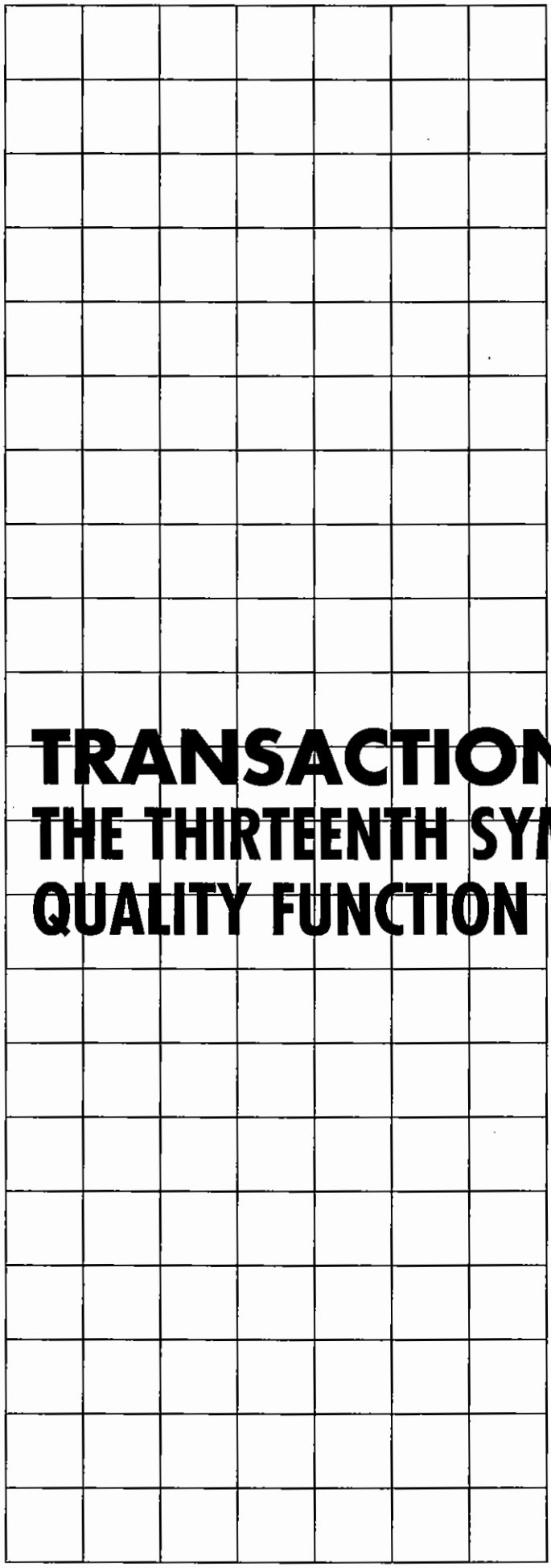

TRANSACTIONS FROM THE THIRTEENTH SYMPOSIUM ON QUALITY FUNCTION DEPLOYMENT

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BEST Deployment: Desperately Seeking an Integrative Solution for Critical Times

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Abstract

Herein key concepts of sustainable development, business excellence and quality function deployment are joined to provide a means of deploying the unified concept of BEST Business Excellence. BEST is associated with four key considerations of sustainability: Biophysical / Environmental or B-Sustainability; Economic or E-Sustainability; Social or S-Sustainability; and Technical / Technological or T-Sustainability. For reference purposes the construct of business excellence to which BEST Sustainability is wed herein is the European Foundation for Quality Management Business Excellence Model, but most well known models yield a similar result, since primary elements of business excellence are now widely agreed upon. Lacking deployment, good policies are no more than pipe dreams so a formal means - BEST Deployment - is herein discussed.

Keywords: Business Excellence, EFQM Model, Environment, QFD, Society, Sustainability.

Introduction

Recall the story of the frog in the kettle where a frog is in a pot of comfortably cool water that is slowly, imperceptibly, brought to boiling - from blissful ignorance to extinction. At this fragile point in history many hold that environmental irreverence has brought humanity into its own kettle of sorts. This has also been gradual as environmental degradation can be traced over a period of more than 500 years - irreverence enduring across many generations and cultures. Deforestation, diminishing biodiversity, acid rain, ozone layer depletion and global warming are a present reality and may well be harbingers of an approaching apocalypse. Generally, critics and some researchers conclude that explosive human

population growth and accompanying human activities are the culprits and that all environmental problems have a demographic dimension that includes humanity *and* the whole of creation on planet earth, both of which are at risk. The pot of water is boiling and, though "the frog in the kettle" has been used only for the purpose of analogy, the irony is ironic that there is in progress an alarmingly rapid global die-off of frogs and toads that is commonly attributed to environmental degradation. This is known as "the silence of the frogs", an important phenomenon because frogs are signal species.

Sustainable Development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs, and is presented herein as an approach to forestalling or reversing the aforementioned destructive environmental trends. In particular, this paper presents the *BEST Model for Sustainability*. This model balances the principles of ***Biophysical / Environmental, Economic, Societal, and Technological Sustainability***. The paper then relates *BEST Sustainability* to representative business excellence models principles and criteria with the objective of wedding these. The envisioned result is "Business Excellence with a Social and Environmental Conscience", otherwise *BEST Business Excellence* (Edgeman, 2000a and 2000b) where the pressing need to advance sustainable solutions for humanity motivates the listing of *BEST* prior to *Business*.

BEST Sustainability: Earth@Ω or Sustainability@α

Many observers interpret sustainability as requiring a balance between economic and environmental concerns. The so-called *triple bottom line* adds societal considerations to the mix. Johnson and O'Donnell (2000), on the 22 December 2000 nomination of Christine Todd Whitman for Head of America's Environmental Protection Agency (EPA) by then American President-Elect George W. Bush, capture both the idea and fragility of balance. President Bush said of Whitman that she is an obvious choice to oversee the nation's environmental interests and that "she has been able to balance the demands for economic growth, and at the same time she has supported environmental protection measures." The elevation of the EPA Head position to cabinet level substantiates the urgency of sustainability. Correspondingly, the reaction of Sierra Club Executive Director, Carl Pope, to Ms. Whitman's nomination in saying that she has a "mixed record on the environment, but on balance we believe the Sierra Club could work with her" illustrates the fragility of the balance.

Figure 1 (Edgeman, 2001) portrays this precarious balance where the *BEST Principles* are sharpened to a point - called Earth@Ω (Edgeman and Hensler, 2001) to emphasize that *BEST Sustainability* is difficult to obtain, that successfully attaining it may well determine future survival of humankind or at least its quality of life now and for future progeny. The word *progeny* is in itself telling since a driving force behind *BEST Sustainability* is a deep concern not only for current and life horizon oriented needs, but also for the needs of generations unborn, that is, an inter- and intra-generational equity plan. Figure 1 further indicates that a carefully developed and deployed approach to BEST Sustainability holds promise for fulfillment of the equity plan, that is, of getting us to Sustainability@α. Not addressed in Figure 1 is the level of coordination among organizations and nations that may ultimately be required if the dream of Sustainability@α is to expand beyond organizational boundaries. Clearly, Sustainability@α is a complicated matter that will require not only a sound plan and coordination, but also resolve on personal, corporate, national and global scales so that it is no accident that Sustainability@α at the end of the spectrum may to likened to the leprechaun's legendary pot of gold that is "at the end of the rainbow". Key *BEST Principles* (Rwelamila, Talukhaba and Ngowi, 2000) are presented below.

Biophysical / Environmental Sustainability (B-Sustainability) regards the environment as an essentially closed system where consumption of non-renewable natural resources must be at a rate at or below replenishment through renewable substitutes. Further to this, as illustrated by the setting aside of various federal lands by President Bill Clinton in the waning days of his US Presidency, are preservation of

various sorts of "landscapes" and minimized use of pollutant sources. B-sustainability is fundamentally ecosystem oriented and examples of its principles include the following:

- Extraction of fossil fuels & minerals, and produce persistent substances foreign to nature at rates that are not faster than their slow redeposit into the earth's crust;
- Reduce the use of the four generic resources used in the built-environment: energy, water, materials and land;
- Maximum resource reuse and recycling;
- Use of renewable resources in preference to non-renewable resources;
- Minimiza tion of air, land and water pollution at both global and local levels;
- Creation of a healthy, non-toxic environment;
- Maintenance and restoration of the Earth's vitality and ecological diversity; and
- Minimization of damage to sensitive landscapes, including scenic, cultural, historical and architectural landscapes.

Economic Sustainability (E-Sustainability) is central to improvement of the human condition, particularly at the individual level, but is generally promoted through corporate and governmental policies and practices. Key E-sustainability considerations include:

- Ensure financial affordability for intended beneficiaries;
- Promote employment creation;
- Enhance competitiveness in the marketplace by adopting policies and practices that advance sustainability, including cooperation;
- Use full-cost accounting and real-cost pricing in setting prices & tariffs;
- Choose socially & environmentally responsible suppliers and contractors; and
- Invest some of the proceeds from the use of non-renewable resources in social and human-made capital to maintain the capacity to meet the needs of future generations.

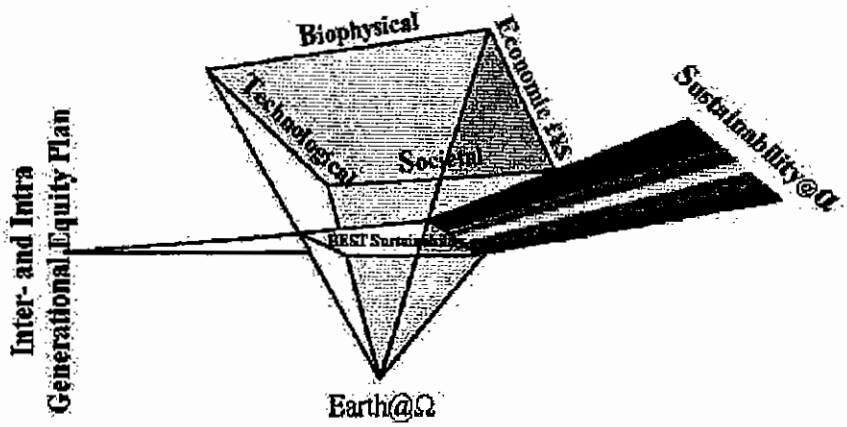

Figure 1. BEST Sustainability Model

Social Sustainability (S-Sustainability) points to improvement of the human condition at the societal level and as such many of the key considerations of S-sustainability are ones for government entities.

- Improve the quality of human life, including alleviation of poverty;
- Provision for social self-determination and cultural diversity in development planning;
- Protection and promotion of human health through a healthy & safe working environment;
- Implementation of skills training and capacity enhancement of disadvantaged people;
- Equitable distribution of the social costs of development;
- Equitable distribution of the social benefits of development; and
- Intergenerational equity.

Technical Sustainability (T-Sustainability) addresses the construction, maintenance and humanization of lasting facilities that strengthen urban infrastructure while not contributing to so-called urban sprawl. While *BEST Sustainability* integrates all four B-, E-, S-, and T-Sustainability pillars. For example, T-Sustainability possesses clear BSustainability implications since it promotes efficient use of land and reduced use of non-renewable energy sources. Among key T-Sustainability considerations are:

- Construction of durable, reliable and functional structures;
- Pursuit of quality in creating the built environment;
- Use of serviceability to promote sustainable construction;
- Humanization of larger buildings; and
- Completing and revitalization of existing urban infrastructure, with a focus on rebuilding mixed-use pedestrian neighborhoods.

The *BEST Pillars* need not work independently and this paper advocates their integration. For example, corporations can contribute positively to S-Sustainability - in terms of citizenship and economics - and can at the same time be stewards of the natural environment (B-Sustainability). Hewlett-Packard Corporation (HP) is among businesses making environmental considerations (B-Sustainability) an important part of its decision-making process in ways consistent with the principles of ESustainability previously cited. Included among such considerations are entry into supplier and partner relationships. HP also devotes much of its philanthropic effort to environmentally proactive concerns. Rowledge, Barton and Brady (1999) chronicle additional examples of environmentally responsible corporations. Actions and products by Monsanto Corporation contributing impressively to BSustainability while also being financially rewarding (E-Sustainability) can be found in Magretta (2000).

Hensler and Edgeman (2001) present an allied approach conceptualizing the optimization of B-, E- and S-sustainabilty through the use of technology, T-sustainability. Therein, T-sustainability is the vehicle by which the joint optimization model achieves of B-, E- and S-sustainability.

Kyosei is the Japanese concept of successfully functioning simultaneously in the roles of social and environmental steward. While translated literally as *symbiosis*, the notion of *kyosei* is one of "living and working for the common good." As practiced by Canon Corporation, *kyosei* has led to harmonious relationships with owners, customers, suppliers, competitors, governments, *and the natural environment* (Rosen, Digh, Singer and Phillips, 2000). When a group of sufficiently influential corporations practices *kyosei*, they can become positive and powerful agents for social, political and economic change - including the sorts of change critical to successful *BEST Sustainable Development* and *BEST Business Excellence*.

Relevant to the notion of kyosei is Margulis' (1998, also see Margulis, Sagan and Lewis 1997) widely accepted theory of evolution, Serial Endosymbiosis Theory (SET). This concept argues that evolution is strongly rooted in cooperation among living entities. SET does not contradict Darwin theory, which is rooted in competition, but completes the analysis of evolution. SET serves to underscore the importance of cooperation in the context of BEST deployment, without which the deployment is surely to fail.

Business Excellence Principles

Numerous international quality awards, such as America's Malcolm Baldrige National Quality Award, the Australian Quality Award, and the European Quality Award, define and implement criteria that measure progress toward underlying principles. Evolution of models using these criteria has yielded the arena of business or performance excellence models. Since these are the offspring of the modern quality movement, this paper assumes a fundamental knowledge of such principles, criteria and models by most readers. Hence the paper touches on these only briefly herein.

Principles of Business Excellence underlying the European Quality Award are the following: Leadership & Constancy of Purpose; Customer Focus; Results Orientation; Management by Processes & Facts; People Development & Involvement; Continuous Learning, Innovation & Improvement; Partnership Development; and Public Responsibility. The criteria by which these are judged and that are themselves organized into models are: People; Processes; Leadership; Policy & Strategy; Key Performance Results; Partnerships & Resources; Customer Results; Society Results; and People Results. The associated model is the EFQM (European Foundations for Quality Management) Model (see the EFQM website, www.efqm.org). Figure 2 organizes these somewhat differently (Edgeman and Jonker, 2000).

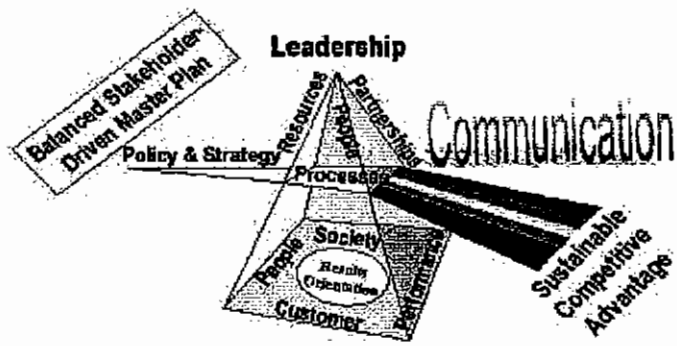

Figure 2: Excellence and the EFQM Criteria

BEST Business Excellence: A Reconciliation of Principles

Humanity is on a perilous path and it is clear that many ideas and resources must be brought to bear, including ideas of business excellence and corporate resources that include intellectual capital and financial capital, both public and private. Moreover, a substantive change of path may first and foremost require broad and deep commitment to change, so that the human heart is in need of transformation. Transformation may not be enough, however, the apparent situation requires rapid and intelligent (i.e., meaningful) change deployment. Therefore, ideas and approaches from areas generally regarded as the domain of business excellence must contribute; deployment must include leadership, change management, hoshin planning, quality function deployment (QFD), and self-assessment.

Central to *BEST Sustainable Development* is the exercise of caring use of the resources mentioned, with particular regard to consumption, lasting use, value for human capital, and environmental impact. Ideas from Business Excellence that are wholly consonant with these core considerations and other important elements of *BEST Sustainable Development* include "doing more and more efficiently with less" - that is, the so-called lean approach; cross-functional training that leads not so much to lifetime-employment as it does to promotion of employability; general care for and development of the human resource.

Additionally, accepted quality axioms such as higher quality leads to profit increases and lower consumer prices hold a high degree of consistency with the economic aspect of *BEST Sustainable Development*. Same for a key goal of Deming's System of Profound Knowledge (1994), i.e., the "creation of jobs, jobs, and more jobs. The "leadership" criteria of accepted business and performance excellence models generally assess multiple aspects of organizational leadership, two of which relate directly to the social and environmental responsibility aspects of Sustainable Development. While discussed only cursorily herein, one model for BEST Business Excellence is that portrayed in Figure 3 where the "inter- and intra-generational equity plan" incorporates the notion of society, future generations and the environment as stakeholders in the "balanced stakeholder driven master plan" employed by business excellence.

An organization's leadership, represented on the left side of Figure 3, is responsible for derivation and deployment of policy and strategy that will deliver E-Sustainability. This, in part, will require adoption of a modified profit concept where profit is regarded as residue, that which remains after all obligations are fulfilled including reasonable care for the environment and society. Lest one be misled, this construct includes the firm's obligation to owners (read stockholders). As previously noted, certain business strategies, such as lean approaches, commonly employed by excellence pursuing organizations simultaneously support all of these considerations and demonstrate wise stewardship of the organization's resources.

Figure 3 portrays personal and societal interests and obligations key to *BEST Business Excellence* on the right side. Perhaps the foremost requirement is a deep resolve to consume carefully and to share our excess (charity), perhaps even that for which we have legitimate need (sacrifice).

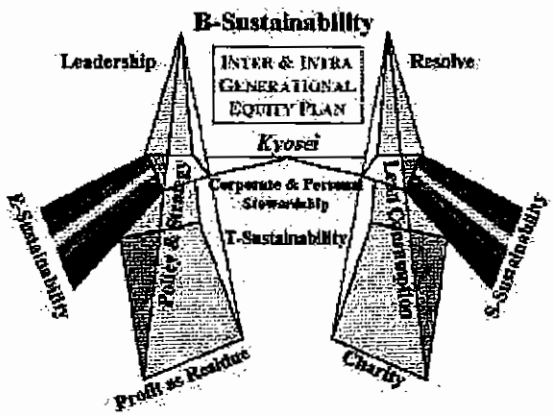

Figure 3. BEST Business Excellence

By-products, albeit carefully crafted ones, that result from joint organizational, personal and societal effort as described are T-Sustainability and, more importantly, B-Sustainability. This is at the heart of the aforementioned concept of *kyosei* -- symbiosis or "living and working together for the common good".

Deploying BEST Business Excellence with AHP, QFD, Policy Deployment, TOC, and TRIZ

In Japanese, *kyosei* is written as two characters:

共棲

Kyo, on the left, means "an action done in common, all taking part in it." The ancient definition of this character actually means "twenty pairs of hands." *Sei*, on the right, means to roost, settle, or stay. The ancient definition of this character is "tree" (in which to roost) and "wife" (woman holding a broom and taking care of the household) (Weiger, 1965). The interpretation of *kyosei* is that all people roost on the various branches of the tree, some higher, some lower, some closer to the trunk and more stable, others out on a limb. This latter image is consistent with attributes of uncertainty and risk aversion, integral parts imbedded in economics, vis-à-vis, E-sustainabilty. Many hands are holding the broom, the instrument of caring for the household, the trunk and roots of the tree. The common mindfulness to this duty keeps the tree healthy and alive; postponing or neglecting this duty by any of the many hands leads to destruction of the tree and eventually all branches.

Kyosei has other meanings as well depending on the characters used, including castration, bluff, coercion, and extortion. In other words, any attempt at symbiosis that is not consensual will be seen as a threat to those holding power. Unfortunately, many see the world as constrained and limited, that any shifting of wealth and power must be a zero-sum gain – "for me to win, you must lose". The key to *BEST Deployment* is to create a win-win scenario in which human creativity and innovation expand the resources available and motivate people to change because it is in their best interest to do so.

Human motivation emanates from a synthesis of a large body of psychological studies by Abraham Maslow. (Huitt, 2000). His widely accepted Hierarchy of Needs[1] attempts to organize needs into two groups - deficiency and growth. Figure 4.

1. The deficiency needs are physiological: hunger, thirst, physical comforts, etc.
2. Safety/security: shelter from danger
3. Belongingness and Love: to love others and be loved and accepted by others
4. Esteem: to achieve, be competent, gain approval and recognition.

The growth needs are:

5. Cognitive: to know, to understand, and explore
6. Aesthetic: symmetry, order, and beauty
7. Self-actualization: to find self-fulfillment and realize one's potential
8. Transcendence: to help others find self-fulfillment and realize their potential.

As a human being begins to fulfill each level of need, higher levels take on greater importance.

[1] Following Maslow, the term "needs" is used herein. A more useful term, one that economists prefer, is "wants". This is so because what one needs is a point of departure between two people assessing those needs, while what one wants is more definitive. This paper uses both terms with an orientation to "wan

Including individual personalities, cultural issues, and the like, it is not difficult to see that, depending upon the individual, community, society or nation, the degree of importance and fulfillment of these levels is different and can change over time. This phenomenon is included in the basic QFD structure in the House of Quality's Planning Table, where customers prioritize their needs according to importance and degree of satisfaction with current and competitive products. Similarly, the work of Kano defining attractive and must-be quality shows the latency and emergence of these needs over time and groups (Kano, 1984). In other words, because QFD is a proven system that can take wants, importance, fulfillment and change, and translate them into actions for product developers, the authors believe that QFD can also help translate humanity's wants into actions that assure *BEST Sustainability.*

One more issue requires attention, local improvements versus system improvements. As is widely understood in the quality profession, attempts to optimize locally can cause suboptimization at the system level. An example of this is a team of basketball players where each player attempts to maximize his or her scoring production. This would result in a breakdown of team play including passing, pressing, posting, etc., since these actions would allow others to score, rather than self. Such a team would surely lose. Similarly, local attempts to improve sustainability could result in decreased system sustainability attainment.

In another example, in China a national policy took only one generation to undermine the health of the country's children. China's policy of one child per family is resulting in a generation of overweight children. This is the societal reaction to a system change resulting in parental focus shift from the family to the individual child. Chinese parents are giving their one child everything they can offer including food (Terninko, 2000). Also, since some parents value boys above girls, an unacknowledged practice of infanticide is leading to a future gender imbalance. With these examples in mind, the application of QFD here and other methods must encompass time, level of needs, and a systems approach if the results are to be useful.

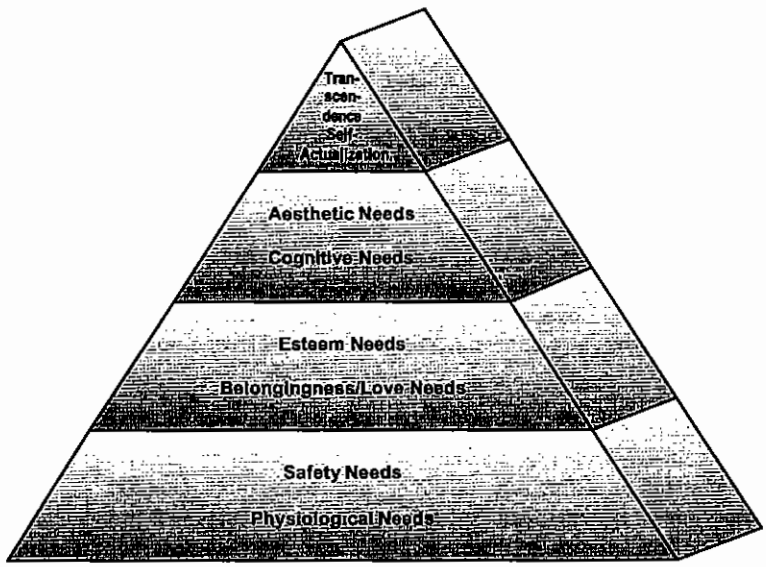

Figure 4. Maslow's Hierarchy of Needs

The Proposed QFD Model

This paper assumes the reader has some level of familiarity with QFD (see www.mazur.net). However, a few general principles are worth repeating. The purpose of QFD is to correctly develop something new the first time, instead of the costly design-test-redesign approach. QFD establishes a cause and effect analysis where the success causes are discovered at the inception of the design, and are communicated to each successive process in the language of that process. QFD works because its inputs are desired outcomes, positive expressions of want, as prioritized by the customer. Maslow's Hierarchy of Needs provides the input that is prioritized by different segments of society.

Once prioritized, these wants are correlated with the *BEST Principles* listed at the beginning of the paper. This expectation is that each segment of society yields a different prioritization of the *BEST Principles*, but also that a significant number are common to all. These common principles may be technically difficult to enact but should be socially and politically easy to accept. Where there are differences, oversight can trace the potential impact those differences have on the wants of each segment of society. Other tools can be used to create the win-win when the inevitable conflicts occur, but the QFD process provides a framework for rational discussion and compromise. Addressing this latter objective, Hensler and Edgeman (2001) present model for joint optimization, not just compromise.

The highest prioritized *Best Principles* become targets to be achieved by different levels of society: internationally, nationally, companies, and individuals. Policy Deployment (Mazur, 1998) provides a related method for achieving this vertical alignment of targets, as well as the means to achieve the targets. Like QFD, this method uses cause and effect analysis to determine for every level of an organization, who must do what by when. Further, policy deployment establishes a measuring system to track progress in real time so that significant deviations can be addressed as early as possible.

Finally, these actions lead to changes in products, where QFD can be used again to redesign for sustainability while still protecting consumer wants; organizational change introducing new and needed business models; and national and international policy changes developing new regulations and rules of engagement, along with ways of assuring compliance. The scope of this paper is to introduce the concepts and show some examples already in place. The expectation is that model improvements will follow.

Figure 5 is a flow chart of the *BEST Deployment* process. Figure 6 shows the top, system level chart. Maslow's Needs are listed and prioritized by the use of the Analytic Hierarchy Process (AHP), a group decision making tool that allows constituents to vote the strength of one want against another in pairs, thus eliminating the need to juggle multiple issues (Saaty, 1990). Further, it permits a lack of consensus in the voting, is robust against bias and human inconsistency and, most importantly, yields ratio scale priorities.

Not shown is the Quality Planning Table providing for entry of each societal segment's prioritized wants, along with their evaluation of how well each want is currently fulfilled and how much fulfillment they want in the future. Akin to gap analysis, the ratio of one's future fulfillment want to one's current level is called the improvement ratio. The product of this improvement ratio and the priority of the want is an absolute weight that is normalized to a Maslow Needs Weight.

The *BEST Principles* are then correlated to Maslow wants using a standard QFD correlation value set blank = no correlation, 1 = weak correlation, 3 = medium correlation, and 9 = strong correlation. The Maslow Needs Weight is then multiplied by the correlation value in each cell, and cells are summed column by column, then normalized to yield the BEST Principle Weight in the last row of the chart. Repeating the process with different societal segments, as well as intertemporally, yields evolved Maslow Needs Weights and the correlated *BEST Principle* Weights. The expectation is that many of the BEST

Principles will not change in weight significantly, thus providing a set of actions upon which all societal segments agree. Where there are large differences between the weights of *BEST Principles* from societal segment to societal segment, dialog and negotiation can implement a rational review of the matrix whereby the degree of impact of any decision can be traced backward to the unfulfilled Maslovian need.

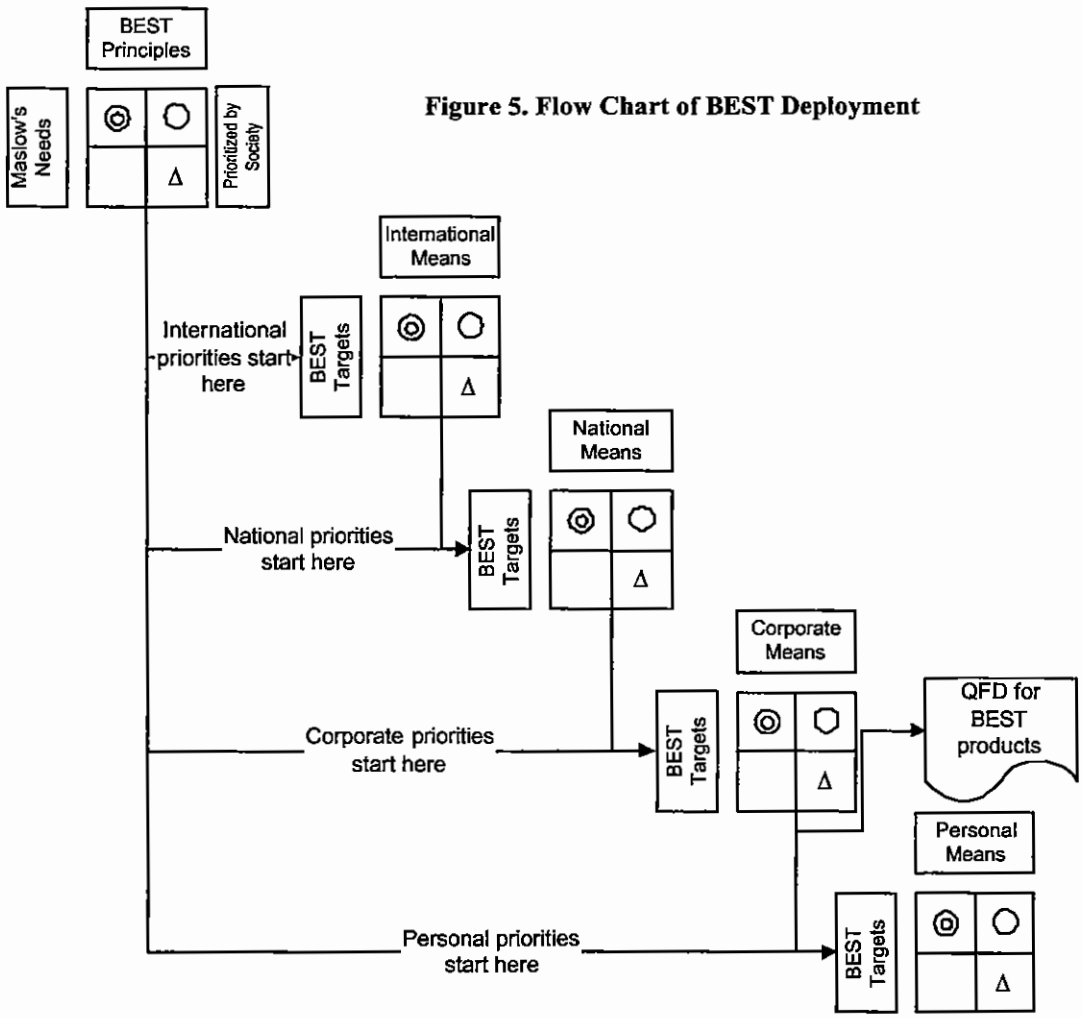

Figure 5. Flow Chart of BEST Deployment

Once *BEST Principles* are prioritized, a determination can be made regarding the appropriate level of policy management at which they are addressed: the international, national, company, or individual level, as shown in Figure 5. Political, economic, and technological considerations help determine the starting point for each key principle. Once the level is determined, the implementation cascades down to each successive lower level for detailed implementation. Appropriate metrics, corrections, and feedback make this an ongoing process of improvement. When policy conflicts arise, methods such as the Evaporating

Cloud (Goldratt, 1994) provide a method for finding a win-win solution by exposing erroneous assumptions that have led to conflict. When technological conflicts arise, methods such as TRIZ (Mazur, 1995) can be used to find innovative solutions.

At the company level, policy management may dictate a design change in a product to support the *BEST Principles*. This could lead to a QFD study to protect consumer satisfaction during the design change. The next section provides two short case studies.

BEST Principles / Maslow's Hierarchy of Needs			Biophysical and Environmental Sustainability										Quality Planning Table					
			Redeposit rate		Use rate reduction				Resource maximization									
			Fossil fuels/minerals extraction rate	Persistent substance production rate.	Energy	Water	Materials	Land	Reuse	Recycle	Renewable preferred over non-renewable		Importance to Societal Segment _____ (AHP)	Curret Level of Fulfillment (1-9)	Desired Level of Fulfillment (1-9)	Improvement Ratio (Desired/Current)	Absolute Wt. (Importance X Improvement Ratio)	Maslow Needs Wt (Absolute Wt./Σ Absolute Wt.)
Deficiency needs	Physio-logical	hunger											0.02	7	7	1.00	0.02	0.704
		thirst				9				3			0.02	8	8	1.00	0.02	0.704
		physical comfort		3							1		0.1	5	7	1.40	0.14	4.93
	Safety	shelter from nature	3				3	9			3		0.1	5	7	1.40	0.14	4.93
		protection from enemies											0.1	5	7	1.40	0.14	4.93
	Belonging-ness	love others											0.1	5	7	1.40	0.14	4.93
		be loved by others											0.1	5	7	1.40	0.14	4.93
		be accepted by others											0.1	5	7	1.40	0.14	4.93
	Esteem	achieve											0.1	5	7	1.40	0.14	4.93
		be competent											0.1	5	7	1.40	0.14	4.93
		gain approval											0.1	5	7	1.40	0.14	4.93
		gain recognition											0.1	5	7	1.40	0.14	4.93
Growth needs	Cognitive	know											0.1	5	7	1.40	0.14	4.93
		understand											0.1	5	7	1.40	0.14	4.93
		explore											0.1	5	7	1.40	0.14	4.93
	Aesthetic	symmetry											0.1	5	7	1.40	0.14	4.93
		order											0.1	5	7	1.40	0.14	4.93
		beauty											0.1	5	7	1.40	0.14	4.93
	Self-Actual-ization	self-fulfillment											0.1	5	7	1.40	0.14	4.93
		realize one's potential											0.1	5	7	1.40	0.14	4.93
	Transcen-dence	help others find self-fulfillment											0.1	5	7	1.40	0.14	4.93
		help others realize their potential											0.1	5	7	1.40	0.14	4.93
Absolute Wt.			14.79	14.79	0.00	6.34	14.79	44.37	0.00	2.11	19.72							
BEST Principle Wt.			12.65	12.65	0.00	5.42	12.65	37.95	0.00	1.81	16.87							

Figure 6. Matrix of Maslow's Hierarchy of Needs to Best Principles

Case Studies

Some years ago, a chemical company that produces a product dispensed in an aerosol can was forced to reformulate due to the ban on that chlorofluorcarbons (CFCs). Seeking to protect consumer satisfaction and value, the company used QFD to highlight critical consumer wants and then translated them into chemical formula and process changes. Figure 7 is an example of their most high level chart.

A Japanese cell phone operator sought to reduce the environmental impact of installing towers. They used QFD to determine which jobs had the most impact on complying with the ISO 14000 standards, and then improved the training and education for those jobs. (Akao, 1998). Figure 8 shows a portion of that study.

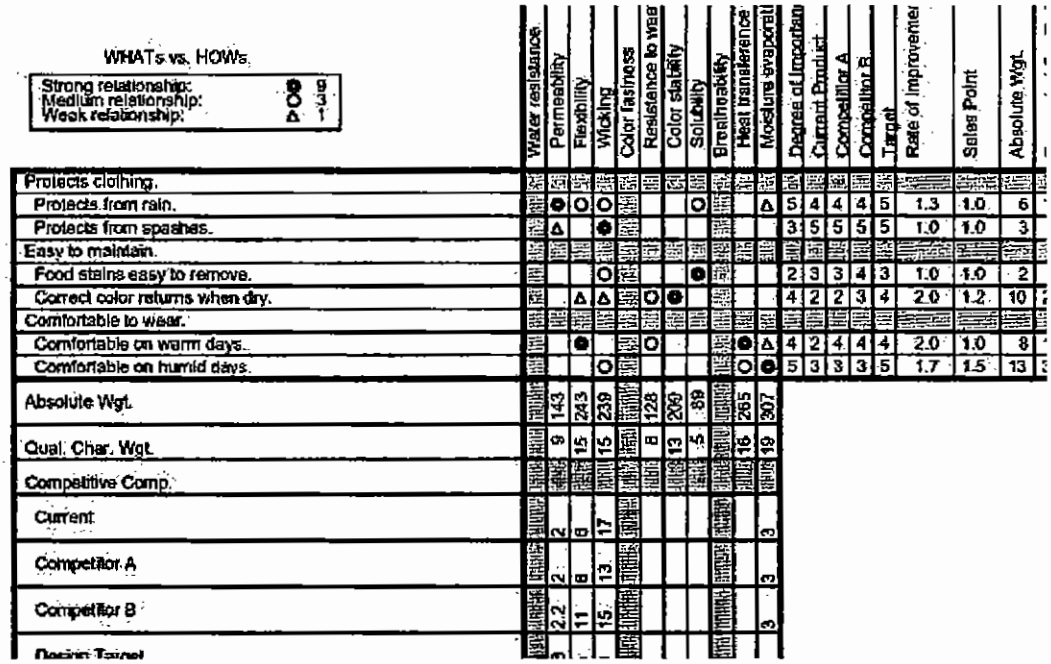

Figure 7. QFD matrix for reformulation of a consumer product for use with a non-CFC aerosol propellant

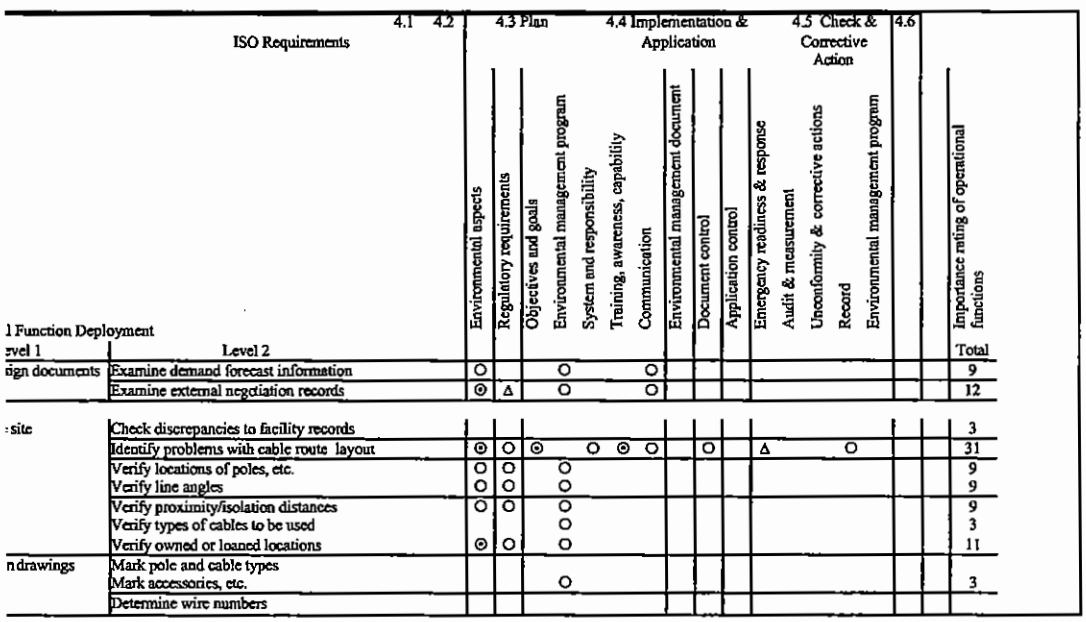

Figure 8. ISO 14000 Requirements and Operational Functions.

Summary

"See always how ephemeral and cheap are the things of man - yesterday, a spot of albumen, tomorrow, ashes or a mummy. Therefore make your passage through this span of time in obedience to Nature and gladly lay down your life, as an olive, when ripe, might fall, blessing her who bore it and grateful to the tree which gave it life."

Marcus Aurelius, Meditations
(Emperor of Ancient Rome "rediscovered" in the epic motion picture, *Gladiator*)

So, where are we? We are at a critical juncture in human history where little margin for error exists if we are to leave future generations with a world that is at least as well off as was found upon our own arrival. As such, we must consciously and physically commit ourselves to this goal and synergistic ones. While this will take commitment from and the contributions of many, those of us familiar with Business Excellence principles and practices have much to offer. The approach presented herein represents a limited view of *BEST Sustainability* and an equally limited view of Business Excellence. Nevertheless, it is clear that there is a meaningful intersection between the two areas that may be referred to as *BEST Business Excellence*. This intersection requires further exploration, expansion, and development to achieve meaningful solutions to existing and emerging environmental, social, and economic problems. Fundamentally we are being called to embrace the age-old principles: stewardship, sacrifice, and service. Will I? Will you? Can we? With QFD and other modern quality methods, we believe that compliable, sustainable policies and products can be agreed upon and produced, with little of the teeth gnashing displayed in recent global conferences. These tools give us the means to rationally analyze problems at both high and detailed levels, and create solutions that are long-run win-win for all parties.

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