

# W. J. Youden Memorial Address: Meeting the Challenge of Total Quality<sup>1</sup>

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There is little doubt that American industry, and American society in general, is facing a severe challenge. We all must change if our businesses and way of life are to survive. Some feel that, if the U.S. is not careful, it will become a colony once again-exporting raw materials and importing finished goods. This challenge affects all of us including those working in colleges, universities, and government. We all have a responsibility to take action. The attitude that "my end of the boat isn't sinking therefore I don't need to get involved" won't work. We will all succeed or fail together. Teamwork is needed.

To meet this challenge many companies have adopted a policy of TOTAL QUALITY and have focused all the resources of all business functions-research and development, manufacturing, marketing, purchasing, finance, etc.-on meeting the needs and expectations of their customers. In the total quality approach, "customer" is interpreted broadly to mean anyone, internal or external to the organization, who comes in contact with the output or product of your work. Each of us has many customers including the persons we pass our work to, our managers and supervisors, anyone who reports to us, and our families, as well as persons outside the company who buy our products.

Understanding the management and ingredients of total quality is the subject of this address. It is emphasized that, as indicated by the theme of this conference "Statistical Methodology-The Tools to Get to Total Quality," statistical methodology is only one component of total quality. Statisticians and other quality professionals must adopt this view and understand all aspects of total quality if they are to effectively help meet the challenge. W. E. Deming tells us that statistics is too important to be left to statisticians. The goal is to get many statistically-minded workers, scientists, engineers, and managers in industry; it is not to employ a lot of statisticians. This approach results in new roles for statisticians that require a broader view and an acquisition of new skills.

It is helpful to divide the management of total quality into three components: philosophy, management policies and procedures, and tools.<sup>2</sup> Ideally, an organization develops a philosophy to guide them, as they institute management policies and procedures to guide the organization. They select tools (e.g. computers, robots, statistics) as needed to aid them in doing their job. Unfortunately, many people focus only on one or two components to the exclusion of the other components, e.g. managers focus on philosophy and policy and procedures, while statisticians focus only on tools. The goal should be for everyone to understand the importance and role of all three components and to ensure that each is given proper attention. Deming's 14 points fit nicely into this model. His points 1, 2, 5, 8, 9, and 12 are philosophical in nature while points 3, 4, 6, 7, 10, 11, 13, and 14 relate to management policy and procedures. Statistical process control techniques are the tools that he promotes.

In his 1984 Youden Address Brian L. Joiner<sup>3</sup> divided Deming's 14 points into 3 principal ingredients-quality, all one team, and scientific approach. The model for excellence of Peters and Austin<sup>4</sup>

consists of care of customers, people, constant innovation, and leadership. Similar ingredients are present in Warne's<sup>5</sup> model for Japanese manufacturing superiority, and Watson's<sup>6</sup> management guiding principles for IBM. It is concluded that the move toward total quality can be greatly enhanced by management paying attention to four key ingredients, customers, people, innovation and leadership. Management must also be sure that they have a total quality management system (philosophy, management policies and procedures, and tools) to deal with each of these key ingredients.

These models indicate that statisticians and other technically trained personnel have new roles (e.g. understanding management's needs, team building, leadership, facilitator) for which they have little formal training. Statisticians must broaden their view from individual clients and statistical tools to the whole organization and its customers. Statisticians must focus on their customers' needs and expectations. Because they are a service function, they should practice total quality like other parts of the organization.

The recognition that total quality must involve all business functions identifies an important opportunity for statistics-quality in research and development. Fortunately, Taguchi<sup>7</sup> has given us some help in this regard. He has developed a general systematic approach to product and process design that is proactive and has a statistical basis. It also focuses on a key concern-robustness in use-the ability of the product and process to withstand a wide variety of uses and conditions. If we believe in constant improvement, then we can only conclude that the goal should be to determine how to make more effective use of Taguchi's approach.

The debate surrounding Taguchi's methods highlights a key point made earlier. Statisticians have focused their evaluation almost totally on the statistical tools that Taguchi uses. The value of the techniques, and the customer need, are robustness of product and process design and a system for achieving it.

The creation of total quality is a top-down process that must have the active participation of top management. If you want to help an organization get to total quality, you must influence the management and all others who make decisions. Good technical work is important, but real progress and impact come from influencing how the organization runs its business and makes its decisions. Deming's 14 points call for the transformation of statisticians as well as American management. A cultural change in statisticians<sup>3/4</sup>how statisticians think and behave and what they value and reward<sup>3/4</sup>is required. Statisticians must become proactive. They must learn organizational development techniques and methods for influencing an organization. This will not be easy. While learning new skills is exciting, it is also filled with many anxieties. The feeling is similar to that experienced by managers when they attempt to learn how statistics can help them do their job better.

By taking a broader view and learning new skills, statisticians can help their organizations use statistical tools more effectively and move toward total quality. Some, who have the skills and interest, will focus on management and organizational development. This should not, however, be the goal of all statisticians.

So it's clear, we-managers, quality professionals, technical personnel, statisticians-have new roles that require new skills. All of us must learn and implement total quality. In addition, managers must learn statistical thinking. Quality professionals and other technical personnel must learn statistical thinking and the tools to put it to work. Statisticians must learn organizational development techniques. Real progress will be made when we all understand each other's needs and frustrations, so that we can help each other become better. In the final analysis many different types of contributions are needed for the success of an

organization. All contributions are important and everyone can contribute. The goals are to get everyone working to their potential and to reward excellence rather than the type of contribution.

It is concluded that a cultural change by everyone is required if we are to meet the challenge of total quality. Leadership, vision and teamwork are needed. We must become proactive and have an outward focus on total quality rather than an inward focus on statistical tools. There can be no growth without change. We exist only to serve our customers whether they are internal or external. We have to make effective use of all the resources we have to meet our customers' needs. Statisticians should recognize that total quality applies to them as it does to all members of an organization.

Finally, patience, persistence and practice, practice, practice-are necessary. It takes a long time to change direction. Juran predicts that 15 years will pass before U.S. industry will deal effectively with the quality crisis.<sup>8</sup> We must continue to work toward our goals and deliver the message in many ways to different audiences. Practice makes perfect. Practice your new role and learn by doing. It is only through change in attitude and behavior that TOTAL QUALITY will become a reality

## References

1. A summary of the W. J. Youden Memorial Address given at the 1985 ASQC-ASA Fall Technical Conference in Corning, NY, October 24-25, 1985. Dr. Snee is Consultant Supervisor in the Gulf Regional Office, Engineering Department, E. I. du Pont de Nemours & Co., P.O. Box 3269, Beaumont, TX 77704 and is Fellow of ASQC and ASA.
2. Marquardt, D. W (1984) New Technical and Educational Directions for Managing Product Quality. *The American Statistician*, **38**, 8-14.
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4. **Peters, T and Austin N. (1985) *A Passion For Excellence*, Random House, NY.**
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7. **Taguchi, G. and Wu, Y (1980) *Introduction to Off-Line Quality Control. Central Japan Quality Control Association. Available from American Supplier Institute, 32100 Detroit Industrial Expressway, Romulus, MI 48174.***
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Will the military follow, do their duty. Is he prepared to meet resistance and riot in the street, initiate the mass arrests of big tech titans and employees, Wall Street's board rooms, the media broadcasters? Trump has managed to unite a vast majority of America's people, his supporters. Will he find the personal commitment, courage & dedication to mobilize them? Meeting Challenge. 704 likes. To find out more info please follow @meetingchallenge on Instagram. See more of Meeting Challenge on Facebook. Log In. or. Create New Account. See more of Meeting Challenge on Facebook. Log In. Forgot account? W.j. youden memorial address. Continued from page 4. prediction presents a number of technical challenges. Reliability is an engineering discipline. Statistical methods are, however, important tools for reliability. It is possible (but sometimes challenging) to achieve these benefits while meeting the requirements of the academic institutions (that research should produce scholarly publications and that external funding is needed to support much of its research). Facilitating academic involvement in manufacturing reliability problems.