

No Boundaries

ASQ'S
FUTURE
OF QUALITY
STUDY





No one who's paying attention would argue that change is accelerating, and that our lives are punctuated by disruptive changes no one can anticipate. In the United States, the impact of subprime mortgages comes to mind. The global reach of the subprime mortgage mess illustrates for all to see just how far the notion of globalization has progressed. News of natural disasters travels at light speed across the globe, and within minutes we are viewing the

a future of constrained resources, where waste is no longer tolerable, quality knows how to eliminate waste. Those who master the systems of an enterprise may hold the keys to mastering the systems of a globe. Those who understand how to delve into data for meaning in their organizations may well delve into the data of world issues and unlock the meaning. Those who bring people together to solve problems may tackle problems beyond company boundaries.

The old boundaries have been obliterated.

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devastation. Global warming, energy issues, and rising food costs unite all of us in ways no one would have thought of 50 years ago.


Those who know and work to master the concepts, techniques, and tools of quality know that quality can, and sometimes does, make a difference. And that knowledge takes two paths. One path is the journey traveled by the organizations we work for. The journey to compete, to win in the marketplace, to grow revenue and profit. To meet demanding customer expectations. To be world-class or risk extinction. And, with rates of discovery and innovation that ply against ever-shorter product life cycles. Today's victors reap staggering global rewards. The other path, outside our organizations, leads to the larger issues our world faces. Issues that confront us daily with increased urgency.

Increasingly the two paths cross. Work and the world. The world and work. In the issues that confront the world, there are opportunities for organizations. In

And even the definition of a company is changing. Once national, then multinational, now global. With each organizational evolution comes evolution of management, problem solving, and leadership. Global management, global problem solving, and global leadership.

Amidst the change, the complexity, and the urgent challenges there is much to be hopeful for and, if we allow ourselves, even to get excited about. The future is coming, of that we can be certain. A future of new technologies, new consumers, and new challenges to conquer. A boundaryless future of limitless possibilities, unencumbered by familiar conventions and rules of thumb, but accompanied by no small degree of risk.

We have two choices, the first to be swept away by the sea of change coming our way, the second to navigate that sea to our advantage. To navigate seas we've never traveled we need new tools. New tools. First clumsy and primitive, then refined and accurate. Such are the tools of futuring.



Futuring, a new word coined by a new profession of futurists, is the art and sometimes science of anticipating the future. As the adage goes, those who anticipate have advantage over those who don't. Every culture captures this wisdom in the lessons children are taught. That wisdom is more valuable in a world where the future presents itself at ever-faster speeds. And so, we invent and hone new tools. One tool we call upon is a futures study. This particular study concerns the future of quality.

In an effort to anticipate the future of quality, ASQ undertook its first futures study in 1995 under the leadership of then ASQ President, David Luther. The value of the study was such that ASQ has repeated one every three years since. This study is the fifth in the series, and from them we've learned a great deal about the future. The first learning is that try as we might, we are ill-equipped to look very far into the future. Change is happening faster than can be imagined. The second learning is that whatever we know about the future will be overcome by what we can't know about the future. It is certain that the future will surprise us. The third learning is that "globalization," however you define it, is the single largest force of change to reckon with. It is the only force of change that has been constant across all five ASQ future-of-quality studies.

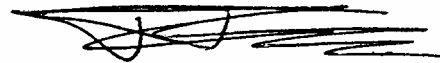
Those three learnings—the rate of change is accelerating; what we can anticipate will be overcome by what we can't anticipate; and the immutable reality of a shrinking world—set the context for us all. And now we go back to the wisdom of the ages—those who anticipate have advantage over those who don't.

Now, for the use of this study. While many studies attempt to provide answers, this one is aimed at provoking questions. More so, at provoking dialogue. Over the course of the next three years, ASQ will use this study to provide focus for a

series of "stakeholder dialogues" where we will invite members and others to join us in conversation about the future of quality. The seven forces, the scenarios, and the implications are seeds for the conversation. Seeds that provide focus, but not much limitation. We will host these conversations all over the world, and from each conversation we will capture the wisdom of the participants. Conversation by conversation we will see patterns and themes begin to emerge; from those patterns and themes ASQ's Board of Directors will consider its strategy in response. But that's just ASQ's use of the study.

We encourage, and in fact will support, organizations that want to use the study to ponder the implications for themselves. ASQ will host conversations in organizations in exchange for the benefit of understanding the future of quality. Company by company, organization by organization, school by school, hospital by hospital, we gather invaluable insights into the issues and challenges organizations look to address.

And then there's a third, and critically important, use of the study—its use to the individual. Anyone wondering where careers may go, what skills will be in demand, or where opportunity may lie will find in this study valuable pointers and hints.



Paul E. Borawski, CAE
ASQ Executive Director & Chief Strategic Officer

The ASQ Futures Study comprises three major components:



- Identifying the key forces that are most likely to shape the future of quality.
- Developing alternative scenarios describing how these forces might unfold.
- Determining implications for organizations and the quality field, for quality professionals, and ultimately for ASQ.

Key Forces

An expert panel of nearly 100 thought leaders of the quality movement from around the globe, representing every sector of the economy, shared their insights in order to gain a credible understanding of the potential impact of current trends on the future. Through multiple rounds of consideration and online dialogue, the panelists arrived eventually at a final-round rank order of their choices—the Seven Key Forces shaping the future of quality.

- 1. Globalization** dominates the future of quality, as it does so many other aspects of life. This is the only force that shows up on each of the previous four ASQ Futures Studies. The many facets of globalization create enormous opportunity—and complexity. Organizations once called “international” are now labeled “global,” suggesting perhaps less of a gravitation toward national identity or country of origin. Globalization is necessitating global supplier networks and driving the urgent need to manage global quality platforms across multiple organizational sites. Variation in approaches is seen as an unnecessary luxury. Standards will continue to rise in importance and use. Organizations also are becoming independent of location and “space” in terms of the talent they need to thrive. Consumers, likewise, are becoming global in their outlook and habits, aided by the Internet. They consume the products and services that best fit their needs, wherever sourced. Globalization is driving huge new consumer markets, creating both opportunity and concern, which are reflected in forces discussed later. Globalization will drive trade policy and impact trading partners in new, unimagined ways. The concepts of “national” and “regional” will have less meaning to everyone in years to come.
- 2. Social Responsibility (SR)** roared to the second position in the 2008 rankings of key forces. It is the first of several forces to reflect the growing concern of citizens for the fate of the planet. As a result, organizations are realizing they must play an important, self-enlightened role as stewards of the planet. They acknowledge that being responsible is not only moral, but good business, if a business is to be sustainable. Recent large-scale examples provide ample evidence of the impact of irresponsible management. The impact reaches well beyond the company owners. Consumers are demanding more knowledge of company practices. Among the criteria consumers use in making their buying decisions, company reputation will assume a more significant place. As organizations set SR goals to respond to these demands, they will find they can rely on the concepts, techniques, and tools of quality to deliver on those goals. Ethics, transparency, social behavior, and environment fall into the broader considerations of SR, as does the “triple bottom line” of people, planet, and profit.
- 3. New Dimensions for Quality** – If control and improvement are the traditions of quality, it is clear that a new collection of competencies is needed if quality is to have much relevance in a world changing at an accelerating rate. Organizations are looking for leadership in creating marketplace innovations; in stimulating new ideas; in managing change at ever-faster rates; and in creating value for ever-more sophisticated consumers. Enterprises seek leaders who value organizational cultures that learn. One futures study panelist was brave enough to call these competencies the fundamentals of 21st century quality. Clearly, near-perfect product quality is an assumed requirement, no longer providing any sustainable differentiation in the marketplace. While assumed, perfect quality is not the outcome of chance. Organizations that take quality for granted will soon learn that lesson. Clearly, innovation without quality is a non-starter. The study participants are mindful of the fact that this force, or these forces, are at work in the *system* of the organization, not just in the products and services of the organization. Chaos and order must learn to live in the same space, and people systems will be taxed to keep up with the pace of change the marketplace demands. Organizations must master these abilities or give way to smaller, newer, more agile competitors.
- 4. Aging Population** is another force with multiple dimensions both adding to the problem and contributing to its solution. Life spans are increasing everywhere, and, as economies grow, and the middle class expands, healthcare is available to more people, though not to everyone. An aging population drives economies and organizations to respond to this large market need. Historically, the world has exploited the brawn and energy of its most

numerous population segment—its youth. As soon as 2025, the majority of the population will be 60-plus. Retirement is an invention of the last century whose ramifications are being fully realized only now in this century. The world never expected so many healthy, nonworking citizens, possessing the means to consume. This is the market opportunity and the crux of a social-system crisis in the world's most developed nations. The generation that inherits these realities will be challenged to find creative solutions the previous generation could not.

The aging population poses workplace challenges as well. As aging workers leave the workplace, organizations will be challenged to replace their knowledge and experience. It may well be that a creative solution entails a return to the workplace for significant portions of the aging population, allowing them to contribute what they know and to enjoy more productive golden years, while at the same time generating unplanned tax revenue to alleviate social needs. The seeds of this trend have already been planted. Retirement may well be redefined, leaving retirement as we know it a relic of 20th-century history.

5. **Healthcare**—or more precisely the demand for healthcare—is clearly a by-product of the preceding forces on this list. Globalization is adding staggering numbers of people expecting access to healthcare. That growing global awareness of healthcare need is not always met with healthcare services provided. And the demands of an aging population, with means, will conspire to significantly heighten the need and demand for healthcare. Clearly, quality can play an important role in taking waste out of the system so that more people can benefit. Neither the wealthy, nor the poor, can afford the increased societal costs as healthcare consumes an ever-larger share of GDP. Policy makers have their hands full with the challenges of equitable

access. They should not be taxed further by financing waste that often equals the actual cost of the care provided. Emerging biotechnology and nanotechnology advances, which hold the promise of curing disease and further prolonging life, add to the complexity of the healthcare world. With these fast-developing technologies in the healthcare mix, completely new quality sciences will be required.

6. **Environmental Concerns** have not been on the key forces list for nine years. The strength of the return of this force cannot be fully realized without considering related comments on social responsibility and the force of climate change (which did not make the short list of key forces). In 1999, environmental issues were spoken of as a concern for the future. It's clear that in 2008 that future is here. There is urgency now, and concern.

There is hope in the demands consumers will make of producers. There is hope in the growing awareness within organizations of the economic value of reducing environmental impact. There is hope that the force of globalization will create regulations and standards of accountability by which all producers everywhere can be measured. But hope, the research panelists suggest, will not be enough. Action is needed.

Scarcity will drive cost, and cost will drive changed consumer behavior. Or, so macroeconomics suggests. This may be another source of hope. But there was no hope for the remediation of damage already done and the fear of the damage of explosive consumption the world faces.

Again, quality can contribute and affect improvement. For organizations that want ways to manage their systems, quality provides the concepts/tools/techniques, and even a standard. For policy makers who welcome new thinking at the table, the quality movement wonders how to get a seat.

7. **21st Century Technology** – The most talked-about feature of current technology is the startling rate of change it is experiencing and its resulting disruptions and discontinuities. Technology's impact, while difficult to forecast, is certain to surprise in ways that disrupt our models for nearly everything we think we understand.

Some believe that technology will deliver solutions for sustainable energy, which will have the added impact of altering the political landscape of the world. Some believe technology will deliver solutions for fresh water scarcity and global food shortages. Certainly genetics, biotechnology, and nanotechnology have the potential to shape the world more radically, and faster, than information technology has. And everyone agrees information technology and the Internet have not finished changing everyday life. Who would have ever thought a terabyte of storage could be held in your hand, much less cost less than a day's wage? And that was yesterday.

If technology is a driver of change, think of quality as the navigator. It is difficult to imagine technology going anywhere without quality—but not today's quality. Therein lie great challenge and opportunity for quality.

Scenarios and Effects on Key Forces

Armed with this expert view of forces shaping the future, ASQ Past President Greg Watson developed four brief alternative scenarios depicting a spectrum of potential future world conditions. One scenario reflects a “utopian” world where the forces of good overcome the forces of “evil” that cause the degradation of our global condition. Another scenario describes the opposite condition where the forces of “evil” win and humankind does not resolve the issues, concerns, and challenges that it is facing. This situation is often called a “doomsday scenario.” Between these two limits of the future lie two alternatives—a “preferred scenario” and a “business-as-usual scenario.”

Global Transformation: Innovation of a Complex System

The threat of drastic changes in humankind’s way of life from negative forces facing the entire world is met with a ‘rebound’ effect as people stop their constant arguments about what will happen and embrace the need for aggressive corrective action. The aim of this action is to halt and then reverse the negative effects of those forces that are unpreventable and to seek solutions to prevent those negative forces of change that are avoidable. Quality methods (defined in their broadest sense) are a key change catalyst that enable humankind to consider new opportunities and define action alternatives by focusing the best minds, methods, and means to drive improvement in areas that threaten the infrastructure of the world (economic, environmental, political, and social). To drive the outcome of this scenario, technology, finance, and quality methods are the focusing forces that are used to create and implement a global investment strategy that is able to achieve broad systemic solutions to the world’s most pressing problems.

Notice how the forces for change influence different dimensions of this scenario:

- **Globalization** – Environmental, political, and social issues have been treated as an international system by a united confederation of the world’s governments that controls the global economy.

Quality is used to focus on the elimination of waste, fraud, duplication, and bureaucracy and assure a responsible application of resources to facilitate resolution of the most pressing global issues.

- **Social Responsibility** – The need to balance the dichotomy between the have and have-not nations and to have a more equitable development of the world is broadly recognized along with acceptance of social responsibility among the world’s leading nations. Principles of quality in governance are applied to all public and private sector institutions. A global standard on social responsibility and corporate governance and a methodology for effective self-assessment for governance excellence have met with broad acceptance.
- **New Dimensions for Quality** – The emphasis of the quality movement shifts to corporate governance and waste elimination. It concentrates on the resolution of the multi-dimensional problems by focusing on a broad definition of “total quality” that addresses all aspects of social systems in both the public and private sectors. Quality methods have been integrated into the governance excellence self-assessment process and are accepted as the global best practice for daily business analytics in organizational performance management

Utopian Scenario



systems in production, service, healthcare, energy, education, transportation, and construction.

- **Aging Population** – All three elements of the aging population crisis have been successfully resolved. While healthcare improvements have extended the lifespan expectations, actions for restructuring economic conditions have helped to resolve the fiscal impact of this longevity increase. Retirement systems have been redefined to accommodate the expanded productive lifespan of people. A second emphasis has been the use of information technology methods (such as adaptive learning and artificial intelligence) to capture the knowledge of the aging population and integrate it into the world’s technology systems. The ability of an older generation to work productively for longer periods means that they can forsake a purely political motivation, apply their accumulated wisdom, and

work for the greater good of humankind and society. They can turn their talents to the restoration and improvement of the world’s urban infrastructure systems for housing, transportation, energy, communications, water, and sewage.

- **Healthcare** – Genome technology, nanotechnology, and biotechnology merged to create core solutions for the longevity of productive human life. Sound quality management practices have been implemented in healthcare systems to eliminate waste, streamline procedures, and assure the consistent delivery of the “best theoretical care” for the major ailments affecting humankind. Distribution of care in this system has been assured through a “kiosk” system of diagnostic stations that is linked through information technology for real-time assessment of ailments and to nanotechnology delivery systems that provide prescriptive treatments

“at the point of contact” at the diagnostic station. This healthcare system operates based on an extension of Internet technology as a means to improve accessibility of the healthcare coverage.

- **Environmental Concerns** – Environmental degradation has not only been halted, but levels of greenhouse gases in the atmosphere have been rolled back to the level of 1990. A system of global pollution sensors has been deployed into space to observe polluting activities and issue summary judgments and punitive fines against the perpetrators through a system developed to use the Internet technology for enforcement of global “equity initiatives” related to improving the environment. Clean energy and pure water have been developed and deployed to all areas of the globe so that deserts now bloom and are productive sources of foodstuffs and the grain needed for biotechnology energy products. Active research on long-term solutions to clean the oceans of years of accumulated pollutants is under way to assure that no surprises lurk in the future to once again threaten the existence of humankind.
- **21st Century Technology** – Although the world is being depleted of many of its natural resources, focused global investment in technology has discovered the means to apply nanotechnology to eliminate dependency on fossil fuel as a global energy source. Biotechnology breakthroughs increase the capability of healthcare to manage global systemic issues while also developing solutions for controlled harvesting of new sources of food for feeding the global population. Technology for desalinization and purification of water are transferred from the American space shuttle systems and made commercially viable on a large scale to resolve the global water distribution problem.

TABLE 1 Forces of Change From All ASQ Futures Studies

| 1996 | 1999 | 2002 | 2005 | 2008 |
|--------------------------|-----------------------------------|---------------------------------------------------------------------------------|------------------------------|-------------------------------------|
| Changing values | Partnering | Quality must deliver bottom-line results | Globalization | Globalization |
| Globalization | Learning systems | Management systems will increasingly absorb the quality function | Innovation/creativity/change | Social responsibility |
| Information revolution | Adaptability and speed of change | Quality will be everyone’s job | Outsourcing | New dimensions for quality |
| Velocity of change | Environmental sustainability | The economic case for the broader application of quality will need to be proved | Consumer sophistication | Aging population |
| Increased customer focus | Globalization | Global demand for products and services will create a global work force | Value creation | Healthcare |
| Leadership | Knowledge focus | Confidence in business leaders and organizations will decline | Changes in quality | Environmental concern |
| Quality in new areas | Customization and differentiation | Customer expectations will continue to rise | | 21 st century technology |
| Change in quality itself | Shifting demographics | | | |



Global Adaptation: Evolution Toward a Synergistic Society

The increasing atmospheric hole in the Southern Hemisphere greatly increased global warming and the subsequent loss of major portions of the Antarctic ice shelf in late 2008. This became a wake-up call to global leaders to unite for the common good in the cause of preservation of the environment. In the political world, the United Nations decided to expand its emphasis on the principles of quality governance by providing a global quality management program for the 200 national governments holding membership. This program was developed to decrease waste, fraud, and abuse in public funded programs and to establish a global “transcendental culture” based on proven principles of quality management. More than half of the governments have elected to participate in the program; a few major government holdouts have limited the effectiveness of the whole program. In summary, many of the dimensions of the social and environmental threats that were perceived in 2008 have been halted, but in many cases, not before there has been significant damage. Focus on repairing social, fiscal, and environmental infrastructures through evolving global improvement programs is a major role of the World Quality Alliance.

Preferred Scenario



Notice how the forces for change influence different dimensions of this scenario:

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- **Globalization** – Recognition of the need for collaboration to address the systemic problems of the world has caused a rapid consolidation of three forces for change: 21st century technology, new dimensions in quality improvement, and social responsibility combined with focused use of the fiscal resources of the world. These forces are in the process of being coordinated to address the chronic problems related to the environment, healthcare, and aging.
- **Social Responsibility** – Progress on the front of social responsibility includes a new standard for self-assessment of “quadruple bottom-line initiatives” using the perspective established for all key stakeholder communities. In addition, standard organizational measures have been developed for all major categories of public and private sector enterprises and these have also been promulgated as a voluntary international quality standard. Finally, a global quality prize for excellence in governance has been developed by the World

Quality Alliance as a means to focus organizational leaders from all sectors in their responsibility for good governance and to encourage the development of role models of excellence. Since all of these efforts rely on voluntary compliance, the major weakness is no longer in definition of the approach, but in its effective deployment and demonstration of subsequent related results.

- **New Dimensions for Quality** – A coherent quality methodology has evolved that has been demonstrated to be applicable in both traditional and non-traditional fields. A comprehensive systems approach to quality, as a further extension of the Lean Six Sigma methodologies, has been developed to improve the world; however, resistance to its universal adoption as a global best practice is prevalent in many areas because they resist the “industrialization” of application to their social systems. Much effort has been made to demonstrate the value of this program through focused improvement projects at the national level, with technology transfer to all other nations, and new knowledge gained in such projects is included

in the global Quality Body of Knowledge (QBOK®). Quality systems, measures, and tools have been embedded in most software systems and evaluated by a global council of “quality guardians.” While much has been done, much still needs to be accomplished. Most efforts are required in the area of implementation, rather than development.

- **Aging Population** – One area of difficulty in driving improvement is the acceptance of senior citizens of a continuing productive role in society. Many feel that they are entitled to the retirement that was promised to them and that any reduction in their benefit expectations is tantamount to deceit and shows lack of faith by the world’s politicians. Since the majority of the world’s population is above 60, and they tend to vote as a bloc on aging issues, not much progress has been made in redefining social benefit programs for elderly citizens. There are successes in other areas: transitioning retirees into “second or third careers” has long been the practice in Japanese management; preserving the knowledge base of retired workers through critical incident interviews using artificial intelligence diagnostics to reveal key workers’ knowledge; and developing communities of practice where senior citizens mentor young leaders and workers in return for “credits” redeemable for the education of their children or grandchildren.
- **Healthcare** – Quality application for the healthcare community has been one of the greatest successes in this scenario. Standard procedures for most major illnesses have been developed, professionally reviewed, and disseminated as best practices. Movement of standard practices to a continuing achievement of excellence is accomplished by comparing performance for all of these procedures against the “theoretical best” capability for care. Elimination of waste in the healthcare system has been credited to the wide adaptation of Lean Six Sigma methodologies as used in service industries and developed for transfer into healthcare

organizations. Healthcare has caught up to manufacturing in terms of its acceptance of quality practices and methods. While good healthcare is now universally available in most developed nations, recurring problems with access to high quality care is not universal in the developing world.

- **Environmental Concerns** – Reforestation and selective forestry harvesting methods that were developed in Scandinavia have been distributed as a global best practice, and the world has now experienced a reduction in the carbon cycle because of the massive increase in planted trees (10 billion trees planted in 10 years). While this program has helped to rollback carbon emission problems, it has also allowed space for a more enlightened approach to the needs of the world's developing nations to exploit their natural resources in order to develop a strong economic base. While global warming was not prevented, the effect has been to halt growth in the collapse of the Arctic and Antarctic ice caps. This success has prevented potential major catastrophes and the effect of rising water on polluting coastal lands and ocean food banks. A major international effort continues to manage the environment better through technology investment in research fields that have promise for rapid gains in the greenhouse gas system in the atmosphere. The world has set new aggressive goals for balancing the environment by focusing financial and technological efforts on the full spectrum of systemic environmental issues facing the whole world: making solar and wind energy economical; providing useful energy from fusion; developing carbon sequestration methods; and harnessing the nitrogen and hydrogen cycles to sustain broad applications of fuel cell technology for energy storage.

- **21st Century Technology** – Increased technology investments have been made in alternative fuels, fuel cell technology, and power sources from non-fossil fuels. A global investment program developed by a consortium of major trans-national corporations collaborates across European, American, and Asian research and technology organizations. The research agenda concentrates on issues related to water purification, food technology, biotechnology, non-conventional power sources, and fuel-efficient mass transportation systems. As a step toward enlightened social responsibility, this research group invests half of the profit from commercialization of these enterprises to elimination of the debt burden of developing nations and an equitable compensation to countries that elect not to exploit their natural resources in ways that lead to environmental degradation.





12 Business-as-Usual Scenario

Global Stagnation: The Halt of Human Progress

The promise of technology has not been fully achieved, and the optimistic feeling that technology can resolve all of society's problems has dissipated. The rate of progress in technological advances over the second half of the last century has decelerated and society has not been able to absorb new technologies. The evidence of technological slowdown exists in several advanced technology applications: nanotechnology is limited by measurement system capability; artificial intelligence is limited by the lack of decision algorithms to define new learning patterns; and telecommunications advances are limited by the burden of maintaining legacy systems. Since technology could not be diffused into appropriate social applications at ever-increasing rates, a destructive tension has evolved: Potential advances for the benefit of humankind cannot be deployed due to the inability of humankind to manage discontinuous, disruptive change. In short, people have come to fear the impact of new technologies in their personal lives. This trend began with genetic biotechnology applications in agriculture during the mid-1990s and expanded to include all innovations that confront people's lives with major change. Other observations may be made about this scenario: First, there has been a systematic weakening of the United States' political-economic power in the world and a concurrent progressive growth and expansion of the political-economic power of developing nations (most notably China and India), which have come to dominate the world's economy. Additionally, strength in a unified Latin American market has occurred. The Amazon Pact, Association of Caribbean States, MERCOSUR, and NAFTA trade agreements consolidated to encompass the Caribbean, Central American, South American, and North American states in a more viable Free Trade Area of the Americas (FTAA) agreement with inclusion of the United States and Canada as equal partners in a democratic trading

union. Following the inclusion of Russia and all the central European states, the European Union (EU) increased its political-economic influence. However, EU market growth came not from innovation, but as a natural consequence of expanded membership and the fiscal realignment based on a continuing weakened American dollar. The impact of the shift into these regional trading centers has fundamentally changed the global marketplace, forming silos representing clusters of nations that have created a modern form of self-preserving isolationism.

Notice how the forces for change influence different dimensions of this scenario:

- **Globalization** – Although the world is faced by an imperative to work together on global solutions for systemic problems, regional alliances prove to be more compatible with national politics. Growing distrust of “Western” motives causes isolation of Africa and encourages development of strong trade confederations among Far East, Americas, Europe, and Middle East nations. Thus, the world's fiscal resources are fractured and are not concentrated on solving critical problems such as healthcare, environment, aging, and social responsibility. Suspicion and skepticism about motives of the differing regional alliances causes lack of acceptance of the technological advances and thwarts the embrace of a ‘transcendental’ quality philosophy or set of methodologies for problem solving and innovation. The world is fractured and all the king's horses and men can't seem to put it back together again!
- **Social Responsibility** – Initial steps have been taken to improve corporate governance, but concerns about regional competitiveness inhibit full transparency and openness of activity. Social responsibility operates reasonably well within regional alliances, but trade boundaries and growing political strength of the regional groups divides the world in the same way that national boundaries had in the past.

- **New Dimensions for Quality** – Quality professionals have managed to develop a set of expanded tools and methods that provide improved capability to address all critical issues facing the world, but these methods are met with exceptional resistance and are considered “American” methods that won’t work across cultural boundaries. Rejection of philosophies and methods based on their region of origin and a not-invented-here syndrome exist in many regions. Thus, while quality can provide answers, it is inhibited from doing so because quality has yet to become a part of a transcendental world culture that bridges local, national, and regional boundaries.
- **Aging Population** – Treatment of the aging problems slips in priority, as resources are not available to address the issues and senior citizens are left to fend for themselves based solely on their personal investments. Regions care for the aging citizens based on the traditions of the dominant regional culture; global solutions are not available to deal with these issues. Some regions develop means for senior citizens to make meaningful contributions to society, others provide them with family-based care, and still others view them as a burden to be cast off into an asylum at the end of their productive days.
- **Healthcare** – Managed healthcare is still not available universally, and the best medical treatment is available only at high prices for those who can afford it. While there are many advances in the capability of healthcare services, availability of these solutions is limited and varies greatly across the global regions.



- **Environmental Concerns** – Environmental degradation is still occurring; however, its rate of change has been arrested and a reasonable possibility exists for neutralization of the collapse within 10 years. The biggest hindrance to addressing worldwide environmental system degradation is the conflict between trade groups that equate access to power, ability to exploit natural resources, and need to improve transportation systems with their right to economic self-determination. The emerging economies of these nations maintain an entitlement to these developments, as they are the fuel for economic growth to assure the well-being and quality of life for their people. Compromise between developed nations and developing nations has not been possible; the developing nations see compromise as a ploy by the developed nations to maintain their superior position.
- **21st Century Technology** – The potential contribution of technology for creating a better global lifestyle and resolving social, political, and economic issues has been severely dampened by a global backlash against broad-scale adaptation of all things new. The major rays of technological enlightenment have been the acceptance of a few technologies for controlling the carbon and nitrogen balance in the atmosphere and a broad acceptance of energy-efficient and alternative-fuel vehicles.



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Doomsday Scenario

Global Disintegration: The Crisis of Environmental Collapse

Politically motivated, short-term thinking based on summary data has precipitated an unheralded collapse of the global ecological system. Humankind has doomed itself by using optimistic estimates to establish politically correct goals for reversing the global ecological damage by 2050. Ignoring data that indicated a systemic problem based on increasing rates of change in climatological conditions has brought society to a “tipping point” where the negative effects of environmental degradation can no longer be reversed. Global warming collapsed the polar ice pack in half the time that was estimated in 2000. This caused an unexpected fiscal impact as the emergency actions required to cope with the rising ocean levels were a drain on a global economy already burdened by years of war. “Too little, too late” is the theme as humankind watches its world

disintegrate, having little capability to intervene. The voices of science and quality are not brought to bear to combat the environmental crisis. Everything Al Gore had described comes true; however, the more conservative estimates that he tempered for public consumption do occur. The rise in the world’s oceans subsequently pollutes the seas and thereby causes a threat to the world food supply in two ways—salinization of productive farmland and pollution of the oceanic food chain. The world is consuming its natural resources at a pace that is faster than the ability of technology to replace “traditional” resources with alternatives. Thus, the promise of technological salvation now seems empty. The result is that the depleted fossil fuels, rising food costs, and food and water shortages give rise to mass famine and drought. These concerns become magnified as no agreement can be reached on collaboration, transparency, and participative decision-making and social democratic governments are replaced with strong military-backed dictatorships. As a result of inequitable distribution of

global resources, have-not nations combine forces with major developing nations to fight a military battle against North America and Europe over access to and consumption of resources. As a result of this warfare, social systems implode. There is a return to social conditions that resemble the Stone Age as global transportation, mass communication, power generation, and political systems have been destroyed.

Notice how the forces for change influence different dimensions of this scenario:

- **Globalization** – The world loses its global perspective, as national and tribal interests dominate the agenda of local governments and disorder prevails internationally.
- **Social Responsibility** – There is a total breakdown in global social responsibility as each nation seeks to do what is best for its own constituency and fails to generate a common bond that connects all humankind. The strong dominate the weak and the only rule that seems to operate well is that “might makes right.” Principles of self-preservation overwhelm and replace an emphasis on the “quadruple bottom line”—the environment has collapsed, thereby destroying the financial structure and leaving the social and cultural elements as causes of friction and rallying points for warfare.
- **New Dimensions for Quality** – Quality as a positive global force has died along with the rest of humankind’s socializing and unifying structures. However, one emphasis of quality practices and methods remains—application of quality methods for the effective use of military operations to subject the world to a power-dominated dictatorship.

- **Aging Population** – The aging population ceases to be an issue as famine, drought, war, and pestilence create massive genocide conditions throughout the world. The youth and weaker aged populations are first to feel the brunt of these conditions.
- **Healthcare** – The healthcare system is strapped financially and in its capability to serve in the face of social collapse. People are unable to correct the waste in the healthcare system; the degrading of all global social systems makes service in the healthcare system even more wasteful and inefficient.
- **Environmental Concerns** – While the environment remains a big concern, the focus is one of victimization—people wait to see how weather will affect them next as climatic conditions dictate the quality of daily life.
- **21st Century Technology** – Fiscal limitations of the economy have caused technology to revert to a “tinker’s trade” rather than a systematic, scientific program of research. As a result, inventions occur, but their broad-scale acceptance and use is impossible, as the world has reverted to an economy based on barter resembling a Middle Ages craft-based culture instead of an innovation-driven mass-production system.



The scenarios serve as narratives to help people imagine what the world might be like in the future as influenced by the forces of change for quality. This sets the stage for the third phase of the study—the implications. This is the most important step, as it moves each of us to the edge of doing something—change. Change will happen. The hope in preparing the study is to move us from reacting to change to leading the change, or if nothing else, to forestall being caught by surprise when change arrives.

Rather than being an exhaustive list, the implications below are meant to prompt your own thinking. Using the study as a starting point, ASQ will conduct a series of stakeholder dialogues where we will explore the implications more deeply. The learning from those dialogues will help inform ASQ strategies and plans. Helping us anticipate the future, so that we can provide leadership to those who look to prepare themselves for the future.

The thoughts below were gleaned from the responses of dozens of leading thinkers and experts in quality, plus ASQ's Board of Directors and staff managers. The invitation was to envision the implications of the key forces and scenarios to quality, to organizations that seek to benefit from quality, and to those who practice quality in organizations and communities.

The list of implications is long and took many paths, with many interesting wanderings. This is not a search for right answers, rather clear thinking about the right topics. We invite you to consider the implications and use these to stimulate your thinking. Better yet, use the study to stimulate a discussion about the future of quality. But don't stop at discussion. Actions will matter. Whether those actions prepare you for an exciting, meaningful future, or those actions serve to prepare your organization for greater success in the future, or inspire you to use your knowledge to make the world a better place. Actions will matter.

Generalizations

Global, social, environmental scale

It is striking, although not surprising given the news of the day, that the forces of change and the responses they provoked have taken a decided turn up and out of the organization where quality has grown and matured. While each of the forces can be considered at the level of organizations, the panelists and respondents often turned in different directions with their thoughts. Most offered insights on how quality can and should be directed at making the world a better place. Clearly it's seen that statistical analysis methods and the tools of control and system- or process-based problem solving and improvement can work as well on large-scale issues as they do on small-scale issues. There is some frustration over the ability to get to the problem solving table, but little concern about the value of being there.

"As with any incredible opportunity, this is not for the faint of heart."

– David Spong
Boeing (Retired)
Two-time Baldrige Winner
ASQ Treasurer



Getting the message heard

That sets the stage for perhaps the most challenging implication: The greatest challenge for quality is equipping those who understand it with the ability to communicate what they know to the audience who can benefit from it. As the proverbial saying goes, “you can lead a horse to water, but you can’t make it drink.” In so many words, that is the lament of the quality community about those who “don’t get it.” It may also be said of the professional in need of skills they may choose not to develop. As many of the voices that once provided the great insights—Deming, Juran, Ishikawa, Masing, and Crosby—are no longer speaking for quality, new voices, more voices, are needed. The quality professional needs to know the language of the audience. Teacher, nurse, lawyer, reporter, small business owner, entrepreneur, assembler, designer, manager, accountant, mayor, executive—it’s their languages quality must learn, with sensitivity for the culture where the message is directed.

Process to systems (Call it the “Big Q”)

The future calls the quality community to grow in its skills of system thinking and system problem solving. There are few instances where quality, at a process level, can afford not to consider the broader implications of change at the system level. As processes have become an organized system of an enterprise through national quality award programs, so too have enterprises become more complex systems as they, and their supply chains, become global in scope. And as quality proves its value for global enterprise, it is now called to address even larger system issues such as sustainability. Process thinking alone will not be sophisticated enough for issues of global scale.

The impact of unintended consequences offers a second argument in favor of system approaches. The near-perfect product environments and breakneck speed of change provide little margin of error for the

unintended consequences of changing process without consideration of the downstream effects.

Speed

It seems so obvious as not to need mention, but speed, the rate of change and all its consequences, is only going to accelerate. This observation has been true since 1995 when ASQ began these structured looks into the future. Though not called out as one of the key forces on its own, speed and its impacts are embodied in the list of forces that surface at the top. But whatever view you take, speed is propelling us at ever-higher rates. Speed requires rates of adaptability and agility that are already proving difficult for organizations and individuals to cope with. We ignore speed at our peril. And we must note that the human condition generally resists change. So, organizations and individuals who master the art, or emerging science, of change will have advantage in their favor. It may be enough advantage to make the difference between survival and extinction.

Relevance, knowledge, and learning

Someone said, “Maybe the reason quality got so much attention in the ’80s and ’90s was because it was perfectly attuned to the needs of executives at the time.” There’s wisdom in that quote, and those seeking to attune quality to the early 21st century need to face a different world—a global marketplace, work force, and supplier network. A world of ever-shorter life cycles, of an Internet-enabled customer with significantly greater buying sophistication. Of a consumer looking for perfect quality and an enjoyable experience, from an organization that makes a small footprint on the environment and works to make the world a better place, too. If the stock in trade of quality in the ’80s and ’90s was control and improvement, those are still needed tools, but not the tools that assure quality will be fully embraced by today’s executives and

managers. It’s been said that the half-life of knowledge today is less than two years. And, there are mounting concerns about the knowledge that retiring baby boomers will be taking out of organizations when they leave. Somewhere in the confluence of these issues, the quality community knows how to make organizations robust, and must learn to do so in a new world.

The bottom line, the top line, and the triple bottom line

So much of quality’s attention is spent on the bottom line. And while there’s nothing wrong with contributions to the bottom line, quality has much to offer the top line that sometimes goes less unnoticed and undeveloped. Understanding the customer’s requirements, driving satisfaction and loyalty higher, anticipating the customer’s needs, assuring an experience people will talk about, designing for high-quality initial yields—all these and more contribute to the top line. And soon sustainability and the triple bottom line will roar into the objectives and goals of all organizations.

“Change and innovation are as much attributes of quality and how we manage quality as they are of the products, processes, and services that are produced and delivered.”

*– A.V. Feigenbaum
General Systems Co., Inc.
ASQ Honorary Member*

Insights From the Panelists

There were literally hundreds of insights offered by the panelists. Here is a representative sampling to further fuel your thinking.

Implications for Quality

1. Clearly quality is being called outside the boundaries of an organization; first by global supplier networks, and then to larger social concerns such as healthcare, environment, and social responsibility. Cultures will shape quality by way of consumer expectations, consumer behavior, and work cultures.
2. That quality has changed or was forced to change is a very debatable issue.
3. Control and improvement methodologies will need to evolve for ever-shorter production cycles.
4. Get ready for quality to be defined in new places and in new ways.
5. Global standards will help with global platforms and solutions.
6. With the Internet reaching everywhere, quality will know no national boundaries.

“The future success of organizations devoted to enhancing quality will depend on their degree of commitment to encouraging modern statistical practices.”

*– J. Stuart Hunter
Princeton University
ASQ Honorary Member*

7. The notion of business success will broaden beyond profit to include the environment and society and intangible dimensions of management.
8. Global perspectives are emerging as the context, and scope, of problem solving.
9. The knowledge and ability to apply the tools of quality continue to be drawn out of the profession and into the hands of everyone in the organization.
10. Measuring waste and managing its reduction will continue to focus quality on the cost side of the equation. Quality will need to work extra hard to balance its ability to contribute to the top line—revenue. Understanding customer needs, designing for quality, and speed to market are at risk, as is quality’s contribution to enterprise management.
11. Change and innovation are as much attributes of quality and how we manage as they are of products, processes, and services that are produced and delivered.
12. Finding ways to take waste out of healthcare will continue to increase in importance with more people deserving access to healthcare along with the health complexities of long lives.
13. Healthcare could benefit from expanding its uses of traditional quality tools.
14. Emerging technologies will give rise to new quality disciplines.
15. The benefits of quality will be applied to an ever-larger share of the economy.
16. Social responsibility will demand that ethics and integrity become system managed.
17. To increase its impact, quality must find its way into educational systems so graduates enter the work force equipped to advance quality practice rather than stumble onto it.
18. Quality must become comfortable with chaos and control coexisting.
19. As quality moves into areas less tangible than manufactured goods, it will increasingly become an issue of culture; a “quality mind-set” is needed.
20. The quality of data as the product of myriad sensors producing time series composed of multivariate measurements in varying dimensions is often spatially located. This plethora of data will serve only to pollute clear thinking and rational decision making if it is poorly designed, managed, and analyzed. The theory and practice of statistics devoted to these new data sources is beginning to surface.
21. There are never better times for quality than times of crisis. This is such a time.
22. The forces taken out of context as drivers unrelated to each other offer a weak appreciation of reality. Indeed the forces create their own system of interactions, which understood together, offer more valuable insights about the future. This is systems thinking.
23. The combination of forces may have different concentrations in different regions, and different market segments adding more complexity to organizations in search of success.
24. Quality must align with sustainable results.

Implications for Organizations

1. Consumer knowledge of SR will shape consumer buying preferences; organizations will need more than SR marketing to garner consumer favor. At the same time, a definition for SR is still a moving target and the benefits and trade-offs are not broadly understood.
2. Changing workplace demographics will demand creative new employment practices particularly in developed nations with shrinking populations.

“The story of three masons is widely known in the field of quality motivation. On being asked what they are doing, the first mason replied, ‘I am a mason,’ while the second mason said, ‘I am working for €15 an hour.’ The third mason gave the following answer: ‘I am building a cathedral which will stand here for many years and serve as a spiritual place of rest.’ Furthermore, the answer of the third mason concerns the quality, which is more intrinsic and can be deployed to more detailed items. Quality is the important element of human satisfiers. Investigating them more deeply and specifically is undoubtedly the key to unlocking the secret of human motivation. This problem will become more and more important in the coming affluent 21st century.”

*– Yoshio Kondo
Kyoto University
ASQ Honorary Member*

3. Organizations will increasingly look to global system approaches that include supplier networks to manage their performance.
4. As finding knowledge becomes more complex and difficult, productivity is reduced. New organization designs are needed to cope with this reality.
5. Quality culture (often discussed by quality executives) will take on more importance as global organizations look to create consistent performance outcomes across many cultures.
6. Customer expectations today demand quality, but quality of product, service, and every touch point is not enough unless it is met with speed, agility, and accuracy.
7. Near-perfect quality has become an assumption in the marketplace.
8. The importance of standards will grow in managing global enterprises (as well as trade) as variation in approaches that serve no purpose or value to outcomes will be seen as waste and subject to management.
9. Monocultural directive approaches will yield to multiculturally-optimized system solutions.
10. New measurement and inspection techniques will be needed for nano and bio applications.
11. Quality standards will vary to suit the values and customers of the targeted market and its unique society; simultaneously, the sub-cultures of each society will globally seek products and services meeting their unique quality standards.
12. New standards for quality governance are being demanded to protect the future interests of all stakeholders.
13. Related to changing workplace demographics, employers should expect more contract employees and consultants. New motivation skills will be needed as well as new learning about satisfaction and loyalty.
14. Today’s middle-aged “boomers” will give way to a smaller youth market.
15. High levels of product quality will become an expected requirement.
16. Globalization will drive ever-faster changes in customer requirements, and ever-greater marketplace complexity, requiring new forms of leadership and new ways of practicing quality.
17. Revitalization of use of basic quality principles and tools will be applied to new complex problems in order to realize the unlimited power of people’s creativity.
18. Organizations must prepare for change-oriented cultures and values that support quality in this climate.
19. Sustainability will become as much a concern of quality management as product quality once was. Waste elimination.
20. Quality’s contribution to “foreseeable” results—new product introductions, R&D payback results, better sooner.
21. We’ll see an increase in moving from quality of product to quality of management and the organization.



Implications for the Profession

1. Get ready for increased multi-cultural work settings, and for approaches that are open enough to benefit from cultural differences. It's possible that standards will need to have cultural flexibility built in to account for differences in attitudes and approaches to work.
2. The traditional quality professional's skills of control and improvement need to expand to include innovation, creative change, value creation, systems thinking, and execution. New concepts, approaches, methods, skills, and expertise.
3. As SR enters the serious domain of organizational goals, organizations will look to professionals who can turn their SR intent into measured results. This has long been the domain of the quality professionals, who may now find a new career avenue for their knowledge and abilities.
4. As quality finds ever-broader application in society, there will be two application fronts: a) the leading edge of technical applications by advanced organizations that will evolve and contribute to new generations of quality, and b) a second front of simplified quality making its application more reachable for less technical sectors of the economy.
5. Begin expanding the traditional measures of performance to include social implications in balanced scorecards.
6. The systems approaches the quality profession has evolved through ISO 9000 and other management system standards will be valued by organizations looking to bring quality, environment, and SR into a holistic management system.
7. Get ready to understand a global world, differences in culture, uses of words, humor....
8. Innovations in quality are apt to come from any culture. Best performing organizations will learn how to balance standardization and improvement in multicultural synthesis rather than by monocultural directive.
9. New technologies and smaller products will demand new approaches to quality, including measurement and inspection technologies.
10. The opportunity for quality is expanding as humanity's view of itself and its world expands. The profession's contribution is also expanding beyond the traditional definition of the enterprise to problems that are global in scope and benefit.
11. How can quality move from better products to a better world in which to live? Be prepared for workplaces that are creative enough to retain the experience and knowledge of an aging work force in a workplace managed and led by 21st century generations.
12. The emergence of new technologies will give rise to new quality tools and techniques for the profession to learn, master, and apply.
13. Quality professionals will have to be more aware of international issues. Dealing with suppliers, colleagues, and customers from all over the globe will be the norm.
14. Be prepared to share your knowledge and expertise with an ever-growing number of your colleagues outside the quality profession. Find ways to simplify, remove jargon, and apply what you know as matter of common sense and practice.
15. The profession needs to understand how to manage relationships with distributors and resellers.
16. The opportunity is there for quality organizations and the quality profession to develop and grow to be the most significant entities in any business organizations for the 21st century.

17. Thinking about products and materials in full life-cycle context, reliability, durability, manufacturability, and disposal are all within the scope of the quality professional.
18. A quality professional who is not actively looking ahead to anticipate the impact of emerging technologies on product, process, enterprise, and the practice of quality will be fortunate to stay employed.
19. Anticipate work directed at less tangibly measured outcomes such as SR and ethics.
20. Acquiring the skills to deal with the burgeoning amount of data companies will have available to them in statistically meaningful ways will grow in importance.
21. The profession must rise to the occasion of addressing the pressing problems that these forces describe.
22. The profession must guard and assure that benefit results from all its practices and that it avoids paper exercises, compliance for compliance sake, and waste in any form. Where paperwork becomes the aim of quality, waste is assured in poor quality, high price, and wasted opportunity.
23. Quality leaders must become skilled in the art of “why” before moving to “what” and “how” and sharpen the focus of all endeavors on value—value to customer. Everything else is waste.
24. Be prepared for lifelong learning extending beyond normally expected working lives.
25. Where technical skills may once have been enough to succeed as a quality professional, the future of the profession will include a much more diverse set of skills, including system thinking, change management, statistical thinking, quality mind-setting, and finance.
26. The quality professional will need to be adept at managing risk in multinational supply chains.
27. Quality must continue to improve in its ability to demonstrate its efficacy.
28. A growing sense that the sphere of competition has become global and the standard that professionals will have to compete against will be the realm of the dedication to learn and the willingness to adapt new ideas. This may be particularly challenging in developed regions where quality of life and balance are attractive but a risk to professionals dedicating greater time to learning.
29. Advances in technology will virtually eliminate the need for inspection.
30. Work life will be extended beyond expected retirement ages to meet personal economic needs and to provide further knowledge.
31. Quality must be able to make top- and bottom-line contributions.
32. There will be a continued decentralization of quality as its tools become increasingly available (through computers) to everyone in the organization. The expert will become an advisor and consultant.

“Chaos and quality must live in the same house; routine and innovation must be handled at the same time.”

*– Eduardo Guaragna
COPESUL – Companhia
Petroquímica do Sul*





Lead Change

Questions to prompt your own thinking and make the futures study personal:

How can I as an individual professional knowledgeable of quality turn the challenges identified in this futures study into opportunities?

Do I have the necessary resources to navigate through the new environment, where familiar boundaries no longer apply?

Am I able to communicate effectively what I know about quality to those who need to know it? If not, am I willing to do what it takes to acquire that ability? How can the quality profession make this transformation easier for its members?

Is my organization taking full advantage of the capability of quality to make itself a robust enterprise in the new global environment?



Acknowledgments

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“I’m energized to think that the opportunity for what we do is expanding as humanity’s view of itself and the world expands. Having lived through decades with events ranging from nuclear disasters to putting a man on the moon, I have seen humanity shift its focus from the local to the global—not just in awareness but acceptance of that fact. The concept of global is passé to most every person on the street but the most secluded. And even they are surfing the Web. The concept of social responsibility is also well accepted by most. What is new and exciting is the fact that as a profession, we see this not just as something that is happening around us, but as something we are part of. Something we can impact as much as it impacts us. We have seen in the last decade the passing of a generation of pioneers who by intelligence, charisma, and determination helped make quality more than an ad slogan. Now we see the future of quality and there is so much left to do. How can we motivate the next generation to provide that same intelligence, charisma, and determination to make quality the way we make the world a better place to live?”

*– Mike Nichols
Nichols Quality Associates
ASQ Chair*



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