functions and groups.

Innovation at the Management Level

Firms face barriers to innovation that exist at the upper management level. Some organizations have been unsuccessful at innovating even though the resources were within reach. It is up to senior management to correctly implement the process of innovation within an organization. Employees can understand the concept and want to be an innovative firm; however, without the support of management the employees will run into numerous roadblocks. For example a marketing executive was approached by the CEO of his company and asked to include into his department's activities one of the members of the company's board of directors. The marketing executive intentionally excluded the board member from the department's work and his performance had been getting weaker over the year he was supposed to work with the board member. The CEO understood the executive's limitations and how a relationship with the board member would develop the department and lead to innovation. Towards the end of the year the executive was approached again by the CEO and told to work with the board member or his job would be in jeopardy. This time the executive chose to obey and found that the board member had ideas and visions that helped change the department. Her methods of change were compelling and built up the executive's confidence. She helped him be innovative in his marketing. The CEO should have communicated the reason for including the board member from the start rather than threatening the executive with possibly losing his job. However, the board member was an effective communicator and able to persuade the department with her arguments once she was allowed to work with the team. Senior management, the CEO in this example had the right idea of utilizing the strengths the company had, the board member, to provide innovative new ideas to the group. Unfortunately the implementation process still needs some work. It is crucial to the firm's innovative success that the process begins with upper management. A company that wants to begin to be innovative must learn to be open minded and willing to let go of past traditions. In the example above the executive needed to let go of his past behavior and open up to working with the board member. Firms may need to make strategic changes as well as changing traditional thinking. Managers must ask for a lot, but not for more of the same thing. If the CEO had accepted more of the same thing, the company would not have developed and changed the marketing department with the assistance of the board member. Asking for a lot creates differences and a variety of ideas. The company is creating a way for new and better ideas creating challenges and opportunities. Once the manager is willing to adopt change and embrace the personal changes necessary, the firm is then ready to be innovative, and no longer must face a management barrier (2007c, p. 11).

Some managers find the task of changing corporate culture to promote innovation to be challenging. Corporate culture includes assumptions, practices and norms that the people in an organization adopt over time. Managers may want to set a corporate culture that encourages innovation and idea generation. However, few are able to follow the innovation value chain or Deming's ideas correctly. Unfortunately many executives believe that simply by stating the idea of innovation, and dictating to the employees that they should innovate, they are automatically going to be an innovative firm (2007 c, p. 8). However, the manager has failed to realize he has misunderstood and mis-defined corporate culture for himself. The manager believes he or she has created an innovative culture simply by stating it, ignoring the firm's processes and practices. This is a misunderstanding of corporate culture and not the proper way to promote innovation. Also, the manager can believe in their own ideas without planning or research and follow fruitless paths. If a manager does not like someone else's idea, it is easy for a good idea to be discarded or rejected especially if it does not fit with the manager's personal style.

Conclusion

Sustaining and disruptive innovations are two types of innovations that can either pose a threat to an organization or be successful for the innovating company. The ultimate goal for many organizations is to innovate in order to stay ahead in the market. Firms are able to accomplish this goal by using the innovative value chain, Deming's PDSA cycle, and other methods. However, the methods used to create successful innovation can be hindered by barriers within the organization and management's knowledge and practice.

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COMPUTER SYSTEM VALIDATION: BUILDING QUALITY INTO AUTOMATED PROCESSES

Frans Leijse

Abstract

Computer technology is all pervasive. It is hidden in domestic appliances, built into smart cards and security devices, mobile phones, PC's, Notebooks, process plants, aeroplanes, automobiles. Computerized systems are everywhere. The inexorable rise of computerized systems is seen in corporate strategies of Industrial, Pharmaceutical and Healthcare companies calling for investment in new technology to improve business efficiency and competitive edge. When such technology is associated with financial reporting, high-risk public safety projects, the production of life-saving medicines or medical devices, it falls under the scrutiny of regulators. The regulators need to know that automated operations are reliable, quality assured and validated. In other words companies need to demonstrate structural integrity of data.

Global pharmaceutical companies are bound by US Federal regulations and European Union (EU) regulations. These regulations impose Good Practices on manufacturing of medicine, medical devices, clinical investigation and laboratories. Pharmaceutical companies must show compliance by presenting documented evidence that a given system or process does what it purports to do. Hence such companies must validate their processes in order to show fitness for purpose.

DOWNSIZING

How Are Financial Performance and Employee Morale Affected?

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Abstract

Downsizing has played a role in the corporate landscape for at least three decades. There have been a number of studies that have tried to find a relationship between downsizing, corporate productivity and employee morale. The results of the studies regarding financial performance have been mixed. There is general agreement that downsizing has a negative effect on employee morale. Financial performance is more difficult to judge due to the large number of factors that have an effect on it. Downsizing seems to be, more often than not, a reaction to poor financial performance.

I. Introduction

Downsizing has been around for as long as troubled organizations have. In the United States, several noteworthy cases of downsizing, or reduction in force, came with the recession at the beginning of the 1980s. Some regard Jack Welch, former CEO of General Electric (GE), as being the pioneer of downsizing (Cenek, 1995). Welch became CEO at GE in 1981 when the company had 411,000 people on its payroll, and within a five year period, about one in four people (112,000) had been laid off – these reductions included parts of the company that were spun off. Since the late 1980s, almost all Fortune 500 companies have implemented a downsizing strategy (Kets de Vries, Balazs, 1997; Cenek, 1995). Downsizing entails not only the layoff of employees, but can also include the sale of assets.

In April 2007, Citigroup's CEO Charles Prince announced that the company planned to lay off 17,000 employees, or 8 percent of its workforce. Prince was under pressure from shareholders to increase profits and the company's share price, which had only risen 15 percent since he had become CEO. Unfortunately, the credit crunch that prevails in the market today has not given Citigroup the chance to determine whether the layoff strategy was effective in improving the bottom line. Citigroup has written down at least $14 billion between the third and fourth quarters of 2007 due to its exposure in the shaky mortgage-based securities markets. Subsequently, Prince announced his resignation on November 4, 2007.

Citigroup's downsizing tactic is a case of a company wanting to decrease labor costs in order to increase profits and shareholder returns. Downsizing also takes place when a company is financially healthy and has a strong outlook for the future. One of the more famous cases of downsizing in times of strength is that of AT&T in the 1990s. AT&T announced on January 2, 1996 that it planned to cut forty thousand jobs in order to cut costs as part of its restructuring strategy. The restructuring was welcomed by investors and the company saw its share price increase. It was a public relations nightmare, though, and then CEO Robert Allen was labeled a "corporate killer" on the cover of Newsweek magazine[i]. Bruce Stinson, AT&T's spokesperson at the time said, "The lesson of 1996 was little is to be gained by projecting job cuts over three years, and another key lesson would be, for God's sakes, don't announce something like this on the first working day of the year. It sets the tone for the next 365 days." In September 1996, the stock price was down to $55 from $66 earlier that year, and employee morale was the lowest it had ever been at the company (Christen, 2005).

Downsizing has been a tool used by management to reduce the cost of labor with the ultimate goal of increasing profits – this is apparent in the fact that almost all definitions of downsizing link it to an implicit increase in profits (Carswell, 2005). Carswell (2005) also points out that downsizing is implemented intentionally, and will obviously result in a net decrease in workforce. Kets de Vries and Balazs (1997) define downsizing as the "planned elimination of positions or jobs." They explain how one of the main reasons that an organization might choose to downsize is to increase efficiency and productivity, yet they refer to a study that reported that more than fifty percent of companies surveyed in the study showed no increase in productivity; on the contrary, they showed sluggish, even declining, productivity.

One of the main backlashes of downsizing experienced by senior executives, in addition to stagnant productivity, is a decrease in morale and trust (Kets de Vries, Balazs, 1997). This was the case with AT&T, especially when employees learned that CEO Robert Allen received a $1.5 million bonus the same year that many lost their jobs. The consulting firm Wyatt Company surveyed 1,005 firms employing a total of over four million people, and found that only thirty-two percent of the companies achieved their profitability goals and twenty-one percent realized their return on investment goals (Bennett, 1991). One may argue that profitability and return on investment have many factors that can affect them other than a reduction in force. That would be a valid argument, and a study of the relationship of downsizing and profits would need to isolate the effect of the downsizing variable in order to be definitive.

A longitudinal study by Wanberg, Bunce and Gavin (1999) concluded that it was imperative that employees be given reasons for why and how a layoff strategy was being implemented. This is because an "explanation was associated with higher perceived fairness of the layoff, higher willingness to endorse the terminating organization, and less desire to sue that organization, even after reemployment" (Wanberg *et al*. 1999). Transparent communication with employees can make all the difference with regard to perceived fairness in almost all situations.

In this paper, the question of whether a downsizing strategy has a positive effect on profits, and if employee morale influences – negatively or positively - the success of such a strategy will be considered. Section II is a discussion and critique of papers related to this topic. Section III contains a discussion of human resource issues that result from downsizing. Section IV reports conclusions and contains ideas for further research.

II. Review of Related Papers

There have been a number of studies that try to link financial performance to downsizing. Other than a company's internal structure and human resource strategies, there are macroeconomic factors that come into play that can affect the bottom line. Some market variables can positively or negatively affect firms regardless of their decision to downsize or not. One example of this is the credit crunch pervasive in the market today and the respective write-downs many of the banks have had to endure. For example, Citigroup announced a large layoff of employees at the start of 2007, yet has also written down over $14 billion which will undoubtedly put negative pressure on the bank's bottom line. It is very likely that Citigroup employed the layoff strategy due to their struggling financial performance.

Carswell (2005) studied the financial impact of downsizing on financial performance of companies in New Zealand. Carswell acquired a database of 632 companies and obtained a non-probability sample. He sent questionnaires out to the companies that employed at least 50 employees and received 155 questionnaires that could be used, a response rate of just under 25 percent. The questionnaire asked the companies if they had recently downsized, to what extent they downsized, the reasons for downsizing and the methods used to implement the downsizing strategy. A Likert scale was used for responses to all the questions. Carswell used four indicators to measure financial performance of the companies used in the study; 1- profit margin, 2- return on assets (ROA), 3- return on equity (ROE), and 4- sales per employee. The financial data needed was collected from publicly available information; otherwise, the individual companies were contacted to obtain the required data. The study spanned five years – two before the downsize year, and two after the downsize year.

From a profitability perspective, the study suggests that firms that downsize do not perform as well as those who do not. Also, two years after the downsizing, Carswell identified a significant relationship between perceptions of procedural justice and the firm's profit margin. Carswell (2005) puts forth the suggestion that if "downsizing is necessary then attention needs to be given to how the process is implemented in order to maximize the financial return." The author refers to the work of Brockner *et al.* (1995), whose findings suggest that employees' trust can be preserved if procedural justice is prevalent during the implementation of the downsizing strategy by a company. If we accept the methods used by Carswell in this study, we draw a similar conclusion. Gilliland (1993) refers to a study by Folger and Greenberg (1985) where they say that "procedural justice theorists are concerned with the perceived fairness of procedures used in making decisions."

It makes sense that the fairer the phase of downsizing is perceived by the employees, the more the employees might feel they have a vested interest in performing well and ultimately contributing positively to the company. It has been shown in a number of studies that perceived fairness in the downsizing process does lead to higher commitment on the part of the survivors, as well as a smaller likelihood that they will quit after the downsizing takes place (Carswell, 2005).

From a human resources aspect, Carswell's findings imply that communication with employees during a time of change is imperative, yet at the same time allowing enough distance so they do not digress from their responsibilities. After the downsizing has taken place, the study seems to suggest that surviving employees should be shown positive results implying that the downsizing strategy was important to implement.

The effects of downsizing may differ from country to country, depending on the prevailing culture, as was found in a 1997 study by Lee. Lee discussed a difference in the way the public perceives downsizing in the U.S. and in Japan. Also, "layoffs in Japan are not as common, as perfunctory, or as easily accomplished as in the United States." This is mainly due to the understanding in Japan that employees are almost guaranteed lifetime employment, at least in the large firms (Lee, 1997). In *The New Economics*, W. Edwards Deming (1994) provides Yoshi Tsurumi's explanation of what a Japanese firm does when it faces financial challenges. In contrast to U.S. companies, the first thing to be cut is dividends: "1- Cut the dividend. Maybe cut it out. 2- Reduce salaries and bonuses of top management. 3- Further reduction for top management. 4- Last of all, the rank and file are asked to help out. People that do not need to work may take a furlough. People that can take early retirement may do so, now. 5- Finally, if necessary, a cut in pay for those that stay, but no one loses a job." This indicates that management is concerned with employee well-being and that this practice creates more of a team culture, and a culture based on fairness.

Lee (1997) also concludes that downsizing ultimately causes a negative reaction in the stock markets of both the U.S. and Japan. One of the main reasons for this, according to the author, is that the market views these layoffs negatively and as a sign that the company is going through financial difficulty. The author uses an interesting quote from Hamel and Prahalad (1994), "Getting smaller is not enough. Downsizing, the equivalent of corporate anorexia can make a company thinner; it doesn't necessarily make it healthier." This would suggest that a review of management, methods used by management and studying the causes of the "sickness" would be important to understand the effects of downsizing. Lee's study gives some interesting conclusions, but to definitively pin the stock's movement on downsizing is arguable. Again, the movement of stocks in a market can be affected by a variety of factors, including the state of the overall economy.

A study performed in Korea by Gyu-Chang Yu and Jong-Sung Park (2006) explores the effect of downsizing on financial performance, efficiency and employee productivity. Their findings implied that downsizing had a positive influence on a firm's profits and efficiency. They also conclude that downsizing has no effect on employee productivity. This was a longitudinal study that spanned six years between 1997 and 2002, and included data from 258 Korean firms. The authors explain that the motivation for downsizing among Korean and other Asian firms is similar to that of western companies. The best Korean example of this is Samsung Electronics, according to the authors. In 1996, Samsung had sales of $13 billion and a profit of $1.2 billion with 60 thousand employees. By 2002, Samsung had $34 billion in sales and a profit of $6 billion with only 45 thousand employees – a workforce decrease of 25 percent. In addition, the price of the company's share rose from $83 to $420 between 1996 and 2004. It is difficult to agree with this argument for the beneficial effects of downsizing. It discounts factors such as innovations implemented by the company, changes in product mix, degree of labor-intensiveness in the products produced, and demand changes for the products produced by Samsung. It also fails to recognize the possible effects of outsourcing of labor.

Yu and Park (2006) provide a summary of ten empirical studies done on the topic of downsizing and firm performance. They report that the results are mixed, although the majority of the findings suggested that downsizing negatively impacted a firm's performance. The authors rightly point out that the studies that use capital market measures can be misleading, since there are many factors that come into play in the stock market when determining the price of a stock. The authors refer to studies by Rogers and Wright (1998) and Dyer and Reeves (1995) that focus on four measures of a firm's performance linked to downsizing:

1. HR results (turnover, absenteeism, job satisfaction)
2. Organizational results (productivity, quality, service)
3. Financial results (ROA, profitability)
4. Capital market results (stock price, growth, returns)

Yu and Park report three findings after correcting for industry differences:

1. Those firms that applied a downsizing strategy were more often in financial trouble than those that did not execute such a strategy.
2. A regression analysis of the data suggested that downsizing helped profitability and efficiency, but not productivity.
3. If a firm experienced a loss during the period of 1997-1999 and downsized, it did not experience as much of an increase in financial performance as the firms that did not experience a loss during that period. This finding leads the authors to suggest that if a firm implements a downsizing strategy "proactively," when it is not going through financial difficulty, then the effects are more positive.

Of course, these findings are subject to the same issues of attributing the effects found to downsizing as the other studies.

Cascio, Young and Morris (1997) studied the effect of "employment-change decisions." The authors found that "firms that engage in pure employment downsizing did not show significantly higher returns than the average companies in their own industries. However, companies that combined employment downsizing with asset restructuring generated higher returns on assets and stock returns than firms in their own industries." The sample used in the study was taken from companies listed in the Standard & Poor's (S&P) 500 and the authors analyzed data from 1981 to 1992.

One of the shortcomings of this study is that it did not take actual downsizing announcements into consideration, since the market reacts to these announcements. Also, the authors did not take into consideration the effect size of the statistically significant differences between the downsizers and the stable employers, for example. Statistical significance alone does not imply that a difference is of any practical importance, and adjusting the p-value can make any difference statistically significant. This paper basically reiterated what the market has known all along: in the short term, investors may react favorably to a decrease in employment and companies that downsize often do so due to financial difficulty, which also may lead to insufficient employee productivity.

De Meuse, Bergmann, Vanderheiden and Roraff (2004) used a sample from the Fortune 100 list of companies for the years 1989 to 1996. The study used firms that were listed in the list in 1989. The Fortune 100 is always changing since it lists companies based on annual revenue. The authors suggest that firms that do not downsize perform better than firms that do downsize, but this disparity vanishes two years after the downsizing announcement.

The authors observe that firms that had layoffs of less than three percent of their employees did better financially than firms that had layoffs of over three percent. Taking the relatively short period of time in the study into account, one can argue that the firms that had layoffs over three percent were going through financial problems to begin with that would take time to overcome. In addition, the authors observe that one year after the announcement, there was no statistically significant difference in financial performance between the two types of firms. The frequency of layoffs was also looked at in the study. Sixty percent of the seventy-eight companies that were part of the study implemented a downsizing strategy three times or more. It was found that the companies that performed layoffs more frequently performed poorly in some instances compared to those that downsized twice or less.

There are some flaws in the logic of this paper – mainly in the use of statistical methods. Five financial indices were used: Profit margin, ROE, ROA, Asset efficiency and market-to-book ratio. The authors used the means of these indices and tested for statistically significant differences between companies that had layoffs and companies that did not. They used *t tests* for "examining differences between uncorrelated means." There will be correlations between the two groups given the nature of the markets they are in and the forces that will affect all companies in those markets. Also, there was no random sample taken and a random sample is a central assumption to using the *t-test*.

Moreover, this study ignores other factors that may have had an effect on financial performance – these factors may have been the responsible forces, but in their being overlooked, downsizing was the default culprit. This was also the case with the studies discussed previously. Graphs of results taken from table two in the De Meuse *et al.* (2004) study are shown in Appendix 1. There is a clear difference between layoff and non-layoff firms: layoff firms did not perform better than non-layoff firms. This may be due to many factors including the possibility that the layoff firms are not managed as well as non-layoff firms. Poor management will obviously produce poor financial results.

The De Meuse *et al.* study does not demonstrate anything about downsizing per se, but indicates that certain companies perform better than others financially, and that those that do not perform well tend to be the downsizers. One might speculate that poor performance leads to downsizing, particularly when management does not know any other way to try to improve performance.

A study by Espahbodi *et al.* (2000) examined 118 firms over an eight year period. This study is interesting because at the end of it, the authors conclude that "downsizing is more effective for firms that increase their asset size and for firms that perform poorly in their industries prior to the announcement of downsizing." This conclusion is questionable for two reasons:

1. The assets that were increased were not defined in the study and may very well have been the reason for the companies' improved financial performance. Appropriate improvements in technology will bring about greater efficiency.
2. Firms that perform poorly are often poorly managed. To say that downsizing can help a company that is underperforming is like saying that water quenches thirst. Cutting any costs of a company that is in financial trouble will temporarily improve the bottom line.

This study brings the difficulty of trying to find a relationship between downsizing and operating performance to the forefront.

A general conclusion that can be drawn from discussions of downsizing in the literature is that it should be used only as a last resort when all other strategies for improving productivity and profits have been exhausted. A paper by Rayburn and Rayburn (1999) that suggests alternatives to downsizing reports that "repeated downsizing efforts increase a company's failure rate." This should be of obvious concern to anyone doing business in the long-term.

The Rayburn and Rayburn (1999) paper suggests alternatives to downsizing that increase competitiveness by "cutting costs elsewhere, introducing new products, or entering new markets." Some managers may view these as very labor intensive and a layoff strategy offers them a quick and easy fix. Those are the managers that do not take into account the backlash from the decrease in morale of the employees – their only concern is that of their shareholders. All stakeholders' concerns need to be addressed in order to effectively implement a downsizing strategy. Citigroup's recent announcement that they were cutting 17,000 jobs did not impress Wall Street and after the announcement, their stock price actually dropped[ii]. This is a good example of a strategy that was hastily taken and the markets knew that it was not going to fix any of the actual problems. It is likely that morale at Citigroup dropped after the announcement, but we will not be able to isolate and study the effects of that, unfortunately.

III. Human Resource Issues

There are important human resource issues that need to be taken into consideration when considering a downsizing strategy. Many studies suggest that downsizing has a negative effect on morale and, as previously mentioned, employee productivity. It can be argued that morale and employee productivity are related and that morale has a direct effect on productivity. There is a study by Vahtera *et al.* (1997) that suggests that downsizing can even have a negative effect on the health of surviving employees, demonstrated by an increase in the number of sick days they take.

A study by Wanberg, Bunce and Gavin published in 1999 found that it was important to let employees know why a downsizing strategy is being implemented. "Explanation was associated with higher perceived fairness of the layoff, higher willingness to endorse the terminating organization, and less desire to sue that organization, even after reemployment" (Wanberg *et al.*, 1999).

Makawatsakul and Kleiner (2003) related downsizing to morale and attrition. The authors point out that downsizing has a negative effect on employee morale and loyalty to the firm. There are four ways that the authors think an employee's "well being" can be jeopardized:

1. Their belief that the downsizing was unfair.
2. The feeling of insecurity that arises during and after downsizing.
3. The lack of faith that they will be rewarded for their work in the future.
4. Survivors may lose creativity and may become less open to change.

A direct effect of low morale is also a decrease in general motivation (Makawatsakul and Kleiner, 2003). The authors point out that if these symptoms become apparent in middle managers, then they will definitely trickle down to subordinates since, in most cases, the middle manager sets the tone of the workplace.

The role of management is obviously very important if a company decides to downsize. Managers should be supportive of their employees and reflect fairness – especially to the employees that did not survive the layoffs. This positive attitude has been shown to increase productivity (Makawatsakul and Kleiner, 2003). According to the authors, the most important thing management can do is to communicate. Communicating to the employees helps in allowing the employee to feel valued and needed. This is especially true for the survivors.

In addition, the authors identify four steps that can help lead to a successful downsizing process:

1. Making the decision to downsize; all possible alternatives to downsizing must be reviewed before a decision to downsize is taken. This will help keep employees' trust in management from diminishing.
2. Planning for the downsizing must "consider all stakeholders' needs." Also, all employees – laid-off or not – must feel that their needs were taken into consideration, and not only the needs of the shareholders.
3. Making the announcement: communication with the employees is imperative, especially with the remaining survivors. "The company must communicate its vision so that survivors can have a sense of hope and personal control about the future and feel empowered."
4. Implementing the downsizing; again, honest two-way communication is key in this step. All employee questions and concerns need to be answered.

IV. Conclusion and Suggestions for Research

In the very basic sense of the term, downsizing can be implemented in three ways:

1. Employee layoffs.
2. Asset reduction through sale.
3. A combination of employee layoffs and sale of assets.

When the nature of a work process is changed by new technology, jobs may be eliminated. In this situation, adjustments need to be made to the size of the workforce. This is especially true given the speed at which new technologies are being introduced to the corporate world. New technology is often championed as helpful in increasing efficiency; in many cases, it also means that human resources are no longer needed to get the same job done.

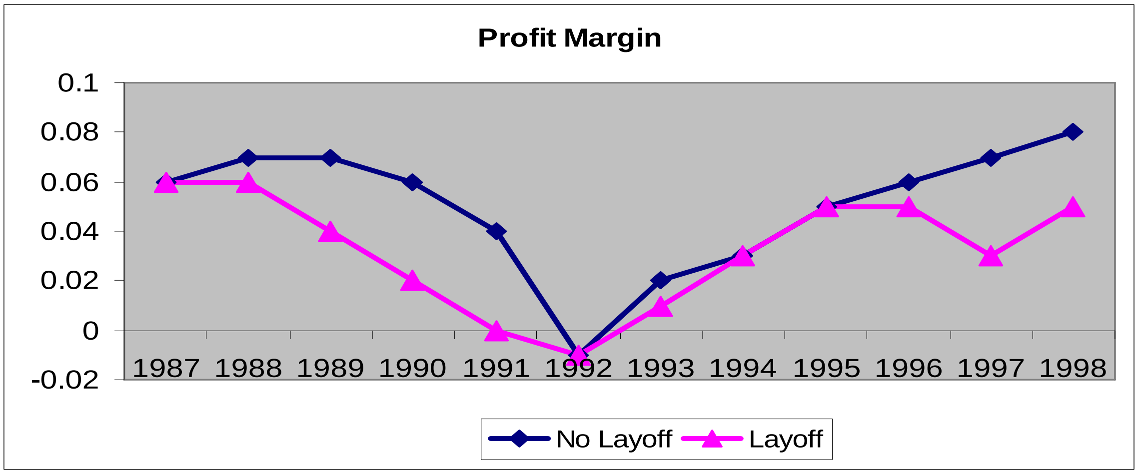
Samsung Electronics was able to increase revenues with fewer people – this shows an obvious increase in overall operating efficiency. In section IV, important factors were identified that need to be considered if downsizing is inevitable. People are an extremely important aspect in any operation, and need to be viewed accordingly, and not just as cogs in a machine.

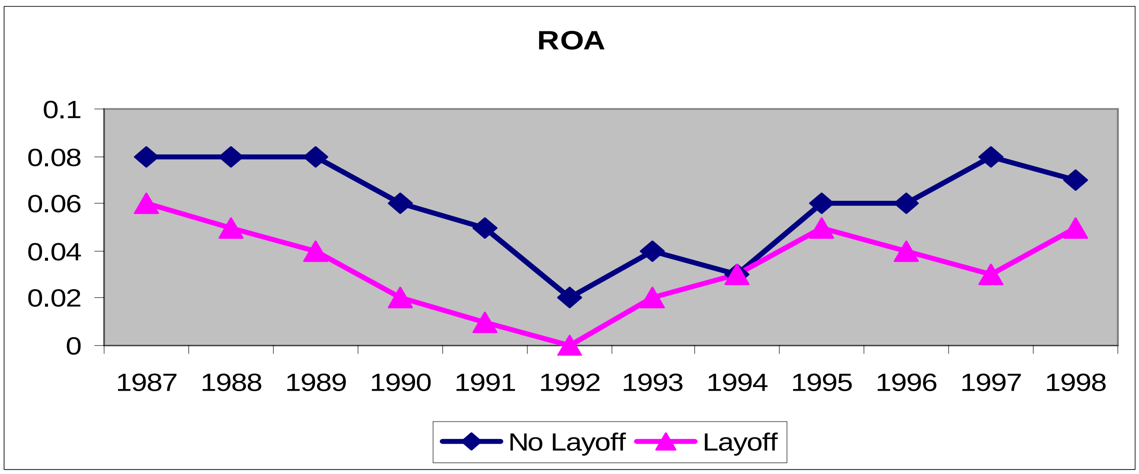
Longitudinal studies that look into the relationship between downsizing, productivity and profits could be done across different industries with the cooperation of the companies to be studied. The companies do not have to be picked at random, given the nature of the corporate world and the limited number of large companies available to be studied. The companies that would be studied could remain anonymous with only the outcomes of the study made public. Funding might be obtained by the companies that would be studied and from academic institutions. What must be studied are the effects of actual layoff actions, and not random decreases in employee count. Ultimately, such a study would still face the problems faced in the studies cited since the effects of downsizing are confounded with the effects of numerous other factors that can affect the companies' financial performance. A study around the actual *causes* of downsizing could be useful in helping to understand why it is used, and potentially help companies avoid those causes.

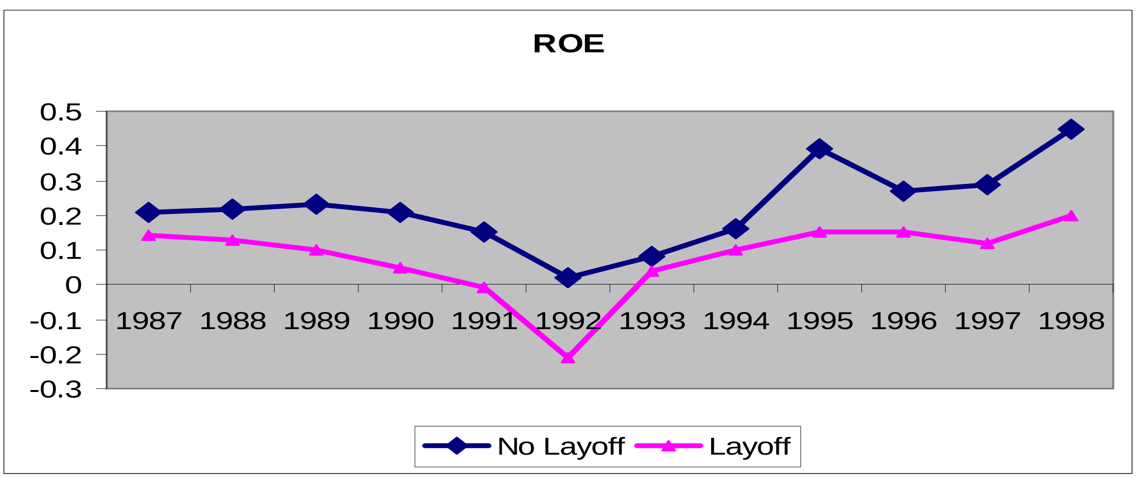
Downsizing is a strategy that can be used if the company considering downsizing does not have a choice but to do so. Having said that, downsizing should be part of an umbrella strategy that takes into consideration the company as a whole, and ensures that the knowledge and capabilities of the company are not downsized along with employees. Also, it is important to make sure that the downsizing strategy is perceived as being a fair one by all that are affected by it – this ensures that morale and productivity are not as negatively influenced.

Appendix 1

Graphs derived from Table 2 in the De Meuse *et al.* (2004) study.

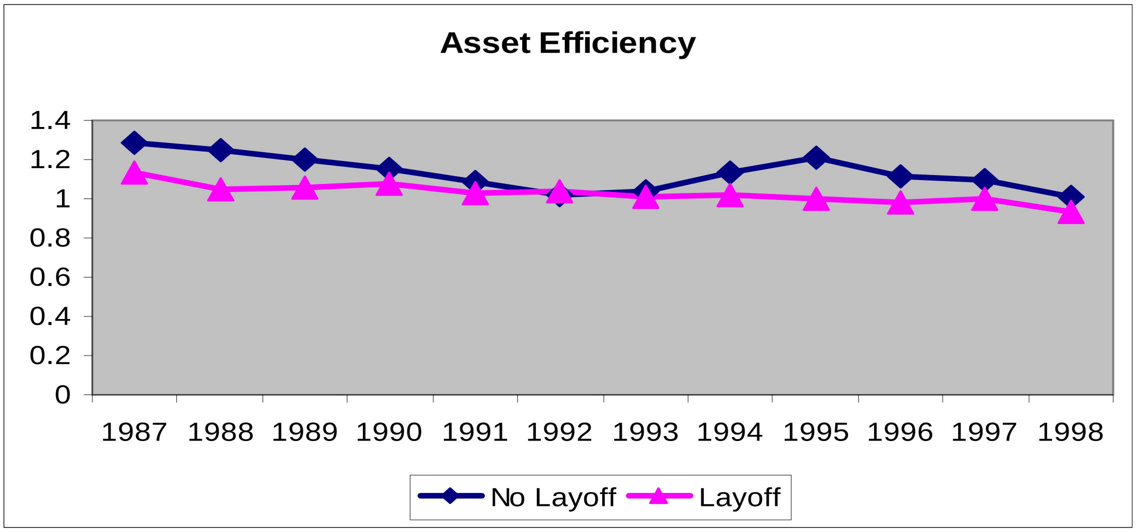


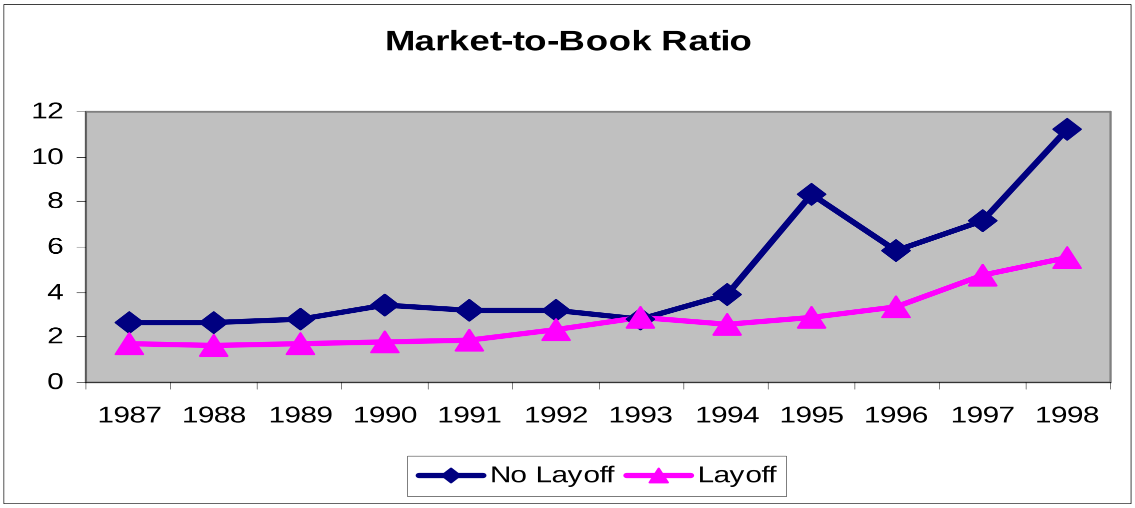




Appendix 1

Continued.





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[i] Cover of the February 26, 1996 issue of Newsweek magazine.
[ii] http://money.cnn.com/2007/04/11/news/companies/citigroup/index.htm

"RECONCILING MILTON FRIEDMAN AND W. EDWARDS DEMING"

Nicholas J. Mauro, Ph.D

Abstract

The intent of this research is to address the question of whether or not the collective work(s) of economist Milton Friedman, Ph.D., and quality management guru W. Edwards Deming, Ph.D., can be reconciled? In my opinion, this is a very meaningful question. If the ideas and concepts put forward by these two renowned scholars can be merged, or better yet, integrated into a single body of knowledge, then the sum of such a merger could be much greater than its individual parts – which would serve as an improvement on the systems each man sought to explain through his life-long work. One might ask: "How could a merger be possible?" Friedman and Deming were contemporaries who lived through and experienced events of the 20th century first hand, and without a doubt each was a significant "world-changer" through his own research, writings, and practical contributions. While I am no expert on either scholar, I was fortunate to study both, and (even more fortunate) to have been an understudy of each man for approximately six years respectively.

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OUT OF THE CRISIS
USING PROFOUND KNOWLEDGE TO ADDRESS CLIMATE CHANGE

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Abstract: W. Edward Deming's system of profound knowledge provides an especially cogent and effective structure from which to lead humanity "out of the crisis" of anthropogenic climate change, which is perhaps the greatest crisis facing mankind today. The problem at its core is a systems problem, and the systems approach of profound knowledge is the key to solving it.

At the dawn of the new millennium, anthropogenic climate change has emerged as one of the greatest problems facing our world. The earth's atmosphere is being reconfigured by industrialization and in particular through the burning of the fossil fuels coal, oil and natural gas. Each year the concentrations of CO_2 and other greenhouse gases increase at a rate faster than the year before, making the planet increasingly hotter. The world scientific community is extremely alarmed, as evidenced by the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC)[1] released in 2007. The assessment reflected the contribution of hundreds of scientists from all over the world, and stated with 99% certainty that the world is warming, and with 90% - 99% certainty that it is caused by human activity. Such strong consensus in the scientific community is rare. As one leading scientist stated, "There's a better scientific consensus on this than on any issue I know, except maybe Newton's second law of dynamics[2]."

Yet despite near unanimity from the scientific community, anthropogenic climate change has been called the invisible problem, or the slow emergency. It is a problem to which many are oblivious and whose consequences will be felt not in two, five or ten years, but rather in two or three decades and on into the next century, and centuries thereafter. If climate change is about anything, it is about long-term consequences driven by interrelationships, interconnectedness, and interdependence - the interrelationship and interconnectedness of the actions of mankind to our atmosphere and our climate, and the interdependence of all members of the earth's ecosystem - including the human species.

Anthropogenic climate change is the first truly global problem. CO_2 generated in the U.S. on a Monday has almost no local effect, but is by Friday affecting the atmosphere over Brasilia and Beijing as much as Boston. And given that industrialization powered by fossil fuels is the main cause, it is essential that the business community take the lead in addressing it. As the nation with the greatest economic power and largest carbon footprint, the U.S. needs to show leadership in both the policy sphere and the private sector. Unfortunately, U.S. leadership on policy has been lacking for over a decade. And American management with its emphasis on ever shorter and shorter time horizons and clearly defined and measurable results, seems ill-suited to addressing an issue that has long-term consequences and ill-quantifiable and complex interdependencies. This was hinted at in a report released at the 2008 World Economic Forum in Davos, Switzerland which ranked the U.S. at the bottom of the Group of Eight industrialized nations on addressing climate change and other environmental issues[3]. It seems that asking U.S. management to consider a problem like climate change is asking it to address something for which it is inexperienced and ill equipped.

The way to find the best tools to "solve" climate change is to understand the roots of the problem. Anthropogenic climate change (hereafter referred to as climate change) is not a problem as much as it is a symptom of a problem. The world's industrial and economic system is fundamentally out of alignment with the earth's ecosystem. This misalignment is a huge systems problem and climate change is its most serious consequence. When considering systems approaches to problem solving, one of the great systems thinkers of the 20th century, and someone who did much to advance systems-based solutions for business was W. Edwards Deming. After a seven decade long career, Deming crystallized his thinking into a framework he called a system of profound knowledge. Profound knowledge provides a cogent and effective structure for understanding business problems from a systems perspective, but it applies beyond business and may well lead humanity "out of the crisis" of anthropogenic climate change.

Background on Deming

Deming was a Montana born, Yale educated statistician. While working for the Department of Commerce in the late 1940's, he was asked by his superiors to go to Japan and help rebuild their economy following the devastation of World War II. Initially involved in census work, Deming eventually began giving lectures on statistical process control to groups of scientists and engineers. The students were so taken with his teachings and his direction that they wanted him to publish his notes so that the information could then be shared further and wider across Japan. He made his students an offer: they could publish his notes themselves under the condition that they use any proceeds or any profits towards improving quality in Japan. That was the measure of this man that he was more interested in seeing a nation rebuild itself than personally profiting from it.

For those interested in knowing more about Deming, a good source is the card catalog at most any public library, where one will find a long list of credits that often include his book *Out of the Crisis*, plus a technical listing of books and papers that is weighted to mathematics and statistics. It is somewhat ironic that one of Deming's most famous refrains, one he used over and over again was "the greatest gains and losses cannot be measured, but they must be managed." Perhaps only someone with a true understanding of mathematics and statistics could see that much of value within organizations is beyond measure. Deming understood not only what measuring could reveal, but also what it left out.

There is no doubt that Deming was a provocateur. At the age of ninety, he took time out from his very busy and well-paid consultancy to teach young business students something he called "profound knowledge." He came to America's business schools to shake things up. At a time when "B-School" students were taught to worship at the dual altars of customer and quality, Deming would espouse heresy – that customers did not determine quality; in fact customers "didn't give a hoot about quality," he would say. When conventional wisdom held that the fall of American competitiveness was due to lazy workers, he would say that quality was determined not on the factory floor but in the boardroom. When the latest buzz in the compensation arena was about using stock options to align executive pay to company performance, Deming would say that pay-for-performance was meaningless and that compensating an executive on stock performance was "like rewarding the weatherman for a nice day." He would say that we are ruined by hard work, we are ruined by best efforts – the more nonsensical he sounded, the more it reflected deep insight.

In 1986 when Deming published his book *Out Of The Crisis*, the U.S. manufacturing sector was in trouble. At one time, the label 'Made in the USA' meant excellence, the best in the world. American innovation had perfected the manufacturing of the automobile, and invented recorded sound, the television set and the transistor radio. However by the mid-1980s U.S. quality and competitiveness were falling behind; factories were closing, and jobs were being lost. Things were being made more cheaply and with higher quality in other countries, especially in Japan.

As Japanese quality and affordability dominated the electronics and automobile sectors, American management turned to Japan, and in doing so found Deming. By then, Japan's most prestigious quality award was named The Deming Prize. Japan's great success story led to the success of *Out of the Crisis*, which led to further work as Deming's teachings gained new audiences. In *The New Economics* Deming put forth a framework he called a system of profound knowledge to rescue American business from the "tyranny of the prevailing management style." Profound Knowledge had four components:

1. Appreciation for a system.
2. Knowledge about variation.
3. Theory of knowledge.
4. Psychology.

<u>Appreciation for a System</u>
Deming believed that every CEO should view his or her business as a system. A system with many interconnected, interrelated and interdependent components. Deming would say that you can't have a system without an aim, and that to be sustainable, the aim cannot be a numerical target. It must instead be the *raison d'être* of the company, the reason why a customer would buy the good or service on offer. He would also say that the aim of the system is a value judgment, implying clearly that values are part of running a successful business. Deming believed one of the most important aspects of systems, as well as the most overlooked by management, was an appreciation of all the interdependencies of components within a system – a necessary understanding in order to optimize the system. He also knew that the definition of system boundaries was critical to the optimization of the system, and as circumstances changed boundaries might have to be redefined.

<u>Knowledge About Variation</u>
To Deming, running a successful business was about understanding variation – its causes and how to control it. By variation, Deming did not mean simply variation in inputs and outputs, but also variation in people, variation in management style, variation in culture, variation in environment. Deming understood that variation in a system could be either stable or unstable. He showed how stable variation was bounded by upper and lower control limits, and he would also say that if a system were showing stable variation then one ought to look for causes that were from within the system - what he called *common causes*. If variation were not stable and

were not bounded by definable control limits, then he advised looking for causes from outside the system - or *special causes*. Deming would warn that the greatest economic losses due to management had to do with mistaking *special causes* for *common causes* or vice versa, and then taking action based on that error. He called this 'tweaking the system', which he found ruinous to the system, heading management "off the Milky Way" to oblivion.

Theory of Knowledge

Deming often pointed to a quote from Thomas Edison "There's no substitute for hard work." Who could argue with that? Deming could. One of his constant refrains was "We are ruined by hard work. We are ruined by best efforts." For Deming, hard work and best efforts were not inherently bad, but coupled with a lack of knowledge they could be ruinous. Rather than making hard work the *sine qua non* of business, Deming always emphasized knowledge. "There's no substitute for knowledge," he would say.

I was a student in the MBA class Deming taught at Columbia. Once, he directed the question "Where does new knowledge come from?" to us, his graduate students. We were an elite grouping, having been accepted into one of the premiere MBA programs in the nation with many of us going on to leadership positions in industry. Yet despite all that "knowledge" we had no idea how to answer his question. So after a long silent pause Deming answered it himself, saying "New knowledge comes from those who follow their own innate curiosity, responsible to no one." He also said that there is no knowledge without theory. Some think experience is knowledge. "Experience is not knowledge," he would say. Others think information is knowledge. "Information is not knowledge." But Deming knew that if through experience, and if through information we per chance think, and if in thinking we theorize, then in proving our theory right or wrong - that is where new knowledge is born. Deming also said that organizations that have the best opportunity for new knowledge were private companies and monopolies. He always extolled the virtues of Bell laboratories, which was the think tank for the telephone monopoly. To him, Bell Laboratories was a great example of how new knowledge can come forth in an organization and what it could bring in terms of sustainable growth, innovation and improved market position.

Psychology

To a great degree Deming was a student of human psychology. He believed that for an organization - a system - to be able to achieve its aim, it had to understand human beings – their psychology and motivation. Deming was a great believer in intrinsic motivation - he used to say that it was not the job of management to motivate the individual. Every person was born motivated, and sustaining that motivation came from joy in work, and joy in learning. He thought that the extrinsic carrot and stick approach to management (which is another way of saying greed and fear) was unsustainable. These emotions were inherently destructive to the system.

One of the things that Deming personally felt was injurious to human motivation was ranking systems. He did not like ranking people, and thought it one of the most damaging and tyrannical aspects of the prevailing management style. But beyond that, it was also ineffective. The best way to keep underachievers in an organization, he would say, was to have a ranking system, because the higher-ranked individuals were then motivated to keep the lower-ranked around in order to help maintain their status. With a purer system, however, where high expectations exist and performance is observed informally by one's peers, the best performers are motivated to have everyone else also perform to their best ability and to see that underperformers either improve or leave. Deming felt that a system that relied on a formal ranking system was much more likely to retain underachievers than one that did not.

While listing the four aspects of profound knowledge separately, Deming said "The various segments of Profound Knowledge proposed here can not be separated. They interact with each other.[4]"

An Example of Profound Knowledge

In the early 1990's, when I was introduced to profound knowledge, Arthur Andersen had one of the premiere brands in the world. Arthur Andersen had been using the Deming framework of profound knowledge even before Deming articulated it. Arthur Andersen the man had a keen appreciation of a system. The Arthur Andersen system had one aim, and that non-numerical aim was the protection of the shareholders of the companies Arthur Andersen audited. The Arthur Andersen firm very carefully built a system of hiring practices, training, controlled expansion, and watchful selection of clients, that was informed by and was in pursuit of that aim. For example, the firm only hired people they felt they could train the Arthur Andersen way. This was very important because when these new trainees went out in the field, clients might try to influence them. This made the choice of client very important as well. Andersen looked for clients that they felt would not likely corrupt their auditors. In a way, being selected as an Arthur Andersen client became a point of pride for many corporations because it indicated that they had been vetted for honesty, openness, and transparency by the prestigious Arthur Andersen. How fast the firm expanded was also informed by the aim. In fact, everything that Arthur Andersen did was in pursuit of the organization's aim of protecting shareholders of public companies. Arthur Andersen himself knew the power of interdependencies – and by carefully managing them he created one of the top brands in the world.

But something happened at Arthur Andersen, something that took the focus away from the original aim and put it elsewhere. Steve Duggan started out at Arthur Andersen back in 1961 when Leonard Spacek was still the head of the firm. Spacek was a protégé of the founder, and only the second person to lead the firm, which he managed much in the same way Mr. Andersen had done. Duggan did three weeks of boot camp as a new CPA hire and at the end of training, he and his classmates were addressed directly by Mr. Spacek. Duggan told me that one of the first things Spacek said to them was that if they were joining Arthur Andersen to become rich, they should stand up right then, turn around and walk out the door - because they were not there to get rich, but rather to protect the shareholders of the companies Arthur Andersen audited. In Deming-speak, they were there to service an aim, a non-numerical aim that was the *raison d'être* of the firm. All of those new hires would have the opportunity to do very well financially, but rather than making it a personal target, their own financial success would become the consequence of optimizing the overall system.

Duggan was very successful at Arthur Andersen, eventually becoming a partner. But late in his career, he began having doubts about the direction in which his firm was headed. He shared with me that he felt he would never have succeeded at Arthur Andersen if it were run in the 1960's as it was being run in the 1990's. "I just don't have the personality for it," he said. By the end of 2001, the firm imploded from the scandals related to Enron, Waste Management, and Sunbeam, which capped a long list of controversial engagements where Arthur Andersen was supposed to be keeping public shareholders protected but was instead advising their own corporate clients on how to protect themselves. So I asked Duggan about how the company went from having Leonard Spacek call new recruits to serve a higher aim, to seeing the manipulation, shady practices and shredding of documents for which Arthur Andersen became infamous. He paused for a short time, and then he said to me, "I think it all started to change when we began measuring things." All I could hear was Deming's voice echoing in my head "The greatest gains and losses cannot be measured." Arthur Andersen became obsessed with earnings growth. They implemented management by objective (MBO), which encouraged companies to partition their enterprises into measurable business units, set numerical goals for each, and have each manager run his area of responsibility with the sole purpose of meeting his individual targets. With MBO, Arthur Andersen changed the aim from its *raison d'être* to a numerical target, and in the bargain created a new growth obsessed culture. The old Arthur Andersen system based on hiring, training and carefully selecting clients, the old way of thinking and many of the old employees did not fit in with the new culture. What eventually ensued from this was something that Arthur Andersen the man had been concerned about from the very beginning – a lack of control. The new culture abandoned its appreciation of the system that had created a world-class accounting firm. The new culture introduced competition within the system and a myopic focus on "making the numbers", which as Deming predicted, was unsustainable. Arthur Andersen was once a firm that leveraged profound knowledge to great success. In abandoning it, it destroyed itself.

Profound Knowledge and Another Kind of Crisis

In some ways, Deming's profound knowledge seems simple – perhaps it might be called a system of common sense. But, unfortunately, the way Deming approached problem solving was all too uncommon. As important as it was to change American management thirty years ago and to lift America "out of the crisis" that bad management was causing, there is an even greater danger looming today. Anthropogenic climate change threatens the very habitability of our planet.

Surprisingly it is problem that has been largely ignored in the U.S., but which must be addressed rapidly if dire consequences are to be avoided. For civilization to address a problem with long-term effects and complex interdependencies, profound knowledge is an especially cogent and effective structure. Each of the four steps of profound knowledge can be used as a window into why climate change must be addressed, and how to address it.

Appreciation of a System

Industrialization used to see itself as disconnected from the ecosystem, and drew boundaries around itself very narrowly, defining externalities as unallocated costs that had no impact internally. Through the impact of climate change, business is beginning to realize that there are no "externalities", and that the actions a business takes ultimately impact back on that business, and in ways that are unforeseen and unintended. Industrialization is out of alignment with the earth's ecosystem. To be prepared to address climate change and its impact, industrialization must see itself as a subsystem of earth's ecosystem and serve the AIM of the overall system.

The Caspian Sea was once a beautiful and vibrant body of water. It supported marine and human ecosystems for thousands of years. But now it is controlled by systems not aligned with natural ecosystems. The gas and oil industries have dominated the Caspian region for decades and the sea is now dying. Fish counts in the Caspian are down 99% from historic levels.

Not very far from the Caspian lies the Aral Sea which was once the sixth largest inland sea in the world. It was the lifeblood of the region, supporting the livelihoods of many in Central Asia for thousands of years. But in its search to expand its industrial base, and to improve the lives of its people, the Soviet Union decided to build up agriculture. In the 1930's and 40's, the central planners began tapping into the source waters of the Aral to develop a cotton industry in the region. Today, with its source waters diverted, most of the once mighty Aral Sea is a desert.

Our business decisions and even our consumer decisions impact our environmental quality, and one of the most powerful examples of the consequences of a misalignment between the economic system and the ecosystem is made clear in a story I call "The Case of the Cashmere Sweater."[5]

This is the story of the price being paid in Asia's land and in America's air in order for us to have cheap sweaters. It also teaches the lesson that what happens in China does not stay in China. It truly reflects the interconnectedness, interrelationships and interdependencies that world trade – and in this case trade between the US and China - bring. It also heralds the end of "externalities" – because it makes clear that actions not only affect others, but eventually they affect the actor as well.

In order to meet the exponentially increasing demand in the United States for cashmere sweaters, China is literally raping its land, polluting its air and affecting the ecosystem of which we are all a part. In 2005, the United States imported fifteen times as many cashmere sweaters as it imported ten years earlier. And prices have plummeted – in 2005 a cashmere sweater cost about ⅓ of what it did in 1995. Cashmere, which was once available only to customers of Lord & Taylor, Saks Fifth Avenue and the like, has now become a sale item at Kmart and Costco. This is the way capitalism is supposed to work – providing more goods for more customers at lower cost. This is a good thing. However, there is more to this story.

It turns out that cashmere is only available from sheep that graze in a very particular part of China, called the Alashan Plateau. The Alashan Plateau is the size of Arizona and Colorado put together, and it was once a very lush and green ecosystem, populated mostly by camels and some sheep. The system was sustainable for thousands of years. But ten years ago, when camel herders saw how much money could be made getting into the cashmere sweater business, they sold their camels, replacing them with sheep, and started cultivating and harvesting the fine wool found on the sheep's underbellies. This was good business for them, and they earned more money than they had ever earned before, helping to lift them and their families out of poverty. But slowly a problem revealed itself – the carrying capacity of the prairie was being exceeded for the first time in thousands of years, and a once lush prairie was being turned into a dust bowl.

This example is just one that demonstrates that China's economic boom has become ecological doom. In 1949, there were 2.4 million sheep on the Alashan Plateau. By 2004, the number was 25.8 million. The result of this shift from camels to sheep has destroyed the grasslands of the plateau. Not only are sheep more voracious than camels, but their heels are very different – camel hooves are actually very flat and smooth and do little damage as they tromp around the plateau, while sheep on the other hand have very sharp stiletto-like heels that tear up the grasslands of the Alashan.

A dust bowl is being created by this phenomenon, and one that is not just affecting China. For example, one particular dust storm in April 2004 that started in the Alashan was so intense that by the time it hit the Pacific, the Korean government reported that 1.8 million people got sick enough to seek medical care, and $7.8 billion in damage was done to the semiconductor and airline industries. That was one dust storm, but it didn't stop there – the dust continued to travel across the Pacific Ocean on what is called the Transpacific Transport, and by the time it hit Denver, the midday sun was so dimmed that it made national news. This dust storm even made it all the way over to the Atlantic coast.

And what of the sheepherders of the Alashan Plateau? They are now in desperate financial condition, because there is no grass for their sheep to graze, they must import feed, which is costing them a fortune and ruining their once comfortable profit margins. The Alashan Plateau may not recover for decades from this devastation. "Our life depends on nature," one of the sheepherders was quoted saying. "Things are getting worse year by year."

The case of the cashmere sweater is a lesson in the appreciation of a system. This is a story of interconnectedness and interdependencies within a system that are hard to measure but which must be managed. It is a story of system boundaries and how in global markets drawing boundary lines seems almost meaningless. Rather than considering waste or pollution as an "externality", this example makes clear that the overall system has no "externalities"- in the system everything is connected .

Wrapped in this story is also a warning about climate change. In 2008, China may already be the largest emitter of greenhouse gases, certainly not on a per capita basis, but as a nation as a whole. Their desire to improve the lives and living standards of their citizenry is a noble one. China will develop and must develop. The only question is, as Dr. Deming would ask, by what method ? China is currently firing up a new coal-fired power plant every week. The implications for global climate if such plans continue unabated are catastrophic. In order that China's development does not become an ecological disaster for the planet, it is essential to understand the system and use new knowledge to optimize the system. The world economic system can not be separated from the planet's ecosystem. The economic system must serve the aim of the overall ecosystem – which is sustainability and life – otherwise it will lead to the destruction of the system. China, nor any other nation or people, wants to commit ecological or climatological suicide. The international community must work together to develop an China, nor any other nation or people, wants to commit ecological or climatological suicide. d share new technologies for creating sustainable and clean energy sources and for increasing energy efficiency. All countries must work together to develop a global system of energy generation and usage that is aligned with the ecosystem.

Knowledge of Variation

In terms of climate change, knowledge of variation means understanding variation in the earth's climate, and the impact that a variable climate can have on the earth's ecosystem as well as the suitability of that ecosystem for human habitation. An understanding of where climate variation comes from, and how can it be controlled, if indeed it can or should be controlled, is necessary. Variation in climate has been the story of planet Earth for 4 billion years – and over the last million years the world has experienced significant variation marked by a continuing series of ice ages and interglacial periods. So how is climate change today different from the previous million years? Are the causes of contemporary climate change related to historic climate change? Are the causes coming from within the system or outside the system, *common causes* or *special causes*? How does understanding the origins of variation affect our ability to deal with climate change?

The scientific community has gathered ice data going back at least 650,000 years. In looking at this data, it is clear that while there is a substantial variation in the level of CO_2 going back hundreds of thousands of years, it is also clear that variation is stable with an upper control limit of 280 ppm CO_2 and a lower control limit of 180 ppm CO_2. One can also see that temperature is very closely correlated to CO_2 levels. In two plots: one for CO_2 and one for temperature, the rise and fall in CO_2 and temperature levels over this 650,000 year period are so closely correlated that they appear to be the same data set.

When a system is exhibiting variation that is stable, Deming would recommend looking for a cause that is from within the system – what he called a common cause. What might that cause be? What has caused the stable variation in CO_2 and temperature for over the last million years or more? It turns out that that question puzzled nineteenth century scientists when the existence of the "Ice Age" was discovered in the early part of that century. The term "Ice Age" is somewhat of a misnomer as there have been many "Ice Ages" in the last million years (seven in the last 650,000 years.) CO_2 concentrations which have dipped down to 180 ppm correlate to what we know as an Ice Age. What is bringing about these Ice Ages, and this variation in CO_2 concentrations? Is the cause from within the system as Deming would suggest?

The system here is not just the earth's ecosystem alone, but the earth as a subsystem inside the solar system. The cause of the Ice Ages (and the cause of variation in atmospheric CO_2) is due to changes from within the earth-sun system. This was revealed through the research of Milutin Milankovich, who he published his findings on the origins of the Ice Age in 1941 in a paper written in Serbian and only translated into English in 1969[6].

What Milankovich learned was that there were three cycles that brought about the Ice Ages, each with a differing period length and effect. The first and most powerful cause is due to the Earth's orbit around the sun which shifts on a 100,000 year cycle. The more elliptical the Earth's orbit, the greater the difference between summers and winters, and the less overall solar energy hits the earth. The second cause is the tilt of the earth on its axis, which varies on a 40,000 year cycle, and the third cause, the wobble of the earth's axis as it rotates, varies on a 20,000 year cycle. These three effects combined have given the planet seven periods of advancing ice as well as seven “interglacial” periods in the last 650,000 years. The system has been stable and the cause, as Deming might have predicted, came from within the system.

When today's level of CO_2 concentration is examined, it is apparent that it has moved outside the bounds of stability as defined by the prior 650,000 years of atmospheric history. It is now at 385 ppm of CO_2, which is almost 35% above natural levels of 280 ppm. This is outside historic control limits, and if business continues as usual, by the middle of this century, we will reach and almost certainly exceed 600 ppm of CO_2, which pushes us even further outside the stable region. If this variation is indeed outside the control limits, and if it is unstable, Deming advised looking outside the system for the cause. Clearly digging up material from the earth’s crust and systematically burning it into the atmosphere is “outside the system” of natural history. It is in fact a large scale geophysical experiment that human beings have been undertaking for the last 200 years whose consequences are not at all clear.

We humans have taken a stable climate system and through special causes created an unstable climate system. To address this, some are suggesting “geo-engineering”, i.e. putting up large scale satellite umbrellas, or perhaps seeding the atmosphere with particulates to cool down the planet quickly. I think Deming would see the geo-engineering approach to climate change as “tweaking the system”, introducing potentially even more variation into the system without addressing the real cause of the current variation – i.e. the burning fossil fuels on a large scale.

<u>Theory of Knowledge</u>

Is the concern about global warming based on knowledge or on a political agenda? What is the history of the understanding of climate change? In fact, anthropogenic climate change is a theory, but as Deming said “There is no knowledge without theory.”

The understanding of anthropogenic climate change comes from the work of dedicated scientists at places like NASA’s Goddard Institute for Space Studies and the National Oceanographic and Atmospheric Administration. The climate scientists of today sit on the shoulders of giants whose work in understanding anthropogenic climate change dates back to the early 19th century.

As long ago as 1827, the term “greenhouse effect” was coined by Jean-Baptiste Fourier. Any student of advanced mathematics knows of the Fourier Series and Fourier Transforms. Fourier’s contributions to mathematics were enormous. Self-educated and innately curious, he wondered why the earth was a stable, hospitable 58°F. He theorized that it should actually be much colder and that something was happening to make the earth warmer than a black-body heat balance would lead one to conclude. Then he theorized that it was because our planet’s atmosphere acts like the glass of a greenhouse - it lets solar energy in, but it doesn't let all the heat out. He published a paper in 1827 discussing the greenhouse effect. Later that century, in the 1860’s, John Tyndall, who was known as the invisible scientist because of all the work he did for which he got little or no credit, advanced the understanding of the greenhouse effect by actually measuring the absorption of radiation by carbon dioxide and water vapor. While Fourier understood that the greenhouse effect existed, it was Tyndall who showed the mechanism by which it occurred. Then at the very end of the 19th century, Svante Arrhenius, a Nobel prize winning chemist, actually spent years in his attic calculating the effects of increasing concentrations of CO_2. He was tickled to find that given the rate at which the world was burning coal, his cold homeland of Sweden would someday become a tropical paradise like Hawaii. But based on his calculations it would take 3000 years, and that was entirely too long as far as he was concerned.

After the work of giants like Fourier, Tyndall and Arrhenius, the conventional thinking from the scientific community by the twentieth century was that:

1. The greenhouse effect was real.
2. CO_2 was the main greenhouse gas.
3. Mankind was adding CO_2 through industrialization.
4. Anthropogenic CO_2 was too small to measure.

There were a few intellectually curious men and women who were not quite satisfied with item 4. One of those was Roger Revelle, a professor at Harvard and the Director of the Scripps Institute for Oceanography in San Diego. Revelle was "responsible to no one" as Deming might have said. He could work on anything he wanted. He could fund or get funding for just about any scientific research that interested him. But the thing that interested him most was finding out whether indeed CO_2 was building up in the Earth's atmosphere. So together with his colleague and young protégé Charles Keeling he set up an observatory at the Mauna Loa volcano in Hawaii, and began measuring carbon dioxide. This was in the mid-1950s. By 1958 they had their first results - and the findings were stunning, because not only was the difference in CO_2 measurable, but it was significantly above the natural level of carbon dioxide for the last 10,000 years. Their conclusion was that without knowing it, humanity was carrying out a large-scale geophysical experiment on the earth's atmosphere.

The story of the knowledge of the greenhouse effect is the story of scientists who pursued their own innate curiosity, responsible to no one. They used theory, and in proving their theories right or wrong, they advanced human knowledge. Anthropogenic climate change could very easily have gone undetected if not for the work of a few curious giants. That work continues today as the leaders of modern science try to gain further knowledge about the course of this "geophysical experiment" and advise policy makers on its implications.

Psychology

When looking at business systems, Deming understood the power of human psychology and human motivation in supporting the aim of the system. When competition and politics enter in, he warned, it leads to the destruction of the system.

Unfortunately, scientists have been put in the position of having to deal with the politics of climate change. In some instances, scientists have been directly intimidated by their own government. In 1998, the journal *Nature* published a report by Michael Mann, Raymond Bradley and Malcolm Hughes[7]. This report was based on a new methodology to combine data from a variety of sources to estimate temperatures in the Northern Hemisphere for the last 1000 years. It received wide attention and one of its graphs showed a simple figure of the Northern Hemisphere temperature and came to be known as the "hockey stick." This was given much attention and many took it as a "smoking gun" – hard evidence of climate change.

Senator James Inhoufe (at that time, chair of the Senate Environment and Public Works Committee) called Mann's work a hoax, and Congressman Joe Barton of Texas, Chairman of the House committee on Energy and Commerce, took it even further by requesting information from Mann and his co-authors NOT just about their data gathering for this report but also about their ENTIRE work history. Mann's report is only one of many rigorous peer-reviewed scientific studies that have found over the last decades that global warming is happening and that it is caused by human activities. But rather than looking to other peer-reviewed work on this subject, or scientific papers from leading scientific bodies like the National Academy of Sciences or the American Association for the Advancement of Science, Rep. Barton chose instead to begin a witch hunt. This did not go unnoticed in the scientific community. In a letter to Rep. Barton, Alan Leshner, the head of the American Association for Advancement of Science and publisher of the magazine *Science,* referred to this request as "a search for some basis on which to discredit these particular scientists and findings, rather than a search for understanding. " Continuing, he said "…we are concerned that establishing a practice of aggressive congressional inquiry into the complete professional histories of scientists whose findings may bear on policy in ways that some find unpalatable could have a chilling effect on the willingness of scientists to conduct work on policy-relevant scientific questions.[8]"

Mann wasn't the only scientist having a difficult time. Dr. James Hansen of NASA's Goddard Institute of Space Studies has spent most of the last thirty years researching global warming and speaking out. NASA's mission statement began with the words "to understand and protect our home planet." When asked why a NASA scientist was working on climate change, Hansen would always point directly to the mission statement – as if to say "I'm just doing my job." But in late 2005, he was told by a junior political appointee in the federal government to stop speaking publicly about climate change "or there may be consequences." Hansen was stunned, but he knew that he was just doing his job "to understand and protect our home planet" and would continue to do it. Two months later, in February of 2006, the NASA mission statement was changed and the words "to understand and protect our home planet" were dropped[9].

Deming understood the importance of psychology in any system that involved human beings. He knew the destructive power of fear in a system. We have been seeing the intimidation of science over the last seven years because of political pressure on what should be a pure search for answers and for truth. Deming presaged this when he stated in one of our classes that the natural inclination of scientists was "to get to the bottom without bias or agenda, and that the more political an issue became the more science suffered."

Profound Knowledge, Climate Change and Biomimicry

Industry and business need a framework to address climate change. With its appreciation of a system and respect for sources of new knowledge, profound knowledge points the way forward to a transformation of industrialization. Profound knowledge naturally leads to a process of aligning the industrial system with the aims of the ecosystem. This means looking to nature and then emulating it. A new field of science is emerging along these lines called biomimicry.

Biomimicry analyzes how nature works and how humans can align industry to nature and thus learn to live sustainably. Pioneers of biomimicry are shaping the future by analyzing nature to understand its secrets and apply them to human industry. Some are studying the signaling power in proteins to speed up and cool down computers, while others are learning about super strong and super resilient materials from spiders. Some study how cells in leaves convert sunlight to fuel in thousandths of a nanosecond, while still others are discovering miracle drugs by observing what animals eat[10]. Biomimicry taps into the vast information that is embedded in our planet's biosphere, and, through theory, creates new knowledge for business, so that industrialization may operate as a genuine subsystem of the ecosystem, serving the aim of the ecosystem.

Yet our current industrialization does not look to nature for any guidance or answers. In fact, it is built on a resource-hungry path of least resistance. In one day, the industrialized world uses twenty-seven years of solar energy that has been stored in coal, oil and natural gas[11]. Nature, however, runs off solar income. The planet's ecosystem does not look for energy sources outside of the daily income that it gets from our sun.

Our industrialized system is based on a linear system, and a linear way of thinking; it is a system characterized by "take, make and waste". Material is removed from the earth's lithosphere, some of which is transformed into a product of inorganic and non-biodegradable matter of limited usable lifespan, while the remainder is wasted and dumped back into rivers, landfills or the atmosphere where it can not be reabsorbed for - in some cases - tens of thousands of years. In our industrialized system products have a beginning and an end; it is a "cradle-to-grave" model of industrialization. Yet this is imbedded in an ecosystem that is a "cradle-to-cradle" system, where waste equals food and output from one process is input to another. Everything left by one species or natural process is used by another and converted into something that is then used again by another. Species that dominate, that take everything for themselves and that foul their own nest - these species eventually die off, and do not make it to the next round of evolution. This is what four billion years of evolution has taught.

Stages of Ecosystems

In Paul Hawken's book *The Ecology of Commerce*, he explains how ecosystems are characterized by three significant stages: pioneering systems, intermediate systems, and mature systems. Pioneering systems are characterized by aggressive, competitive, resource hungry behaviors pursuing untrammeled growth that are by their nature unsustainable. Only if a pioneering system evolves into an intermediate stage typified by increasingly complex organisms can it survive. Eventually if it makes it to becoming a mature system, it will be comprised of highly efficient processes that are resource-conserving, robust, self-sustaining and highly complex[12].

If the industrialization of tomorrow had the characteristics of a mature ecosystem, it would look like yesterday to some extent. The old Arthur Andersen was like a mature ecosystem – a highly complex organization with critical interdependencies that were understood and carefully managed. The old Arthur Anderson was efficient, robust, sustainable and complex, but it was not driven by growth. Eventually this changed, as interdependencies and complexities were sacrificed, and Arthur Andersen became more like a primary ecosystem devoted to growth at any cost, which made it vulnerable and ultimately unsustainable.

As industrialization mimics mature ecosystems, the result will be nothing short of revolutionary. The change will be characterized by renewable clean energy, closed loop recycling, zero waste, harmless emissions, efficient transport, sensitized people – in short: reinvented commerce. This way of doing business is very much in line with what profound knowledge would point us towards. And thankfully, examples of this type of industrialization are already in practice today.

Interface Corporation
Ray Anderson is the chairman and founder of Interface Corporation[13]. In 1994 he was asked by his sales staff about the company's position on the environment. The sales staff was headed to a conference where they knew they were going to be asked questions about Interface's environmental impact. So Anderson's reply was that Interface complied with the law – their environmental policy was that they followed orders. But for some reason this conversation got Anderson thinking. He started to study his company and learn about its environmental impact. Interface is one of largest industrial carpet makers in the world. Their business has historically been a highly petrochemical-intense and fossil fuel-intense business that also pollutes a lot of fresh water. After only a month of research into his company's environmental impact, Anderson was stunned. To make one ton of industrial carpet, Anderson found out that his company Interface threw away into landfills, into rivers and streams, and into the atmosphere thirty-three tons of waste. He concluded that although today he might be a hero to Wall Street, or to the 7000 people he employed, someday he would end up in jail for what he was doing to the ecosystem. At that point, he made a decision to undertake a revolution within his company. And the revolution he undertook is very similar to the type of change Deming advocates through profound knowledge – a complete transformation of the organization, involving every employee in the transformation, and aligning every process, every action, every initiative in service of the aim.

Anderson had an advantage that the CEO's of many public companies don't have. He was fortunate enough to have controlling interest of his company. So in some sense he could do whatever he wanted and was "responsible to no one." In fact he was responsible to the board, but he held a lot of sway. He approached his company as a system, and he redefined the aim of his company to work towards that aim. He involved all his employees, and gave them a sense of a higher purpose and esprit de corps. He involved his customers, and he said that the goodwill that came from his clients was nothing short of " astonishing." While some in his company were concerned that he had "gone around the bend," he remarked "That's the job of a leader - to go around the bend and see what's coming."

His first concrete step was to create the new aim for the company. The aim was to make Interface, firstly a sustainable, then a restorative enterprise. His first initiative was one called Ecosense: whose mission was to reduce, reuse, reclaim, recycle, and redesign -- and the entire organization was put to work in pursuit of that initiative. He pioneered the Evergreen lease, whereby customers never quite own the carpet they buy from Interface, but instead use it until it is no longer usable, and then Interface will be responsible for taking it back and making it into something usable again. This is what is known as "closed loop" recycling, and it is probably one of the most powerful ideas today aligning industry to the ecosystem and addressing industrial waste. In the United States, local and municipal governments spend far too much of their budget getting rid of things like industrial carpet and other solid waste, when instead they should be spending that money on education, putting out fires, and security. Getting rid of solid waste should be the responsibility of the manufacturer, and that's the position of Interface, even though they are a huge manufacturer of solid waste. The idea of closed loop recycling also brings us closer to the natural way, and the idea that there is no waste, or that waste equals food. In this way worn-out Interface carpet can become the raw material (i.e. the food) for the next generation of carpet. With closed loop recycling, industry is actually providing itself with a new source of raw material that is a lot easier to work with, and a lot easier to procure, while encouraging new design techniques that consider a product’s use and reuse in perpetuity.

Since 1994, Ray Anderson has done much, but he is only halfway to his goal of becoming a completely restorative enterprise by 2020. He still needs to find a recyclable nylon, to substitute carbohydrates for petroleum products, and to solve the transportation problem. But the results so far have been quite impressive. After 13 years of revolutionary change, use of fossil fuels is down 45%, use of water is down 67%, greenhouse gases are down 60%, contribution to landfills are down 80%. The hard cash savings for Interface since 1995 is $336 million. Revenues of Interface are up 49%, with increased profit margins. They have $1.1 billion in annual sales and represent 37% of the global market share.

I met Ray Anderson at a conference in Chicago in November of last year. When I asked him if he was familiar with Dr. Deming or his teachings, he first said that he was not a follower of Deming and that the implementations that he put forth in his company were of his own initiative. But then he began to speak about Deming, and talked about how Deming had powerful ideas that were ahead of their time, and that he wasn’t listened to in his home country. Anderson appreciated Deming’s systems approach to problem solving, and how his teachings had a message beyond serving the bottom line. The more he spoke about Deming, it seemed to me the more he began to see the application of Deming and his teachings to what Anderson himself had been doing at his company for the last thirteen years. Ray Anderson’s actions and leadership are very closely aligned with Dr. Deming's teachings of understanding the system, understanding variation, understanding the power of new knowledge, understanding human motivation and ultimately involving the entire enterprise in pursuing a common purpose. This is exactly what Ray Anderson has done, and it was exactly Deming’s purpose in articulating the framework he called profound knowledge.

Conclusion

Climate change has emerged as one of the greatest problems facing our world today. It is a problem which on the surface seems to be about a build up of greenhouse gases in the earth’s atmosphere due to industrialization. Yet from another perspective, climate change is the symptom of larger problem – a misalignment of systems. The world economic system, powered by fossil fuels, is fundamentally out of alignment with the earth’s ecosystem. This urgent “systems” problem requires U.S. leadership. Unfortunately American management is being asked to address a problem with long-term consequences and ill-quantifiable complexities, when it usually emphasizes short-term results that are easily measurable.

W. Edwards Deming has shown American management the way out of crisis before, and through his system of profound knowledge he can guide us out of the crisis that is climate change. Profound knowledge provides a framework that focuses on four essential aspects of industrialization to address the fundamental causes of climate change – (1) viewing business from a systems perspective, (2) understanding variation, (3) the importance of new knowledge, and (4) an appreciation of human psychology. The business leader of today needs to be thinking of her enterprise as a system inextricably linked to and dependent upon the ecosystem. Climate change has made that link undeniable. Deming's profound knowledge not only helps management recognize that link and but also points directly to solutions such as clean renewable energy, closed loop recycling and biomimicry.

Footnotes

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THE EFFECTS OF REWARDS PROGRAM MEMBERSHIP ON BRAND LOYALTY IN THE U.S. CONSUMER CREDIT CARD INDUSTRY

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Abstract

The primary loyalty-generation method in the U.S. consumer credit card industry has become the reward program. This paper argues that the majority of reward program implementations do not result in sustainable cardmember loyalty. Four principle issues are discussed: over-saturation in the market, loyalty to the rewards program vs. the brand, the short-term structure of offers, and the lack of demonstration that increased billings are equivalent to loyalty.

Introduction

In the last decade, empirical studies have shown that individuals have come to view rewards programs as an expected value-added service of most consumer credit card products.[1] Getting something of tangible financial worth in return for high-spending habits has become the cultural norm in the United States. Companies have capitalized on this trend by saturating the market with creative, aspirational and even experiential rewards in the hopes of positively influencing brand loyalty to respective plastic products. Additionally, rewards offers almost always have a quick turnover rate due to the popular industry goal of establishing "stickiness". To reach this goal, it is assumed that high offer turnover creates frequent new content which drives constant traffic to rewards portfolio interfaces. This, in turn, establishes a rewards program as being "sticky". In other words, it is believed to make the consumer "stick" or become loyal to a product. Consequently, it is believed that the individual card holder will place more of his or her charges on one brand of card increasing billings for the company.

There are four important questions that must be asked when determining the effectiveness of the above credit card industry tactics in improving brand loyalty. First, does the current over-saturation of rewards programs in the U.S. industry stifle the added value proposition of individual programs? In order for a rewards program to be effective in establishing brand loyalty, it must catch consumer interest. If the competition is doing something almost identical, how will one brand's program be distinguished from another? Secondly, does frequent and constant use of a rewards program by a consumer equate to card brand loyalty or just loyalty to the rewards program itself? Thirdly, does the fact that offers are primarily short-term affect long-term interest in a brand? Lastly, loyalty is oftentimes confused with increased billings in the credit card industry. Do increased billings necessarily denote that a consumer is more loyal to one card over another?

The overall consensus of this paper is that consumer credit card rewards programs lead to increased loyalty but only to the rewards programs themselves. They generally do not result in a stronger faithfulness to a card brand despite the fact that they may result in short-term increased billings. Additionally, rewards programs have saturated the market and will soon reach a maturity point at which card companies can no longer increase the value and variety of rewards they distribute to consumers while remaining profitable. At this point, companies will have to focus on other business differentiators to distinguish themselves from the competition. These business differentiators can include exceptional service, low annual percentage rates and convenience of use. With so many choices for consumers today, brand loyalty is critical to the health of a card company. Rewards programs may provide a short-term solution to repetitive card usage but they do not answer the long-term question of how to hold onto customers and limit the amount and frequency of attrition.

Background Information

Informal loyalty tactics have been around for years in the small-business area. For example, local merchants and restaurateurs for ages “have understood intuitively the broader strategic purpose behind an effective rewards program, making a point to get to know their best customers and rewarding them with special services and attention”.[2] These small businesses caught on early to the realization that delivering increased value to high-spending customers tends to turn them into more frequent customers. Rewards programs got noticed by larger corporations around the world when in the early 1970s European researchers studying business-to-business marketing realized that loyal customers tended to give suppliers a greater share of their business. In other words, loyal customers were deemed to be more profitable to a firm. Empirical research done around this time also determined that it costs much more to entice a new customer to do business than to get a current one to repeat purchase.[3] Over time studies have shown that, “loyal customers even become business builders: buying more, paying premium prices, and bringing in new customers through referrals”.[4] The uncovering of this notion began a new marketing philosophy focused on loyalty building for many industries, including consumer credit cards.

Soon after this realization in the early 1970s, industries ranging from airlines and hotels to financial institutions and credit card companies began establishing their own versions of rewards programs in an attempt to lure customers back over time. The goal of these programs was to “establish a higher level of customer retention in profitable segments by providing increased satisfaction and value to certain customers”.[5] However, it was much more difficult for these larger companies to determine who their best customers were. At a small organization, face-to-face interactions with clients provide solid first-person evidence of buyers who make a significant contribution to a business’ profit. Larger scale businesses such as credit card companies, with oftentimes hundreds of thousands of clients, lack the ability to personally determine individual customer value; as a result, they have to rely on market research and databases to conclude to whom to extend the richest rewards. The latter method has been shown to cause the accuracy of identifying valuable clients to fall precipitously.[6]

Credit card companies began to use their records of spend data over time to determine who their most important customers (aka highest spenders) were. They subsequently targeted their early rewards programs, generally designed around accumulating points with an airline co-brand, specifically toward these individuals. This approach generated buzz amongst cardmembers of all wealth levels and soon even low and mid-level spenders were asking how they too could sign up to earn points towards reward redemption. According to the opinion of Rajive Johri, president and director of First National Bank who has over a decade of experience in the consumer credit card field, “People love to earn rewards on everything. It’s human psychology”.[7] Out of this demand by cardmembers of varying spend-levels was born the tiered approach to credit card rewards which is still considered a best practice in reward programs today.

The basis behind the tiered approach is the logic that “not all cardmembers are created equal. In order to maximize profitability, a company must give its best value to its best customers”.[8] Tiered rewarding creates an aspirational effect where the value of the rewards reflects the amount spent on a card product. For example, a customer who spends $5,000 a year and who earns 1 point for every dollar charged may be able to cash in his or her points at the end of a year for a $50 gift certificate to their favorite retailer. However, a customer who spends upwards of $100,000 a year and who earns 2 points for every dollar charged could possibly redeem their points for a first class domestic airline ticket.

The aspiration effect comes into play via strategically-worded marketing communications. Lower spenders are made aware that if they spend $XX amount more per year they could be eligible for richer rewards and examples of luxurious items and experiences are dangled in front of the consumers’ eyes.

Higher spenders are recognized for their value to the company and are solicited with a constant barrage of premium offers and unique experiences tailored to meet their elite lifestyle. According to the professional opinion of Steve Georgeou, President of Geocom Inc., a New York-based consultancy, “the biggest violator of the profitability rule is the credit card that gives the same benefits, service and communication to customers whether they are profitable or unprofitable”.[9] It is this widely-held belief that has shaped the way rewards programs are built today across the United States. For example, Merrill Lynch delivers rewards on its Merrill+ card that grow in value parallel with cardholder spend; cardmembers who spend $20,000 per year receive perks that include double points on Merrill Cruises, a free transatlantic companion ticket on British Airways and complimentary spa services and special room rates at hotels worldwide. Customers who spend from $20,000 to $50,000 annually receive these basic rewards plus an additional seven more, including an international business-class companion ticket on Delta Airlines.[10] This form of incremental rewards through tiering is thought to induce cardmembers to spend more on one card rather than spread purchases on multiple brands of plastic.

The State of Credit Card Rewards Programs

Over the thirty plus year lifespan that credit cards have enjoyed, the number of cards in force in the U.S. market has exploded and the need for differentiation in this extremely competitive marketplace has become critical. As a result, rewards programs now generate the biggest expense consuming card companies’ revenue. Diamond Management & Technology Consultants, Inc. of Chicago estimates that 44% of interchange fees paid by merchants go towards financing rewards programs.[11] The race to become what those in the industry refer to as “top of wallet” (meaning the first card consumers reach for when making purchases) has reached a furious pace.

Market Saturation

Research has shown that sixty to seventy percent of credit cards now offer some type of rewards program, a number which is more than double the amount from five years ago.[12] This number is growing every day as consumers demand richer and richer rewards for their spending. Rewards programs which were once considered an easy way to differentiate the value of holding one card over another now must be built in to the portfolio of every new card to ensure consumer interest and success.

Trends

Consumers have quickly learned that it’s relatively easy to game the field of credit card rewards by keeping a wallet full of plastic products. In 2004, there were 185 million credit card holders in the U.S. who each carried an average of four cards.[13] Market savvy cardmembers noticed that they could “use one card at the grocery store and another at the gasoline pump, depending on which card earned the most rewards at a particular merchant”.[14] To keep consumers choosing one card over another, companies have developed several new means to up the ante of rewards programs and bribe customers to use only one brand for repetitive purchases. These include “making rewards programs more flexible, offering double or even triple points so rewards can accumulate faster, creating merchant-specific rewards cards and increased co-branding, allowing consumers to choose or customize their own rewards, and offering ‘experiential’ rewards”.[15] This wider breadth of complex reward program design and implementation has extensively altered the industry’s loyalty tactics.

Designing rewards programs to include more variety has been a trend in the credit card business which reflects the industry progression toward trying to satisfy a wider range of cardmembers. For example, the Citibank American Airlines AAdvantage card originated over twenty years ago by providing consumers the opportunity to accrue one point for every dollar spent with the product. Points could then be turned in by the consumer for flights on any American Airlines route (the number of points required to book depended on the length and popularity of AA routes). Today however, Citi AAdvantage card holders can not only use their rewards points to book airline tickets, they can also redeem points for magazine subscriptions, hotel stays and even restaurant meals. Additionally, higher-spending Citi AAdvantage members can enjoy savings ranging from ten to fifty percent on popular lodging properties as well as free companion tickets on many American Airlines flights.

Not only are card distributors coming up with more options for ways consumers can spend their rewards points but many companies are even moving toward giving card members more power when it comes to designing their own rewards program. For example, the Chase Freedom card lets consumers choose whether they want three percent cash back or triple rewards points on purchases in the top three retail categories in which they spend the most in a one month period. According to the opinion of Rick Ferguson, editorial director of Colloquy, a loyalty-research firm which does work with the credit card industry, this new flexibility trend, “might be the first of a new iteration of products in the loyalty industry in general, where we see card issuers start to cede more control to consumers”.[16]

Experiential rewards are also becoming an essential part of many card rewards portfolios. For example, American Express offers its issuing partners such as Bank of America and Citibank a roster of over 20 experiences in which card members can partake. For example, consumers can sign up to be a fighter pilot for a day, drive a stock car, host a wine-tasting with a world-renowned sommelier or even host a professional sports game as a sports announcer. These experiences are marketed as once in a lifetime activities and are meant to be exclusive opportunities for affluent cardmembers who most likely already have all the material goods they desire. For lower spending cardmembers, experiential activities are highlighted in marketing communications not so much to boost redemption of the activities but to generate excitement about what a card can give an individual if they spend enough on one product. For acquisition marketing, experiences are touted as being unique to a specific brand of card. A major problem for credit card companies in recent years has been ubiquity. Studies have shown that the problem of ubiquity “resides not only in the proliferation of loyalty programs in the marketplace, but also in the stunning sameness of the reward offerings in most programs”.[17] In an industry where practically anything can be purchased with rewards points, one of the last ways of differentiating the rewards program of one card versus another is to feature experiences which are difficult to plan and are hard to find available anywhere else. Experiences are the most difficult reward for a competitor to duplicate and are instrumental in capturing cardmember attention and reducing attrition.

In addition to luring customers into spending more with lavish rewards that are frequently updated to stay current with trends, credit card companies are also making it nearly impossible to exit a rewards program without enduring a monetary loss of some amount. This tactic involves taking advantage of switching costs, “the onetime costs that customers associate with the process of switching from one provider to another”[18]. Since empirical research has shown that there is evidence that switching costs have a significant impact on repeat choice behavior, companies have caught on to creating barriers to exit.[19] If a consumer wants to quit a card product, he or she will have the difficult task of identifying a reward they wish to fulfill in the exact denomination of their rewards points balance. If this is not possible, he or she will lose quantifiable financial value. Depending on the type of card, rewards points will usually be worth from a quarter of a percent to two percent of total spend – a number which can add up if a consumer is a heavy card user. Even if the consumer decides to redeem all their points on an item or experience, they will most likely be left with some remaining number of unused points. These points must be abandoned in order to switch card products – a negative outcome which acts as a barrier to exit for many customers.

In general, business practice over the years has logically demonstrated that are three key best practices guidelines that sum up the above state of the credit card industry. These are: 1) Be first to market; 2) Offer real value; and 3) Everyday spend matters.[20] Arriving first on the scene with a successful new rewards product or plan is what every credit card issuer is after. It is much easier to be the originator than to try and catch up with the competition by copying a successful idea. Offering real value is a second best practice in today's credit card rewards programs. Consumers cannot be lured to spend more on a specific card if the rewards are not relevant to the audience. Rewards must bring something to the table; program results from various issuers have shown that in order to succeed they must have "real appeal to life stage or be lifestyle-focused".[21] Thirdly, it is of the opinion of industry experts that programs created for the purposes of increasing loyalty must "achieve critical mass in the eyes of consumers".[22] More specifically, offering rewards related to small independent merchants or marketing experiences that can only be redeemed geographically far from major metropolitan areas or tourist destinations are doomed to long-term failure. Name-brand rewards or cash back for purchases at national retailers are much more relevant to the primary demographic of most card companies.

Research Question

The question posed in this paper is whether or not there are effects of rewards program membership on brand loyalty in the U.S. consumer credit card industry. Loyalty is a critical topic in today's card industry as more and more companies face the realization that in service situations, studies have shown that exclusive loyalty is confined to a small number of customers[23]. For every cardmember that pulls out a different brand of plastic to make a purchase, a competing company loses the chance to profit on a percentage of that spend. Loyalty is a powerful form of the customer-business relationship which logically "can affect customers' decisions to repurchase a service and their decisions about how much to use the service"[24]. Loyalty can make or break a credit card business in the long-run.

Existing research tackles the question of the effectiveness of loyalty programs in general but no paper has focused specifically on the rewards programs of the U.S. credit card industry which are an extraordinarily expensive attempt to garner consumer loyalty. An abundance of data was readily available as it relates to the types of rewards programs in the consumer market today and in the past and their effect on consumer spending. Therefore, it was natural to put together existing data on the effectiveness of loyalty programs with data as it relates directly to the consumer credit card industry in the United States. The result is a greater understanding of the effect of rewards programs on credit card holder behavior – including the likelihood of a rewards program increasing brand loyalty.

As was mentioned in the introduction, there are four essential questions that arose through the research that was conducted for this paper. First, does the over-saturation of rewards programs in the U.S. industry stifle the added value proposition of the program? Secondly, does frequent and constant use of a rewards program by a consumer equate to card brand loyalty or just loyalty to the rewards program itself? Thirdly, does the fact that offers are primarily short-term affect long-term interest in a brand? Lastly, do increased billings necessarily indicate that a consumer is more loyal to one card over another?

The available literature indicates that the over-saturation of rewards programs in the industry does stifle the added value proposition of credit cards. With the overabundance of rewards-based credit card choices in the market, consumers have been trained to search primarily for cards that provide incremental value. Furthermore, empirical research highlights the fact that consumers are surrounded with mass advertising that emphasizes rewards and recognition benefits.[25] As a result of consumers being better trained than ever at searching for added value combined with the fact that they can find relatively similar rewards with a wide variety of card providers means that rewards programs that were once a clear competitive differentiator are no longer such. This, in turn, weakens the ability of rewards programs to generate loyalty to a card product. In her article, *Looking Beyond the Physical Card*, Maria Bruno-Britz sums up the over-saturation in the credit card rewards program industry with two simple rhetorical questions: How many more points does a person want, and how many cards do they want their points spread across?[26] Consumers are bombarded with chances to accumulate points and rewards on a spectrum of products via direct mail, television, online, print ads, and even non-traditional guerilla marketing methods. If the public is aware that the majority of plastic brands have a similar form of rewards programs then these programs cannot be a strong producer of loyalty. Unique experiences help to decrease the sameness of rewards programs across the industry; however, these aspirational activities are only obtainable by a fragment of the population and are therefore less valuable to the majority of the cardmember demographic.

The second question asks, does frequent and constant use of a rewards program by a consumer equate to card brand loyalty or just loyalty to the rewards program itself? The research conducted for this paper indicates that the majority of the time rewards programs create loyalty for themselves and not the card brand. Psychologists have used behavioral learning theory to suggest that the type of incentives offered by many customer loyalty schemes induce loyalty to the program rather than the core product or service. The studies showed that this is due to the fact that the incentive and not the product becomes the primary reward.[27] Establishing cardmembers' loyalty to a rewards program is dangerous for any credit card company. Chances are that the program will one day need to be restructured in one form or another and this could mean the loss of cardmembers who were loyal specifically to that program.

The industry needs to be extremely cautious that they tie in their rewards program directly with their card product—a task which most companies today fail to accomplish. One exception is the General Motors HSBC card which allows participants to build up points only towards the purchase of a new General Motors vehicle. This is a more desirable rewards set-up since, as Grahame R. Dowling and Mark Uncles sum up their research findings in their paper, *Do Customer Loyalty Programs Really Work?*, "the creation of a point of difference reinforces the longer-term value proposition in the product itself". [28] In this case, the reward is tied immediately to the card product. If the program is successful and cardmembers become loyal to the rewards generation, then loyalty is also built to the card product because they are one and the same – General Motors. Another example of this type of program is The Royal Caribbean cruise line which has partnered with Visa to create a line of Royal Caribbean-related experiential rewards for cardmembers who cruise frequently. This is a best practice that is one of the few ways card companies can enjoy increased loyalty to their brand through the implementation of a rewards program. The Citibank American Airlines AAdvantage card and other airline co-branded products don't fall into this category because the points accumulated on these products can be used for a wide variety of product redemptions – not just flights on the airline itself.

The third question asks whether the fact that reward program offerings are primarily short-term affect long-term interest in the brand. According to the secondary research conducted for this paper, the answer is yes. Credit card companies strive to make their rewards program content constantly refreshed with new offerings that follow public trends. As was stated in the introduction, it is believed by these companies that such constant change drives consumers to pay attention and become constantly involved in a card's program resulting in "stickiness," also perceived by the industry as loyalty. However, as an article on the topic of short-term rewards in the Harvard Business Review logically states, "the full potential of value sharing through rewards is realized only when customers change their habits to become sustainably loyal. And that shift occurs only when the company has developed and communicated a proposition that clearly has long-term benefits for the consumer".[29]

The short-term trend in today's credit card rewards programs does not provide long-term benefits for cardmembers. In fact, they do just the opposite. Many of the most financially valuable rewards on the market at the time of this writing are good only for a limited time. According to The Wall Street Journal, card companies currently have "a spat of eye-opening teaser offers – short-term deals designed to entice [consumers] to switch to their card".[30] For example, Citibank is offering consumers who enroll in their Elite Level PremierPass Card up to 25,000 bonus points after $500 in purchases are made within two months.[31] This type of cardmember baiting is not exclusive to Citibank. JP Morgan Chase, Discover Financial Services and other major industry players are also offering big rewards up front with little or no long-term value. For a company to financially benefit from distributing such high-value rewards at the beginning of their relationship with a customer, they must retain that customer for the long-term. Unfortunately, these baiting techniques are resulting in polygamous loyalty; that is there are no long-run propensities, only next purchase probabilities.[32] It is more valuable for cardmembers to sign up for one card, get the bonus points, redeem them, and then move along to another card than it is for them to stay with one issuer for the long-term. In their paper, *Loyalty Trends for the Twenty-First Century*, Michael T. Capizzi and Rick Furguson share their opinion that in today's market, "consumer value-detectors have never been sharper. Hollow value propositions will be exposed within months of launch. Results will never materialize".[33] The short-term structure of many rewards programs creates these hollow value propositions. Offers are constantly switching and it's extremely difficult for consumers to determine the core long-term value of a rewards platform. Although the constantly changing offers may, in fact, create "stickiness" toward the marketing touch-points of a rewards program (e.g. a program website), the uncertainty of what can be expected in the future inhibits a long-term relationship with a brand.

The fourth question is do increased billings necessarily denote that a consumer is more loyal to one card over another? Many issuers claim that their rewards program members increase billings for the company. For example, American Express states that their cardmembers who are enrolled in rewards programs spend five times more than those not enrolled.[34] The problem arises when issuers assume that increased billings mean that customers are loyal to their card brand, which may not be the case. According to researchers who have studied the 80/20 rule and how it relates to loyalty, "there is reliable empirical evidence to suggest that many/most heavy users will be multi-brand loyal for a wide range of products and services. That is, a company's most profitable customers will most probably be the most profitable customers of your competition as well".[35] In other words, higher billings and increased loyalty can be mutually exclusive. It is highly probable that a card issuer's most valuable clients are not loyal to the brand. They may enjoy the rewards program and spend more than the average consumer, however this does not in all cases equate to loyalty.

This paper has discussed the multiple ways in which the credit card industry is not achieving long-term client loyalty to plastic products. Opponents to this point of view may claim that loyalty is not important in the credit card industry. They may state that the only important factor about rewards programs is that they increase usage levels which increase company revenue through merchant interchange rates and consumer late fees. This may be true in some cases; however, what happens when rewards programs mature and then begin their decline? How will card companies prevent attrition if there is no brand loyalty? The rewards program arena has begun to demonstrate the telltale signs of a mature market. After decades of double digit growth, studies have shown that the market has begun to show signs of fatigue from both consumers and practitioners.[36] Annual reports by card issuers have demonstrated that they are approaching the maximum they can spend on the implementation of rewards programs.[37] Soon, revenue generated by these programs will not be enough to increase the value and variety of the rewards. Eventually, consumers will be able to purchase anything with rewards points. Points will act identical to cash and there will be no unique differentiators left between the rewards programs of different issuers. Additionally, if rewards programs augment usage levels, industry experts are of the opinion that cardmembers will be increasingly exposed to the complete service experience of a company, including negative experiences which may cause clients to switch to the competition.[38]

To secure loyal customers for their future, card companies must realize that loyalty needs to be established through means other than rewards. If a company serves its customers well and meets their expectations, then natural loyalty will result. And it will logically follow that "attempts to 'buy' more – the functional equivalent of paying someone to go on a second date – might actually backfire.[39] Companies need to look for ways to stimulate the growth of natural loyalty rather than taking shortcuts that focus only on behavior.

According to a multi-company empirical study, strong evidence was shown of consumers' behavioral and purchase intentions being influenced by service quality. This study demonstrated "that companies offering superior service achieve higher-than-normal market share growth".[40] An example of a credit card product which is using methods other than rewards points to foster loyalty is American Express' well-publicized black card – the Centurion Card. This premium and invitation-only product is for American Express customers who spend more than $100,000 a year on Amex plastic. The idea for this product was a direct result of the 80/20 rule and the evidence provided in industry studies that it's more profitable to hold onto customers than to focus on generating new ones. The Centurion Card offers a host of rewards; however, these perks are not the primary attempt by American Express at loyalty-generation for this product. Exceptional and best-in market service is the tactic that the company uses on this portfolio to establish loyalty. Centurion customers have a personal concierge on-call 24/7 and 365 days a year to assist with anything a cardmember requires. Personal needs such as a last minute reservation at a fully-booked restaurant, re-booking after a flight cancellation in the middle of the night on the other side of the world, even dry cleaning pick up can be achieved with one simple call. Alfred F. Kelly, Amex's Group President for Consumer and Small-Business service states that "[the company] is seeing a lot of people who value service more than price".[41] This corporate logic is an example of how to build solid and long-term loyalty to a card product without relying on increased billings generated by short-term rewards. To ensure their hold on their customers for the extended future, card companies must remember that relationships and loyalty are not always just about points or miles. Research has shown that companies need to "offer psychic rewards, not just physical ones" and give their clients "something of value that isn't a coupon in disguise".[42] In focusing on psychic rewards such as superior service (as in the Centurion Card example), convenience of use, and strength of brand recognition, a company's card business will be better poised to survive the backlash of the problems associated with rewards programs discussed in this paper.

Conclusion

This paper has referenced existing publications on the effectiveness of loyalty programs and tailored it specifically to the domestic credit card market. The result is an informative study on the effects of rewards program membership on brand loyalty in the U.S. consumer credit card industry. The paper argues that the efforts of credit card companies to establish rewards programs, in general, do not result in increased cardmember loyalty. There are exceptional programs which focus program rewards on the brand itself (General Motors and Royal Caribbean), but these examples are few and far between. Four principle issues regarding rewards programs were discussed: the over-saturation of the market, loyalty to the rewards program itself, the short-term structure of offers, and the lack of demonstration that increased billings are equivalent to loyalty. In each area, was arguments were presented to illustrate how each issue detracts from the ability of rewards programs to generate customer loyalty to the card brand. The paper additionally highlighted more effective ways in which card businesses can foster long-term loyalty. These include focusing on building natural loyalty through premier service and exceptional product performance.

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BUILDING EAST-WEST BRIDGES OF QUALITY AND PEACE:
How The Economic Principles Of Muhammed Yunus, Banker To The Poor, Extend Dr. Deming's Theory

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Abstract: Muhammed Yunus, Grameen Bank founder/Nobel-peace-prize-winning, real-world, system-optimizing economist (Banker for the Poor, 1999): (1) develops poor entrepreneurs; (2) extends Dr. Deming's theory; (3) unveils Western economic theory; and (4) inspires our six cross-cultural universal peace principles--real education, compassion, love, quality, non-violence, development--for East-West bridge-building, personal development, and interpersonal relations.

Introduction. Our paper explains why Yunus' work extends Dr. Deming's theory, serves as a path to structurally-realistic theory, and exposes theoretically-obsolete (structurally-unrealistic), popular, elite-pleasing beliefs, propositions, and myths that act as barriers to the daily practice of the six universal peace principles (UPPs)--real education, quality, compassion, love, non-violence, and development--that we propose as the foundation stones for both East-West peace and peace in the backyards of our own nation's communities. It explains why Yunus' bank-for-the-poor micro-finance loan work and theory of system-optimizing economics does more than extend Dr. Edwards Deming's theory of quality, profound knowledge, and system optimization. We use UPPs to extend and begin to transform their system-optimizing theories into a cross-cultural, potentially-universal theory of structurally-realistic economics (SRE) that inspires win-win-principled individuals, organizations, and nations to daily practice the six peace- (not-war) -producing UPPs, the first and most important of which is real education. We define it as cultural, social, and ecological as well as economic learning needed to accumulate profound knowledge and produce produce peace. It's based on or developed by: (a) choosing independent, critical, creative, and system-optimization thinking that goes way beyond mass education (teaching/learning aimed at memorizing textbooks to get high test scores, more school funding, and the public image/illusion that students who score well on tests have the skills they need to effectively run households, businesses, non-profit organizations, governments, and foreign policy), textbook economics, and apathy about our elite/corporate-controlled, anti-democratic institutions; (b) respect for other human beings and species, ecology, future generations, and life itself; (c) seeing the world, one's self, and others both as it/we really are (choosing truth over ideology, lies, myths, false beliefs) and could be; (d) choosing grassroots democracy over highly-centralized government bureaucracy and politics that doesn't necessarily or typically represent the interests of poor/working people; (e) awareness of our urgent cultural, economic, social, and ecological need to invert war-profiteering, win-lose capitalism; (f) speaking truth to power--challenging others to be more win-win, do good, and the right thing; and (g) readiness to forgive, heal, and develop meaningful relationships with all others--producing peace (not war), becoming one's best possible, most intellectual and spiritual self while helping others do the same by the daily practice of our six universal peace principles. SRE helps us to fight poverty by analyzing competition, conflict, and cooperation--anti-developmental vs. pro-developmental individual, structural, and ecological effects of win-lose transactional vs. win-win interpersonal relationships between win-lose vs. win-win-principled individuals. It also helps us to realize why everyone needs to daily practice our seven universal principles (rather than mass education, over-priced, low-quality outputs, apathy, hate, violence, anti-development, and war) to develop meaningful interpersonal relationships in increasingly more parts of our work and lives.

Going Behind The Veil Of Economics. Current textbook economics theorists are structurally-unrealistic in four ways. One is their psychological focus. They pretend to explain a structural (socio-economic) or interpersonal phenomenon (market behavior) with an abstract transactional focus on how an anti-social, system-exploiting, "competitive" individual relates to money (makes, spends, saves, invests it) rather than how real-life buyers and sellers can produce peace by developing themselves and their relationships with others. They assume human beings: (a, b) are purely materialistic (lack a mind, spirit, soul) and don't vary in qualitative (win-lose vs. win-win) types, (c) exchange, trade, or transact on level playing fields, and (d, e) don't make momentary choices between win-lose vs. win-win economic principles or abuse their Structural Opportunity To Exploit another. More specifically, they unrealistically assume that there's only one qualitative type of decision-maker--an "amoral economic man" (AEM) who allegedly only needs to care about his own "rational" (practical/anti-social) decision-making equilibrium, the relationship between his income/money/budget and his insatiable greed for more consumption on the highest possible indifference curve (the textbook derivation of individual demand); he allegedly doesn't need to care about the needs and interests of others or the quality of his work, relationships with God/spirituality, other people, groups/organizations, community, ecology, society, and the economy as long-run sustainable systems. A second way is that typical textbook theorists arbitrarily divide economic theory into microeconomics and macroeconomics rather than give students, economists, citizens, and policy-makers structurally-realistic theory that connects the two and analyzes the individual, structural, and ecological effects of interpersonal relationships between win-lose- vs. win-win-principled decision-makers, as our Power Structure Grid does. A third way is that their microeconomics includes propositions that are misleading (e.g., "markets are both economically efficient and just," "banks and other businesses are competitive, non-discriminatory, and non-elitist," "Adam Smith's invisible-hand takes care of both non-poor and poor people," "conflict between win-lose vs. win-win principles doesn't matter"). A fourth way is that their macroeconomics also includes propositions that are misleading (e.g., "economic growth is always win-win/pro-developmental," "all boats rise in the harbor with a rising tide," "one size fits all"). Both Deming and Yunus explain why we need better, system-optimizing economics to help all people of good will to bridge and overcome the over-reported cultural and economic differences between East and West and our own under-reported character differences between our lesser or materialistic selves and our best possible, more social and spiritual selves.

Textbook theorists' love affair with the elite and worshipping of a purely heartless, soulless, materialistic "amoral economic man" (AEM) who allegedly is the only type of decision-maker that normatively should and does exist) is a key barrier to overcome if we, following Dr. Deming, want to get America out of its management/leadership crisis. Because many Americans sadly hide behind AEM's veil or mask, we are like him--win-lose in effect, intended or not. We're: (a) mass educated (lack the critical-thinking, management, and leadership skills to be a structural realist--one who develops those skills in order to pursue truth and wisdom as well as practice our six culturally-universal peace principles), (b) economically liberal (don't want or seem to be--contrary to religious and spiritual affiliations/claims--accountable to God nor man for the effects of our behavior/relationships on others), (c) politically liberal (publicly claim to support democracy and oppose a big federal government but privately take subsidies, tax breaks, privileges, no-bid contracts at the public trough), (d) socially-conservative (claim to support the American Dream but actually don't because we're scared to be price- and quality-competitive with well-educated, well-capitalized competitors on level playing fields), (e) narrow-minded (less than humanistic), (f) arrogant (resource hogs and bullies), (g) selfish/greedy (vulgarly treat practicality, efficiency, and profit as gods), (h) nominally competitive (but typically produce conflicting win-lose or lose-lose effects), (i) intellectually-challenged (either don't understand or deny the Adam Smith Problem or how his "invisible hand" violates the textbook term, fallacy-of-composition), (j) socially-insensitive (deny/ignore the sources of mass education, poverty, hunger, subsistence wages, corporate control of markets and politics, class conflict, or lower life chances of the poor), (k) dishonorable (without integrity--we pass the external costs of our decisions onto others), and (l) spiritually absent (either behave as Adam Smith's savage sans conscience or, like his impartial spectator, have a conscience but use it sparingly). In contrast, a structural realist uses his real education to develop SRE to understand, heal, and develop meaningful interpersonal (structural/social relationships) with real-world qualitative types of decision-makers.

In sharp contrast, both Deming and Yunus urge all social scientists, business managers, and policy-makers to develop and use system-optimizing SRE that's both economic and social in goal, effect, and function. In our last Deming Institute paper we argued that the failure of typical textbook economics theory to truly be both economic and social in effect created what we called "Deming's Sugar-Beet Error": Textbook economics authors didn't prepare him/us to see that farm input/output markets typically are un-level playing fields controlled by win-lose-principled individuals, speculators, and corporations who typically abuse (e.g., at harvest) their Structural Opportunity to Exploit. Like Deming's work, Yunus' work challenges Western economic theorists to replace their neo-classical, psychological, point-to-point equilibrium economic theory by analyzing quality of outputs, the quality of interpersonal relationships between different classes and types of people, and inequity or anti-development.

Selling The Soul Of Economics: Insights From Deming's Error. The Deming Error is a positive serendipity that partially stems from three major economic errors. One is the over-"Samuelsonization" of economics textbooks by typical authors who ideologically promote "guns/war" and "butter/consumption" in a post-Schumacher era. Since they typically ignore E. F. Schumacher's critique of orthodox economics, they fail, in effect, to theoretically add/integrate his concepts of moderation (enough) and meta-economics (the decision-maker's thinking about his relationship to himself, other people, and the ecological system) and to let go of "culturally moral" (elite-sanctioned) anti-developmental/win-lose beliefs such as "greed is good," "unlimited economic growth" and "survival-of-the-fittest." Contrary to Smith's own warning in the 6th edition of his 1759 first book, Theory of Moral Sentiments--not to corrupt the moral sentiments of society by worshipping or admiring the rich and the powerful--their second major error is the typical authors' elite-serving tradition of re-selling the soul of economics. They do so by re-institutionalizing Adam Smith's fallacy-of-composition-violating Lie, "invisible hand"--that competition is socio-economic (directly economic in its goal and unintentionally and automatically social in its effect or function). Their second error triggers a third--the failure as social science theorists to develop a school of peace within economics to help our top policy-makers let go of their fear-mongering and war-profiteering and, instead, to daily practice our six universal principles to build bridges of peace within society and between Eastern and Western people. We need to learn, work, trade, and live in community by being able to analyze and minimize conflict and to cooperate as well as compete with each other. Their textbook production possibilities curve (PPC) tells us about conflict over scarce resources but not how to develop meaningful interpersonal relationships to help us cooperate with, exchange, or efficiently recycle products or co-create higher-quality, lower-priced inputs and outputs. These errors unnecessarily keep capitalism vulgarly economic only and typically win-lose in its individual, structural, and ecological effects.

In contrast, neither Deming nor Yunus re-sell the soul of economics--as if economics is totally or only materialistic and we can be blind to poverty, hunger, morality, responsibility to needy others, community, ecology, society as a whole, or even the economy as a whole. They give us both economic and social concepts and principles. They serve as mentors/role models who set a precedent and example for both Eastern and Western theorists, economists, leaders and ordinary citizens to build bridges of peace and good will around the world. Whereas Deming's theory helps design/re-design organizations that address the needs of their stakeholders rather than those of their shareholders, Yunus demonstrates cautious trustfulness that transforms qualified working poor into shareholding entrepreneurs who own and borrow from their own bank. Yunus challenges both Eastern and Western bankers to use micro-finance loans for the poor--to make them visible by giving them an entrepreneurial opportunity to change their class and their life within the private informal sector of the economy and to reject charity and public works.

Organization. Space limitations require us to only briefly explain the failure of Western economic theory, Deming's principles of quality/profound knowledge/system optimization, and describe eleven of what we call true socio-economic universal principles that we've mined and developed from the detailed stories of Yunus' book about his process of organizing and running Grameen Bank to help the poor. Except for Dr. Deming's position against competition, those principles are logically consistent with Dr. Deming's management and economic principles. Both authors attack Western managers' habit/practice of short-run profit maximization as a violation of continuous qualitative improvement and promote a higher quality of life for the working poor or "losers' of win-lose capitalism; they differ, however, on the means in that Deming favors good secure private jobs for the poor and Yunus favors micro-finance loans to help women and poor workers/suppliers to transform themselves into entrepreneurs.

Western Economic Theorists' Blindness To Anti-Developmental Economic Growth. Our original concern about structurally-unrealistic economic theory was expressed in our 1974 article, "What Is the Definition of Development," which asserts that many economists and other social scientists are poor or careless conceptualists, theorists, or policy-makers who treat the concepts of development and economic growth as synonymous ***(1)***. Their use of the oxymoronic term, "economic development," ignores development's conceptual opposite, anti-development (win-lose or lose-lose effects), and mixes/confuses the meaning of growth, which is impersonal and quantitative, with that of development, which is interpersonal and qualitative. The latter concept necessarily refers to a win-win process in which increasingly more individuals within a community or society become better off without anyone being harmed or made worse off--there's a requirement that no win-lose or lose-lose effect occurs.

Reflections On A Structurally-Realistic View Of Poverty. Using our SRE distinctions (above), we can see/conceptualize poverty as an accumulated result of one or more win-lose-principled individuals, organizations, or nations who abuse their material-based power (MBP) to gain or profit unfairly, if not repetitively, at the expense of mass-educated poor people (with much less MBP), the economy and society, organizations truly seeking long-run sustainability, and peace-based communities (certified as non-violent and poverty-free). We can also see poverty or being poor as an effect or condition that is predictably produced and maintained by markets or other so-called socio-economic institutions that are rigged, structured, or organized to enable the "powers that be" to be big, regular "winners" who abuse their own (or other people's) un-level playing fields to accumulate MBP from their victims--so-called "losers" such as unorganized working poor ***(2)***. Smith's lie was that markets are level playing fields, price-competitive, and always good for society, as if they are both economically efficient and economically just, win-win, or pro-developmental. Meanwhile, scientific studies and real-world news document record-level greed, anti-development, and gaps between the classes, many of which result from easy, low-cost loans or government subsidies for the rich and corporations and high interest rates or no loans at all for hard-working but poor entrepreneurs.

Deming's Theory Of Quality, Profound Knowledge, And System Optimization. In the Preface of The New Economics (1993) Deming argues for a necessary transformation into a new style of management and, as we presented in our first Deming Institute paper, a set of ten economic principles that help us go beyond violent, anti-developmental, and pro-war Western beliefs that keep our nation in crisis ***(3)*** . He points out that the route to take is profound knowledge for the leadership of the transformation, which is not automatic. Rather, he states, it must be led. He next points out that profound knowledge consists of four parts, all related to each other: (a) appreciation of a system; (b) knowledge about variation; (c) theory of knowledge; and (d) psychology--of individuals, society, and change. He asserts that the system of profound knowledge provides a lens through which we develop and use organizations to system-optimize across time rather than short-run profit-maximize. He adds that his 14 Points of Management in industry, government, and education follow naturally--without what we call private or public subordination of the poor--in an organization guided by profound knowledge. He also hits the theme of this paper--socio-economic system optimization as a path to world peace--by stating that the transformation will lead to adoption of performance relative to the aim of the system. Individual components--teams, departments, divisions, plants--will not compete. Instead, each area will make choices directed at optimal benefit for the whole organization [or system]. An organization that seeks profound knowledge, he says, is already poised for the transformation into system optimization. Like Yunus, he observes that we have grown up on a climate of "winner-take-all competition" between people, teams, departments, divisions, pupils, schools, universities. Put in our words, we've been [incorrectly] taught by economists who "Samuelsonized" them and us to believe that market competition and/or war will solve our problems. Actually, he notes, competition we see now is destructive or violent--just like war.

Deming's Basic Principles (DPs) Of System Optimization. Dr. Deming's work gives us the opportunity to glean and identify his basic principles of system optimization (DPs). DP#1 is seeing quality as the basic problem; if a product/service possesses [medium to high] quality [at a reasonable price] it helps everybody [is pro-developmental] and enjoys a good and sustainable market. DP#2 is the necessity for trade or economic exchange. He reminds us that in order to improve living [the quality of life] in a material as well as in a spiritual way, people need to trade products and services with other people [implicitly in a win-win or economically just way]. That is, trade is a two-way street. It needs to be a fair trade [not win-lose trade]. For a community to import anything, it must export something in payment. DP#3 is understanding that the market is the world. That means the market for almost any product may be anywhere in the world. DP#4 is to objectively assess how the U.S. stands in the balance of trade. We currently are not doing well. We actually are losing millions of good jobs and our poor, like the world's poor, are suffering because in many cases working people are working longer hours but buy less because their purchasing power falls because the big corporations keep raising prices, which, following textbook theory, drives/rations consumers out of markets; the greed for short-run corporate profit drives the nation's economy with more win-lose/anti-developmental growth (at the firm, market, and economic levels) that triggers more inflation and unemployment. Deming gets at war-profiteering as a key part of the underbelly of win-lose, corporate-controlled capitalism when he notes that one of our best American exports, one that brings in dollars, is our corporations selling materials for war--the same phenomenon our White House claims Iran is doing. Who has a log in his eye?

Deming's DP#5 is our need to answer the question, "What happened?" He points out that everyone--which would include our working poor, who were told decades ago that American income and wealth "trickle down" from the rich and corporations to the poor--expected the good times to continue and to wax better and better. However, on looking back, he adds, we find that we've been on an economic decline for three decades. DP#6 is to decide what we must do. His partial answer is that we in North America may [need to] accept the fact that we no longer excel in the manufacture of low-cost items in great volume--low-cost isn't better or profitable. This business, he asserts, has gone to automation, Mexico, Taiwan, Korea, and elsewhere. The rest of his answer is that we can elevate our economy with specialized products and services. However, this change will require not information but knowledge. That means our problem is the need for more real education and development of a truly intellectual culture that truly values learning--one that is not full of mass-educated true believers who can be politically molded into "red state" or "blue state" people who lack the real education (e.g., critical-thinking skills) to identify their own true economic and non-economic interests. By extension, given the beginning retirement of the baby boomers, we need to educate or train well all people of all classes better and to especially help the poor to become productive, responsible workers and entrepreneurs--consistent with the American Dream. DP#7 is the need to innovate, create, or re-design new outputs. In Deming's words, he that innovates and is lucky will take the market.

DP#8 answers the question, "Why did the plant close?" Deming's answer is that economists and engineers saw a plant as a model for efficiency, communication, good relationships with suppliers, written up and filmed. He adds that the workmanship was superb, but the plant was turning out a product that had lost the market. Moreover, he reminds us that it is management's responsibility to look ahead, predict, change the product, keep the plant in operation. DP#9 involves answering the question, "Where is quality made?" His answer is, by the top management, because the quality of the output of a company can't be better than the quality determined at the top. It means that job security and jobs are dependent on management's foresight to design products and services that will entice customers and build a market--to be ready, ahead of the customer, to modify the product and service. DP#10 is that the results of most activities of management can't be measured. Consequently, a faulty management practice such as failure to optimize through time may be missed or ignored and can only be fixed by a theory of management that respects constancy of purpose and the need to do long-run planning that sees the function of every component of the organization to be its contribution to the optimization of organization or system itself.

DP#11 defines and explains what a system is. Deming defines it as a network of interdependent components that work together to accomplish the aim of the system, which is a value judgment that requires not only plans for the future but also requires knowledge of the interrelationships between all of the components within the system and of the people that work in it. DP#12 is a system must be managed--it can't manage itself. It's a warning that, left to themselves in the Western world, components of a potential system become selfish, competitive, independent [anti-system] profit centers. It identifies the secret of cooperation between components toward the aim of the organization in order to avoid the destructive effect of competition. This principle overlaps with our definition of development. It's the development of an organizational aim that enables everyone to gain or benefit--stockholders (shareholders) and a gamut of stakeholders that include employees, suppliers, customers, community, and the environment--over the long run. Deming asserts that it involves a clarification of values and the choice of producing something of value to others and never should be defined in terms of activities or methods.

DP#13 defines optimization. He defines it as a process of orchestrating the effects of all components toward achievement of the stated aim. He insists that it's management's job and, like our definition of development, that everyone wins with optimization. He warns us that anything less than optimization will bring eventual loss [lose-lose effects/partial economic collapse] to every component in the system. All groups need to have as their aim long-run optimization of the larger system. DP#14 is understanding the failure of adversarial (zero-sum) competition. Thus, if economists understood the theory of a system and the role of cooperation in organization, they would no longer teach and preach salvation through adversarial competition. Instead, they would lead us into optimization of a system in which everyone would come out ahead. DP#15 is the obligation of a component, which is to contribute the best it can to the system--not to maximize its own production, profit, sales, or any other competitive measure. He warns that some components may operate at a loss to themselves in order to optimize the whole system, including the components that take a loss. He adds that optimization for everyone concerned should be the basis for negotiation between any two people, divisions, union and management, companies, competitors, and customers.

Background On The Life And Work Of Muhammed Yunus. The year of 1974 began to swiftly change the life of Muhammed Yunus and the common poor of Bangladesh due to a widespread famine. Yunus notes that the starving people did not chant any slogans nor did they demand anything from him and other well-fed city folk. Rather they simply lay down very quietly on the latter's doorsteps and waited to die (p. vii). He reflects that there are many ways for people to die but somehow dying of starvation is the most unacceptable of all. His sympathy and respect for the hungry and poor sharply contrasts to their "put down" by Robert Thomas Malthus, the classical "great economist" who warned the world that, according to his Malthusian Doctrine, world poverty, hunger, and starvation would eventually spread because world population eventually increases at a much faster rate than world food production. Although Malthus was an ordained Protestant minister, he was an affluent English professor of economics who not only opposed public aid for the poor but also disrespected and disliked the poor enough to call them the "dregs of society"--as if they're incorrigible, unwilling and/or unable to improve or develop themselves, thereby blaming them for their own poverty. Malthus later softened his harshness toward them and implied that they could be corrigible or socially responsible if they delayed marriage and starting a family ***(4)***. Also in 1974 Professor Yunus began to dread giving his own economics lectures because they implied that economic theories could cure social problems of all types--they allegedly were "good for society" or pro-developmental, making his lectures seem to him structurally-unrealistic, like the American movies where the "good guys" always win (p. viii). The thing that really bothered him was that the classroom theories he taught didn't reflect the life around him, so he needed to run away from those theories and from the textbooks and discover the real-life economics of a poor person's existence.

His repeated trips to villages around the Chittagong University campus led him to discoveries that were essential to his establishing the Grameen Bank. He simply learned about the problems the poor face from their own perspective. He started the process by offering people tiny loans for self-employment. The loans provided a starting point for cottage industries and other income-generating activities that used the skills the borrowers already had.

True Socio-Economic Principles (YPs) And Universal Peace Principles (UPPs). We next simultaneously identify/describe two sets of principles--presenting one UPP after each YP. The first set, YPs, directly or closely reflects true socio-economic principles (ones grounded in the struggle of the daily life and work experience of single, particular poor people themselves rather than in the American Dream's dual mythology that, following Keynes, the federal government will save capitalism since Adam Smith's god of competitive markets failed) that we gleaned from the 2003 (2nd) edition of Muhammed Yunus' book, Bank for the Poor: Micro-Lending and the Battle Against World Poverty. We use the first set (YPs) to identify--in sharp contrast to the alleged but untrue textbook-based socio-economic principles listed in our Introduction--true socio-economic principles that we easily gleaned from Yunus' story of what he learned about hunger, poverty, the poor, economic theory, economic policy, and the differences in how Eastern and Western banks treat their poor. In the second set each UPP is a Yunus principle (YP) transformed into a more general, peace-community-based, win-win version of a sacred (any person, place, or thing that's viewed as more important than money, capital, material-based power, or harming/killing others) universal peace principle (UPP)--a cross-cultural, structurally-realistic decision-making focus on key values, forces, and processes (e.g., real education, compassion, love, quality outputs, non-violence, development, and peace) that win-win-principled people, organizations, and nations need to practice to truly make the world a better place.

Yunus Principle (YP) #1: Get academic economists to develop and teach real-life economics of poor, working people rather than current economic theory that's out of touch with their work and lives. Yunus notes that they incorrectly assume that business profit is a reliable measure of economic and social well-being (p. ix). He states that nothing in the economic theories he taught reflected the life around him. "How could I go on telling my students make-believe stories in the name of economics?"…."I needed to run away from these theories and from my textbooks and discover real-life economics of a poor person's existence" (p. viii). He adds that when you hold the world in your palm and become arrogant you do not realize that things get blurred when seen from an enormous distance. Like Deming, he opted for the "worm's eye view" and hoped that if he studied poverty at close range he would understand it more keenly. By repeated trips to the villages he learned about the problems that face the poor from their own perspective. One thing that worked well was to offer people tiny loans for self-improvement--loans that provided a starting point for cottage industries and other income-generating activities that used the skills the borrowers already had. UPP # 1: (Consistent with the historical principle of Jubilee,) We need academic economists to develop an entirely new (post-9/11), extra-Western, non-elitist, peace-based universal (Eastern-Western) world view of economics that increases development by helping the poor become entrepreneurs and decreases anti-development by helping small businesses compete with giant corporations by producing medium to high quality outputs at reasonable prices. Textbook economics theorists explain that small price-competitive firms are more economically efficient than big corporations with high overhead (e.g., CEO salaries, perks). SRE, in contrast, gives top budget priority to the quality of education, health care, job safety, creating and keeping jobs, job security, individual-home-based and/or cottage-industry-based entrepreneurial businesses, and the quality of work and lives of single, specific real-world poor/working people, as reported from their own perspective. Examples of SRE-based economic and social policies include: (a) increase the capital gains tax on public-traded corporations but not on small private businesses; (b) slash the military budget; (c) take the health care coverage and salary hikes away from the members of Congress until they pass universal health care for all Americans and balance the federal budget; (d) give low-interest loans to start more private Grameen-type banks that make low-interest, micro-finance loans to hard-working entrepreneurial poor; (e) form/oversee economic planning and marketing cooperatives (EPMCs) that use the Internet to pool and share capital resources, technology, and ideas about how to develop new markets; (f) outlaw payday loan companies and adjustable rate mortgages; (g) form/oversee citizen-based industry councils (CBICs) to police executive salaries/perks, waste, corporate mergers that reduce competition, price-gouging, war-profiteering, and ecological damage; (h) outlaw war-profiteering and issue mandatory price-controls during war; (i) (consistent with Adam Smith) limit the media, market, and political power of corporations and the abuse of highly-leveraged borrowing and hedging; and (j) give tax breaks to small businesses who create and keep living-wage jobs.

YP # 2: Relate to others (at home or abroad) in a win-win way that socially bonds and unifies yourself with them--rather than divide or separate yourself from them in win-lose, subordinating, exploitive, or disrespectful ways. Let us, Yunus states (p. 255), wave our national flags, celebrate our regional, national, racial, local, religious, political, and cultural identities, but not by offending others, not claiming supremacy. Instead, we should glorify in the unity of humankind, strengthened, and enhanced through the friendly competition of cultures, religions, and other diversities. He states that he's always believed that the elimination of poverty from the world is a matter of will. Even today we don't pay serious attention to the issue of poverty, because the powerful remain relatively untouched by it. Most people distance themselves from the issue, saying that if the poor worked harder ("weren't so lazy") they wouldn't be poor; they imply that input and output markets are always economically just or fair. He points out that a poverty-free and a hunger-free world would be economically much stronger and far more stable than the world is today (p. 261). He notes that poverty studies typically focus on why some countries are poor rather than on why certain segments of the population are below the poverty line (p. 35). UPP # 2: We need to develop increasingly more win-win relationships with God, the earth's ecology, other people, and home- or cottage-based businesses that are owned by the poor and/or keep the poor gainfully employed.

YP # 3: Fight against poverty and hunger because they don't belong in civilized human society (p. 248). Yunus notes that brilliant theorists of economics do not find it worthwhile to spend time discussing issues of poverty and hunger; rather, they believe that these will be automatically resolved when general economic prosperity increases--in our words, as if growth always produces development and never produces anti-development. He adds that economists spend all their talents detailing the processes of growth and prosperity (as John M. Keynes did), but rarely reflect on the origin and causes of poverty and hunger, and, we add, also of capital accumulation through mass education, disinformation, market control/exploitation, lobbying, war-profiteering, or other forms of violence, anti-development, and war. Yunus worked with others to make a public outcry against poverty and hunger to increase awareness (p. 36). He got students and faculty involved in raising public awareness of the two problems by preparing a statement on campus that others signed as a protest which started a chain reaction. Other universities and public bodies that had not spoken out against the famine of 1974 took up their cause. UPP # 3: We need economists, managers, citizens, and policy-makers to take off their socially-apathetic, conservative class blinders toward poor and hungry people and to overcome the elitist error of John M. Keynes--his choice of unemployment rather than a living wage as one of the two enemies of a healthy economy. During the Great Depression, Keynes and other top British economists watched the police beat up the poor coal miners who were striking for a living wage--they were sent back to the mines with a 20 percent pay cut.

YP # 4: Be a role model or mentor for your children and the poor--show them how to grow more food to feed themselves and be more self-reliant (p. 37). It's important to help the poor to be less dependent upon others. Yunus decided that he would experiment on the micro-level by helping the villagers of Jobra to grow more food. He was not an agronomist but he made it his business to study the low-yielding local variety of rice and more high-yielding varieties developed in the Philippines. At first, he notes, the farmers were amused by his findings. But when they saw how very serious he was, they agreed to let him plant the high-yielding rice in their fields. He encouraged his students to go with him into the village and devise creative ways to improve day-to-day life there. UPP # 4: We need to develop and work with the poor by helping them to learn survival skills--how to read, write, compute, operate a computer, make/keep a household budget, balance a checkbook, garden, cook, process fruits/vegetables, do laundry, run a lawnmower, sew, shop, save, invest, cook, compost, recycle, pay bills, and to start a business.

YP # 5: (Following Dr. Deming,) System-optimize every organization (p. 242). Ways to do so are rewarding those who temporarily sacrifice for a more needy/weaker member or part of the organization, documenting exceptional continuous qualitative improvement (CQI), creating or re-designing a new product/process/program, or stopping their short-run profit maximizing--the source, Deming notes, of our management crisis in America and our rising inability to compete in the global economy. Yunis asserts that the key performance factor is for a branch (or a bank) to generate a surplus of deposits over the loans outstanding in those branches. Those branches not only carry out their business with their own funds, but also contribute their surpluses to meet the fund requirement of deficit branches. A related challenge and accomplishment is for a branch (or bank) to have succeeded in taking 100 percent of their borrowers' families over the poverty line. UPP # 5: We need to ensure that all managers and employees understand the principles of CQI, profound knowledge, and system optimization and that their budgets provide all workers a living wage, educational/travel support, materials, health care coverage, and safe working conditions.

YP # 6: Recognize and admit that economic growth doesn't necessarily produce development or "trickle down"; rather, the essence of development is changing (improving) the quality of life of the lower 25 percent of the population (page 211). Yunus has always disagreed with any type of per capita definition of development. He points out that those who believe that economic growth and development are not synonymous or move at the same speed incorrectly assume that the economic layers of society are somehow linked to each other, like so many railway carriages, and that one only needs to stoke the engine for the entire train and everyone in it to move forward at the same speed. He adds that if there is no growth, nothing moves forward--that is true. But that often-used analogy of a train and linked socio-economic strata breaks down over one significant factor. A train is drawn by a (p. 212) locomotive located at the front or pushed back from behind, or both. But in case of human society, each economic entity or group has its own engine. Therefore, the combined power of all the engines together pushes and pulls the economy forward. If the society fails to turn on some of the engines, by simply ignoring some of those strata, the combined power of the economy will be much reduced. Worse still, of the engines of the social group at the tail end are not turned on, those carriages may start sliding backward, independently from the rest of society, and to the detriment of everyone [anti-development], including those who are better off. Yunus asserts that micro-credit pushes the entire train forward by helping each passenger in the rear (or third class) carriages. This cannot reduce the speed of the train; it can only increase it, which most of today's so-called development projects fail to do. Of course, he adds, investing in roads, dams, power plants, and airports increases the efficiency of the engines in the first-class carriages. Those are the fanciest and richest ones, and it enhances the trains' engine capacity many-fold. But whether those investments can help ignite or enhance the capacity of the engines in the subsequent carriages, in all other layers of society, remains uncertain. It's not always true that all boats rise in the harbor by similar amounts with a rising tide; remember JFK's "…Ask what you can do for your country."? UPP # 6: Reduce poverty, pass universal health care coverage, and stop the disappearance of the middle class by raising income tax rates for affluent or rich people and corporations and by lowering them for the poor, working people, and small businesses.

YP # 7: Stop the upper-class policy of allowing orthodox banks and moneylenders to make the poor even poorer. Yunus notes that orthodox economists have shaped the existing world by locking up all the investment money in only one category of investment--investment for making personal profit (p. 252). That means that there's only one type of competition: competition to amass more personal wealth. He points out that no formal financial structure was available to cater to the credit needs of the poor. He adds that the moment we open the door to making a social impact through investments, investors will start putting their investment dollars through this door as well. He also gives us the following true story about the greed of some middlemen ***(5)***. Regarding the stool-makers of Jobra village, they own their bamboo by buying it from the middlemen. They must sell their bamboo stools back to them at the end of the day as repayment for their loan. They sell each stool for a profit of just two cents. They could borrow the cash from the moneylenders and buy their own raw material but the moneylender would demand a lot and the people who deal with them only get poorer; it depends--the moneylender sometimes charges 10 percent per week but some charge 10 percent per day. Yet the reality is that making two cents per bamboo stool isn't enough for the stool-making women to help their children break the cycle of poverty when the money earned is barely enough to feed the women and their children. He states it clearly: "Sufuya Begum earned two cents a day….It seemed to me the existing economic system made it absolutely certain that Sufuya's income would be kept perpetually at such a low level that she would never [be able] to save a penny and would never invest in expanding her economic base….I had never heard of someone suffering for the lack of 22 cents." The latter number was the cost of the stool-maker's daily materials to make her stool and sell it back to the middleman in order to make two cents. The key point is that--by herself--she couldn't break free of her exploitive relationship with him. That is, to survive she needed to keep working through the trader. Yunus states her economic crisis very simply and honestly by stating that people like Sufuya were poor because the financial institutions in the country did not help them widen their economic base. Rather, what was needed was an institution that would lend to those who had nothing, but banks there wouldn't lend to anyone without collateral to put up or back up the loan because collateral was/is their guarantee. This is the point where Yunus' understanding of real-world economics as distinct from the ideology of textbook economics spoke truth to power: He argued that the working poor worked 12 hours a day and that their working lives are the best security a banker could have. He opposed the idea of a guarantor or co-signer of a loan because nothing would prevent a guarantor from taking advantage of the borrower. He made himself a guarantor for a moderate sum to help some of these 12-hour-a-day laborers to buy their own supplies and materials--thereby avoiding the need to borrow from a middleman or moneylender….The bankers call the real borrowers the "banking untouchables." UPP # 7: We need to design and effectively administer class-specific micro-credit and business loan programs for new and established entrepreneurs in order to avoid class warfare/conflict or middlemen (e.g., corporate agribusiness, bankers, moneylenders) who abuse their MBP, win-lose economic principles, and Structural Opportunity to Exploit the working poor. Yunus, for example, asserts that if one mixes the poor and the non-poor in a program, the non-poor will always drive out the poor and the less poor will drive out the more poor. Re-stated, class warfare means that rich farmers could pay a pittance to the poorest of the poor; for example, women who only got paid a small wage for three weeks of threshing rice got a smaller share if she was poor. For example, one woman told him: "After a few weeks of threshing rice we're out of work, and we're have nothing to show for ourselves." She was right, Yunus added. For the same work, a woman could earn at least four times more if she had the financial resources to buy the rice paddy and process it herself.

YP # 8: Take the time to get the know real-world people of any class, including the poor, if you really want to help or develop them from their perspective because it's difficult or impossible to help the poor (or anyone else) unless and until we define who they are. For example, Yunus found it useful to use three broad definitions of poor to describe the situation. In his definition of the poor he included the women who threshed rice on a village communal farm, women who made bamboo shoots, and petty traders who had to borrow at 10 percent per month like them who earned so little weaving their baskets and sleeping mats that they often resorted to begging. These people had absolutely no chance of improving their economic base. UPP # 8: We need to identify different categories of the poor in order to capture the variation in their level of skills, commitment to working, and demonstrated willingness and ability to produce a moderate to high quality of product or service.

YP # 9: Both non-poor and poor people need to be aware that repayment of loans by people who borrow without collateral has proven to be much better than those whose borrowings are secured by assets. In fact, Yunus found that over 98 percent of the Grarneen Bank loans are repaid. UPP # 9: We need to respect the poor for being so responsible in paying back their micro-finance loans. In our words, the poor are structural realists because they realize--without a Ph.D. in economics--that their getting a non-collateralized micro-loan probably is their only opportunity to break out of poverty. They realize they don't have any economic safety net or cushion to fall back on. If they fail afoul of this one loan, they will have lost their one and likely only chance to get out of the rut.

YP # 10: Grameen's successful method of having micro-loan borrowers make daily payments (rather than the conventional method of banks and credit cooperatives, which is usually demanding lump sum payments) worked well and still does. Yunus arrived at this principle when Grameen Bank started in January, 1977 by studying how others ran their loan operations in order to learn from their mistakes. He learned that parting with a lot of cash at the end of a loan period is often psychologically trying for [poor, micro-loan] borrowers. They try to delay the repayment as long as they can and in the process they make the loan grow bigger and bigger. In the end, they decide not to pay back the loan at all. Such lump-sum payments also prompt both borrowers and lenders to ignore difficulties that come up early on; rather than tackle problems as they appear, they hope the problems will go away by the time the loan is due. Yunus notes that in structuring Grameen's credit program, he decided to do exactly the opposite of traditional banks. To overcome the psychological barrier of parting with large sums, he decided to start a daily payment program. He made the loan payments so small that borrowers would barely miss the money. For easier accounting, he decided to ask that the loans be paid at the rate of one taka a day over the course of the year. UPP # 10: (Given our current credit crisis and the increasing financial struggles of the poor and middle class as well as the Fed's recent trend of bailing out big corporations, hedge funds, banks, and mortgage companies,) We need to empower young people by preparing them for the real world. Doing so would require us to provide them with a real education based upon structurally-realistic, real-life economics.

YP # 11: The Grameen requirement that each micro-loan applicant needs to join a support group (of like-minded people living in similar economic and social conditions) that has a moral responsibility for each other's loans is much more than a banking requirement. Convinced that social solidarity would be stronger if the groups came into being by themselves, Yunus and his fellow bank officials refrained from managing them, but they did create social and economic incentives that encouraged the borrowers to help one another succeed in their businesses. Group membership not only creates support and protection but also smoothes out the erratic behavior patterns of individual members, making each borrower more reliable in the process. Yunus notes that subtle and at times not-so-subtle peer pressure keeps each group member in line with the broader objectives of the credit program. A sense of inter-group and intra-group competition also encourages each member to be an achiever. Shifting the task of initial supervision to the group not only reduces the work of the bank but also increases the self-reliance of the individual borrowers. Because the group approves the loan request of each member, the group assumes moral responsibility for the loan. That means that if any member of the group gets into trouble, the group usually comes forward to help. UPP # 11: We need to be open-minded and insightful enough to understand that Deming and Yunus undoubtedly contributed a lot more to the development of SRE and our understanding of our need for cross-cultural universal peace principles than did our celebrated economists Adam Smith, Robert T. Malthus, and John M. Keynes. Why? Because both Deming and Yunus taught, wrote, and explained to us our individual, business, and system needs not to "sell out" the soul of "economics"--to act upon our need to care about our structural underdogs or needy rather than “the powers that be.” Our two future-looking theorists told us that we need the courage and wisdom to see that “economics” necessarily is both materialistic and social. They both traded in their textbook economics for the opportunity and commitment to learn about what we call structurally-realistic economics (SRE) from the perspective of real-world poor people themselves. Yunus quit his professorship to start a micro-credit bank for the working poor, wannabe entrepreneurs who would have a better chance of supporting themselves and their families above the poverty level. He designed and started a very unique bank that designed in requirements that combined economic and social goals. His group membership requirement expected future borrowers and shareholders to show that they truly care about being thy neighbor’s keeper. He helped a group of neighbors become a micro-community--a cultural microcosm of people who not only know and regularly engage in meaningful (not merely transactional) interpersonal relationships with each other but also trust one another enough to take the responsibility to help each other develop confidence, character, and economic security. They vouched for, mentored, and, if necessary, became accountable for helping each other out financially if any one of them has any trouble making a daily loan payment to the Grameen Bank. The latter, in contrast to being pariahs of usury, produces both economic and social functions as a local private institution that they each must qualify for in order to become fully-certified shareholders who are overseen by a center chief who must vote for or against their worthiness to join and stay in their micro-community.

Conclusion: Adam Smith didn’t get it (“economics”) quite right; his Adam Smith Problem reflects that he used his second book to shrink his original meaning of economics from economic and social to simply materialistic survival-of-the-fittest. According to his own intellectual and moral judgment (in the 6th edition of his first book), he admittedly corrupted the moral sentiments of society by coining the fallacy-of-composition-violating error or lie, “invisible hand” (that market competition allegedly would save capitalism and society even though people are selfish and greedy) in order to tell the rich and powerful (and ordinary, mass-educated people) what they wanted to hear so the former would serve as his deep-pocketed patrons--to not be economically, socially, or morally responsible for one or more others, especially if they’re poor. Worse yet, he never completed his solemn promise to his college students--to identify a set of universal economic principles that would harm no one and make the world a better place. Robert T. Malthus didn’t quite get “it” right either. Although he was an ordained Protestant minister who was nominally concerned about the poor, his concerns about the poor were less than compassionate. Indeed, he blamed the poor for their own poverty, hunger, and sub-human condition--as if they were the “dregs of society” who had the same life chances as the upper classes and either were lazy and/or too procreative. He thought the poor were economically and socially irresponsible and didn’t deserve any private or public aid or charity but, after the 1803 edition of his Essay on Population, he defined them as corrigible or potentially responsible if they delay marriage and family to avoid being a burden on the upper classes. The Great Depression in the U.S. and Europe raised grave concerns about the failure of markets as a clear-cut signal that capitalism may not be long-run sustainable. Along came Keynes to create the theoretical promise and illusion that a big proactive federal government was truly needed to save capitalism even if markets failed--as if economic growth at the economic level will automatically “trickle down” or be win-win for the rich and the poor even though he calmly watched the poor British coal miners get beat up and sent back to the British coal mines with far less than a living wage--with a 20 percent pay cut!

So what none of the above “great economists” got right about “economics” was the need to see the world as it really is, to develop SRE to explain it to others, to show compassion for the poor and needy, to develop win-win interpersonal relationships with others, to reform or replace institutions such as markets and banks that allow the greedy to exploit the working poor, and to practice universal peace principles (UPPs) to make the world truly a better place. That is, what they didn’t get quite right was what all future leaders need to learn in school but apparently didn’t--that it’s the quality of the real education, character, and readiness to non-violently heal or mend troubled relationships (with other nations) within and across cultures that matters at all points in time, especially given the war-profiteering special interests that President Eisenhower and Dr. Deming warned us about. That means the integrity of our mind, heart, spirituality, and soul should not and can’t afford to be for sale or rent. In brief, our paper clearly suggests that the time is here to turn a lot more attention, development, and support to structurally-realistic, real-life economics based upon our six universal principles that truly can produce domestic and East-West bridges of world peace.

Footnotes:

1 See my fall, 2007 article, “The Failure of Anti-Developmental Growth,” in the National Social Science Journal.

2 See our forthcoming 2008 article, "Toward An Economics of Peace," in the National Social Science Journal. It explains that the use of a Power Structure Grid illustrates the importance of a decision-maker's momentary choice of win-lose (or lose-lose) vs. win-win principles in determining whether or not he will likely abuse his MBP or Structural Opportunity To Exploit the other individual in a specific interpersonal relationship in or out of a market. It also shows that if two AEMs interact, then if both individuals are win-lose-principled at the moment and one has more MBP than the other he will likely go ahead and exploit or harm the other, making him his victim and thereby producing anti-development or war at the expense of the other individual and of the quality of their relationship.

3 In that 2005 paper we named and described the ten economic principles that he mentioned at the very end of his 1980 PBS video, "Dr. W. Edwards Deming: The International Prophet of Quality." Those economic principles established him as a clear-cut win-win theorist as well as a significant peace ambassador to Japan, an important role since he was one of the first three American consultants invited to Japan shortly after the end of WWII. They may be even more important than his 14 management principles because they help us to analyze conflict and cooperation.

4 See his Essay of Population. Barnes and Becker, in their History of Social Thought, mention that David Hume wrote a letter to Malthus shortly after the first edition came out and not so politely pointed out that Malthus was too harsh on the poor, especially because he called them the "dregs of society" and implied they were incorrigible. This suggestion Malthus paid attention to and softened his assessment in the 1803 edition, trying to make them corrigible.

5 This is the same point we identified and explained in our second Deming Institute paper. We used the first of three supply and demand graphs to illustrate Dr. Deming's naivete` about the Structural Opportunity To Exploit that American corporate agri-business have in its input and output market relationships with family farmers; it reflected a commodity market where the increase in market supply is greater than the increase in market supply, resulting in a considerable fall in the price and putting the farmers/suppliers in a serious cost-price squeeze due to the rising per unit production cost associated with the Law of Diminishing Returns.

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THE POTENTIAL CHALLENGES & BENEFITS OF INTEGRATING WIND POWER INTO A POWER SUPPLY SYSTEM: IS WIND POWER VIABLE?

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Abstract:

This paper discusses the advantages and disadvantages of wind power generation. It also examines some of the technology used by wind turbines to harness the energy provided by the wind. There is an in-depth look at the problems faced when implementing wind power and what might motivate a company to invest in wind power. An interview was conducted with a wastewater authority that successfully implemented wind power into its utility operations.

Introduction:

The United States faces many challenges as it prepares to meet its energy needs in the future. With all the turmoil swirling around the electricity supply crisis (California), fluctuating natural gas prices, concerns surrounding potential security issues of domestic nuclear power plants, problems with foreign sources of energy and environmental issues, interest in renewable sources of energy has been growing.

In 1996, wind energy in the United States was produced primarily by independent power producers and nearly all of it was produced in California. Since then, it has become the fastest growing utility-scale energy resource. Generating capacity in 1996 was 1,800 megawatts. By 2006, interest had arisen in the ability of renewable energy to survive as a viable energy source and capacity had grown to more than 11,600 megawatts. This represents enough energy to power about three million average homes. In 2007, the American Wind Energy Association (AWEA) has predicted that there will be an estimated newly installed capacity of 3,000 megawatts. The potential for wind power to replace other forms of energy in the United States is very large as wind only accounts for about two-tenths of a percent of the U.S. energy supply (AWEA).

As the need to stabilize the nation's energy resources and electricity demands increase, more utilities are seriously evaluating wind power to provide a part of their generation mix. At the same time, many utilities are expressing concerns about possible impacts on system operations when greater percentages of wind power are introduced into the electric power system.

To consider the viability of wind as an energy source, one must fully understand the advantages and disadvantages commonly debated publicly. The following are proposed advantages of wind power:

- Wind power offers the consumer an environmentally conscious emission of zero carbon dioxide and other potential pollutants into the atmosphere. This is an advantage over fossil fuel-fired power plants.

- Wind power is cost effective. Since the 1980's, the cost of wind generated electricity has fallen from forty cents per kilowatt hour to approximately three to ten cents per kilowatt hour in today's market.[1]
- Wind power decreases the reliance on other natural resources whose prices tend to be unstable; wind is free.
- The United States can reduce its reliance on other nations for their natural resources.
- Wind farms are unlikely targets for terrorism, compared to vulnerable nuclear power plants.
- Once installed and integrated into the electrical grid, wind farms run themselves, with the exception of some planned maintenance.[2]

In the long term, use of wind power can reduce our reliance on non-renewable natural resources, control electrical costs and reduce greenhouse gases associated with global warming.

The following are seen as disadvantages of wind power:

- There is a high initial investment cost associated with the generation of wind power. Wind power prices are affected by rising turbine and installation costs.[3]
- Wind strength is not constant and it varies from zero to storm force. This means that wind turbines do not produce the same amount of electricity all the time.
- Wind is extremely unpredictable and unreliable.
- Wind farms can be considered unsightly and noisy.

Outside the more obvious advantages and disadvantages listed above, this paper will examine the wind power industry in the U.S. and why and how the utility companies are adapting and integrating wind power into their growth and development projects.

<u>How does a wind turbine work?</u>

A wind turbine converts the kinetic energy in the wind into mechanical power. This mechanical power is used to turn a generator which creates electricity. The force of the wind passing over the blades creates a torque that turns the turbine blades. The shaft from the turbine blades is attached to the gear box which converts the slow rotational speed of the blades to a speed required by commercially available generators to produce electricity.

Wind turbines are typically three blades that operate facing into the wind. Since wind variability is a major issue in wind power sustainability, wind turbine manufacturers have included a "yaw drive" which turns the turbine to keep the rotor facing into the wind. The blades can turn or pitch out or into the wind to control the rotor speed in order to produce energy that matches the power distribution load, and to minimize the wasted rotations if the wind isn't strong enough to produce energy.

From the generator of the wind turbine, the electricity travels to a transformer and then over transmission lines to the end users. This type of power distribution can be used without the creation of unsafe environments (potential terror threats for nuclear power plants), the reliance on undemocratic and unstable countries (oil), and the pollution of the earth through the emission of greenhouse gases into the atmosphere using nonrenewable sources (oil, coal and natural gas).

Problems facing utilities in implementing wind power.

Wind farms can generate electricity only when the wind is blowing at a speed sufficient to supply the minimum rotational speed to the generator (the minimum is dependent on the turbine make and model). Wind speeds often fluctuate from minute to minute, hour to hour, and day to day, making it difficult to predict the amount of power that can be generated. The utility system operators are concerned that the wind farms' variable output will increase operating costs. Utility operators have worked out a reliable system of balancing the consumer demand for electricity with the total power generated by their current power plants. The controls are automatic routines based on the well- known operating characteristics of their power plants and the consumer electricity demand histories.[4] If we were to rely on the utility system operators to increase electrical output, they would likely continue to add more traditional fossil fuel power plants. This is due to the decades of experience they have in obtaining permits, building and operating fossil fuel power plants to supplement rising electrical demand. However, they would not be taking into consideration the unreliability of fossil fuel supply and their contribution to the emission of greenhouse gases.

What would motivate a company to consider wind power?

- Tougher regulations on greenhouse gas emissions
- Tightening of fuel supply/rising costs
- Tax breaks for integrating renewable energy into the supply
- Consumer demand for green energy generation
- Reduced community opposition in locating wind farms

Nearly every adult of voting age has either seen or heard of the documentary, *An Inconvenient Truth*, about the efforts of former United States Vice President and Nobel Prize winner Al Gore to alert the world to the danger of global warming. As the entire world becomes concerned about global warming, it becomes harder for utility companies to act entitled; they have to become more socially responsible. In 2005, power generation in the United States represented forty percent of the total energy-related carbon dioxide emissions into the atmosphere.[5]

The rapid rise in the price of oil is, in part, a result of strong world economic growth. A key factor contributing to the high prices is the strong demand for oil and the inability of non-OPEC producing countries to keep pace with the global consumption and the OPEC producing countries' decision to cut production.[6] Also, the lack of political stability in several OPEC countries such as Iraq, Nigeria, Venezuela and Iran has decreased inventories and put upward pressure on crude oil prices. The reality of the situation is that oil fields will eventually be exhausted.

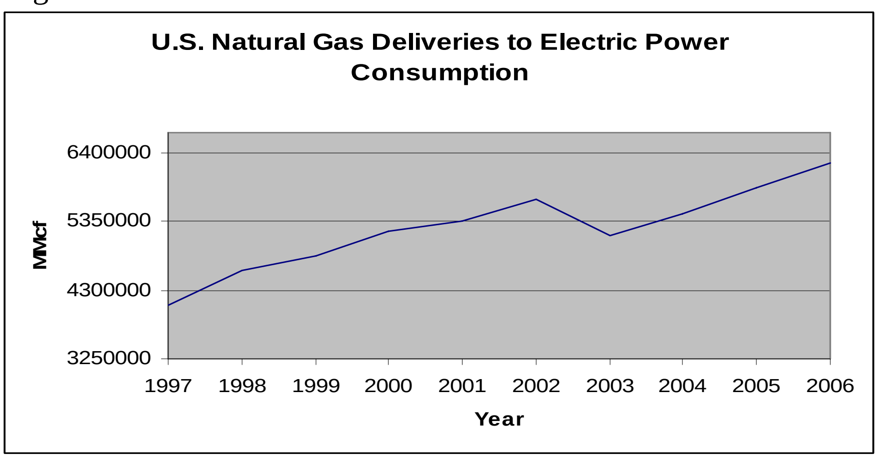
The Federal Energy Commission has recently reported on a plan to construct forty liquefied natural gas (LNG) terminals in the United States in order to import LNG to supplement our limited supply and increasing demand. Table 1 shows the top ten natural gas reserves in the world. U.S. utilities get a majority of their LNG from Trinidad, Qatar, Algeria and Nigeria, again relying heavily on politically unstable countries.[7]

Table 1. Earth's Top Ten Natural Gas Reserves

Top 10 Natural Gas Reserves	**Percentage of World Reserves[8]**
Russia	30.5%
Iran	14.8%
Qatar	9.2%
Saudi Arabia	4.1%
United Arab Emirates	3.9%
United States	3.3%
Algeria	2.9%
Venezuela	2.7%
Nigeria	2.3%
Iraq	2.0%

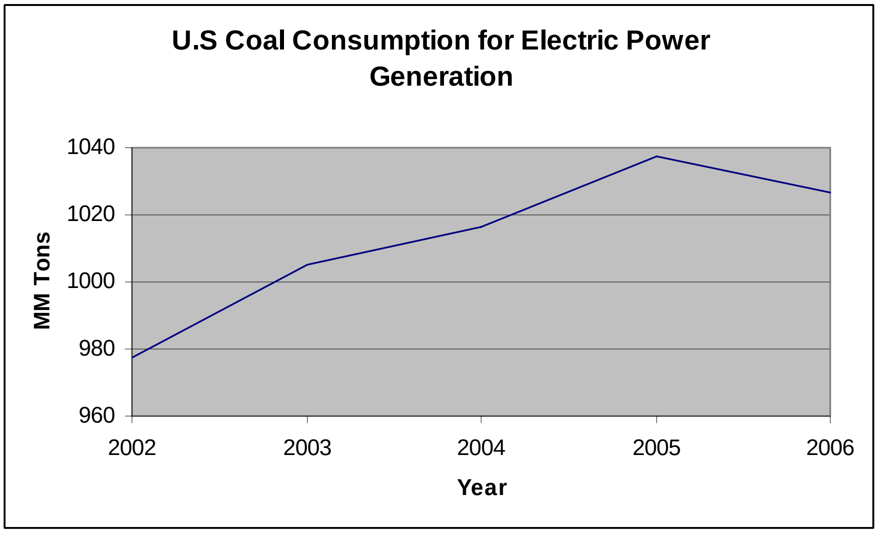
Figure 1 shows the rising natural gas consumption in the U.S. Utilities need to start reducing their reliance on oil and natural gas in energy production and need to start seriously considering wind power as an alternative.

Figure 1. Use of Natural Gas to Generate Electric Power in the U.S.



In 2006, electric power generation accounted for 92.1 percent of the coal consumed in the U.S. About half of the electricity generated in the United States comes from coal. [9] One positive we can draw from coal consumption is that we don't have to rely on any foreign governments in the near term since the U.S. has the largest coal reserves in the world. The U.S. electricity consumer benefits from a coal burning power plant because coal is low cost and domestically available. However, strip mining produces environmental damage. Acid mine drainage pollutes the water supply and methane gas escapes from the mines adding to the greenhouse gas emissions which are created when coal is burned to create electricity. Figure 2 shows the rising consumption of coal in the U.S. for electric power generation.

Figure 2. Coal consumed in the U.S. to Generate Electric Power



The United States is the largest producer of nuclear power in the world. As of 2007, there are 104 licensed reactors at 65 different sites generating twenty percent of the total U.S. consumption of electricity, amounting to approximately 97,000 megawatts.[10] Since 2001, nuclear power plants have achieved production costs to equal the lowest of those of coal, natural gas and oil fired facilities. These costs may seem attractive today, but the concern is the industry's ability to find safe, secure, and permanent disposal of nuclear waste. Currently, there is a $30 billion nuclear industry waste fund for the disposal of spent nuclear waste and other contaminated materials. The current method is geologic disposal and the most notable site is located in the Yucca Mountains in Nevada. The problem surrounding the disposal method is that it has only been studied since 1987 and it wasn't used until 1999, so the long term safety of this practice is relatively unknown.[11] Also, the accidents at Three Mile Island and Chernobyl make nuclear power less desirable in one's backyard (NIMBY, not in my backyard).

Wind Farm Location

The issue of locating a wind farm is that the location has to be where the wind blows strongly enough to turn the turbine blades. These locations may not be near power grid transmission lines or may be located in an environmentally sensitive area or in a community that is opposed to wind turbine development. Another area of concern when considering locating a wind farm is the variability of the wind intensity and the output of the turbines. This variable nature of power output requires constant regulation and load following to make wind energy a reliable source of power.

Summary of a study conducted for the New York Independent System Operator (NYISO) [12]

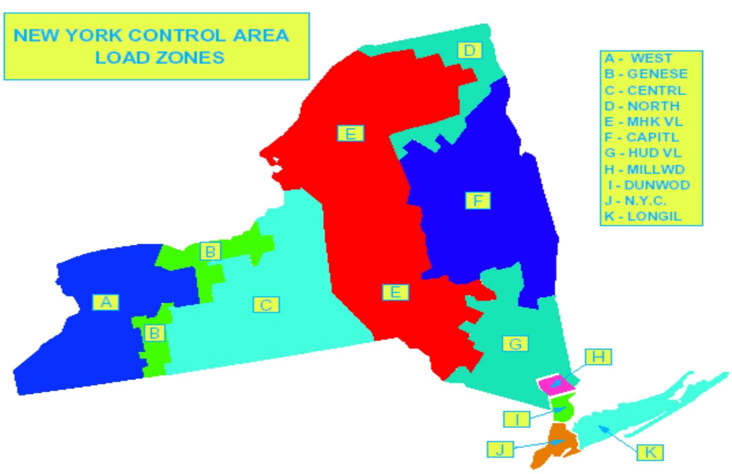
NYISO is a non profit organization structured to operate NY State's bulk electricity grid and administer the wholesale electricity market. The New York system is operated as a single large balancing authority by the New York Power Authority and has well-functioning hour-ahead and day-ahead wholesale markets into which generators bid energy. Bids are accepted until projected demand is met on an hour-by-hour basis, and all accepted bidders - including wind plants, which bid at a zero price – are paid the highest accepted bid price.

The purpose of the study was to address 3,300 megawatts (MW) of wind in a system that serves a customer load projected at 34,000 MW and understand whether the system could handle 10 percent wind penetration without major difficulties.

The NYISO study is considered one of the most comprehensive U.S. wind integration assessments to date. It covers all the necessary factors a developer of wind energy facilities needs to consider whether as an independent energy producer or one of the state's electric companies. There are several previous studies that discussed the benefits of considering wind power as a source of renewable energy with many positive environmental benefits including the lack of green house gas emissions. This study brings into consideration the issues of locating wind farms and the need for including power transmission facilities to supply the energy to the users (load), estimated operating system costs, impacts on customer payments, reductions in emissions from conventional electricity sources, and the impacts of wind forecasting since the supply of wind is not constant.

Even with increases in costs due to the wind's variability there is still a reported savings resulting from the fossil fuel displacement. The wind resource was modeled from weather data for the period 2001 and 2002, and was combined hourly with corresponding coincident load and generation data scaled to the projected 2008 peak demand. Geographic diversity of the wind was captured by using wind data that corresponded to a number of locations. Figure 4 shows the potential of wind power generation state-wide.

Figure 4. New York State Wind Power Generation Potential[13]



Potential Wind Generation by Zone	
Zone A	4016 MW
Zone B	515 MW
Zone C	922 MW
Zone D	433 MW
Zone E	2683 MW
Zone F	703 MW
Zone G	154 MW
Zone H	0 MW
Zone I	0 MW
Zone J	0 MW
Zone K	600 MW
Total	10026 MW

The conclusion from the study was that the New York State power system can integrate and accommodate at least 3,300 megawatts of power generated by wind. However, it would require some minor adjustments to the power system's planning, operating, and reliability practices.
Summary of findings in the NYISO Study:

- The total impact on variable operating costs for the study year, including the impacts of wind variability and fuel savings, was a reduction of $335 million.
- With state of the art wind forecasting methods total system variable cost savings can increase from $335 million to $430 million. If forecasting is done perfectly, one can notice an additional savings of $25 million.
- Wind generators created revenue of $305 million, or about $0.035 per kilowatt hour.

Conclusions of the NYISO Study:

- Wind is a viable business opportunity.
- If properly implemented with proper load and wind forecasting, there is a noticeable cost saving.

Atlantic County Utility Authority (ACUA) Wind Power System

Some history of the ACUA and the wind initiative[14]:

The Atlantic County Utilities Authority (ACUA) is a public agency that provides environmental and waste management services to the people of Atlantic County and southern New Jersey. It was formed in the 1960s by the Atlantic County Board of Freeholders and charged with the development of a comprehensive approach to wastewater management. At the time there were more than 20 small, outdated sewage treatment plants. These treatment plants discharged partially treated sewage into streams, tidal waters and other surface waters. Over those years this situation resulted in the degradation of the county's fresh water resources. With the construction of City Island Treatment Plant in 1978 all of the county's wastewater treatment was centralized into this state-of-the-art facility. The plant treats an average of 50 million gallons of wastewater a day and discharges the disinfected effluent one mile off the beach into the Atlantic Ocean. This initiative has made the formally polluted back bays, estuaries and streams safe for fishing and recreation.

One of the most visible projects that the ACUA has completed is the wind farm at the City Island Wastewater Treatment Plant (WPCP). This is New Jersey's first onshore wind farm. The ACUA has partnered with Community Energy Inc. to build a 8.0-megawatt wind farm. It consists of five 1.6 Mw state of the art wind turbines manufactured by General Electric. The tower hubs are approximately 262 feet high, each with three rotors of 118 feet for a total height of 380 feet. The ACUA uses approximately 35 to 60 percent of the electricity generated for the wastewater facility with the remaining energy provided to the main power grid.

The cost of the 8.0 MW wind farm was $12.5 million. Funding was provided by grants from the New Jersey Board of Public Utilities and Atlantic City Electric totaling $3.62 million. The balance of the project was funded by Community Energy's equity investment partners.

The wind generation facility was dedicated on December 12, 2005 and has been fully operational since January 2006.

Summary of the interview with an ACUA Executive: (Questions located in Appendix A)

The ACUA had an initial investment in the project of about $3000 to cover some legal fees. It wanted to make sure it wasn't violating their charter by allowing electric generation on its facility. The ACUA signed a memorandum of understanding that it would lease land to Community Energy for the location of a wind farm on ACUA property and the ACUA would purchase electricity from Community Energy. Community Energy then erected a MET tower (meteorological tower) to begin measuring the characteristics of the wind at the site at various heights. All of the wind feasibility studies were performed by Community Energy and its financial partners.

The ACUA owns the land where the five turbines were erected. It is paid approximately $3000 per turbine per year for the leasing of the land. It also entered into a contract with the developer to purchase at least 9 million kWh per year of electricity at a fixed rate of 7.95cents/kWh. The deciding factor behind the implementation of wind power into its power portfolio was a forecasted consistent rise in electrical costs. The members of the ACUA also saw that electricity made up approximately 10 percent of their operating budget so by fixing the electrical costs they believed they could realize an electrical cost savings within the first couple of years.

In terms of opposition to the construction of the wind farm, the Audubon Society presented the greats challenge. The developer hired a bird expert and its study indicated that one bird would be killed per year per turbine. The Audubon Society wanted to do its own study. It wanted $500,000 from the developer. After one and a half years of delay it finally accepted $175,000 from the developer and the project was a go.

After two years of wind energy production at the site, there has only been one confirmed bird death that is attributed to the wind turbines. The Audubon Society has full access to the facility to monitor the bird's interaction with the turbines.

Other groups that opposed the construction of the wind farm were the casinos and residents adjacent to the ACUA facility. Both groups objected to the view and the noise of the wind farm. The noise opposition was handled by a site visit to a wind farm in Central Pennsylvania. There people could observe and hear that the turbines are quiet. Currently construction at two casinos' hotel towers will have views of the wind farm and one is purchasing the excess power from the wind farm so it can advertise to customers that it is a green-energy supporter.

Over the past year the facility has welcomed more than 6000 visitors and has been extremely popular with the surrounding community.

The wind farm can generate more power than the ACUA needs to operate its facility. Also if the wind is not blowing and the turbines aren't producing energy, the ACUA purchases electricity from Atlantic City Electric. The ACUA pays a service charge of approximately $30,000 per year for this backup capability.

Since the facility went online on January 2006, the wind farm has produced more than 40 million kWh of electricity of which the ACUA has purchased more than 22 million kWh with the remaining energy being distributed onto the community power grid. The electric bill for 2004 was $3.5 million and now the electric bill for 2007 is $2.8 million. The ACUA has already begun to realize savings from its fixed contract with Community Energy.

Conclusion:

The studies from the NYISO and the ACUA have quantified the costs associated with the integration of wind power into the power supply. They have concluded that wind energy creates a cost savings when comparing to power generated by fossil fuels and that the cost advantage will increase as the future costs for natural gas and oil rise.

One can see through the ACUA interview that with a viable wind site, ease of connectivity to the community's power grid and cooperation between the community and the authority the project will provide a financial as well as a realized environmental benefit.

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[1] U.S. Department of Energy, Energy Efficiency and Renewable Energy, "Wind Power Today," May 2007.
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[3] U.S. Department of Energy, Energy Efficiency and Renewable Energy, "Wind Power Today," May 2007.
[4] Parsons, Milligan, DeMeo, Smith, Oakleaf, Wolf, Schuerger, Zavadil, Ahlstrom, Nakafuji. p. 5.
[5] Energy Information Administration, "Emissions of Greenhouse Gases in the United States 2006," 2007. p. 21.
[6] "Short-Term Energy Outlook"
[7] Energy Information Administration, "United States LNG Activity Expanded"
[8] Energy Information Administration, "Natural Gas Reserves By Country"
[9] Energy Information Administration, "Annual Coal Report"
[10] Energy Information Administration, "US Nuclear Generation of Electricity,"
[11]CRS Report to Congress, "Nuclear Power: Outlook for New Reactors," p. 25.
[12] 2005 GE Energy for the NYISO, p. 5-6.
[13] Idem.
[14]Atlantic County Utility Authority, p. 3.

Appendix A:

Questions asked to the Executive of the ACUA:

1. What preliminary studies did you perform to identify the wind farm sites?
2. What deciding factors led you to implement wind power into your power portfolio?
3. Who or what did your largest opposition come from in wind farm construction?
4. How do you handle the wind variability and integration into your system demand?
5. Has there been any community reaction?
6. What, if any, cost savings has the ACUA passed on to the utility's consumers?

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SEPARATING INDIVIDUAL EFFECTS FROM SYSTEMIC EFFECTS IN PERFORMANCE APPRAISALS

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Abstract

There is an apparently irreconcilable conflict between the traditional view of performance appraisals and the view of Dr. W. Edwards Deming and his colleagues. The traditional view asserts that raters can accurately assess an employee's performance and assign a rating that reflects the employee's individual effects. Dr. Deming believed it is impossible to separate an employees' individual contribution to performance from the contribution that is due to the system. This paper looks at three studies that purport to investigate the truth of Deming assumptions and concludes that there is empirical information to suggest that under some circumstances raters are able to adjust their ratings upwards or downwards to account, to differing extents, for evident systemic effects.

Introduction

The prevailing attitude towards work effort in the United States is largely based on the Puritan roots of hard work, thrift and personal responsibility. Among American companies, assessing employees' individual performance and contribution to the productivity of the firm is expressed as a key goal in running a successful business. Performance appraisals or evaluations, most commonly conducted annually, are the generally accepted methods of determining how well employees are contributing. A 1994 survey found that ninety percent of the responding companies used an appraisal system and this response neared one hundred percent by 1999.[1] These companies view performance appraisals as a necessary administrative tool to give feedback and develop employees, make administrative decisions, measure organizational improvement, and protect the company against law suits through documentation.[2]

Performance appraisals are generally "top-down", with a supervisor evaluating the performance of a subordinate employee, although other methods, such as peer evaluations, have been increasing in popularity. Performance appraisals typically measure two categories: job-relevant behaviors and work outcomes. Job-relevant behaviors are actions employees perform in their jobs. According to existing theory, certain job-relevant behaviors are identified as leading to successful work outcomes.[3] One example of this is a salesman who is aggressive, but friendly (behavior) will increase sales (the corresponding predicted work outcome). Any suggestion that an employee's difficulties in performing a particular behavior and achieving the corresponding outcome is the fault of the system or work environment rather than the fault of the employee is interpreted as "making excuses" or failing to take responsibility.

This unpopular view of systemic responsibility was espoused by W. Edwards Deming[4] and those that follow his philosophies.[5] Deming called performance appraisals a "deadly disease" because of their damaging effects on employees and the organization. He pointed out raters' inability to distinguish the systemic effects on work outcomes from the employee's individual contribution to those outcomes. This paper looks at several studies to try to determine whether the conventional view of human resources in companies or Deming's view is correct If raters in employee performance evaluations cannot separate individual contributions or failings from the systemic helps and hindrances, performance appraisals are not a useful tool and should be rejected for lack of utility. In this case, there is no need to address Deming's question of the fairness of performance appraisals. So, the question to be answered is whether raters conducting performance appraisals can distinguish systemic effects on an individual's performance and account appropriately for those effects in assigning a rating.

Traditional View of Performance Appraisal

The traditional view of performance appraisal is based on an implicit assumption that organizational performance can be accomplished by improving the performance of individual employees within the organization. The theory is if all of the employees or parts of the business can separately improve their individual performance, then the whole business will be improved and be more successful. Performance management systems operate by having supervisors conduct regular (generally, annual, semi-annual or quarterly) evaluations of employees and set individual performance goals to be reached by the individuals by the time of the next evaluation.[6]

Organizations also see performance appraisals as necessary administrative tools for feedback and employee development, administrative decision making, evaluating organizational improvement, and the ability to document to protect the company from law suits.[7] First, for feedback, employees should be told how they are doing and how they can improve. Adverse employment actions, like demotion or termination should not come as a surprise. Second, employers need some way to see whether organizational improvement efforts such as training programs for employees are effective. Finally, in the case where termination is necessary, employers need to be able to document and justify that poor performance was the reason for termination rather than an illegal reason such as discrimination against a member of a protected class.[8]

Underlying the traditional view of employee performance is the assumption that raters can accurately assess an employee's performance and assign a rating on how the employee is doing relative to his or her prior rating and as compared to other employees. Implicit is the puritanical view that hard work of an individual leads to success. However, if performance appraisals are not measuring individual performance, but something else, the performance appraisal system fails as an accurate, and therefore useful, tool.

<u>Deming View of Performance Appraisal</u>

W. Edwards Deming designated performance evaluations as one of the deadly diseases of management. He said that it was "unfair, as it ascribes to the people in a group differences that may be caused totally by the system that they work in."[9] "[M]erit rating is meaningless as a predictor of performance, except for someone that falls outside the limits of differences attributable to the system that people work in." Deming recognizes the allure of the idea of rating employees by merit and the appeal of the concept, "pay for what you get; get what you pay for; motivate people to do their best, for their own good."[10] However, Deming asserts that perceived performance is a combination of the effects of the system an employee works in and the employee. Deming gives the equation:

$x + (yx) = 8$

to demonstrate the concept. He uses x to stand for the contribution of the employee, yx as the affect of the system on the employee's performance, and 8 for the employee's apparent performance, here 8 mistakes. He asserts that as an equation with two unknowns, it is impossible to solve for x. That is to say, that it is impossible to separate an employees' individual contribution to performance from the contribution that is due to the system.[11]

Deming states that "merit rating is meaningless as a predictor of performance, *except for someone that falls outside* the limits of the differences attributable to the system that people work in."[12] Deming goes further saying that through appropriate statistical calculations it is possible to determine which employees are outside the system. An employee can fall outside the system on the good side, i.e., he is performing better than the limit of system variation, or an employee can fall outside the system on the bad side, i.e., he is performing worse than the limit of variation attributable to the system. For the employee that is outside the statistical limit on the positive side, there is a rational basis to believe that the employee will continue to perform well in the future. For an employee below the lower statistical limit, Deming states that the employee may need "special help" once other factors, such as machine malfunction, particular to that employee have been investigated.[13]

Deming also raises several objections to performance appraisals that are not based on their accuracy as a measure of employee performance, but on how their use negatively impacts employee performance, such as discouraging teamwork, causing employees to look out for themselves rather than co-workers or the company, and encouraging focus on short-term visible results.[14] However, the issue to be considered here is whether performance appraisals have utility as a measuring tool.

<u>Separating Systemic from Individual Factors</u>

Can systemic factors be separated from individual factors in performance appraisals? There are two main implications for performance evaluations if the answer to the above question is "no." The first is a question of fairness; the second is a question of utility.

First, performance evaluation would be unfair to the employee which it purports to evaluate. Some employees would be rated more poorly than their abilities and efforts would warrant, because they are laboring in a system which makes their job more difficult. Some employees would be more highly rated than merited because the system affects the outcomes in some way that enhances their apparent performance.

Second, and important even to companies that may not place a premium on fairness, performance appraisals would not be accurate tools to use in making important decisions on hiring, firing and promotion. As a result, utilizing performance evaluations could result in companies firing employees they should keep, making poor hiring decisions, and promoting the wrong people. Therefore, the threshold question is whether or not performance appraisals are an accurate decision making tool. After reviewing the limited empirical research available, the author has found three studies addressing some aspect of Deming's assertion that systemic and individual factors cannot be separated in performance evaluations. These studies are discussed below.

Performance Appraisal as Effective Management or Deadly Management Disease: Two Initial Empirical Investigations

The first study performed and reported by Kenneth P. Carson, Robert L Cardy, and Gregory H. Dobbins in "Performance Appraisal as Effective Management or Deadly Management Disease: Two Initial Empirical Investigations" consisted of two separate studies.[15]

The first study was conducted to assess the extent to which managers and subordinates believe that subordinate performance is caused by specific individual or system factors. In the study, 117 individuals from two undergraduate and four MBA classes, all employed full-time, were classified independently by one of the authors and a graduate student as either a manager or a subordinate based on responses to questions about their job title, duties, time in position, and time with employer, with 111 roles decided by agreement and the other 6 by consensus. The substantive portion of the questionnaire filled out by the students had two parts. The first part asked the students to indicate the percentage of variation in subordinate performance that is caused by individual characteristics and the percentage that is caused by situational factors with the two having to add to 100%. The second part asked the students to indicate on a seven-point Likert scale ranging from almost never (1) to almost always (7) how frequently 12 job related factors caused poor performance. Analysis of the first part results "indicated that managers perceived performance to be more of a function of subordinate characteristics than did subordinates." Analysis of the second part results revealed a significant difference between managers' and subordinate ratings of the 12 factors.[16] Supervisors found that poor performance was caused by low subordinate motivation and low subordinate ability; while subordinates found that poor performance was caused by inadequate tools and equipment, lack of time, poor task preparation, personal constraints and poor scheduling.[17]

The second study was conducted to evaluate the self-reported and actual extent to which performance appraisal raters consider personal characteristics, systemic effects, and actual performance, when the raters are asked to consider all three. In the study, a section of 18 final semester MBA students with a median age of 28 were given an initial scenario that described a production environment where management and employees are concerned with productivity and correct attribution of poor work outcomes and then were given five pieces of information about individual workers. Two pieces were specific to the individual: information was about their mechanical comprehension ability and self-rated effort; two were outside the individual's control: equipment set-up time performed by a separate crew and difficulty of production run; and actual productivity (excellent, good, average and very poor). There were 64 data trials (and 10 randomly placed repetitive trials for consistency of evaluation) for each of which the study participants were asked to consider the information given and then give a rating from 1 to 7 for individual effectiveness. The trials were presented so that levels for the factors were not related to levels of any other factors. After the trials, participants were asked to self-rate how important each factor had been in their judgments and how they thought each factor affected their decision.[18]

The goal of the study was to find out how the subjects weighed the factors and came to a decision. Experimental conditions were not manipulated between subjects, but within subjects and provided comparisons between actual and self-reported policies. Productivity was the dominant factor for actual policies, followed by set-up and difficulty of run, with factors outside of the individual workers' control and ability exerting little influence. In their self-reported policies, raters significantly underestimated the influence on them of actual productivity, accurately judged the small effect of ability and effort and overestimated the effects of factors outside of worker control, i.e. set-up and difficulty. The findings seem to support Deming's view, as illustrated by his bead experiment[19], that raters rely on data for actual performance without giving proper consideration to system factors that detract or facilitate performance and that raters in performance evaluations rely on outcomes without looking at causes.[20]

In summary, a disparity was found in the first experiment between the beliefs of supervisors and subordinates about the causes of the subordinates' performance. The supervisors believed that subordinates are primarily responsible for their job performance, while subordinates believed that systemic factors have a major impact on performance. In the second experiment, it was shown that actual productivity was the major factor influencing performance ratings, with raters holding employees personally responsible for negative performance despite available information about system constraints and the raters' professed belief the systemic constraints were factored into the evaluation.

Both studies described above used a convenience sample of MBA students. Therefore there is reason to suspect the significance probabilities and the ability of the authors to generalize their findings and discussion to a wider population. Second, effort was described as self-rated effort and as very fast paced, faster than average, average, or slower than average. Raters are likely to be skeptical of employees self-reports of effort. Third, the descriptions of the independent variables of ability, effort, difficulty of the production run, and productivity were ambiguous. For instance, production run was described as very fast paced, faster than average, average, or slower than average. Actual productivity was described as excellent, good, average, or very poor. These descriptions were inherently ambiguous, and might be subject to differing interpretation. Because of the ambiguous manner in which the level of each independent variable was described, it is possible that raters may have simply used productivity information to evaluate performance.[21]

Person and System Effects in Performance Appraisal: Ratings as a Function of the Degree of Performance Responsibility and Errorfulness

A second paper authored by Robert L.Cardy and Cynthia L. Sutton and titled "Person and System Effects in Performance Appraisal: Ratings as a Function of the Degree of Performance Responsibility and Errorfulness" described two studies.[22] Both studies were conducted to see how evaluators act when person and system factors are more or less responsible for performance. The studies manipulate the individual and systemic factors in the manufacture of car radios, where the individual component was represented by hand-made parts and the systemic component was represented by machine made parts.[23]

The participants in the first study were 126 university juniors and seniors, 76 men and 50 women, enrolled in a business management class who volunteered and participated in exchange for credit. The participants were randomly assigned to either a high person responsibility group where "each of four workers hand crafted nine of the ten components (90% person) that make up a radio and a machine made the other part"[24] or a system responsibility group where "the machine made nine of the ten radio components (90% system) and a worker made the tenth part", with an equal number of men and women assigned to each group.[25] Each participant was asked, acting as the production supervisor, to rate the performance of four workers after reviewing each worker's daily record. This record was described as illustrative of the worker's typical performance, consisting of "the number of errors made by the person and machine for each radio, cost of the errors, and total number of radios made without error".[26] Study participants were told that the radios had to be error free in order to be sold.[27]

Participants were assigned to a group that evaluated a situation where either the worker or system was responsible for 90% of production, and each participant saw conditions of one of two levels of system error and four versions of performance records within the two system-error levels, that "depict[ed] two levels of productivity and two levels of person-related error."[28] For example, a participant assigned to the high worker responsibility group would see performance records that showed either high or low system-related error, with two of the production records showing high performance levels, and two depicting low performance. Each production record showed the number of error-free radios produced by each worker, the total number of errors, and the cost of the errors. The cost of the ten components was adjusted to equal the cost of the radios made under the two different conditions. [29]

Participants used rating forms in the same order as they viewed the performance information, with seven-point Likert scales; the low rating (1) "Poor; This worker seems to be doing a very inadequate job" and the high rating (7) was "Excellent; This worker seems to be doing a great job."[30]

The data were analyzed using analysis of variance (ANOVA). The ANOVA revealed a significant between-subject main effect for responsibility. Ratings were higher in the situation where the machine or system had more responsibility for the outcome than where the person had more responsibility. There was also a significant effect for person error: participants assigned harsher ratings when person errors were high than when person error was low. The main effect for productivity was also significant. Ratings were more favorable when productivity was higher than when productivity was lower.[31]

Study 1 found that raters evaluated employees more positively in the system responsibility condition than in the person responsibility condition. Ratings were also found to be lower in a high person error condition than in a low person error condition. Raters were also found to evaluate more positively when productivity was high than when it was low. [32]

Specifically, participants may have only considered the number of errors made by a worker and not recognize the number of parts across which the errors occurred. In the materials used in the first study, the percentage of errors was constant across the responsibility conditions with only the actual number errors changing. The student raters may have only focused on the absolute number of errors. Ratings were also found to be lower in a high person error condition than in a low person error condition, indicating that raters respond to direct performance information. Participants appropriately lowered ratings because of larger numbers of person errors. Participants gave a significantly higher rating when productivity was higher than when it was low even though productivity was due to both person and system effects.[33]

High productivity resulted in significantly higher ratings regardless of whether person or system was the major responsibility for performance. Participants held a worker largely responsible for production more accountable for overall productivity than a worker with a smaller scope of responsibility. The study authors assert that the raters should have been influenced by the number of person errors and not productivity.[34]

The pattern of the interaction also indicated that the worker benefited by higher ratings when the system was largely responsible for production, particularly when there was low productivity. The responsibility by productivity interaction indicated a larger responsibility influence under a low, as opposed to a high, productivity condition. A possible explanation for this effect suggested by the study authors (the same behavior observed in Cardy's and Sutton's second study described above) is that productivity was a primary factor considered by raters. In the present case, if productivity was low, study participants may have looked for a cause. When the system contribution was the largest, the participant was likely to have viewed the system as the major cause of the productivity problem; this situation benefited the worker. Where person responsibility was high, the participant most likely saw the worker as the major contributor. However, when productivity is high, raters did not look for underlying causes. [35]

The authors postulate that the effects found in study 1 were due to participants' misunderstandings or beliefs regarding the role of person and situation factors in the work situation, possibly assuming that workers had some control over machine performance. In study 2, the authors attempted to make a clearer separation between machine and worker performance by telling participants that machine made parts were produced in another part of the plant by another group of employees. Also added in study 2 were explicit instructions to participants that they should evaluating worker performance without considering the parts made by machine. [36]

The participants for study 2 were 44 male and 28 female juniors and seniors for a total of 72 university students who received credit for their participation. The procedure was nearly identical to that of study 1, except for the differences described above and two manipulation check questions for the participants, first, "How many of the types of components for each radio were produced by the machine?" with an answer scale from 0 to 10 and second, "In this situation, to what extent was an error made by the machine in any way the fault of the production workers?", with an answer range of (1) "None; The worker could exert no control on the error rates of machines" to (7) was anchored with "Totally; The worker could control the error rates of machines."[37]

89.1% of the participants reviewing production where person responsibility was high correctly indicated that one part was made by machine and 75.6% reviewing production where system responsibility was high correctly indicated that nine parts were made by machine. The authors only included those participants who correctly identified the number of parts made by the machine in subsequent analyses. "In regard to the second manipulation check question, 58.7% and 59.5% of the participants in the person and system responsibility condition, respectively, answered "None; The workers could exert no control on the error rates of machine." There was some support for the authors' theory that the manipulation check question might have tapped into a general belief by participants in person responsibility for machine produced parts.[38]

In the second study, participants rated workers based on systemic factors rather than personal factors. However, the interaction between responsibility and productivity did have a significant effect on performance ratings. Ratings were more lenient when person error was low than when person error was high. Ratings were harsher when productivity was low than when productivity was high.

The authors conclude that "raters are influenced by factors beyond the worker's control, even when the situational influences are clearly separated from the contributions of the worker and when instructed to ignore these situational influences."[39]

This study has two important limitations, which are shared at least, in part, by the first. First, its rendition of person and system effects in their simulated experiment are simplified and significantly different from what would be found in the workplace where system effects such as the quality of supervision, interactions with superiors, peers and subordinates, availability of resources, quality of resources, interactions with other parts of the system, systems of reward, organizational policies, organizational justice, degree and form of intra-organizational competition, various cultural factors, etc. are more difficult to identify and determine their effects. Second, the statistical analysis tools used, such as t tests and ANOVA depend on having better than ordinal data and the Likert scale used to produce the data is ordinal.

<u>Do Raters Consider the Influence of Situational Factors on Observed Performance When Evaluating Performance? Evidence From Three Experiments</u>

I. M Jawahar of Illinois State University in "Do Raters Consider the Influence of Situational Factors on Observed Performance When Evaluating Performance? Evidence From Three Experiments" reported on three studies conducted to determine whether or not those evaluating performance will adjust their ratings to take situation or systemic factors into consideration.[40]

The first study had 88 male and 98 female undergraduates for a total of 186 students enrolled in business administration courses. Participants were asked to play the role of a sales manager at G & E, Inc. and to evaluate the performance of their subordinate, Chris. The participants were told "G & E, Inc. manufactures and markets a variety of appliances throughout the United States" and it gathers and accurately estimates information about its different sales territories: the market potential, the number of customers, number of major competitors, and the average amount of time a sales associate would spend traveling between customers.[41]

"This study was a three (situational facilitators, no situational facilitators or constraints, situational constraints) by two (low observed performance, high observed performance) factorial design with both situational conditions and observed performance manipulated as between-subjects factors. Participants were randomly assigned to one of the six experimental conditions".[42]

Information about the entire sales force was provided immediately after the description of G & E, Inc. The average conditions for a company sales associate were 4.8 million average sales, six major competitors in an associate's territory, 50 minutes average travel time between calls, and an $8 million average market potential.[43]

The same information about the sales force was provided across all six conditions. But, the scenario depicting Chris' performance was varied so that this information, when considered along with the information about the sales force, would lead to perceptions of different situational conditions, varying from conditions that facilitate performance to conditions that constrain performance. Observed performance was manipulated by varying the sales achieved relative to the market potential of the sales territory.[44]

Sales performance of Chris was manipulated by changing the percent of market potential with 60% as low and 90% as high. Situational factors were manipulated by changing the number of competitors and travel time between customers, with 4 competitors and 30 minute travel as situational facilitators, six major competitors and 50 minutes of travel time as neither facilitators nor constraints, and eight major competitors and 70 minutes of travel time as situational constraints.[45]

Participants were asked to rate Chris' performance, considering only the information provided, from 1 to 5 with 1 for poor and 5 for very good and then to explain or justify their rating. As a manipulation check, participants were asked four addition questions, first, “To what extent do you think Chris' performance, sales achieved, was helped by situational factors?”, second “To what extent do you think Chris' performance, sales achieved, was hurt by situational factors?”, third “How much credit does Chris deserve for sales achieved (assign a value between 0% to 100%)” and fourth participants were asked to indicate on a 5-point scale their rating of Chris’ observed performance.[46]

Participants assigned to the high-observed performance condition rated observed performance significantly higher than participants assigned to the low-observed performance condition. Within each situational condition, observed performance of Chris was rated higher in the high-observed performance condition than in the low-observed performance condition. Participants considering circumstances where situational factors facilitated performance (fewer competitors and less travel time) reported that Chris was helped by situational factors more than did participants viewing a situation where performance was not facilitated or constrained, who in turn indicated that Chris was helped more than did participants in the situation where constraints were present. Likewise, participants in the situational constraints condition reported that Chris was hurt by situational factors more than did participants where there were no facilitators or constraints, who in turn reported that Chris was hurt more than did participants in the situation where performance was facilitated. All t tests indicated that the manipulation of situational conditions was successful.[47]

The presence or absence of circumstances facilitating or constraining performance (more or less competitors and more or less travel time) substantially influenced the level of ratings with ratings where constraints were present significantly higher than were ratings in the no facilitators or constraints condition, which in turn were higher than were ratings in the situation where performance was facilitated. As may be expected, ratings in the constrained circumstances were significantly higher than were ratings where performance was facilitated. Where performance was constrained, ratings were higher than where performance was neither facilitated nor constrained and ratings were in the facilitator condition were lower than were ratings in the no facilitators or constraints condition.[48]

It appears that participants underestimated the impact of constraints and adjusted ratings upward to a lesser extent but overestimated the impact of facilitators and adjusted ratings downward to a greater extent. The level of observed performance also influenced ratings such that ratings were higher when observed performance was higher than when observed performance was lower.[49]

The significant main effect for situational factors may indicate that some raters are capable of taking situational influences into consideration when evaluating performance. This interpretation is further strengthened by participants' answer to the question: "How much credit does Chris deserve for sales achieved (assign a value between 0% and 100%)." Participants in the situational facilitator, no facilitator or constraint, and situational constraint conditions indicated that Chris deserved averages of 58%, 71 %, and 81% of credit for sales achieved, respectively, even though within each observed performance condition, Chris performed at the same level.[50]

This pattern of results indicates that raters in the study were able to give more credit and assign higher evaluations when an employee achieves a certain level of results under constraints and give less credit and assign lower evaluations when an employee achieves the same level of performance under favorable conditions.[51] The study author identified two potential limitations to study 1. First, undergraduates have limited experience with performance appraisals. Second, each study participant only evaluated the performance of one salesman, whereas in a life situation, a rater would evaluate many employees with varying results and system constraints. [52]

Study 2 was identical to study 1 except for changes that addressed the two limitations identified in study 1. First, the participants were human resources (HR) managers who had prior experience in performance appraisals. Second, each participant evaluated six employees in each of the possible situations, which eliminates the situation in study 1 of each participant making one rating. The only other difference was since participants were seeing information for six sales associates; the author used six different names instead of just Chris. Participants were the 65% of HR professionals affiliated with a local HR organization who provided useful data after a mailing and follow-up telephone call; that is, the response rate was 65%. [53]

As predicted, situational conditions substantially influenced the level of ratings. Ratings where performance was constrained were higher than ratings where performance was neither facilitated nor constrained and, in turn, higher than ratings where performance was facilitated. Again, as before, observed results also significantly impacted ratings. Sales associates who achieved a higher level of observed results had higher ratings than sales associates who did not. Also, when the situation was more difficult, the rating was higher.

This significant effect for situational factors and the interaction between situational factors and observed performance may indicate that some raters take situational influences, when the raters are made aware of them, when evaluating performance.[54]

Study 2 successfully replicated the effects reported in Study 1. However, in Study 1, undergraduate students served as raters, while HR managers experienced in conducting performance appraisals served as raters in Study 2. The results of these two studies indicate that both novice and experienced raters may adjust ratings depending on the ratee's situation when the rater is aware of the situational factors. An illustration the participants understanding of situational factors is seen in their response to: "How much credit does Chris [Pat, Sam, Al, Joe, or Mick] deserve for sales achieved (assign a value between 0% and 100%)." Participants indicated that Chris, Pat, Sam, Al, Joe, and Mick deserved averages of 57%, 70%, 79%, 72%, 83%, and 88%, respectively, of credit for sales achieved. This takes into account that Chris, Pat, and Sam achieved sales of 60% of market potential, and Al, Joe, and Mick achieved sales of 90% of market potential while Chris and Al were aided by situational factors, and Sam and Mick were constrained.[55]

Study 3 looked at the assertion that performance evaluations are equally reflections of the rater and the individual being rated. Specifically, it examined how individuals that are high self-monitors and low self-monitors differ in rating of workers whose performance is facilitated or hindered by situational conditions. Self-monitoring is the ability of a person to consider and be influenced by situational conditions. High self-monitors are able to interpret social environmental cues and adapt their behavior accordingly; low self-monitors are less able to discern environmental cues and therefore less able to adapt their behavior and judgment to the situation.[56]

The author predicted that high self-monitors would be better at considering systemic constraints on the G & E sales associates than low self-monitors. Snyder and colleagues' 18-item Self-Monitoring Scale was used to classify the participants as either high or low self-monitors.[57]

The mechanics of the study were the same as study 1 except that this study's design was a three (situational facilitators, no situational facilitators or constraints, situational constraints) by two (high self-monitors, low self-monitors) factorial design. Each sales associate had the same performance, achieving 90% of market potential.[58]

As the author predicted, ratings of high self-monitors were significantly lower than ratings of low self-monitors when the sales associates' efforts were described as facilitated by fewer competitors and less travel. Ratings of high self-monitors were significantly higher than ratings of low self-monitors when the sales associates' efforts were hindered by more competitors and more travel. Ratings of high and low self-monitors were not significantly different when the sales associate was described as neither helped nor hindered, having an average number of competitors and travel time.[59]

One potential limiting factor, not noted by the author, was the response rate. The rates for studies two and three were 65% and 87%, respectively. There is no information about why people that did not participate in the study chose not to respond, so there is no way to know if there was bias introduced by nonresponse.

One major limitation of the study is the extent to which it can be generalized to situations in which system limitations are not so readily apparent or pointed out to the raters or situations in which the raters are not human resources professionals. The question is whether or not the results observed with these raters under these particular circumstances can be repeated in other experimental situations or more importantly, a real workplace environment with all its complexity. A potential unexplored answer to this question is whether training in identifying systemic effects instead of pointing out the effects to raters would be similarly successful in permitting raters to account for systemic effects in assigning ratings.

Conclusions of Studies

In the first study, we have the observation in the context of the study that subordinates and supervisors have different views on the role of systemic effects on performance. Supervisors generally are more likely to believe that individuals are responsible for their productivity; which is in line with the traditional human resources view of performance. Subordinates are more likely to view situational or systemic conditions as largely responsible for their performance; this is consistent with Deming's view of performance rating. As illustrated by Deming's bead experiment, raters will hold employees personally responsible for negative performance when there is some visible form of outcome. At the same time, supervisors may have some information about system constraints, but falsely believe they are factoring the systemic constraints into their evaluation when that is not the case. This was seen in study 2; even when raters were unable to ignore particular system factors even when explicitly instructed to do so. However in that study, it did appear that raters attempted to give more weight to errors in evaluating productivity when errors were made by people rather than machines.

Study 3 demonstrates that in the controlled situation of the study, where raters were clearly given systemic factors to consider, raters with different professional backgrounds did and were capable of taking situational influences into consideration. Those raters evaluated performance by adjusting ratings of employees operating under constraining conditions upward and adjusting the ratings of employees operating under conditions that help performance downward in comparison to those employees working under average conditions that neither hindered nor helped performance. Although raters in study 3 seemed to be able to successfully consider systemic factors, they seemed unable to fully escape the traditional belief of individual responsibility that is ingrained in American culture. There was a tendency for raters to underestimate the impact of constraints on performance. They would adjust ratings upward to a lesser extent than might be merited, and raters seemed to overestimate the influence of facilitators on observed performance. They would adjust ratings downward to a greater extent, thereby concluding that employees were getting more help than was really the case. One possible interpretation of these facts might be raters expressing disapproval of employees getting outside help rather than succeeding on their own efforts, whether or not that was possible within the system.

A final conclusion from these studies is that certain types of people, as shown in study 3, who were high self-monitors as opposed to low self monitors were better at discerning situational influences when they were presented with them and adjusting ratings to incorporate those systemic influences.

Discussion

So, where does this leave companies trying evaluate the performance of their employees in order to make management decisions? One thing to consider at the outset is the limitations in these study conclusions; even given accurate results within the experiment, making the leap to a real workplace situation is much more complicated and challenging.

First, researches have found limitations when looking at "paper people" rather than studying the behavior of people in real situations. One limitation is that paper studies exaggerate the significance of findings as compared to observation studies.[60] Jawahar counters that "one could argue that in many jobs (e.g., loan officer), outcomes of behaviors (e.g., number of loans issued, dollar value of loans, etc.) are likely to be just as important, if not more important, than observable behaviors in influencing performance evaluations." [61] While true, his statement unconsciously reflects the traditional performance appraisal view of looking at outcome (here, for a loan officer, number or dollar amount of loans issued) and shows a second and more significant problem when attempting to apply the results of these studies to real jobs in real companies. In a paper based experiment, it is much easier for the individual performing evaluations to consider systemic effects that are explicitly presented to them, although, as seen in Studies 1 and 2, this is not a guarantee of success. However, it is a different challenge for those rating employees in companies to incorporate systemic effects into performance evaluation ratings. The rater must first be able to figure out what systemic affects are and whether they facilitate or constrain an employee's performance, to what degree they affect performance, and then take that into account when rating.

One method of getting at the systemic affects is to ask employees to evaluate themselves, since subordinates are apparently more able to detect system affects than are supervisors. There is evidence that self-ratings can be accurate in some situations.[62] However, there is the issue, demonstrated as a possible problem in Study 1 by Carson, Cardy and Dobbins, that there is an inherent distrust in the ability of self-raters to be objective. A possible solution to this problem is using employee self-evaluation to identify system factors for managers and then having the manager incorporate these systemic effects into their ratings.

Another possibility utilized by companies is peer evaluation. Since the individuals performing peer ratings work within the same environment as those that they are rating they may be able to, as in self-evaluation, see systemic effects. They also may be more able to perceive individual characteristics and behavior and separate them from system effects. Little or no actual research has been performed to investigate the ability of peer evaluation to separate systemic effects. [63] Peer review can also be more sensitive to political manipulation. In their book advocating the abolition of performance appraisals, Coens and Jenkins cite politics as one important reason appraisals do not work since supervisors and rated employees try to manipulate the system for a particular outcome. For example, supervisors knowing the goals they want achieve in advance and using the evaluations as a tool to accomplish them, might make an employee they personally trained look good so they are perceived more positively.[64] Employees are able to gain better evaluations for themselves by using their ability to evaluate their peers poorly. There is also the incentive for peers to rate each other poorly in order to advance in their organization. If proper checks are not instituted then peer review can make evaluations worse. Erich Dierdorff and Eric Surface in their study on peer evaluation assert that their "findings suggest the importance of identifying and controlling for systematic influences beyond ratee performance when using peer ratings for administrative decisions. Here, a central idea could be to eliminate the influences of factors outside that of actual ratee performance (i.e., context effects) in order to more accurately capture cross-situation performance."[65]

Another method of review, the 360-degree feedback, aims to give a fuller picture of someone by corralling anonymous input from peers, subordinates and supervisors. 360 degree feedback is supposed to give the best of all worlds since the manager solicits information from peers and those above and below. An example of the problems with this method was found in a recent *Wall Street Journal* article. At a manufacturing company where a business-segment manager works, the 360-degree process has been suspended due to mutual back-scratching. A Chief Operating Officer of a different company once received 360-degree feedback from three anonymous peers who reviewed him positively and three others who reviewed him very poorly.[66] There is no way for a manager to sort out such confusion. In any case, 360 degree feedback currently utilizes the same flawed tools as other appraisal systems, without evidence of utility to justify their use. The only hope would be multiple confirmation of the same information, and two poor tools could easily confirm each other.

Conclusion

Deming asserts that even if raters are able to recognize some systemic effects, they cannot recognize all of them. However, businesses cannot be constrained by this lack of knowledge; sometimes they must act regardless of whether they have all the information. Knowing everything about a situation is impossible. Business organizations do not need to know whether performance appraisals are a perfect tool. They do need to know if they are a useful tool. There is empirical information to suggest that in some circumstances where raters are made aware of systemic effects on performance raters can and do consider these effects that facilitate or hinder individual performance and are able to appropriately adjust ratings upwards or downwards to account for these effects. This conclusion, even if it could be generalized to other circumstances, including real workplaces, still leaves the question of whether or not raters can *identify* system limitations or facilitators when they are not pointed out to them, as was done in Jawahar's experiment. Further study is needed to see whether raters are able to independently identify systemic factors. One possible avenue of study is whether training raters to identify systemic effects would increase their ability to identify such effects that hinder or facilitate performance.

Endnotes

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USING THE DEMING MANAGEMENT METHOD TO DEVELOP RISK MANAGEMENT PLANS ON COLLEGE CAMPUSES

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The focus of this paper is to show how the Deming methodology may be used on college campuses to coordinate input from faculty, staff and administrators into a comprehensive risk management plan for dealing with non-financial risks [i.e. those that impact human life and safety].

Introduction and Literature Review

As colleges seek to address campus risk to health and safety, the need to involve all segments of the academic community will require the Deming methodology to engage all participants in the risk management process. On college campuses, administrative functions, such as campus safety and public health have been separated from the academic aspects of the university. Under the corporate management model employed at many universities, risk management activities are housed within the office of the vice president of finance or business operations. Despite the tragic consequences of campus shootings at South Carolina State University in 1968, at Kent State and Jackson State Universities in 1970, at the California State University Fullerton Library in 1976, the University of Texas in 1991, the University of Iowa and Penn State University in 1996, Appalachian State University School of Law in 2002, the Weatherhead School of Business at Case Western University in 2003, at VPI in the Spring of 2007, Delaware State University in September of 2007, and Louisiana State University in December 2007, as well as, the 1970 bombing at the University of Wisconsin, risk management planning on most university campuses is administratively driven without active engagement of faculty, students or staff in the planning process.(1)

A 2002 survey and study of risk management practices at 15 private and public universities (Balasubramani, Ramjee and Thompson [3]) found that none of the surveyed schools (1) had a comprehensive plan for addressing campus-wide terrorism risks, (2) included a process for incorporating faculty, staff or student input into the design of campus security, and (3) incorporated faculty, student or staff evaluation and periodic feedback into the risk management plan. Even though past studies support the benefits of risk management or quality improvement planning being developed out of discussions with faculty, students and staff (Buisman, Thompson, and Cox [5], Hughes [14], Likins [16], Montano, Hunt and Boudreaux [17]) university administrators continue to avoid or limit such activities in favor of policies and procedures created by university managers. The lack of active involvement of individuals impacted by managerial decisions in areas of health and safety at the university are also at variance with ideas and concepts found in operations research (Hillier and Lieberman [13], pp. 12-20) and risk management (Williams and Heins [20], pp. 23-35 texts. For example, Williams and Heins note that the security function is the responsibility of all departments at all levels of an organization (Williams and Heins [20], p. 24).

Two risk management concerns arise from the disengagement of faculty, students and staff in the planning process. First, administrators may have less knowledge than faculty, students and staff, about key risks, and the methods for addressing them. In addition, because faculty, students and staff have not been actively involved in the development of risk management plans, they are unlikely to be aware of them. The failure to communicate and practice risk management programming at universities is an impediment to loss reduction and prevention in the event of a campus-wide threat to health and safety. One key determinant of the viability of a risk management plan is its awareness by those groups that are to use them when an emergency occurs (Dorfman [11], pp. 59-60). The 2002 study of Balasubramani, Ramjee, Thompson [3] showed that even with surveyed schools that utilized some type of risk management programming, there were no communication systems and action plans in place to immediately respond to campus-wide risks to the well being of faculty, students, staff or administrators. Deming [10] presents a similar perspective when identifying the role of the manager within an organization. He notes that a manager: (i) understands and conveys to his people the meaning of a system (ii) helps his people to see themselves as components in a system, to work in cooperation with preceding stages and to achievement of all stages of an aim, (iii) understands that people are different from each other and tries to create for everybody interest and joy in work. (2)

During the past two decades there have been a number of research initiatives to encourage the application of Deming principles incorporating faculty/administrative collaboration to campus quality improvement projects. A 1991 article by Hughes [13] identified the important role played by faculty with respect to quality improvements in human resource management at universities, noting that faculty tenure makes them a significant and continuing source of ideas about beneficial change. (3) A 1993 paper by Likins [16] presents a case study on leadership, change and total quality management at Lehigh University that highlights faculty involvement with the incorporation of Deming's 14 points on their campus. (4) Likins [16] observed that despite the fact that education is the principal focus of higher education, universities tend to be less than enthusiastic in their commitment to employee training, a position at variance with Deming's call for the revamping of management training [Deming [9], point 6, institute training, p. 52]. Further, Likens noted that in order for universities to adopt Deming's principles, "they must be understood and adopted (or adapted) by all the independent actors in the university and that means virtually everybody. . . .total quality commitment means quality everywhere for everyone, from the food service center to the Nobel laureate's laboratory. A total quality commitment will not come quickly or easily but is worth striving for." A 1995 study by Clayton [8] examines the implementation of kaizen incremental quality improvement processes using Deming principles to make long-term planning decisions at Aston University in Birmingham, England. Clayton [8] reported that the university implemented a program of quality circles as early as 1987 that involved the active participation of staff in "quality" projects. These circles were expanded to include academic departments, with 150 staff being active members of 17 ongoing quality improvement projects. As an outgrowth of the circles, process councils were developed to husband resources to train those recruited to work on sub-processes, document process improvement, prioritize areas for improvement, integrate priorities with the university's critical success factors, establish measures for monitoring and assuring systematic improvement and reviewing the progress of projects (Clayton [8], p. 597 and p. 599.) Clayton noted that, "Performance can only be improved if there is deep understanding of the complete system, 'profound knowledge" in the language of Deming, and attention to the chain of interdependencies." (5) A more recent, 2005 article by Montano, Hunt and Boudreaux [17] offers insights into the application of the Deming Shewart cycle to student advising at Lamar University in Beaumont, Texas. The paper reported on the development of a quality improvement process based on discussions with team members consisting of a faculty facilitator and members of the advising staff at Lamar University. This team identified the following corresponding relationships: **S**uppliers – student information from high school, other colleges; **I**nputs – catalogues, student files and records; **P**rocess – activities within the student center dealing directly or indirectly with students; **O**utputs – results of advising, graduates, students with a C average or better, change of majors and **C**ustomers - people who receive the output from the student center, employers, graduate schools, with primary customers being general studies, undecided majors and those students experiencing academic problems. (Montano, Hunt, and Boudreaux [17], p. 1108.) While the Montano, Hunt and Boudreaux [17] study offers interesting flow charts, diagrams and quality control charts dealing with advising, one can not but wonder what relevant information might have been left out due to the lack of significant faculty involvement in the quality improvement process. Letters of recommendation, knowledge of the major, as well as, latest research trends within a discipline fall in the purview of faculty and bear directly on quality student advising.

Universities could benefit from published research dealing with the use of the Deming methodology by businesses in the areas of quality management and/or health and safety planning. A 1994 paper by Anderson, Rungtusanatham, and Schroeder [2] advances the notion that using the Delphi method for uncovering processes in need of quality improvement may help an organization in meeting Deming's 14 points. This view would coincide with notion of using faculty, students and staff as experts in particular areas of a risk management plan. (6) A 1997 investigation by Wood [21] provides evidence of the advantages of using the Deming model to develop viable disaster plans. Wood [21] presents information on how employees in the Alfred Murrah Federal Building in Okalahoma City were able to develop a data recovery system that proved helpful in restoring services in the aftermath of the bombing in April 1995. This article notes that the main reason why corporations and federal agencies are seeking to develop data disaster plans is the imposition of government mandates from organizations such as the SEC or the Federal Reserve. (7) Coincidently, in the aftermath of the VPI shootings, the Commonwealth of Virginia [7] issued a report on the incident calling for the development of response plans to critical incidents. The University of Virginia [19] produced a critical incident management plan in September 2007 which provides an extensive listing of response strategies for critical incidents, but does not outline quality management processes to adapt to new campus threats or incorporate information from students, faculty and staff. A more recent paper by Salazar [18] provides insights into the application of the Deming philosophy to safety systems within manufacturing companies. While the article incorporates the four basic points dealing with constancy of purpose, training, measurement of system quality and implementation into injury prevention and workplace safety, the ideas appear equally applicable to university safety. Two salient suggestions relate to training. First, the author notes that in order to improve the quality, an operation's safety system should "redefine or clarify the safety professional's role to place an emphasis on training at all levels, commit resources for safety training in existing training/organizations/department training groups, establish comprehensive training for all new employees, institute a system of continual re-education and retraining in safety, and periodically measure the quality to the system derived from training (i.e., measure the quality of the system, not the quality of the results). Second, two indicators should be used when assessing system quality, sample of unsafe practices, behaviors or conditions (safety audits), and actions taken by management to positively affect system safety. " (8)

Integrating Deming Principles into the Risk Management Process

A risk management plan represents a process for defining, identifying, addressing, and re-evaluating how to deal with risks to an organization. It is a total quality management process in the sense that the plan must be updated to incorporate newly identified risks, better techniques for handling old and new risks due to the evolution of an organization's operations. The five steps to the risk management process are: (1) defining what constitutes a significant risk to the organization (2) identification of all relevant risks to the organization (3) determining what methods might be effectively employed to deal with each particular risk (4) implementation of the risk technique from (3) to the risk identified in (2), and then (5) evaluation of the risk management process with suggestions to improve the system serving as feedback to step (1). Risk management plans are designed to allow organizations to identify and deal with risk. An organization can choose between either voluntarily addressing identified risks or involuntarily assuming those risks externally imposed by outside forces. Involuntary risk assumption is unhealthy to the longevity of an organization because of the potential for large, unrecoverable loss. In higher education, loss of life, reputation or the physical ability to transmit learning represents types of catastrophic loss that should not be involuntarily assumed. Catastrophic risks can be due to both natural and man-made events. Two recent examples in each of these areas would be Hurricane Katrina for the five universities in New Orleans, and the massacre on the campus of VPI. Risk management processes are designed to identify significant risks, develop, communicate and implement appropriate methods for dealing with those risks across the organization and update plans to deal with emerging risks. Within the broad risk management framework are plans for both pre and post loss activities. Pre-loss planning focuses on identification of significant risks, loss prevention and control, creation of risk management plans, education and communication of the risk management program, coordination of timely response to risk events, evaluation and updating of pre-loss plans. Post-loss planning deals with loss reduction, response communication, data gathering, and prevention of further loss from an incurred risk. An important element, missing from university risk management programming is the incorporation of student, faculty and staff input into all phases of pre and post loss planning. Recent studies, such as the investigation into the what went wrong at VPI [7] along with Virginia's critical incident management plan [19] serve to illustrate how much risk management planning on college campuses is viewed as an ex post response to catastrophic loss. Such university risk management programming appears to be devoid of the need to utilize the expertise of faculty, staff or students in addressing safety. Despite having faculty, students and staff who are doing research in such areas as psychology, sociology, criminology, risk management and safety engineering, universities continue to ignore important sources of information on how to handle risks within the confines of their campus. Laying aside the important issue of gathering information and suggestions from those impacted by various campus risks, one other absent feature of university risk management planning is communication and testing of risk management procedures. If students, faculty and staff are unaware of what the university's response will be in the event of a disaster how likely is it that those plans will be carried out should a "critical incident" occur? If the university has developed elaborate plans, but has no commitment to carrying out a test and practice of the system, what are the chances that students, faculty and staff will be able to complete risk management assignments during a real disaster? While it is very easy for university administrators to create action plans, and lengthy critical incident responses, the actual implementation of such programmed responses may be difficult when the majority of stakeholders have not been actively included in the process. However, from a university administrator's perspective, having a risk management plan along with critical incident responses may be helpful in demonstrating to the public a commitment to dealing with risk in the event of a disaster. Ironically, the mere presence of a plan doesn't guarantee that it will be effective or carried out in such a way as to mitigate against large loss in the event of catastrophe.

University risk management planning could be improved by incorporating Deming principles in each step of the risk management process. A quality management team consisting of representative leaders from faculty, staff, students and administration would meet and define a process for gathering information from each constituency on what are significant campus risks. Such a group would also work to create and coordinate a set of subsystem groups consisting of students, staff, faculty and administrators to: (1) identify risks and (2) develop methods for avoiding, preventing, controlling or transferring risks. An initial statement on what constitutes a significant campus risk would serve as a beginning metric for identifying, classifying and prioritizing risks by the various subsystem groups. One subgroup could perform risk assessment to determine (1) what risks might impact human life, continued operations or the reputation of the institution (2) how likely are these risks going to happen (3) how severe might loss be from the risks. Information from this group could be used by the quality management team to prioritize risks and assign pre-loss and post-loss assessment and action planning to other subgroups. Another subgroup could review and evaluate current risk management action plans in light of identified and prioritized risks to determine what steps could be taken to improve communication, prevention, avoidance or response to significant risks. A communication and education subgroup could work on creating training and practice activities designed to ingrain risk management in the daily activities of the campus. One outgrowth of such a process might be to lower the incidence of risks such as theft, and assault while moving towards addressing the major risk of campus violence. Within each subgroup a risk-based decision making process utilized by ABS Consulting [1] would be incorporated along the following lines: (9)

Define the Decision Structure ➔ Risk Assessment ➔ Identify & Classify Relevant Risks ➔ Suggest/Apply Risk Technique ➔ Impact Assessment/Evaluation and Feedback

Communicate and Educate Others about Ideas/Plans/Results/Suggestions

By defining the decision structure for each group, everyone will be aware of what type of risk issues will be addressed, who are the stakeholders and how are they to be actively engaged, the manner in which choices will be made, what factors will influence decisions, and what metrics may be used to assess and evaluate ideas and suggestions. Performing risk assessment will lead to an understanding of the current state of risk management programming and coverage of likely loss producing risks, frequency and severity of risks that involve loss, and maximum possible loss. The identification and classification of risks will allow group members to focus on risk characteristics, interrelationships between risks, a hierarchical structure of risks based on severity and frequency, and indicators of what types of risk techniques might be most effective in preventing, limiting or avoiding risks. Based on risk classification, a determination is made of the particular technique that best addresses an individual risk. In cases where loss of life or injury might be extensive, a suitable risk method would be avoidance if at all possible. For example, some urban campuses use bus transportation to move students in the evening from dorms to library in order to avoid or reduce the possibility of student assaults. Other campuses have well lighted, secure parking facilities attached to teaching buildings to reduce the chance faculty or staff will be attacked at night after class. The decision on what type of risk management technique works best with the compendium of university risks resides with subgroup members who are aware of the unique circumstances on their own campus.

University risk management planning should include Deming's cause and effect methodology to root out key factors that influence frequency and severity of risk. For example, the voluminous Commonwealth of Virginia report on the VPI shootings [7] provides a chronology of events leading up to the massacre. While several key factors emerge such as the early report of VPI faculty on the mental difficulties and threatening behavior of Cho Seung-Hui to university administrators, the inability to get Cho into treatment, lack of a complete communication system and decision model to lock down the VPI campus after the first shooting, there is little in the way of a framework for developing action plans on the basis of learned information from the shootings. By breaking down subgroup activities into manageable risk areas, cause and effect relationships can be explored to identify factors contributing to risk and what methods might be used to deal with them. For example, a common thread in the Texas, Iowa, Cal-State, Case Western, and VPI shootings is the mental instability of the perpetrators. Given federal restrictions on the release of student information to family members due to the 1974 Family Educational Rights and Privacy Act, limited options available for involuntary commitment of a mentally ill student, and state restrictions on suspension of suicidal students, there should be a subgroup of faculty, students and staff studying how detect, monitor, evaluate and treat mental illness for all participants at the university (i.e., administrators, faculty, staff, and students). (10) The subgroup might also consider risks to the university from members of the campus contracting contagious diseases that could adversely impact operations. Philosophically, university subgroups will need to come to terms with whether the provision of higher education is a privilege or a right for students seeking an education.

Traditionally, the admission process, with the selection of students deemed capable of entering the university, appears to favor the ideal that study is a privilege which would require matriculating students meet conditions conducive for learning. On the other hand, at public universities, where students are automatically accepted from community colleges or high schools based on minimal qualifications, there is the perception that higher education is a student right. Depending on the teaching philosophy at each respective institution there may be a number of different methods for dealing with student mental illness, legal restrictions on the release of information, and commitment of ill students. For example, one university might require, as a pre-condition for admission, that the student sign over the right of the parents to have full and complete access to all of a student's records. Another university might develop policies that would require a student, faculty, staff or administrator to seek and maintain counseling, and compliance with prescribed medications as a condition for continued participation at the university. One salient feature of this issue is the varying nature of the response to the risk based on the local conditions at the school. A university that has a medical school is likely to have a different perspective on addressing mental illness than a small, private school in a rural setting. Consequently, a subgroup consisting of representatives from all members of the campus community will be better able to address health issue risks based on their knowledge, appreciation, and background on the type of risks faced by the academic community.

Teams working on the university risk management program could benefit from a clearly defined and articulated data gathering and benchmarking process. Collection of risk information should be part of both pre and post-loss risk management planning. Incident reporting and outcome data needs to be recorded on a consistent and common basis to allow for benchmarking with other institutions. By using information technology, such as the SMART public safety software system, universities may be able to record, access, and report on public safety and health related risks that can then be addressed in the risk management process. (11) In addition, by adopting a standard reporting format, universities may share information on common risks along with ideas on how to address them.

Overriding the work of the quality committee and the working subgroups is the role of education, training and practice on the risk management plan for the entire campus. Within each of these risk management groups there should be educational training, and practice initiatives on a continuous basis. One of the challenges of implementing a risk management program on a college campus is the periodic influx of students, faculty, staff and administrators, which makes it difficult for everyone to be aware and prepared to execute action plans. In order to be effective, the risk management program needs to be ingrained on the campus to the extent that educational training, and practice is a part of the university culture. Consequently, educational training should be included in the orientation process for administrators, faculty, students and staff, with at least one preparedness drill occurring every semester. The use of educational technology, such as WebCT, Dreamweaver, and downloadable instruction files, could help disseminate information and updates on the risk management process. As part of the evaluation and feedback step to the risk management process there should be an assessment of training and practice to measure effectiveness, and identify areas for improvement and ways to better communicate and support the risk management plan.

Conclusions

Given the importance of campus health and safety as a precursor to education, university risk management plans need to be considered as a top priority to improving academic programs. After recent events on the campuses of Appalachian State, VPI, Case Western Reserve, Delaware State, and Louisiana State, universities can no longer claim events involving violent events that endanger students, faculty, staff and administrators are unforeseeable or occur so infrequently as to not require a comprehensive risk management response. The risk management process involves a deliberate approach to the identification, prioritization and treatment of risks that may impact human life on a college campus. Risk management planning could be greatly enhanced by having universities employ Deming principles to create a truly continuous, quality improvement program that includes faculty, students, staff and administrators. Benefits from adopting such an approach would come in the areas of: (1) a better understanding of the root causes of campus risk and ideas about how to address them (2) improvement of training, communication, education and practice of risk management action plans (3) an ability to collect relevant risk information, benchmark and update the risk management process and (4) active involvement of all campus participants so that they feel ownership of the risk management program.

Footnotes

1. South Carolina State University, 3 students killed by local policemen who fired into a crowd protesting segregation, Sellers, Cleveland L. (1998), "Orangeburg Massacre: Dealing Honestly with Tragedy and Distortion," The Times Democrat, January 24, 1998; Kent State University, 4 students killed, 9 wounded when Ohio National Guard Troops fired on a group of Vietnam war protestors in the middle of campus, Lewis, Jerry M. and Thomas R. Hensley, "The May 4 Shootings at Kent State University: The Search for Historical Accuracy," www.dept.kent.edu/sociology/lewis/LEWIHEN.htm; Jackson State University, 2 students killed, 12 wounded when city and state police fired on a group protesting the Vietnam war, deaths at Kent State and racial inequality resulting in a riot, http://www.may41970.com/Jackson%20State/jackson_state_may_1970.htm ; California State University, Fullerton Library, custodian shot and killed 7 fellow employees, injured 2 others, later pleading guilty by reason of insanity, http://media.www.dailytitan.com/media/storage/paper861/news/2006/05/17/News/Victims.Fall.In.Wake.Of.Killing.Spree-1997630.shtml ; University of Texas clock tower shootings by a one time engineering student, 17 dead, 31 wounded, http://www.npr.org/templates/story/story.php?storyId=9619382 ; University of Iowa, a graduate student shot and killed 3 professors on his doctoral committee, another graduate student in the physics department, an administrator, another student worker was seriously injured, http://en.wikipedia.org/wiki/Gang_Lu ; Penn State University, a 19 year old, female resident of University Park, with psychiatric problems used a rifle to shoot and kill an undergraduate journalism student, and wounded another student while they were walking across campus, http://en.wikipedia.org/wiki/Hetzel_Union_Building ; Appalachian State University School of Law, a student who had flunked out of law school shot and killed the Dean of the law school, another faculty member, and a student, http://archives.cnn.com/2002/US/01/16/law.school.shooting/ ; Case Western Reserve University, former student who lost a legal suit with a university employee, went to the Weatherhead School of Business building opened fire killing a graduate student and injuring 10 others, http://www.cnn.com/2003/US/Midwest/05/10/university.gunfire/index.html ; VPI, the largest university massacre to date on a US campus, caused when a student with psychological problems killed two dorm room students, followed by a shooting spree on campus which left 25 more dead students along with 5 faculty, another 33 students were injured, http://www.governor.virginia.gov/TempContent/techPanelReport.cfm ; Delaware State University, a freshman student shot and killed one student and injured another, http://en.wikipedia.org/wiki/Delaware_State_University_shooting ; Louisiana State University, 2 doctoral students were shot and killed within their student housing complex, the perpetrator has yet to be found, http://www.usatoday.com/news/nation/2007-12-14-lsu-students-slain_N.htm?csp=34 ; University of Wisconsin-Madison, a graduate mathematics student was killed when an anti-war protestor detonated a fertilizer bomb outside the Army Math building, three of the bombers were apprehended, one was never found, http://www2.jsonline.com/news/state/aug00/sterling20081900a.asp .

2. Deming, W. Edwards, The New Economics for Industry, Government and Education, (Cambridge, MA., MIT Center for Advanced Educational Services, 1994), pp. 125-128; These same ideas are reinforced within the transformation principles found in Deming [9], pp. 24-87, particularly relevant are points (1) create constancy of purpose for improvement of product and service, (9) break down barriers between staff areas which would include administrators, faculty and students, (13) encourage education and improvement for everyone within the organization and (14) take action to accomplish the transformation.

3. Hughes [13] noted that faculty autonomy and difficulties in defining and measuring educational products may require adaptation of the Deming methodology, however, faculty or their appropriate representatives must be included in all areas of a planned change in higher education, p. 54.

4. Peter, Likins, "Leadership, change, and TQM, The Lehigh University Case," Public Administration Quarterly, (Spring 1993), Vol. 17, #1, p. 3. "Despite the fact that our principal function is education, a sister activity of training, those of us who work in the field must admit that universities are notoriously deficient in their commitment to training their own employees. . .We commit ourselves mightily to the task

of learning about ideas, but we tend to be scornful of those who train people actually to execute specific tasks."

5. Marlene Clayton, "Encouraging the Kaizen Approach to Quality in a University," Total Quality Management, Dec, 1995), Vol. 6, #5, p. 599.

6. John C. Anderson, Manus Rungtusanatham, and Roger G. Schroeder, "A Theory of Quality Management Underlying the Deming Management Method," The Academic of Management Review, (July 1994), Vol. 19, #3, pp. 473-510. In addition, the authors point out that: "the effectiveness of the Deming management method arises from leadership efforts toward the simultaneous creation of a cooperative and learning organization to facilitate the implementation of process-management practices, which, when implemented, support customer satisfaction and organizational survival through sustained employee fulfillment and continuous improvement of processes, and services," p. 480.

7. Charles G. Wood, "Using Quality to Create a Viable Disaster Plan," Quality Progress, (January 1997), Vol. 30, # 1, pp. 59-64. Wood notes that developing a viable disaster plan is likened to making lemonade from lemons, because SEC and GAAP accounting practices require that a plan be addressed annually by boards of directors, and failure to do so creates an out-of-compliance issue generating a footnote to the corporation's financial statements, p. 59.

8. Noe, Salazar, "Applying the Deming Philosophy to the Safety System," Professional Safety (August 2006), Vol. 51, # 8, pp. 53-54. Salazar also reiterates the accountability and responsibility management has for establishing and implementing system controls.

9. ABS Consulting, Risk-Based Decision Making, (Rockville, MD, Government Institutes, 2001), pp. 4-7. This process definition is an adaptation, of the principles of risk-based decision making outlined in this text, to campus risk management planning.

10. Alexander B. Cohn, "Virginia Addresses Student Suicides," The Harvard Crimson, February 27, 2007, which may be accessed at: http://www.thecrimson.com/article.aspx?ref=517322. Some two months before the VPI massacre in Blacksburg the Commonwealth of Virginia legislature unanimously approved a law banning the suspension of any suicidal student. One Harvard researcher, Dr. Paul Barreira noted that one consequence of the law would be to require Virginia's public universities to provide treatment for suicidal students. Chris, Jenkins, "Debate Swirls Over Rules Allowing Mentally Ill to be Forced into Treatment," MSNBC, December 30, 2007, noted that in New York city, Kendra's Law has allowed those with mental illness to obtain help when the consequences of their mental condition prevents them from willingly seeking assistance. "Kendra's law, named after Kendra Webdale, who was killed in 1999 after being pushed into the path of a New York subway train by a mentally ill man, allows courts to use much a lower standard than Virginia's to force outpatient mental health treatment."

11. Universities are beginning to adopt management information technology to help with dispatching, record keeping, incident reporting, evidence tracking, mobile communication and civil process filing using software developed by companies such as, SMART public safety software. Their website can be accessed at: http://www.smartpss.com/

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DEMING AND MCGREGOR: AN EXAMPLE OF TRAINING METHODOLOGY FOR THE DEVELOPMENT OF LEADERS

Dr. Curt Wegner

Introduction

Dr. Deming's Point 7 says adopt and institute new methods of leadership (*Out of Crisis*, p. 54). The aim of this paper is to provide a rationale and method for improving outcomes in learning by leaders who wish to take an active role in their personal transformation efforts as they face this challenge.

I have had a hunch for many years. I think there is a strong relationship between Dr. Deming's Theory of Management and McGregor's Theory X and Theory Y set of assumptions that managers use for establishing managerial approaches in the motivation of subordinates in an organization. The relationship is so strong that facilitators who assist others to understand and apply Deming's Theory of Management would improve learning outcomes if McGregor's theory was incorporated into educational programming. Implicit in Dr. Deming's Theory of Management is a predisposition for leaders to possess a positive, optimistic outlook about the nature of people in everyday work situations. I have observed that assisting individuals in understanding Theory Y style of leadership naturally lead to a more effective assimilation of the values, concepts and techniques typically associated with the Deming's Theory of Management.

The hunch has been based on observations over several decades while working with participants in Deming seminars. In these programs, I have designed and presented activities that engage adults in understanding the Deming's Theory of Management. As a practitioner, my interests lie in providing people with an opportunity to optimize personal learning that will lead to adoption and practice of the Deming's Theory of Management. Deming wrote that "people are different from another", but organizations tend to treat them the same. This could not be truer. It also holds true relative to how they learn. Deming said:

> "People learn in different ways, and at different speeds. Some learn a skill by reading, some by watching pictures, still or moving, some by watching someone do it." (*The New Economics: For Industry, Government, Education*. 2nd Edition, p. 108)

Relative to my concerns, Deming's point is an inspiration, not a delimiter. The aim of this paper is to share one methodology so that other practitioners will have the opportunity to plan similar transformation efforts in the future and possible replicate my assertions. It is not "the" way, only one way.

Deming's Theory of Management

In his book, *The New Economics: For Industry, Government, Education*. 2nd Edition (1994), the late Dr. W. Edwards Deming outlined a new theory of management based on *A System of Profound Knowledge*. Dr. Deming described that four key elements must interact as a system in order to produce the necessary insights required for effective leadership in the real world, a variable world.

The four parts (or disciplines) are presented in such a way that they are not to be considered mutually exclusive events. The elements are highly interdependent in nature and work together all the time. They are identified as:

1. Appreciation for a system
2. Knowledge about variation
3. Theory of knowledge
4. Psychology (*The New Economics: For Industry, Government, Education*. 2nd Edition, p. 92)

Dr. Deming understood that the first step is transformation of the individual. By that he means that leaders must undertake willingness and ability to apply *A System of Profound of Knowledge* in everyday situations amid people and work before anything will change in an organization. Application will require challenging old assumptions. In addition, Dr. Deming noted that his 14 Points for management in industry, education, and government as they were proposed in *The New Economics: For Industry, Government, Education* (2nd Edition p. xv) "follow naturally as application of this outside knowledge, for transformation from the present style of Western management to one of optimization."

Critical to Dr. Deming's way thinking about the parts of *A System of Profound Knowledge* is that they interact with each other in such a way that one can not apply a segment without knowledge of the other three, e.g., "knowledge of psychology is incomplete without knowledge of variation" (*The New Economics: For Industry, Government, Education* (2nd Edition p. 92). A System of Profound of Knowledge emanates from **statistical thinking** and brings the interdependence of people and work processes to higher state of understanding. Dr. Deming goes to great lengths to describe how these interdependencies operate within the context each other. He presents many examples of how one element influences another in everyday situations and how these relationships create different perspectives for the management of people in an organization. These new perspectives of the real world obviously lead managers to new conclusions or theories about the natural consequences of people working in processes and how leadership needs to be redefined.

One place to initiate personal transformation (from an educator's view point) is by focusing on one (at least for now) of the elements of *A System of Profound of Knowledge* – psychology of leaders as they grapple with the attributes of Deming-type leadership. Dr. Deming stated that:

> "The most important act that a manager can take is to understand what it is that is important to an individual. Everyone is different from everyone else. All people

are motivated to a different degree extrinsically and intrinsically. This is why it is so vital that managers spend time to listen to an employee or understand whether he is looking for recognition by the company, or by his peers, time at work to publish, flexible working hours, time to take a university course. In this way, a manager can provide positive outcomes for his people, and may even move some people toward replacement of extrinsic motivation with intrinsic motivation." (*The New Economics: For Industry, Government, Education*, 2nd Edition, p. 112)

And in one of the video tapes from the Deming Library series, Deming says:

> "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 innate attributes of people." (*A Study in Continual Improvement Part II, 1994*)

When I study Dr. Deming's writings, it is clear that his perspective about people is very positive, yet always veiled in the context of a variable world that we live in. He continually refers to intrinsic motivation as the true motivator, the one with which we were born. He recognizes that what drives people to do great things comes from within, not from the outside or extrinsic motivation. He realizes that people are naturally intrinsically motivated and that our problems arise from the falsehood that the only way to motivate people is through methods of extrinsic motivation. I'm reminded of Deming's Forces of Destruction chart in *The New Economics: For Industry, Government, Education*, 2nd Edition, p. 122) in which he depicts how outside forces of extrinsic motivation smothers a person's natural inclination of intrinsic motivation from birth to death. His writings also include insight about the negative effects of MBO/MBR on people in work processes and superstitious myths about human behavior we encounter everyday of our lives. He points out how the individual is crushed and molded into something totally dependent on a system of extrinsic motivation, reward, recognition and punishment alike. Henry Neave underscores Deming's words:

> "They (those that prescribe to an extrinsically-motivated society) squeeze out from an individual, over his lifetime, his innate intrinsic motivation, self-esteem, dignity, and build into him fear, self-defense, extrinsic motivation." (*The Deming Dimension,* p. 388)

Dr. Deming understood the power of intrinsic motivation and so eloquently articulated that we must learn to stop de-motivating people as they already are motivated. He sees the values within people as something inherently good, not distorted with assumptions of greed, laziness, lack of ambition and dislike of work.

In the same writings, Neave reminds us of Deming's quote in the context of Point 7:

> "Improve the system, and variation between people will diminish." (*The Deming Dimension,* p. 337)

I reckon this statement indicates that Deming believes that if we closely examine the true nature of people, we will find that apparent differences in people are not due to the people, but to the systems that drive people's behavior. The net result is that people are more alike in their base-adherence to intrinsic motivation than they are different. Again, this is a positive, optimistic viewpoint on the nature of people.

In yet another example, Neave notes the words of Deming:

> "I trust them; they come through." (*The Deming Dimension,* p. 402)

Here Dr. Deming is talking about how he doesn't grade students and, yet they always finish a project or paper. This statement demonstrates the positive belief in a person that they will follow through. Dr. Deming doesn't need to extrinsically reward them. He points out that grading in schools is inappropriate. Neave writes about Deming:

> "The worst obsolescence in schools is ranking." (*The Deming Dimension,* p. 384)

In the video, *The Prophet of Quality Part I (1992)*, from the Deming Library, when discussing Point 12, joy in work, Deming says:

> "I don't grade my students. How can I know how someone will do ten years from now under economic, financial and psychological conditions nobody can foretell. Nobody would dare to foretell."

This is yet another example of positive-based mental model about people and the nature of work. Deming obviously is aware of the potentiality of giving his students a negative or, for that matter, a positive self-fulfilling prophecy by associating a person's "performance" in the classroom and what they will be able to achieve in the future. He is optimistic that people will meet their own high expectations if left uninfluenced by his judgments one way or another and left to their own intrinsic motivation levels. He is essentially saying why unnecessarily interfere with the future of his students. They are totally capable of self-direction and control. External control is not necessary and is really detrimental in the grand scheme of human nature.

Lloyd Dobyns goes on to say:

> "You can not enjoy what you do if you are doing it only to beat someone else. If you can not find joy in doing the job itself, you can not contribute to a quality organization. (*The Prophet of Quality Part I, 1992*)

Dobyns' commentary is alluding to the point that people really do want to find (and/or seek) true satisfaction in their work. Again, the presumption is that intrinsic motivation is constantly at work within an individual in their quest to work and contribute to the organization. The barrier to their satisfaction is inattentive management practices that do not subscribe to the psychological needs of workers and negative preconceived ideas about the true nature of people.

Deming knows that students will complete assignments. They do not need to be coerced or threatened to finish their work. Dr. Deming believes in them, he trusts them and the innate qualities they naturally possess to complete the assignment will drive their behavior. Dr. Deming can also see the effects of the self-filling prophecy, otherwise known as the Pygmalion Effect having an impact on people's response to this type of leadership. (*The Deming Dimension*, p. 384)

When Dr. Deming debriefs the Red Bead Exercise, he points out that ranking people is a lottery. The obvious explanation is based in statistical thinking and the understanding that people work **in** the system, and that management works **on** the system. Nonetheless, the effects on people are devastating; being admonished for results outside their control is simply wrong. But the lasting effect on people is to destroy their spirit, their sense of self-worth. The underlying assumption is that people have been robbed of their natural state of dignity and sense of self-respect. Here again, Dr. Deming indicates his strong, perceptual understanding and adherence to the fundamental belief that people want to do their best, are good and want to make a contribution for the good of the organization, most often in spite of the system within they work. This also points to a belief system that is positive and constructive.

Indirectly, Dr. Deming is asking why a manager would presume that a person comes into the workplace with anything else than a positive attitude, natural curiosity to learn or possess a willingness to work hard to fulfill their aspirations. The point is that a manager can come to the workplace with an unhealthy system of assumptions about people that can promote cynicism and distrust by workers. Where this negative, pessimistic set of assumptions comes from is yet to be determined, but rest assure, it is totally devoid of any understanding of what truly motivates people, i.e., intrinsic motivation.

All these examples are pointing to a basic set of assumptions about people that is healthy, realistic and useful. It is a side of the Deming philosophy that is often overlooked, or ignored, but is a strong tenet of the way Dr. Deming wanted leaders to lead. In the words of the author of this paper, the wisdom Dr. Deming was:

> "*Believe in people and they will not disappoint you. If you are truly committed to improvement, don't destroy their souls by assuming they are untrustworthily, lazy, or want to avoid taking on responsibility. People are better than that. You are going to need all the help you can get. Don't start off on the wrong foot by assuming people don't want to make a contribution. Assume they are already motivated, want to help and then work with them to make things better by collaboratively using A System of Profound Knowledge to sort out the future. Remember that the 'system' includes what assumptions you as a leader make about people. They will react exactly to satisfy what you project on them.*"

Finally, if we start with a set of assumptions about people that are positive, optimistic and recognize that the formation of sets of assumptions by leaders are part of the system too, we will be less vulnerable to the negative effects of superstitious learning and the errors of our forefathers. Similarly, as CEO Geary Rummler of Performance Design Lab said:

> "You can take great people, highly trained and motivated, and put them in a lousy system and the system will win every time." (*Customer Loyalty Guaranteed: Create, Lead, and Sustain Remarkable Customer Service*, p. 172)

All this discussion is leading towards a rationale of how we might be able to change the psychological predisposition of leaders to use a wrong set of assumptions and to also recognize that the set of assumptions they formulate, right or wrong, are part of the leadership system. I'm interested in understanding how assumptions of leaders about the nature of people and work drive their behavior when interacting with others. I see leadership as a process. By that I mean, if we begin to examine the inputs to the decision-making processes that leaders adopt, we could see that their theories about people do affect what they project onto their customers, the people they lead.

In particular, I propose that Deming-type leadership would require a positive, optimistic set of assumptions of people in order for the leader to practice *A System of Profound Knowledge* in the first place. Therefore, why not give leaders the opportunity to examine their personal belief systems to help them evaluate whether they could support and practice Deming-type leadership. Show them there might be a necessity to help them out of the 'trough' of despair and disorientation. This would be done not to compare individuals but to give the individual an opportunity to compare how they think against a realistic, well documented understanding of the nature of people in work processes. If we can conclude that it would worthwhile to do this self-introspection, then what would we look for and what method would we use? This is where McGregor's Theory X and Theory Y come into use.

McGregor's Theory X and Theory Y

My first experience with Douglas McGregor's Theory X and Theory Y set of assumptions (X/Y) came about in the 1970's while conducting research for my doctoral dissertation. The purpose of my dissertation was to study the relationships between cognitive style of managers and managerial disposition. At the time, I was interested in establishing predictive models using variables that would help organizations more effectively identify psychometric indices for the selection and development of high potential managerial candidates for Navistar International Corp.

In his 1960 seminal book, *The Human Side of Enterprise,* Douglas McGregor identified two dichotomous sets of assumptions that managers use to guide their behavior when managing their employees, which he labeled Theory X and Theory Y. Theory Y contended that individuals are self-motivated and self-directed. Theory X contended that people are in fact, the opposite and must be threatened or coerced into performing work. But more alarming was the contention by McGregor that Theory X was the one that was widely assumed by business schools to be accurate and was predominantly used by leaders in the workplace. At the time he wrote his book, this was based on many decades of research in the social and management sciences. But over the past half century, not much has changed and is widely assumed even today.

McGregor's top question for management (and the premise for his research) was:

> "What are your assumptions (implicit as well as explicit) about the most effective way to manage people?"(*The Human Side of Enterprise,* p. vii)

Douglas McGregor challenged us to change our mental paradigm much the same way Deming challenged us. Joel Cutcher-Gershenfeld noted the thoughts of McGregor when he quoted:

> "Every managerial act rests on assumptions, generalizations, and hypotheses – that is to say, on theory. Our assumptions are frequently implicit, sometimes quite unconscious, often conflicting; nevertheless, they determine our predictions that if we do *a*, *b* will occur. Theory and practice are inseparable." (*The Human Side of Enterprise Annotated Edition,* p. 8)
> "The inseparability of theory and practice builds on work advanced by Kurt Lewin who preceded Douglas McGregor at MIT. (See Kurt Lewin, *Field Theory in the Social Sciences*, New York: Harper & Brothers, 1951.)" Footnote from: (*The Human Side of Enterprise Annotated Edition,* p. 8)

Cutcher-Gershenfeld goes on to quote McGregor's words in the same writings:

> "So long as the manager fails to question the validity of his personal assumptions, he is likely to avail himself of what is available in science. And much is there. The knowledge in the social sciences is not sparse, but frequently it contradicts personal experience and threatens some cherished illusions. The easy way out is rejection, since one can always find imperfections and inadequacies in scientific knowledge." (*The Human Side of Enterprise Annotated Edition,* p. 8)

Heil, Bennis and Stephens added when they wrote:

> "Douglas McGregor's most important legacy was neither Theory X nor Theory Y. It was his insistence that managers question their core assumptions about human nature, and that they see how these mental models lead to managerial practices." (*Douglas McGregor, Revisited: Managing the Human Side of the Enterprise,* p. 20)

Heil, Bennis and Stephens go on to say that managers resist taking a look at their core values. They are not comfortable with this concept. They state:

> "McGregor refused to simplify unbelievably organic and complex challenges into formulaic analyses and solutions. He believed that every solution was different: Like an individual person, the net result was a factor of countless variables. Yet leaders who look to implement his ideas still want easy answers—a simple, applicable, seven-step cure-all. They resist his message that every situation is unique and organic. In a self-fulfilling manner, many managers fail to implement

> his ideas because they believe them to be unimplementable. His ideas don't take hold because most managers don't believe they can put them into practice. When push comes to shove, most managers resist the hard work called for when managing people's values and motivations. They want to have a conversation about it, but when it comes to dealing with people and organizations, they want something simple to use. This type of response plagued McGregor. In real life, the solutions to problems are far more complex and individual than any one generic purpose.
>
> McGregor was often met with the following question: This is a great theory—but how do you make it work? And McGregor would invariably respond: "I don't know." He knew that his thinking worked only when each individual figured out how it worked *for them*. This explanation applies equally to McGregor's principles. People want a simple model they can implement effortlessly, regardless of who they are or what the unique situation demands. McGregor resisted such a simple response.
>
> Above all, McGregor wanted people to look in the mirror and consider who they were and what they believe, a challenge that most people have at the very core of their being. And yet, until a person peels away the layers, looks at himself, and recognizes his deeply held beliefs and attitudes, he cannot lead or design a truly effective organization in today's world.
>
> McGregor believed that organizations would be far more effective and powerful when managers offered employees the opportunity to align their individual goals with those of the business. His thinking reinforced the pragmatic message at the core of famed psychologist Abraham Maslow's work: People are capable of extraordinary accomplishments if they are able to meet their own self-fulfilling needs when pursuing the goals of the organization. Maslow referred to this approach as "enlightened management." (*Douglas McGregor, Revisited: Managing the Human Side of the Enterprise*, pp. 20-21)

When setting the premise for his theories, Cutcher-Gershenfeld cites that McGregor often used an effective analogy comparing physical sciences to social sciences:

> "We do not, for example, dig channels in the expectation that water will flow uphill; we do not use kerosene to put out a fire. In designing an internal combustion engine we recognize and adjust to the fact that gases expand when heated; we do not attempt to make them behave otherwise. With respect to physical phenomena, control involves the selection of means which are appropriate to the nature of the phenomena with which we are concerned.
>
> In the human field the situation is the same, but we often dig channels to make water flow uphill. Many of our attempts to control behavior, far from representing selective adaptations, are in direct violations of human nature. They consist in trying to make people behave as we wish without concern for natural law. Yet we

> can no more expect to achieve desired results through inappropriate action in this field than in engineering." (*The Human Side of Enterprise Annotated Edition,* p. 11)

In the same writings, Cutcher-Gershenfeld goes on to say:

> "Another fallacy is often revealed in managerial attempts to control human behavior. When we fail to achieve the results we desire, we tend to seek the cause everywhere but where it usually lies; in our choice of inappropriate methods of control. The engineer does not blame water for flowing downhill rather than up, nor gases for expanding rather than contracting when heated. However, when people respond to managerial decisions in undesired ways, the normal response is to blame them. It is *their* stupidity, or their cooperativeness, or their laziness which is seized on as the explanation of what happened, not management's failure to select appropriate means for control." (*The Human Side of Enterprise Annotated Edition,* p. 12)

When connecting action to theory, Cutcher-Gershenfeld also points out:

> "Human behavior is predictable, but as in physical science, accurate prediction hinges on the correctness of the underlying theoretical assumptions. There is, in fact no prediction without theory; all managerial decisions and actions rest on assumptions about behavior. If we adopt the posture of the ostrich with respect to our assumptions under the mistaken idea that we are thus "being practical," or that "management is an art," our progress with respect to the human side of enterprise will be indeed slow. Only as we examine and test our theoretical assumptions can we hope to make them more adequate, to remove inconsistencies, and thus to improve our ability to predict.
>
> We can improve our ability to control only if we recognize that control consists in selective adaptation to human nature rather than in attempting to make human nature conform to our wishes. If our attempts to control are unsuccessful, the cause generally lies in our choice of inappropriate means. We will be unlikely to improve our managerial competence by blaming people for failing to behave according to our predictions." (*The Human Side of Enterprise Annotated Edition,* p. 13)

Noting earlier annotations in his book Cutcher-Gersenfeld pointed out that:

> "Two decades after the publication of this book (The Human side of Enterprise, 1960), Dr. W. Edwards Deming echoed McGregor with his injunction: "Don't blame the people, fix the system." (*The Human Side of Enterprise Annotated Edition*, p. xxii)

Similarly, as Brian Joiner articulated in his book when describing system performance and that we should focus attention on the system:

> "Blame the process, not the person." *Fourth Generation Management: The New Business Consciousness,* p. 33)

The precepts of McGregor's theories are based in methods of influence and control managers use to lead people in the organization. I think that McGregor would agree with a widely cynical remark that I've often heard regarding business: *If it weren't for all the people involved, business would be a great line of work!* A false assumption like this one can permeate throughout an organization; top to bottom. Leaders are habitually complaining about recalcitrant employees, their unmotivated attitudes, and poor work habits as the root causes of all the organization's problems. As a countermeasure, leaders feel obliged to strictly enforce rules and policies; there will be no deviation! These leaders believe that this approach is the only way to control the indigent workforce; these human relations problems have to be counterbalanced with authority. As Cutcher-Gersenfeld observed:

> "If there is a single assumption which pervades conventional organizational theory it is that authority is central, indispensable means of managerial control." (*The Human Side of Enterprise Annotated Edition,* p. 24)

Cutcher-Gersenfeld draws attention that much of the principles identified for effective management of people at the time came from studies around the military and the Catholic Church (p. 22). While these may be necessary and appropriate assumptions for these organizations, it is difficult to generalize from these studies to mainstream business and industry situations. More importantly, he says that continued adoption of these principles still yield disappointing results (p. 22).

Another key aspect to consider is the concept of interdependency of the various elements of an organization. He notes that as organizations become larger and more complex, authority becomes more of a limitation than strength. Cutcher-Gersenfeld writes:

> "The outstanding fact about relationships in the modern industrial organization is that they involve a high degree of interdependence. Not only are subordinates dependent upon those above them in the organization for satisfying their needs and achieving their goals, but managers at every level are dependent upon those below them for achieving both their own and organizational goals." (*The Human Side of Enterprise Annotated Edition,* p. 29)

McGregor provides insight about the true nature of authority in the operation of an organization. The point is that the upward and downward nature of dependencies is such that the organization can be characterized as a dynamic rather than static system of relationships. Therefore, it is too risky to depend on a unilateral means of control as the primary method for achieving organizational goals, especially when people are involved. The most important lesson for the leader to learn, then, is that the selection of the appropriate means of influence for the situation is critical. This naturally then leads to a question: What assumptions are appropriate for a leader to follow in this selective adaptation process?

Theory X

As the first set of assumptions to present, it is the most obvious. It is easily recognized, because it is based on so-called incontrovertible evidence about the true nature of people. Therefore, correctness is not an issue because the leader accepts it as truth. Everyone knows it, and it will never change. It is a negative, pessimistic view of people. McGregor wrote that managers would (and most often did) base their decisions on the following set of assumptions:

1. *"The average human being has an inherent dislike of work and will avoid it if he can.*

   This assumption has deep roots. The punishment of Adam and Eve for eating the fruit of the Tree of Knowledge was to be banished from Eden into a world where they had to work for a living. The stress that management places on productivity, on the concept of a "a fair day's work," on the evils of featherbedding and restriction of output, on rewards for performance –while it has a logic in terms of the objectives of enterprise – reflects an underlying belief that management must counteract an inherent human tendency to avoid work. The evidence for the correctness of this assumption would seem to most managers to be incontrovertible.
2. *Because of this human characteristic of dislike for work, most people must be coerced, controlled, directed, and threatened with punishment to get them to put forth adequate effort toward the achievement of organizational effectiveness.*
3. *The average human being prefers to be directed, wishes to avoid responsibility, has little ambition, wants security above all."* (*The Human Side of Enterprise,* p.33)

The premise for action for the leader, then, is to control the ranks of so-called dishonest, mediocre, lazy, untrustworthy, ductile workforce; leaders must rely on choosing actions that effectively counteract these negative tendencies of people. They include the use of techniques such as tight controls, implicit threats, close supervision, coercion, intimidation, reliance on punishment, and negative rewards. Other more insidious methods can include installing performance appraisals, ranking of employees, incentive schemes and the like. The point here is that there is an unprecedented amount of countermeasures available if one is looking for them. It follows the old proverb: *If the only tool you have is a hammer, then everything looks like a nail!*

In addition, Warner writes:

> "There are two approaches to Theory X: a "hard" approach, which relies on coercion, implicit threats, close supervision, and tight controls – essentially "command and control." The "soft" approach is to be permissive and seek

> harmony so that employees will cooperate when they are asked to do so. McGregor believed that neither extreme is ideal: The hard approach often generates hostility, deliberately low output, and hard-line demands. The soft approach results in ever-increasing requests for more rewards, in exchange for ever-decreasing work output." (*Management Styles Questionnaire (MSQ) Facilitator's Guide,* p. 2)

Moreover, Cutcher-Gersenfeld writes:

> "The philosophy of management by direction and control – *regardless of whether it is hard or soft* – is adequate to motivate because the human needs on which this approach relies are relatively unimportant motivators of behavior in our society today. Direction and control are of limited value in motivating people whose important needs are social and egoistic.
>
> People deprived of opportunities to satisfy at work the needs which are now important to them behave exactly as we might predict – with indolence, passivity, unwillingness to accept responsibility, resistance to change, willingness to follow the demagogue, unreasonable demands for economic benefits. It would seem that we may be caught in a web of our own weaving.
>
> Theory X explains the *consequences* of a particular managerial strategy; it neither explains nor describes human nature although it purports to. Because its assumptions are so unnecessarily limiting, it prevents our seeing the possibilities inherent in other managerial strategies. What sometimes appear to be new strategies – decentralization, management by objectives, consultative supervision, "democratic" leadership – are usually but old wine in new bottles because the procedures developed to implement them are derived from the same inadequate assumptions about human nature. Management is constantly becoming disillusioned with widely touted and expertly merchandized "new approaches" to the human side enterprise. The real difficulty is that these new approaches are no more than different tactics – programs, procedures, gadgets –within an unchanged strategy based on Theory X." (*The Human Side of Enterprise Annotated Edition,* pp. 54-55)

In the same writings, Cutcher-Gersenfeld concludes:

> "However, so long as the assumptions of Theory X continue to influence managerial strategy, we will fail to discover, let alone utilize, the potentialities of the average human being." (*The Human Side of Enterprise Annotated Edition,* p. 57)

<u>Theory Y</u>

McGregor offers Theory Y as an alternative to Theory X set of assumptions. They are based on an optimistic, positive view of people. Theory Y propositions are not offered as a form of abdication by managers, but as new theory for the management of human resources. Theory Y generalizations are based on many years of research in the social sciences and are conceived to be accurate descriptions of the nature of people. In fact, Theory Y is perceived as a solution for integrating individual and organizational goals. McGregor described Theory Y as:

1. "*The expenditure of physical and mental effort in work is as natural as play or rest.* The average human being does not inherently dislike work. Depending upon controllable conditions, work may be a source of satisfaction (and will be voluntarily performed) or a source of punishment (and will be avoided if possible).
2. *External control and threat of punishment are the only means for bringing about effort toward organizational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed.*
3. *Commitment to objectives is a function of the rewards associated with their achievement.* The most significant of such rewards, e.g., the satisfaction of ego and self-actualization needs, can be direct products of effort directed toward organizational objectives.
4. *The average human being learns, under proper conditions, not only to accept but to seek responsibility.* Avoidance of responsibility, lack of ambition, and emphasis on security are generally consequences of experiences, not inherent human characteristics.
5. *The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely, not narrowly, distributed in the population.*
6. *Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilized.*" (*The Human Side of Enterprise,* p. 47-48)

Following this train of thought, Warner speculates:

> "By contrast, Theory Y holds that work is as natural as play and that people have a psychological need to work. They want responsibility, are capable of self-control, and desire to achieve. Therefore, managers should arrange the work environment and methods of operation so people can achieve their own goals by directing their own efforts. Theory Y holds that motivation can come from self-esteem and achievement; if people are properly managed, in fact, they will be more creative and team-spirited, and be willing to take on responsibility. McGregor believed that very few organizations make full use of their employees' inherent abilities and strength. The role of the manager is not to ask which set of attitudes is right, but rather ask: *What is the reality of our job situation, and how can I motivate my people to keep them involved and contributing?*" (*Management Styles Questionnaire (MSQ) Facilitator's Guide,* p. 2)

McGregor points out that Theory Y is centered on the possibilities of human growth and development. The strategy for its application should be for selective adaptation rather than adoption of a single, all-inclusive, absolute use of authority for control. He contends that Theory Y is not a limitation as implied with Theory X set of assumptions. Theory Y is more of an estimator of management's capabilities. Cutcher-Gersenfeld writes:

> "Above all, the assumptions of Theory X point up the fact that the limits on human collaboration in the organizational setting are not limits of human nature but of management's ingenuity in discovering how to realize the potential represented by its human resources. Theory X offers management an easy rationalization for ineffective organizational performance: It is due to the nature of the human resources with which we must work. Theory Y, on the other hand, places the problems squarely in the lap of management. If employees are lazy, indifferent, unwilling to take responsibility, intransigent, uncreative, uncooperative, Theory Y implies that the causes lie in management's methods of organization and control."(*The Human Side of Enterprise Annotated Edition*,p.66)

While McGregor understood that Theory Y was easy to say, their application in an organization would be challenging. He noted that it would not be easily accepted by managers because of deeply ingrained managerial habits of thought and action. After all, managers who have risen to the top have had their Theory X set of assumptions reinforced over and over again either by pay increases or promotions. *Why change now? They got me this far in my career; I'd be stupid to change now. The risks are too great.*

The primary strategy to use when applying Theory Y is the principle of *integration*. Integration implies that the best approach is the creation of conditions that allow employees to achieve their own goals in the context of directing themselves to achieve the goals of the organization. As leaders ponder this concept, they quickly recognize that this approach is not business as usual. This is a different style of management all together. I think Deming would agree.

There is now an interim step that looks and feels uncomfortable to the manager. The objective is now for the manager to be thinking of how to match the organizational goals with the goals of the individual to get results. This is different than just reeling power to make a decision to get a specified result irrespective of the needs of the people who have to perform. It was believed by McGregor that the synergistic effects of combining the two set of goals would result in the organization achieving lasting economic objectives more efficiently and consistently. The flip side of Theory Y is that unless integration is achieved the organization will suffer losses.

Application of Theory Y opens up many possibilities for innovation and creativity. Theory X limits the possibilities. It was McGregor's belief that the continual testing and re-testing of Theory Y precepts in the organization would allow development of the kind of knowledge that would sustain the viability of the organization. Cutcher-Gersenfeld writes:

> "There is substantial evidence for the statement that the potentialities of the average human being are far above those which we typically realize in industry today. If our assumptions are like those of Theory X, we will not even recognize the existence of these potentialities and there will be no reason to devote time, effort, or money to discovering how to realize them. If, however, we accept assumptions like those of Theory Y, we will be challenged to innovate, to discover new ways of organizing and directing human effort, even though we recognize that the perfect organization, like the perfect vacuum, is practically out of reach." (*The Human Side of Enterprise Annotated Edition,* p. 74)

When I think about this statement, I think of Deming's reference to the need for workers "to take joy in their work", or Point 13 for the education of people, or Point 8 to drive out fear. All these references are tenants of the innate values that people bring to the workplace. Dr. Deming recognized these inherent qualities of people and added his unique theoretical framework to the management of people, e.g., systems and statistical thinking which have proven to be natural extensions to a Theory Y set of assumptions which McGregor challenged us to test. As Cutcher-Gersenfeld surmised:

> "Theory Y is an invitation to innovation" (*The Human Side of Enterprise Annotated Edition,* p. 77)

Jacoby and Terborg take a critical look from McGregor's perspective:

> "In summary, McGregor believed that a Theory X philosophy of human nature – employees are incapable of innovation and responsibility and need to be controlled by extrinsic rewards and punishment – is simply not healthy. Jobs that do not allow for self-control and self-fulfillment can create counter-productive behaviors, i.e., employees may attempt to "beat the system" in order satisfy their needs. (This sometimes involves creative behavior of the type considered improbable under the Theory X view.)
>
> In contrast, the Theory Y philosophy appears to be a more adequate description of human nature and makes managers responsible for harnessing the creative and positive aspects of human behavior for the benefit of both the individual and the organization." (*Managerial Philosophies Scale,* p. 2)

In the practice of leadership, the integration of employee goals and organizational goals, can take many forms. According to McGregor, some of the best include tactics such as job enlargement, job rotation, job enrichment, teamwork, employee empowerment, and job re-designs. All these stand to offer an alternative to the standard methods used today. Each will require astute understanding of the coalescence of employee-centered and organization-centered goals far different from what is occurring in the modern workplace.

Warner highlighted some of the challenges in thinking that is necessary. The taxonomy compares the style differences for Theory X and Theory Y sets of assumptions in usual managerial circumstances. While not definitive, the mental models are a helpful reminder for those seeking a new perspective.

	Theory X Parent-child Relationships*	Theory Y Adult-Adult Relationships
Manager' View of Work	Work is a source of dissatisfaction. We must compensate for this through pay and benefits.	Work can be satisfying and challenging…a major opportunity.
Manager's View of Workers	Employees want less responsibility and security. They are dependent on supervisors to make decisions, solve problems, set goals, and keep them productive.	Employees want more responsibility and challenge. They are capable of making decisions, solving problems, and setting goals for themselves – if we let them.
Manager' View of Self	I'm OK, but you're not OK. People are too dependent on me. I end up having to do their thinking for them and bailing them out.	I'm OK, and you're OK. Once employees have been trained, my role is that of a coach. I must step back and let them play the game.
Motivation Used by Manager	Carrot and stick: Set up systems of reward and punishment to entice and coerce employees.	Work is inherently appealing: Use it to give challenge, a sense of achievement, recognition, responsibility, and growth.
Expectation: the "Pygmalion Effect"	This manager expects less of people that they are capable of – and gets it! "Expect the worst and you won't be surprised."	This manager expects more of people than they knew they were capable of – and gets it! "Expect the best (not perfection) and people will give their best effort."
The Working Relationship	"Employees are here to extend my effectiveness."	"I'm here to extend the effectiveness of my employees."
Motivation of Employees	They spend most of their energy keeping the boss happy, harvesting the carrots, and avoiding the stick.	Employees spend their time meeting goals and standards that they and the manager have agreed to jointly.
The Goal of the Organization for Employees	To have workers trained as well-oiled machines that make few errors, require little maintenance, and function as highly dependable robots within a narrowly prescribed area of operation.	To develop people to the point where each is a manager of his/her own time and talent, solving problems and making decisions within an expanding area of freedom and responsibility.

(*Management Styles Questionnaire (MSQ) Facilitator's Guide*, p. 29)

* The reference to parent-child formats is based on the author's integration of Transactional Analysis techniques for understanding the leader-employee relationship. It was not originally used by McGregor in his book, but does offer an enlightening perspective to consider.

Warner's table describes mindsets for the Theory Y-based leader to adopt. If leaders used the mental models listed above in the context of PDSA and without fear, application of Theory Y will follow with new knowledge. That new knowledge will then be used in the context of continual improvement under further iterations of the strategy. Following this approach, the creation and use of organizational memory will take precedence over emotional reaction and disappointment when perfection is not achieved.

<u>The Pygmalion Effect</u>

The third leg of the stool deals with the power of expectations on others. *The Pygmalion Effect* is a long-understood theory in the field of social science used to explain why people behave the way they do. This phenomenon is well-known and used to help explain results in psychological studies exploring the causes of achievement in people's performance. It was well documented in Rosenthal and Lenore Jacobson in their seminal book, *Pygmalion in the Classroom* (1968). The powerful effect of this concept was noted by Deming:

> "There is another factor to take into account, the Pygmalion effect. Rated high at the start, anyone stays high. Rated low at the start, he stays low." (*The New Economics: For Industry, Government, Education*, 2nd Edition, p. 26)

Neave reiterates in his book:

> "In grading in schools, and in performance appraisals, Deming sees considerable evidence of the "Pygmalion Effect." From the teacher's or appraiser's viewpoint, there is bias in expecting past good or bad performance to predict further good or bad performance respectively – and that does affect the detailed behavior of the appraiser. It also affects the (the person being appraised) – the employee or the student. Deming quotes George Bernard Shaw: "Treat me like a flower-girl: I'll be flower-girl; treat me like a lady: I'll be a lady." This thought is so important that a full version of this quotation from Pygmalion is also worth reproducing:
>
>> "The difference between a lady and a flower-girl is not how she behaves but how she's treated. I shall always be a flower-girl to Professor Higgins because he always treats me as flower-girl and always will; but I know I can be a lady to you because you always treat me as lady and always will."
>
> This is one of the many insights from Deming that is so easy to cast aside with scarce a thought – but, the more you think about it, the more you realize how much truth there is in what he says. And the more appalled you become at the way we treat people in school and in adult life." (*The Deming Dimension*, p. 384)

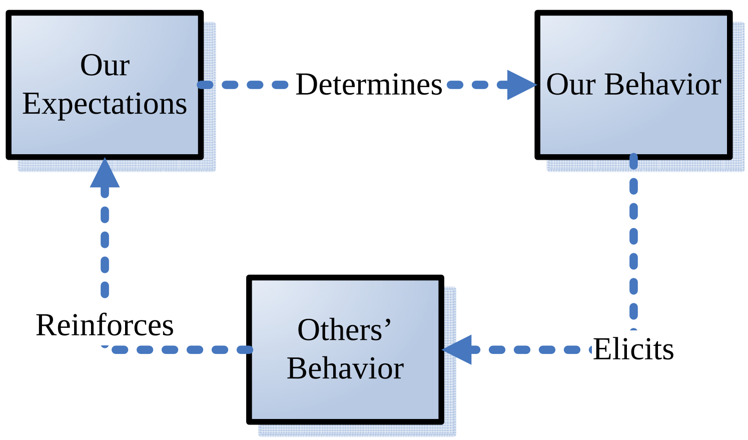
The concept of the self-fulfilling prophecy, as termed by Robert Merton in *Social Theory and Social Structure* (1957), is based on four principles:

1. We form expectations of people or events.
2. We communicate those expectations with various cues.
3. People tend to respond to these cues by adjusting their behavior to match them.
4. The result is that the original expectation comes true. (*Pygmalion Effect: Managing the Power of Expectations*, 3rd Edition)

The power of expectations can not be overstated. Merton postulated that our expectations can have a powerful influence upon the future that unfolds, even when we might not be aware of those expectations. What he found is that once the expectation is projected by the sender consciously or unconsciously, people respond to it in ways so as to please the sender, or said differently, people behave in ways that are consistent with and thus ultimately help confirm or fulfill their prophecies. Merton concluded that somehow people's behavior and actions caused predictable outcomes. How we view people affects the way that we treat them which in turn can influence their behaviors and behaviors.

In addition, a flowchart from Hall's work is a useful diagram to demonstrate the relationships. (*Management Values: Managing as a Self-fulfilling Prophecy Facilitator's Guide*, appendix)

Self-fulfilling Prophecy



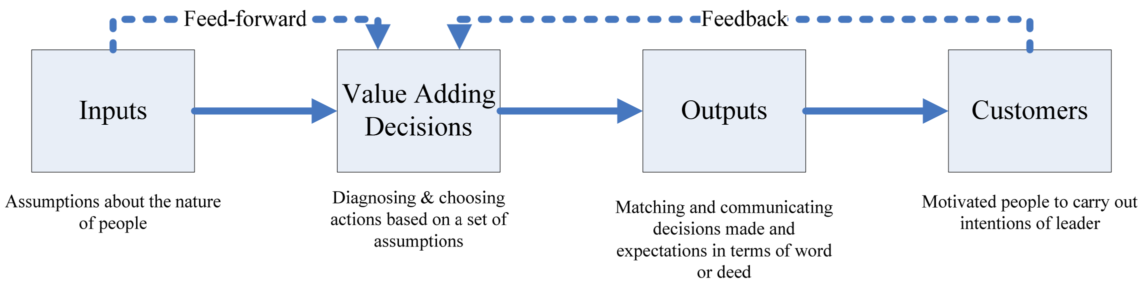
The concept has value in the application of Theory Y. If the manager starts with a positive, optimistic attitude about people and uses Theory Y as the basis for action, there is a higher chance that employees will respond to the manager so as to please the sender. The implication is far reaching in the testing of Theory Y; the performance of people depends more on the manager than previously believed. Always expect the best from people and they will typically measure up to your expectations. Conversely, if Theory X is projected, and employees act out negative script that they were just given, the self-filling prophecy is confirmed.

In considering the motivation level of people in the accomplishment of goals, the manger has a significant amount of influence in the leadership process and needs a realistic platform from which to start when planning the work of others. Before changing others, wisdom would tell us to consider that it is necessary to change ourselves first.

The Process of Leadership

Simply stated, leadership is the process of influencing others to get results. The operative word in this statement is *process*. In the world of Deming, process has a distinctive meaning associated with it. I believe that if one begins to analyze leadership in the context of flowcharts, to help organize our thinking, we can see new relationships that open up new possibilities for meaningful interpretations and improvement. We can begin to see the process as a sequence of steps. Below is a diagram which helps to understand the process of leadership as a *system*, not just the cumulating effects of a series of events that cause responses from those it affects. In other words, when a person is "leading" in a situation, there are inputs that are used by the leader to evaluate a given situation, leaders have a set of theory-based reactions to employ that leads them to anticipate predictable reactions from those they influence. The inputs include the sets of assumptions the leader employs to influence others in a given situation. As result, I believe it looks something like the process outlined below.

Viewing Leadership as a Process



The diagram is simplified in order explain the dynamics of leading based on theory. Obviously, there are other factors involved in this complex process, but I chose this basic format so as to keep it understandable by only focusing on one aspect of the entire process. The theory presented here depicts the progressive sequence of thinking that a leader follows, consciously or unconsciously, as they try to influence others. It attempts to show that assumptions managers believe to be true can have a profound effect on their own behaviors as well as the motivation levels of others as McGregor and Deming suggest. The implication is that if we can accept this diagram as representative of the sequence that actually occurs in the leadership process, it is not a quantum leap to suggest that if we can identify and selectively manifest the assumptions that leaders use to act out their beliefs, show them what their predominant set of assumptions are, then perhaps they can be convinced to modify and change their behavior based on an identified "need".

In a systems perspective, Deming sees usefulness in feedback as a method for process improvement. On the other hand, *feed-forward* type information can also be useful. In this case, if the *feed-forward* information can assist a learner in identifying a *gap* in knowledge or understanding, this will be useful for the learner to prepare for further learning to close the knowledge gap. Likewise, if the *feed-forward* type information confirms the absence of a gap, then the learner has received positive reinforcement of an existing condition. Either case is favorable and helps the learner in self-directed learning which is what the Deming or McGregor have indicated as best practice. This statement is based on integration of Theory Y sets of assumptions as well. If Theory Y is best set of assumptions for motivating employees at work, then it is also the best set of assumptions for motivating adult learners. People are perfectly capable of making intelligent decisions about the learning they wish to accomplish. In other words, they are mostly self-directive.

Learning and Improvement

This is where alternative learning techniques have practical value. A self-diagnostic technique can expose the student to a new way of thinking by first showing the student that they are, for example, using Theory X set of assumptions about people and then, second, gives them a look at how they think about Theory Y. This can be an effective method for changing a person's perception. It is different than simply telling people to adopt Deming's philosophy and hope they discover the essence of the theory (by chance) and are capable of replacing their old theory with the new theory. Some need help.

Heil, Bennis and Stephens point out the necessity for helping leaders peel back layers of experience and personal thought processes for the purpose of change. They wrote:

> "Leadership naturally reflects the assumptions and beliefs – the character – of the individual. In this human system of enterprise, leaders don't shape behavior by implementing consultant-driven models. Rather, they mobilize and align people through authenticity and presence. They realize that they cannot change the way they lead without trying to change the way they are. Their ability to move people in an organization derives not just from behavior but character – not just what you do but who you are. McGregor believed that you have to look in the mirror and figure out who you are because you can't lead in any other way. People change how they lead and manage only by changing who they are and how they think.
>
> And yet the obstacles to following through on this simple concept are myriad. McGregor found that people do not have a good process for questioning and evaluating the way they think. Such a process was just too abstract for most. To do so would be to introduce a degree of uncertainty that is anathema to most take-charge managers. Questioning how they think would ask them to expose their weaknesses and exist in a realm that they couldn't necessarily master. It doesn't guarantee immediate and attainable results. More over, such a process is hard to justify in terms of risk factors. As management consultant Peter Drucker has argued, managers will not switch to new technologies until the benefits to be realized are exponentially higher than existing systems as opposed to promising a mere one or two times advantage. The same principle applies to a managerial mindset. Comfortable managers, set in their stuck patterns, will not risk the switching costs of rethinking their thinking without a clear, demonstrable return on their time and emotion." (*Douglas McGregor, Revisited: Managing the Human Side of the Enterprise*, p. 23)

The above writings are challenging educators and change agents to recognize the necessity for new and innovative methods. If a method can be followed that will help to identify a "need", it would be useful to the leader. Once the leader can see the gap or need, then at least they can begin to address their assumptions about people. Before identifying the need, there was no need to change.

The lessons to be learned would be of immense value in assisting a person to better understand their relationship with the outside world and give them new perspectives for adopting useful behaviors in the future. Suffice it to say, the person would never be the same. I think we can value the potential of such an experience if presented in proper context; we need to help the person to adjust and flourish in the same world, but with a new outlook. When considering attributes of leadership that Deming purports useful for the successful transformation of an organization, leaders would do well to possess new perspectives (or theories). Leaders would have the ability to continually revise current theory with new theory after testing. Of course the new perspective would lead to new theories about the nature of people and work which is at the crux of the question to be addressed in this paper: *If a person can see him or herself the way they are thinking now, can this new perspective help him or her replace their current belief system with a realistic but different belief system about the nature of people and work and add to their ability to practice Dr. Deming's Theory of Management?* And, in addition, can this new perspective be tied to practical application of Deming's *System of Profound Knowledge*?

Further on in their writings, Heil, Bennis and Stephens address a key concept about the requirements and risks for changing how we think:

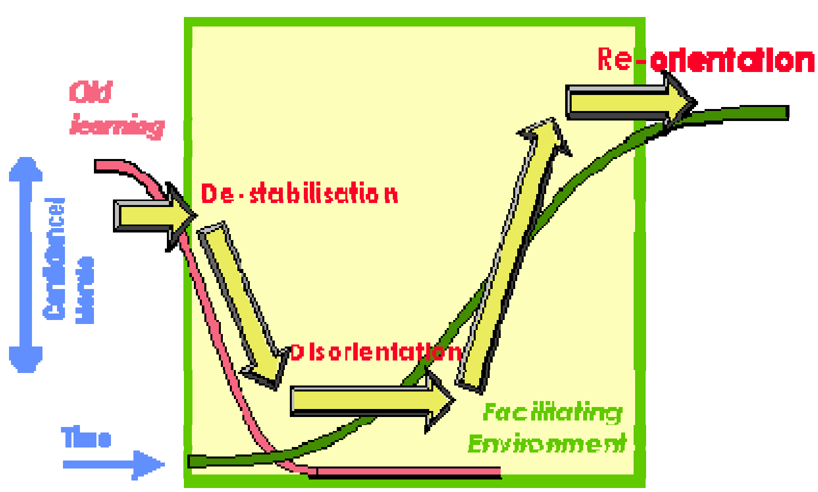
> "Our mindset is enormously valuable. It enables us to act. Without it we would have no way to relate yesterday's events and problems to today's, no basis for predictions, no framework for organizing information, and little confidence in our actions. Without a set of assumptions to guide our actions, every management decision we make, no matter how slight, would take forever. We would have to weigh every variable and ponder every possible outcome. Without a basic set of beliefs to guide us, every decision would be our first.
>
> On the other hand, with a belief system we trust, we can make assumptions about cause and effect, build models to describe how the world works, be confident in our solutions, and generally bring order to the complexities inherent in managing an organization.
>
> The biggest problem with a mindset is that once we've developed one, we tend not to challenge it, particularly when it seems effective. Why should we? If it worked yesterday and works today, it should work tomorrow, right? Not necessarily. Not even probably. In fact, in a rapidly changing environment such as the one we compete in today, leaping to this conclusion is dangerous business. Instead, to ensure that our thinking does not become outdated, we must continuously put our old ideas to the test, to question the efficacy of yesterday's truths and to do so before they fail." (*Douglas McGregor, Revisited: Managing the Human Side of the Enterprise,* p. 48)

The points outlined in this section are of importance: It demonstrates a profound piece of insight about people and learning. People are not normally in a position to see themselves as they really are, but if they can see themselves in a different light (from the outside), the chances of them really changing their behavior is greatly enhanced. Self-introspection is inherently a difficult process, but not impossible. Self-assessment doesn't come without risk. If something is identified as undesirable, one could become upset or disoriented.

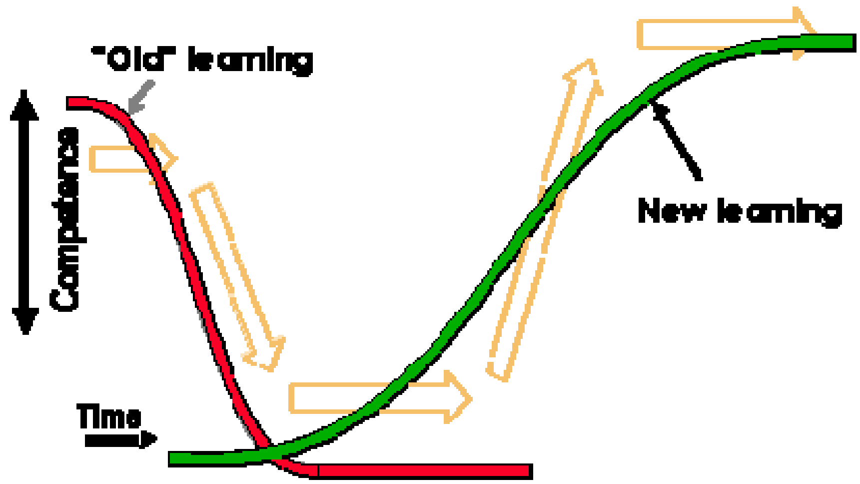
There are many theories about how learning occurs in adults. For example, here is one on supplantive learning versus additive learning that offers a different perspective. Atherton writes:

> "Supplantive learning calls into question previous ways of acting or prior knowledge and replaces it with something new. This is different than "additive learning" which adds new knowledge or skills to an existing repertoire. The replacement (supplantive) of former learning leads to a temporary "trough" of diminished competence.
>
> The natural cause of supplantive learning follows three stages. The first stage is de-stabilization. This is where the previous way of thinking or acting is upset. The second stage is disorientation. It is defined as the "trough" in which a loss of competence and morale combine to making learning difficult, and there is considerable temptation to return to the old way. The last stage is re-orientation. What takes place in this stage is the gradual climb out of the "trough", which follows a similar pattern to the curve of "normal" additive learning." (*Learning and Teaching: Learning Curve*)

The Learning Trough in problematic supplantive learning



Learning is change that often clashes with old ideas and perspectives. What was once thought to be a truism is now challenged by the new ideas. As a result, the learner should be prepared to understand that as they "bottom out" and their perceptions about the nature of people are contradicted, they will be vulnerable to discomfort and possibly regression, i.e., go back to the old way. It is important, then, for the learner to reconcile the differences and between the old and new as quickly as possible so as to ensure application of the new learning. For some, going from Theory X to Theory Y assumptions will not come without discomfort and disorientation.



The replacement (supplanting) of former learning
leads to a temporary "trough" of diminished competence

Deming takes a different approach in understanding the learning process and that other factors should be considered. For example, he writes:

> "Anyone, when he has brought his work into a state of statistical control, whether he was trained well or badly, is in a rut. He has completed his learning of that particular job. It is not economical to try to provide further training of the same kind." (*Out of Crisis,* p. 249)

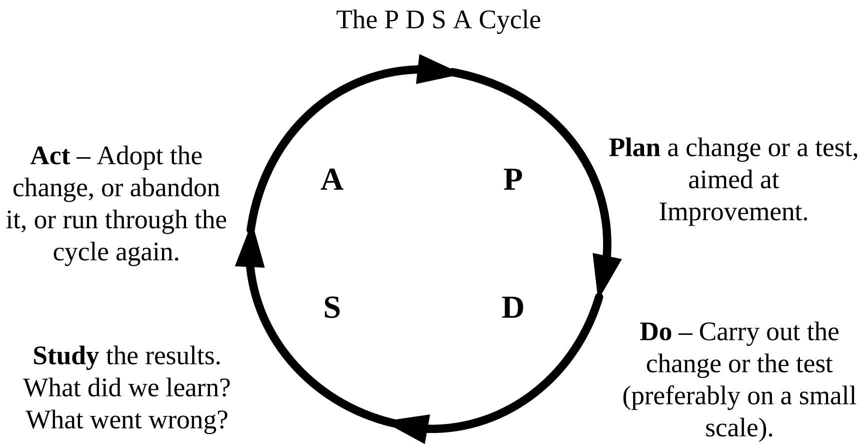
Henry Neave put the situation into perspective:

> "I think the basic reason is well-known human characteristic that bad habits are much harder to dispel than no habits! Once something has been learned wrong, learning it right consists of two parts: getting rid of the wrong and then receiving the right. The former is difficult, very difficult." (*The Deming Dimension,* p. 329)

I think it's entirely feasible that leaders can fall into a state of statistical control in their assumptions about people and work too. This has implications to holding Theory X assumptions. I think that once they have been conditioned to a negative, pessimistic viewpoint of people, usual training methods will not suffice to change that perspective. It will take new methods of training to bring in the *new learning* to bring learners out of the trough.

The Shewhart Cycle for Learning and Improvement

Deming wrote that the foundation for learning is the Shewhart Cycle for Learning and Improvement. It is known by four key steps in the process of learning: (*The New Economics: For Industry, Government, Education,* 2nd Edition, p. 112)



The Shewhart Cycle offers a significant approach to systematic learning. It can be used in any situation where theories are to be tested and re-tested for the purposes of improvement. The PDSA Cycle produces the best results when used in an iterative fashion. That is, when used over and over again, it produces the optimal circumstances for learning to occur. It can be used the context of personal transformation as well.

A Few Words about Adult Learning

At this point, I'd like to reiterate that effective adult education is based on a concept that adults learn differently than children. Malcolm Knowles postulated his views in *The Modern Practice of Adult Education* to the extent that he coined a new theoretical framework for adult education and that it should be used as the basis for future educational programming when adults are involved. The premise is clear: Adults learn differently than children (Pedagogy – the teaching of children) and, as such, different learning theories should be utilized by the adult educator than those traditionally used in situations when dealing with children. His ground breaking work cited the development of a new field of study in learning called Andragogy.

The principles of Andragogy are derived from an understanding that adults are continually striving for independence throughout life and prefer self-direction (relying more on intrinsically-based motivation) in their learning over the traditional extrinsically-based learning typically associated with teaching children, e.g., use of grades, teacher approval, etc. For intents and purposes, Knowles was following Theory Y as a basis for his theory behind Andragogy.

Knowles identified six assumptions of Andragogy that are worth mentioning:

1. "Adults need to know why they need to learn something before undertaking to learn it. He goes on to say that the first task of the facilitator of learning is to help the learner become aware of the "need to know".
2. Adults have a self-concept of being responsible for their own lives. This leads naturally to a "psychological need to be seen and treated by others as being capable of self-direction".
3. Adults come to into an educational activity with both a greater volume and a different quality of experience from youths.
4. Adults become ready to learn those things they need to know or to be able to do in order to cope effectively with real-life situations.
5. In contrast to children's and youth's subject-centered orientation to learning (at least in school), adults are life-centered (or task-centered or problem-centered) in their orientation to learning.
6. While adults are responsive to some extrinsic motivators (better jobs, promotions, salary increases, and the like), the more potent motivators are intrinsic motivators (the desire for increased self-esteem, quality of life, responsibility, job satisfaction, and the like)" (*The Making of an Adult Educator: An Autobiographical Journey*, p. 83)

The implication of these tenants is based on similar assumptions normally as associated with Theory Y concepts. But more importantly, when used as a foundation for the facilitation of new learning, i.e., use of Theory Y assumptions about the nature of people in leading others in the learning process, several of the tenants provide a sound rationale for the application of self-diagnostic techniques. The premise is this: If the learner can see that there is a "need" to know, then he or she are more likely to expend energy in the quest of that new knowledge and increase the chances of the new learning to be actually applied.

The question then becomes in the facilitation of learning Deming-type leadership and the effects of Theory X and Theory Y: How can we establish the "need" to learn? One method is the use of instruments in the learning process. If a "gap" can be identified between the actual versus the desired states, learners can take advantage of this knowledge and begin the personal transformation process.

The adult learning environment must be non-threatening, conducive to self-exploration, characterized by physical comfort, mutual trust and respect. The learning environment envisioned in this discussion is one:

1. Including the diagnosis of needs for learning.
2. Free of criticisms.
3. Confidential in nature.
4. Timely with meaningful feedback.
5. Enhancing freedom of expression.

6. Recognizing acceptance of differences.
7. Based on the principle that learners perceive the goals of a learning experience to be their goals (integration).
8. Promoting active participation as the norm, not the exception.

Notwithstanding the importance of understanding Deming's System of Profound of Knowledge as a whole and that the elements are highly interdependent with each other, my interest is to focus in on one of the elements of the system, psychology, for the purpose of proposing a teaching technique that can assist a leader in the process of personal transformation. As Dr. Deming so eloquently stipulated as necessary to start total transformation, it starts with personal transformation, and I think that includes examination of the assumptions leaders use to influence others. Intuitively, Dr. Deming knew that change had to start with people.

Heil, Bennis and Stephens wrote:

> "People are living organisms and communities of work are capable of renewal, adaptation, and change, and can't be fixed. McGregor recognized that real change happens only when a community of interest decides it wants to be different and the obstacles to renewal are removed." (*Douglas McGregor, Revisited: Managing the Human Side of the Enterprise,* p. 12)

Following this train of thought are several questions to consider as we think about how adult education can bring leaders to a higher state of readiness to lead the critical mass. Some of these are:

1. Can we help leaders investigate their assumptions about people?
2. How can we begin to change a leader's thinking process about the nature of people and work?
3. Where do we start?
4. What assumptions must we make about people's desire to change?
5. What method should we use to assist him or her in personal transformation efforts?
6. How should the Shewhart Cycle be incorporated into the process?

<u>Managerial Philosophies Scale: A Self Appraisal of People and Work</u>

Jacob Jacoby and James R. Terborg designed and published an instrument called the *Managerial Philosophies Scale* (MPS). The MPS is based on the Douglas McGregor's conceptualization of Theory X and Theory Y managerial philosophies. The self-assessment instrument is used in assisting a user to view their personal belief systems relative to people and work for the purpose of change and improvement in an adult learning situation. Fortunately, the instrument had been used in other research situations, and the authors have published convincing normative databases for reference purposes that identify excellent reliability/validity or evidenced-based statistics to support its usage.

For example, Jay Hall noted in *Management Values: Managing as a Self-fulfilling Prophecy Facilitator's Guide* that managerial achievement was directly connected to managerial philosophy (X or Y). That is, as managers were more successful and moved up the ranks, they were more likely to be Theory Y. In addition, Hall designed an entire leadership module around the use of the MPS in his Models for Management Series. In module 1, *Management Values: Managing as a Self-fulfilling Prophecy*, he took the X/Y concepts to the next level by extending it to the self-fulfilling prophecy (also known as the Pygmalion Effect). As part of the model design, participants were instructed to complete the MPS as part of a technique known as "learning through instruments".

The premise of the technique is based on the theory that a person can participate in self-diagnostic techniques that would reveal their predisposition to act out these beliefs in their day-to-day leadership behaviors, thus giving the person the opportunity to see themselves in a way that they never have seen themselves before. I call this a psychometric *feed-forward* technique. In other words, it's like a person looking in a mirror and seeing themselves for the first time. Imagine what psychological impact that would have on a person! Similarly, think about a person who has been blind since birth: seeing themselves for the first time could be a mind altering experience. The experience can have a profound effect on a person and should be considered useful in personal transformation efforts by educators with students.

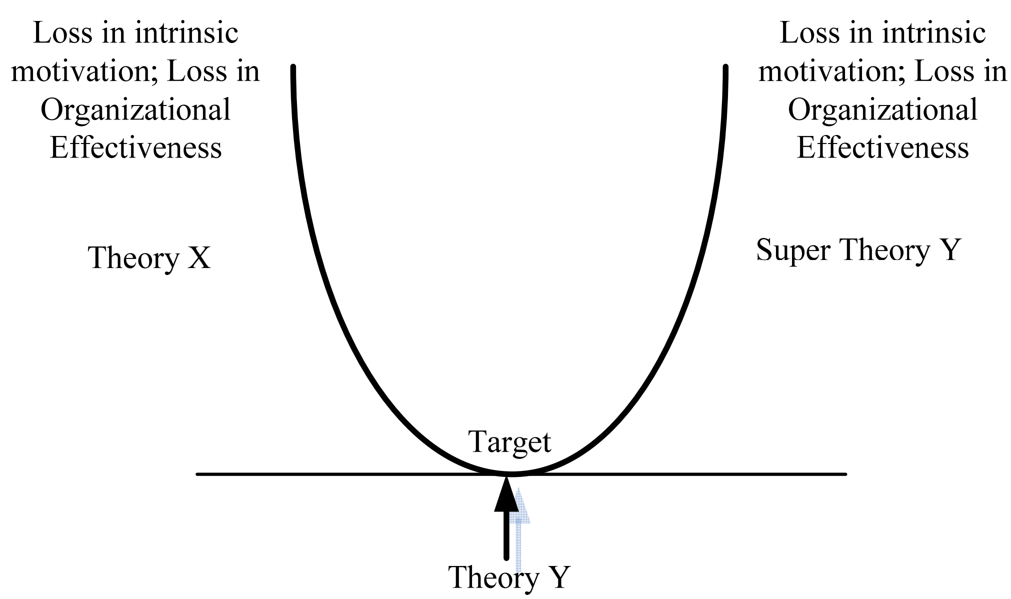
In addition, the authors have connected the output of self-assessment with application in the real world. Jacoby and Terborg contend in the MPS (p. 4) that research supports the hypothesis that if human characteristics are normally distributed throughout the population, Theory Y tenets would be aligned with a normal distribution of the workers in a given population. The implication for this assertion is, then, that approximately 68% of population that managers normally encounter will possess Theory Y expectations about their work. As result, they hypothesize that 68% of the people are like those described by Theory Y, somewhere between 10% and 16% of the population will subscribe to Theory X expectations, and somewhere between 10% and 16% of the population will subscribe to super Theory Y expectations. Super Y assumptions are conceptualized to be the *extreme* application of a laissez-faire leadership. Therefore the probabilities for a manager to be correct in drawing upon the right set of assumptions would look like this; the Theory X manager will be correct 10% to 16% of the time, the Theory Y manager will be correct 68% of the time, the super Theory Y manager will be correct 10% to 16% of the time. These figures are used for illustrative purposes only and, obviously are not indicative of empirically-based assessments of these traits in the normal population. If this is true or closely represents reality however, then the effectiveness of a manager in using any set of assumptions other than those associated with Theory Y would be down to 20% to 32% of the time. Practically speaking, with these kinds of odds in making the correct choice, Theory Y seems the most appropriate choice to follow, for most people, most of the time.

Jacoby and Terborg conclude:

“Therefore, the real significance of subscribing to a particular set of beliefs lies in the behaviors which result. The MPS has been designed to tap into the very tenuous and abstract area of belief, ideology and generalized assumptions about others. And, to the extent it is capable of doing this, it provides a basis for understanding and interpreting observable behaviors.” (*Managerial Philosophies Scale,* p. 5)

Another viewpoint may be better depicted in the context of the Taguchi’s loss function concept (*The New Economics: For Industry, Government, Education,* 2nd Edition p. 217). As originally presented by Taguchi, the theory portrays a deviation from “quality” as a loss to society. While the original conceptualization may have applied to the production of quality automobiles or television sets, it has migrated to a core theoretical construct for other fields of study as well. In this discussion, we can extrapolate to the behavioral sciences, management and leadership sciences. My conception of the Taguchi Loss Function model comes in the form of the relationship between application of Theory X and Theory Y sets of assumptions on the intrinsic motivation levels of worker in an organization. The hypothesis is that a loss in intrinsic motivation in the follower and organizational effectiveness occurs as the leader deviates from the desired use of Theory Y set of assumptions, either towards more Theory X or more towards super Theory Y.

Taguchi Loss Function Model



The target for the leader should be a Theory Y set of assumptions. As one moves away from the target (in terms of assumptions used by the leader), there is a loss in intrinsic motivation that occurs in the individual as well a loss to the organization in terms of achieving its goals. For example, the leader moves towards Theory X in his or her thinking to compensate for the propensity of people to avoid work and the result is a negative, pessimistic method of projection by the leader onto the follower. The reaction of the follower is as the leader predicts (“See, I told you so.”) and the behavior is, therefore, confirmed. The cycle is repeated over and over in countless interactions and eventually, the leader believes he or she has no choice but to resort to a Theory X set of assumptions get back control of the situation..

The other extreme is also problematic. If the leader moves off the target towards a super Theory Y condition, the effect on the follower is similar. For example, the leader moves towards super Theory Y in his or her thinking to compensate for the propensity of people to negatively react to high amounts of directive behavior and the result is an overly positive, lassie-faire ("Let them do whatever they want approach.") method of projection by the leader onto the follower. The reaction of the follower is as the leader predicts and the theory is, therefore, confirmed. The follower is unable to meet expectations and becomes almost paralyzed. The cycle is repeated over and over and eventually, the leader believes he or she has no choice but to resort to the same old, reliable set Theory X of assumptions.

<u>Description of the Learning Experience</u>

McGregor's original question is the focal point of the process. The steps involved are designed to address and display the individual's response to McGregor's question:

> "What are your assumptions (implicit as well as explicit) about the most effective way to manage people?" (*The Human Side of Enterprise*, p. vii)

A session typically contains a group of 12-15 participants in a horseshoe arrangement of tables. Sessions can be planned to last 2 -3 hours depending on the objectives to be accomplished. At the beginning of the session, the facilitator tells participants that the exercise will be conducted in an atmosphere of trust and respect. It is non-threatening in that participants are told that the results and subsequent discussions are kept private. At no time is the participant under duress to share the results of the assessment with anyone else. All documents are confidential and never collected or analyzed for purposes of adding to information into any human resource department records. Under this pretext it is believed that participants will collaborate without fear of retribution and willingly participate.

The exercise is part of Models for Management Series Module 1 *Management Values: Managing as a Self-fulfilling Prophecy*. The learning experience is centered on 7 phases: Self-diagnosis, viewing a video titled *Management Values and Self-fulfilling Prophecy*, scoring and interpretation, connection to the P-D-S-A cycle, group discussion, soliciting feedback from others and learning contracts (personal action planning). The first phase is to complete the MPS instrument. The MPS instrument is a ten-page, NCR paper-based booklet designed to give immediate feedback to the user. It includes a list of 36 statements about Theory X and Theory Y set of assumptions. The user uses a seven-point Likert-type scale to agree or disagree with the statements. Instrument validity and reliability coefficients are available in the booklet. These quantitative assessments reassure the user that the instrument measures what it purports to measure and that it can do it reliably no matter who completes it. These methods are consistent with modern requirements for evidence-based instrumentation techniques.

In the second phase, a video tape is presented that reviews McGregor's Theory X and Theory Y sets of assumptions and relates the concepts to typical workplace situations. Next, the narrator in the video connects McGregor's theories to the Pygmalion Effect by stating that it would be better to use Theory Y in their roles as leaders as opposed to Theory X under the presumption that if you keep using Theory X, don't expect Theory Y results. In addition, the video makes the case that leaders would be better off using Theory Y when dealing with people because most people will positively respond to these types of assumptions than they will with those of Theory X. Finally, the participants are challenged to review their own predisposition to use these theories. This is done by asking participants to score and interpret their individual MPS instruments. The intention here is create a learning need.

In the second stage of the session, participants are instructed to break open the NCR paper and score the instrument. The scoring is relatively easy and when completed gives important *feed-forward* information to participants. The process yields a snapshot of the participant's mental model of Theory X and Theory Y inclinations of the user. Raw scores are converted to percentiles scores (so as to give external comparisons to other industries or groups) for the construction of bar graphs. These bar graphs provide the user with a data-set used to perform a comparative analysis of their plotted philosophical profiles. Interpretation of results is connected to four possible scenarios depicted in the MPS. These scenarios help the user to identify with one or the other to demonstrate their inherent predisposition to use Theory X or Theory Y sets of assumptions with people. The four scenarios are named reductive (Theory X biased), traditional (Theory X but contaminated with the effects of previous human relations training), developmental (Theory Y) and super Y (over subscription to Theory Y). The authors point out that understanding of Theory X or Theory Y is a matter of ranges of agreement with the two theories. Developmental is considered by the author to be the preferred style.

In the third phase, participants are reminded of the Shewhart Cycle (P-D-S-A) for learning. They are presented the model as a method for learning. Under the "Plan" phase, they are challenged to plan a test about their assumptions if they discover that they are Theory X. They are directed to think of a situation where they can apply Theory Y in a real situation back at work. In the "Do" step, they are encouraged to carry out the test, preferably on a small scale. In the "Study" step, the participants are asked to analyze the results that they observed to determine what went right or wrong and lessons learned. In the final stage, the learners are reminded to "Act". That is, they are to adopt the change, abandon the new behavior, or try the cycle again until new perspectives are gained. The overall end result is that participants utilize the Shewhart Cycle as a method for learning. This is done in the spirit of continual improvement methodology that is a vital aspect of the Deming approach.

In the fourth phase, the learners are again challenged with a check against reality. It is pointed out that this self-diagnostic instrument was completed by them, but it could be even more valuable if they received feedback from their direct-reports who completed a Reality Check instrument. [This phase of the session is optional and is facilitated only if participants were given prior instructions to have their direct-reports complete the instrument.] The purpose of checking personal results with others is to provide another viewpoint of how leaders are perceived leading in everyday circumstances. This will help to validate the perceptions they have of themselves with the perception of others. A sample of three surveys is recommended to be given to different subordinates. This instrument is similar to the MPS in that the subordinates are asked to complete two 20-items sets of questions. The questions collect data in two areas: What style do they perceive the leaders to be using in the past. And second, how would the direct-reports wished to be led? (It should be noted that respondents typically report that they prefer to be led from Theory Y sets of assumptions.)

In the fifth phase (if used), the participants are shown the rest of the video presentation that shows them how to score and interpret the three sample surveys from the reality-check exercise. Then they can compare how they perceive themselves against the perceptions of others. Differences can be explored depending on the circumstances revealed and a general group discussion ensues. Then, participants are instructed how to plan a feedback session with the people that responded in the survey. The goal of the session is to ensure open communications between the participants. In addition, learners are encouraged to do a lot of listening instead of defending. It is pointed out that none of the data collected will be of value unless the leader is willing to use it for personal growth and development. Under this guise, learners are challenged to initiate a personal change program that involves a “contract for learning” strategy. Participants are given an opportunity to complete a self-directed contract that will guide their learning in the future and reinforce personal change.

Reactions

In the sixth phase, I like to solicit personalized reactions to the survey results. I ask for their opinion about the value of the exercise. Invariably, participants are surprised to discover that they mostly agree with Theory X propositions, but would like to hold Theory Y assumptions. I solicit from everyone how they think most people really are. They agree that people are probably Theory Y in their beliefs and would like to be treated as such, but the organization’s culture, i.e., the systems, policies and procedures prevent them from acting out their intuitive thoughts into action. The risks of failure and admonishment are just too great to assume Theory Y propositions.

Occasionally, there are managers who agree with Theory X propositions and do not see the need to change. These individuals see themselves as successful and have literally been conditioned and reinforced to behave the way they do. For many years, they have been reinforced to apply Theory X, i.e., promotions, bonuses, pay increases, etc. Because they have achieved higher levels of responsibility, it is difficult for them to change. Again, the risk of failure is just too high.

An interesting question arises in the case of the staunch and proud Theory X leader: What should we do with them? The inherent solution lies in Theory Y assumptions. Just leave them alone for now. They are like rocks in a river, water will flow around them. I think optimism is needed here. Sooner or later they will begin to assimilate Theory Y propositions and try them out. Improvement by others and other positive reinforcements will change their perspective over time.

At the end of the session, the seventh and last phase, I like to challenge participants with an action-planning exercise to solidify their thinking with the Shewhart cycle for learning and improvement. I present the opportunity by asking participants to complete a *learning contract*. The learning contract approach is used in many adult learning situations as way to build commitment and follow through. The purpose of this exercise is place structure in the learning process such that participants can rationally diagnose and prescribe their personalized approaches to change. Participants can work in small groups for the purpose of exchanging ideas and planning out a change process that they are likely to follow. Again, this allows the person to integrate their personal goals with the goals of the organization, a main concept behind McGregor's approach to implanting an intrinsically motivated workplace into the organization.

The basic concept behind the learning contract process entails guiding the participant through a series of questions designed to produce a list of their personal goals to improve or change their management style. It structures thought around their learning process in such tasks as how they will organize their personal time, measure progress made, who in the organization can support them, and how to maintain momentum and identify milestones along the way. These are very personalized plans and encourage active participation, rather than passive participation in their learning. Again, the process is voluntary and only used if the participant sees it as value-adding. I have found that most people have difficulty at first with this process because they really have never taken the time to structure their own learning. They have never been asked to do it before. Consequently, they feel uncomfortable, but readily adapt to the potentiality of the outcomes.

The MPS offers the opportunity to see a gap if it exists. Prior to taking the self-assessment, participants had no idea where they stood. Second, since some now learn that they work from a Theory X-driven set of assumptions, they become more acutely aware of the causes of the problems they face everyday. Awareness of this situation helps the participants to understand their frustration with their current work environment. If they hold Theory Y assumptions and the instrument confirms it, participants are relieved that they are using best-in-class assumptions, but are concerned about the future. Emphasis is now made on them initiating change over the world they have control over and not to dwell on the negatives.

But aside from these types of acknowledgements, I review a summary table of interdependency between the various theories underlining the concepts. This is done to crystallize the relationships and separate cause from effect.

Below is a table that describes the successive iterations of McGregor's, Deming's and self-fulfilling prophecy theories and the implications for organizational improvement. Here is how the three theories dovetail with one another:

Leader's Alignment with McGregor's Theories	**Number of Attempts to Apply Deming's Theory of Management**	**Effects on the organization**	**Self-fulfilling Prophecy**
X **Mindset of Leader:** **Why try?** **People can't be trusted;** **They must be coerced and intimidated to work.** **I need to keep control!** **Prediction:** **Expect problems – but at least I know how to deal with them – as I always have.**	**Low to None**	**Result: Problems and disappointments** Workforce unmotivated and resistant to participate; People not interested in learning new methods or cooperating; Rampant defensiveness; Absenteeism high; Evermore protectionism; Low employee morale; Innovation nonexistent; Fire fighting intensifies; Poor communications; Results continue to sag; Customers disenfranchised	The prediction comes true as expected. Results in: See, I told you so! I knew it would never work. Everybody loses!
Y **Mindset of Leader:** **People are jewels waiting to excel; They are already motivated.** **I need to integrate the goals of people with the goals of the organization** **I think I can do it!** **Prediction:** **Expect opportunities – anticipate new and exciting alternatives**	**High**	**Result: Opportunities – Enthusiasm and success** Workforce highly motivated; Participative environment; People accepting new responsibilities; Incentive systems disappear; Ranking of employees eliminated; Quota systems disappear; People excited about learning new methods and cooperating; High employee morale; Absenteeism drops; Fire fighting decreases; Results significantly improve; High innovation; Customers delighted	The prediction comes true as expected. Results in: See, I told you so! I knew it would work. Everybody wins!

McGregor always intended that Theory Y set of assumptions should be applied in the organization. Correspondingly, he observed, since Theory X is present and in place right now, why use it? It hasn't worked in the past so why use it in the future. He contended the process starts with the leader to act out his or her theory, i.e., Theory X or Theory Y. If he or she acts out Theory X assumptions, don't expect different results even trying to utilize Deming's Theory of Management. On the other hand (and of utmost importance), if he or she acts out Theory Y assumptions in place of Theory X, new opportunities will arise. Theory Y will require <u>integration</u> of Deming's Theory of Management, employee personal goals and organizational goals. The prediction is a synergistic effect that will improve the organization's quality, productivity and competitive position as Deming predicted in the application of his theory. In the words of the author of this paper, the message was simple, yet profound:

> *As leaders, you have to follow the right theories about the nature of people and methods of management. Best practice leadership dictates that you start with Theory Y propositions, apply them in the context of Deming's Theory of Management and the self-fulfilling prophecy and the enterprise will prosper to unlimited heights.*

Often times, leaders confuse cause with effect. In the realm of organizations, current thinking relative to effectiveness is interpreted this way: If I could just trust these workers to perform better, we wouldn't be in this mess. It's their entire fault. In this scenario, the cause is the unmotivated, lazy workers, and the effect is loss in profit. The reality is more like this: If the leader would adopt a Theory Y set assumptions about people, then workers will be motivated and high organizational effectiveness is most likely to occur. In this scenario, the cause is not the worker, it's the leader. The **effect** is the motivation level of the people doing the work. The **cause** is faulty assumptions use by management to motivate workers. As Deming always contended, the problem is not with the worker, it's with the people at the top, i.e. leadership. He understood the correct relationship of cause and effect and got the variables in the right order. In a statement attributed to Gipsie Ranney, Joiner remembered:

> "Costs are not causes, costs come from causes." *Fourth Generation Management: The New Business Consciousness*, p.272)

McGregor understood these concepts too. He understood the power of theory and the source of costs in an organization as well: They come from faulty theory of management, not the other way around, i.e., the worker.

<u>Conclusions</u>

The method described in this paper is only one example of how to initiate the change process. There are other ways to provide *feed-forward* type information to individuals as part of personal transformation. It affords adults a way to question and evaluate the way the think. The exercise provides participants with the opportunity to respond to

McGregor's original question in a simple, straightforward, and understandable fashion. The technique that is demonstrated is designed to facilitate systematic learning and exploration of this question by leaders. It provides participants with enough structure and freedom to conduct their exploration in a non-threatening environment based on proven adult education principles. Participants are given the freedom to make their own decisions and draw their own conclusions.

Having the technique applied in the context of the Shewhart Cycle (Plan-Do-Study-Act) is vital to the impact of the technique. It immerses the individual in an effective method for learning. The theory behind McGregor's position is sound and based on solid research into human behavior from the social sciences. The technique presented is based in Theory Y assumptions. It provides a viable alternative to a state of unconscious incompetence. "No action" is a state of leadership where the individual does not take the time to questions their assumptions about people. McGregor predicted that Theory X propositions will implode on its own faulty moral and ethical foundations. The futility of Theory X propositions and the optimism that Theory Y tenants offer need to be explored by leaders. The future is bright. Adults are willing to take responsibility in their learning, they are self-motivated and self-directed, they want to grow and develop, and they are adaptable. It is predicted in the spirit of Theory Y that if given the choice, leaders would prefer to know and deal with their predispositions so as to improve, rather than hide their head in the sand like the ostrich. As I heard Deming say in a seminar once:

> "We need more than just good people; we need people who are improving."

If leaders are going learn effectively from experience, they have to have theory from which to evaluate. Not knowing their theories is tantamount to dereliction of duty. Leaders need to test and modify their hypotheses as a result of new data. The technique presented here offers leaders the opportunity to identify the hypothesis they are currently applying to lead others. The technique allows leaders to first become aware of their current state, and then second, allows them to modify their assumptions towards the actualization of Theory Y. In the context of the Shewhart Cycle, leaders can use Theory Y propositions in the workplace, apply them (test) to gain data and re-test the theory over time to learn and improve, not only for personal gain, but for organizational gain. We must negate the tendency of leaders to shun introspection as something esoteric, non-value adding, but to promote self-diagnostic techniques to plan personal growth and development.

Lessons Learned

In conducting this exercise numerous times, I have learned several things. I try to mentally apply the Shewhart Cycle and try different things at different times to evaluate the effect. Here are some of my observations:

1. Every time I run this exercise, I learn something new. It could be as simple as confirmation of a predictable comment from a participant to a totally new perspective that I've never considered before.

2. Participants like this experience. I have never run into a manager yet that told me that they have ever taken the time before this exercise to examine their personal theories and assumptions. No one has ever asked them to do it before. The only thing they are typically measured on is results; no one cares about the personal theories hold. Introspection for the purpose changing mental paradigms is not easy.
3. My confidence grows every time when presenting and discussing this material to groups. In fact, it is fun! I look forward to these sessions with great anticipation and the reaction of participants.
4. People do, in fact, learn differently. Some by reading, some by hearing, some by watching, and some by doing. I don't think there is "one best way" to present and involve learners in an educational process designed to change a mental paradigm that will satisfy everyone.
5. Conducting this session drives much of my passion in subsequent sessions. I have learned that it adds to my personal fuel tank of enthusiasm.
6. Connecting McGregor's Theory X and Theory Y to Deming's Theory of Management is helpful. Participants respond well to the central idea of McGregor's writings as they understand, and more importantly, apply Deming's Theory of Management. Participants often respond well to the concept that one never learns without testing their theories in the context of PDSA.
7. Only a small number of participants will attempt the voluntary "Reality Check" portion of the session. I have learned that there is still *fear* out there in the workplace. Asking others to participate in one's growth and development is not easy. It can be threatening and uncomfortable. Many are skittish and wish to put it off.
8. McGregor and Deming came to same similar conclusions relative to the negative effects of business practices on people such as MBO, MBR, performance appraisals, pay for performance, incentive systems for performance, compensation systems, establishment of numerical goals and quotas, and employee of the month rewards, etc. In my opinion, McGregor used three of the four disciplines that Deming indicated were the basis for *A System of Profound Knowledge*. McGregor relied on *psychology*, *appreciation for a system* and a *theory of knowledge* as the basis of his rationale. However, Deming casts a wider net by including the dimension of an understanding of variation and the concept of statistical thinking as a rationale for dispensing these business practices. McGregor hovers around this discipline but never really specified it from a statistical vantage point. He looked at the effects purely from a social scientist's perspective. He talked about how many variables can affect the leadership equation, but never addressed variation and the concepts of common and special cause. As such, the simulation of the Red Beads and the construct upon which it is based, that people work in the system and that performance measurements are really measurements of the system in which they perform and results are not attributable to people, is far more effective at explaining why these business practices should be discontinued.

9. Overall, McGregor’s contributions dealt heavily with the inputs to the process of leadership, i.e., the mindset of managers and the assumptions they follow as they approach the design of work systems and expected outcomes.
10. In presenting Deming’s Theory of Management, an exercise involving McGregor’s theories can supplement the learning process. People are curious. People positively respond to self-diagnostic techniques that can bring awareness to a critical issue. Moving from a state of unconscious incompetence to conscious competence is possible with a little nudge. By moving up in the process of leadership to begin illuminating assumptions held by managers, conscious or unconscious, we can go a long way to explain these predispositions and their effect on people and organizational effectiveness.
11. I have a lot of respect for the Pygmalion Effect as a powerful phenomenon to keep in mind when dealing with people. Projecting positive, challenging expectations go a long way in bringing out the best in others. Leaders have a solemn responsibility to use it appropriately, wisely and not as weapon.
12. Reliance on intrinsic motivation is one of keys that will unlock the true human potentiality in organizations. I have never witnessed anything more powerful than a person who is operating from a base of intrinsic motivation. I believe people are already motivated to do a good job when they come to work. What we have to learn is how to stop de-motivating people.
13. I would be surprised if Deming would have disagreed with McGregor’s theories. In my opinion, Deming would have seen the value of sharing McGregor’s theories. I think the viewpoints are inseparable, at least from a psychology viewpoint.
14. Deming’s Theory of Management casts a wider net than McGregor’s propositions, as prophetic and useful as they are. It’s interesting to speculate that if McGregor had collaborated with Deming on understanding variation from a quantitative viewpoint whether McGregor would have become a proponent of the elimination of practices such as performance appraisal and MBR rather than a proponent of just modifying the methods.
15. The challenge for us is to test all these theories in our quest to gain new knowledge and improve as leaders. By testing our predictions, we will become increasingly confident and self-assured as time goes by. Our worlds will become clearer, more orderly as we make new predictions and iterate the PDSA cycle of learning over and over again. We’ll know it’s working when it works for us.
16. We are all committed to Deming’s Theory of Management in one form or another. We are all different in that pursuit, but united in the aim and purpose. As McGregor pointed out, we all yearn to be part of something bigger, something meaningful, and something gratifying. It is our nature.

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NO PAIN, NO GAIN, NO INSTANT PUDDING…
Driving World Class Excellence into Local Government!

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Abstract

Taxpayers, like stockholders, are holding their local government accountable to ever-tightening budget constraints. Learn how 5S led to activity-based-cost savings for 5 municipal courts associates, the city, and, most importantly, the constituents. This case study serves as a blueprint to the mandatory inaugural work to drive world class excellence even in government!

Background

The City of El Paso has taken the historic step of approving the change from a strong-Mayor to a Council-Manager form of government. The city employs 6,200 people Four Deputy Chief Administrative Officers, a Fire Chief, a Police Chief, an Airport Director, and 25 department heads make up the leadership group. The employees and managers have been used to changes and new direction every two years which provides no consistency for objectives or goals. The position of City Manager requires managing the transition of the organization and community from the strong-Mayor form of government to Council-Manager form, including balancing the expectations of the City Council, City staff, and the community.

Change is difficult. We become so use to the fact that (it appears) to have worked since the inception of the city so why change now. The transition of the city employees from a mayoral-form of management style ("it will change every two years so there's no rush.") to a city manager management style ("she's not leaving. This is long term") first requires the education that will encourage change as welcome and beneficial to all employees, associates and leaders alike. There must now be an understanding that the city is in essence a corporation – an entity to meet the needs of its customers, the population of El Paso.

The transition from an autocratic bureaucracy (short term changes every two years) to a team-based management philosophy (long term strategies) takes time, patience, understanding, and education of all associates. Identifying new perspectives helps management win the commitment and success of their employees in the process. People education, the backbone of success, increases the commitment to the forthcoming changes to be made in the environment they now know. The employee's commitment brings more agreement. Their agreement increases the speed of change and builds accountability to organization goals. Involvement is an excellent quality tool in fighting apathy (a prevalent emotion in El Paso). This case study was driven by this key success factor for optimizing operational performance.

The principle of organizational development (OD) is that organizations are social systems in which people are strongly influenced by the organizational culture. Therefore, the most powerful tool for improvement is cultural change. The goal is to increase the long-term health and performance of the organization, while enriching the lives of its members.

The portable philosophies of Dr. Deming

Dr. Deming's belief that "it's not enough to just do your work or work hard, you must know what to work on" is the predicate to Office Kaizen, the genesis of which is the implementation of the 5S principles. Just as just-in-time systems in manufacturing where we applied Dr. Deming's "tear the roof off your plant and look at your work flows from a bird's eye view" in order to implement straight-line systems, scrutinizing paper trails from a "bird's eye view" is the mantra to streamlining work flows and increasing office cycle time, a performance measurement for rapid response systems and excellent customer service.

Office design and layout begins with each individual cubicle *(no instant pudding)* and the organization and professional development (O&PD) skills of the person who occupies it. Discover how 5 El Paso municipal court associates integrated attaining their O&PD 5S skills with the immediate application *(the pain)* of the principles to their work environments and achieved multi-fold value-added increases in their productivity levels *(the gain)*.

Why No Instant Pudding?

The "instant pudding" theory is the supposition that quality and productivity improvement are achieved quickly through an affirmation of faith rather than through sufficient effort and education. It is an obstacle to achieving quality.

Why We Fail To Meet Our Objectives

The Japanese approach to quality improvement stresses following a carefully defined problem-solving process. In the US, we spend too much time emphasizing results while failing to provide education (training) in the processes that yield those results over the long term. (hence, the "instant pudding" theory)

Visual Management A Zero Cost Motivator

A Chinese proverb states: I listen and I forget. I see and I remember. Pictures are a visual management tool to easily measure (see) "how far you've come". Pictures provide a problem-solving storyboard (a technique based on Dr. Deming's plan /do /check /action problem-solving process. The steps being taken and the progress toward the resolution of a problem are continuously planned and updated) to remind participants of the *pain* they started with and the *gain* to maintain what they achieved.

Kaizen Blitz

Kaizen Blitz is a rapid improvement of a limited process area. Part of the improvement team consists of workers in that area. The objectives are to use innovative thinking to eliminate non-value added work and to immediately implement the changes within a week or less. Ownership of the improvement by the area work team and the development of the team's problem-solving skills are additional benefits.

The 5s Lean Principles

1. **S**ort what is needed right now and what is not
2. **S**traighten - housekeeping - a place for everything and everything in its place.
3. **S**weep is both physical and visual, removing any clutter or poor visibility
4. **S**tandardize by establishing "what good looks like" and rules for upkeep.
5. **S**elf-discipline = **ACCOUNTABILITY**

Statement of Need in Municipal Court

I had been asked by the city's Municipal Court Director to assist in the development of organization skills for 5 Municipal Court Associates. The Director had tried many times by having others clean up after the associates to no avail. My analysis to her was to use her own teenager as an example of why it is imperative the associates "feel the pain". "If you clean your daughter's bedroom every time she dirties it, what have you taught her? You've taught her nothing about responsibility or accountability. She will learn that when it gets cluttered, someone else will clean it up." I applied this same philosophy to the associates. "If someone else has always cleaned up their clutter, is it any surprise it continues to get cluttered?" This scenario was the perfect example of an "instant pudding" process.

I met with the 5 Municipal Court associates for 2 ½ hours to customize the proposal to their specific Organizational Development (OD) skill(s) need(s). The root cause of clutter and, hence frustration, and, hence, low productivity levels was the lack of basic organization skills (some of the associates had had "time management" in a general class course). Although there were many additional factors (increasing work loads, no extra help, and lack of software to facilitate manual tasks) that contributed to the frustration, the associates recognized their OD weakness had to be addressed first.

The awareness of this weakness and the enthusiasm of the associates to want to correct this situation was an indicator that success would be achieved, once given the opportunity. In order to realize this hands-on, root cause solution, the following was required- first and foremost, the associates had to be provided the time and space to accomplish the assignment. Their day-to-day responsibilities negated the ability to do this during the work hours. The suggestion was to bring them in on a weekend. It was with success in mind that the proposal was written and accepted.

The weekend kaizen blitz with the 5 associates began with a 1 1/2 hour PowerPoint presentation which introduced the principles of Dr. Deming and the lean principles of 5S. The presentation served as the education tool to define the **why** and the **what** (no *"instant pudding*") of the actions they would undertake over the 2 day period. They had to understand why the *"no pain, no gain*" process was an opportunity for them to acquire the basic organization skills needed in any position or level. I call them "portable" skills.

The balance of the day was spent on executing OD principles S1 – S4 in their respective areas **(the "how")**. This "no pain, no gain" exercise provided the genesis for achieving principle S5, self-discipline, the final deliverable of this opportunity.

Increasing Office Cycle Time: Applying the principles of 5S
A *cluttered desk does indeed indicate a cluttered mind!*

The five associates started by taking pictures of their "the way it was" cubicle for their problem-solving storyboard. The storyboard serves as a continuous reminder to participants not to fall back into old habits. They were then ready to begin the first of 5S, Sort

S1. Sort - Group Like Things Together

This first principle included the following zero-co$t tools

- Paper (recycle) as labels
- Markers to write with
- Scotch tape / stapler to affix label
- Garbage bags / cans
- Used boxes, existing trays, the floor, the wall to define the separate areas

The first action of Sort was to have the associates, as a group, write out the labels they needed in their work space. I introduced the exercise to them:

"Even though you have different job responsibilities, there will be some topics, or labels, that are standard to all of you (sample: things I do weekly, things I do daily; things I need for month-end; things I can archive, things I can throw away, things I need to file; books- fiction, non-fiction, work, entertainment)."

Once the labeling was completed, the associates placed the labels in their respective available open spaces close to their cubicle. This enabled them to categorize items and paper piles as they emptied their cubicles, saving time and effort for S2. Although as a group they had written up their stack of similar labels, additional ones were written customized to their particular need as they came across one-off or forgotten items.

The associates had chosen to break out items into three initial groupings – Toss, Archive, and Keep. Each associate started in one area of their cubicle (left side of cabinet, drawer, etc), and dispositioned items in/under the appropriate labeled zone. Once the cubicles were cleared out, the associates had to further classify and arrange their items and paper piles. In order to realize the space needed for the "keep" piles (Dr. Deming's 'you need to know what to work on' pile), they each addressed their "toss" and "archive" piles first. Many of the paper files were clearly outdated and should have been archived or thrown away years ago. One of the associates commented she had not seen the edge of her desk for years! This process was the longest, approximately ¾ of the day. Once complete, each associate took their second set of pictures for their problem-solving storyboard.

S2. Straightening

The tools needed for this principle:

- office supplies (sample)

- file folders
- drawer separators
- in-out boxes
- file cabinets

This principle takes us to the Deming philosophy of housekeeping - *a place for everything and everything in its place*. Housekeeping, a visual management tool, makes it easy to understand the methodology of having "one home per part". This system allows for visual awareness of an item/paper status. The waste in time to find an item or piece of paper either because the associate does not remember where it is or it is located everywhere in the cubicle is compounded for each piece of paper or item. This wasted cost of "hunt and find" impacts the "rapid response" service to our clients/customers/constituents. Additionally, this impacts the high stress levels on both the associates and the customer.

The housekeeping process for the associates was to evaluate their categorized "keep" files. Pile by pile, item by item, the associates arranged, straightened, and grouped until all sub-sorting was complete and, most importantly, they labeled, labeled, labeled, to insure easy identification when they had to find something in the future. Once complete, storyboard pictures were taken by each.

S3. Sweep

The tools needed for this principle:

- dust cloths
- vacuum

The process of sweep is both physical and visual. It includes removing any clutter or poor visibility. The associates tidied their cubicles by dusting and vacuuming them first. Every drawer, file cabinet, bookcase, chair, and small supplies like staplers were cleaned. Spotless, the cubicles were ready to be organized for efficiency.

As the associates started reorganizing and rearranging their "what to work on" items, they were reminded of Dr. Deming's "bird's eye view" philosophy. They focused first on the physical layout of their cubicles. What was the internal, cubicle flow of their work? If the associate was left-handed, were items that had been set-up (example: telephone) on their right impeding their efficiency? If so, the items were moved to the associate's left. Most offices are designed for right-handed people. If you are left-handed, redesign **your** layout to accommodate **your** needs.

Removing the clutter and creating an efficient office layout allowed the associates to streamline their work processes and increased their productivity (less hours spent looking for stuff, more hours spent on doing). Poor visibility translated to poor productivity. "*If you can't see it, you'll forget it*". Once complete each associate took pictures for their storyboard.

S4. Standardize

Standardize by establishing "what good looks like" and rules for upkeep.

At the end of the second work day, each associate had created time management reminders and checklists to further insure bad habits would not return. They took their final problem-solving storyboard pictures. The pictures were developed the next day and returned to the associates. Each created their own storyboard and hung it up in their cubicles. It serves as a continuous visual reminder of their progress and success and reinforces the "pain / gain" process. It will serve as a daily reminder on how far they've come.

S5. Self-discipline

Self-discipline is the professional development (PD) skill the associates learned through this kaizen-blitz process towards achieving their rapid response environment. The 2-day kaizen blitz actioning the principles S1 through S4 was the genesis for self-discipline. The two day ordeal of sweat and hard work reinforced their desire to maintain their now clean, efficient and stress free work spaces. A "bird's eye" view indicated all wasted action had been eliminated. The problem solving storyboard, reminders and checklists serve as tools to assist in maintaining their organized spaces.

This weekend "no instant pudding" kaizen blitz was instrumental in providing the associates with the organizational and professional development skills (O&PD) needed to increase office cycle time, streamline their work processes, and reduce their stress levels. Their enhanced productivity levels are multi-fold and they have transported those skills to their personal lives.

Post-testimonial
"My desk was probably the worst one. I have since gotten much better at getting rid of paperwork and not letting it sit on my desk forever. I'm far more caught up on my paperwork and it's nice to find something quickly and not waste a lot of time looking for things. I'm still a work in progress, but Patricia did a great job of patiently taking me through the steps to better organizing not only my desk but myself." Rebecca Vasquez, Senior Court Deputy

Conclusion

Dr. Deming's philosophies cut across all industries. Viewing a production floor process from a bird's eye view to analyze non-value-added waste that prevents straight line (just in time, seamless flow) systems apply in the administration side of the organization. Office layout and design, housekeeping, visual management, people education – all quality tools that provide organizations with the rapid response systems needed to, in the end, achieve overall best in class customer service. The roots of excellence begin with each person in each cubicle, applying the principles of 5S. The success is an organization that puts us in the forefront of our competitors to make us world class- yes, even in government!

LIST OF AUTHORS