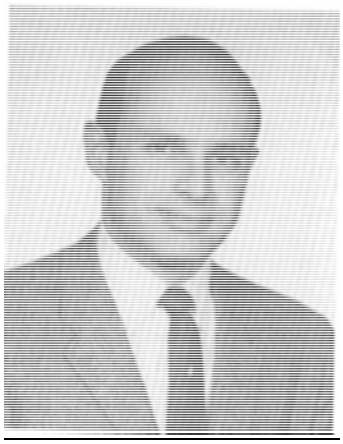
Quality Management System Visionaries

By Susan O. Schall, Ph.D.

Each year ASQ seeks nominations for the Freund-Marquardt Medal. The Medal is presented to nominees who, like Richard Freund and Donald Marquardt, have applied quality management principles to the development, implementation, and improvement of all types of management system standards including quality, environmental, and occupational health and safety, to their supporting technical standards such as those on statistical methods, and also to the criteria for major quality, environmental, and performance excellence awards such as the Malcolm Baldrige National Quality Award and the European Foundation for Quality Management Award (MBNQA and EFQM).

Most people are more familiar with other quality medals and their namesakes, such as Shewhart, Deming, Juran, Feigenbaum, and Ishikawa. So, who were Richard Freund and Donald Marquardt? Why was the Freund-Marquardt Medal named after them? As someone who directly benefited from the work of both men in their respective corporate careers, I hope to clarify the answer to those questions. I started my career as a quality engineer at Eastman Kodak's Kodak Park facility in 1982 and after an educational leave of absence for graduate school 1984-1888, worked as a consulting engineer in DuPont's Quality Management & Technology Center for seven years.

Richard Freund



Richard (Dick) Freund received an MS in engineering from Columbia University and went to work at Eastman Kodak in 1949 as a statistical consultant in the Management Services Division focusing on quality control and statistical design. He played important roles in the quality function of the company, dealing with management, product, process and service quality. He developed and guided the use of modern quality technologies and practices throughout Kodak Park operations. As a young quality engineer at Kodak Park, I stepped into an organization with a document management system and annual product and process management reviews, something that I would learn to be extremely rare decades later.

Dick published and presented extensively on these topics around the world and served as editor of *Technometrics* 1963-66. He was recognized for this work, becoming a Fellow of AAAS (1963), ASQC (1965), ASA (1967), ASTM and IQA (1975). He received the ASQ Brumbaugh Medal in 1948, the ASQ Lancaster Award twice (1958 and 1960), the ASQ Shewhart Medal in 1982, and the ASQ Dodge Award in

1987. In addition, he was a registered Professional Quality Engineer in California and an ASQ Certified Quality Engineer (CQE). Despite all these accolades, Dick was a modest and unassuming person, never drawing attention to himself.

He served as ASQC President-Elect 1971-72, reshaping the society into industry and technology groups (today's Divisions), strengthening the technical thrust of the organization. As ASQC President 1972-73, he was a tireless supporter of ASQC, working to improve relationships with other international professional organizations, including the National Society of Professional Engineers (NSPE), American National Standards Institute (ANSI), the American Society for Testing Materials (ASTM), and the National Academy of Engineering (NAE). He was instrumental in obtaining the Secretariat of the ANSI Z-1 Committee on Quality Assurance for ASQC. This work served to elevate ASQC's technical strength within the technical community. Championship of ASQC continued after his Presidency to include service as ASQC Representative to the Committee of Presidents of the Statistical Societies (COPSS) where he was influential in getting quality control in the Statistical Careers booklet and establishing the close cooperation between the societies that remains today. It should be noted that in 1997 the American Society for Quality Control (ASQC) changed its name to the American Society for Quality (ASQ).

As early as 1976, Dick recognized the void in standards for the management of quality and engaged Robert Peach (2000 Medal recipient), Harrison Wadsworth (2001 Medal recipient) and Joe Tsiakals (2012 Medal recipient) in drafting a US standard for management of quality which was eventually issued as ANSI/ASQC Z-1.15- 1979, General Guidelines for Quality Systems. Few know Dick Freund as the originator of the concept of quality management standards as "*he had a quiet, humble, self-effacing personality, did not seek credit for himself but was generous with passing credit to others, seeking to listen, obtain consensus and international goodwill,*" remembers Joe Tsiakals.

Dick's work with ANSI Z-1 led to membership on the US Technical Advisory Group (TAG) to ISO TC 69 on Statistical Methods, and leadership of both Subcommittee 1 on Nomenclature and Subcommittee 4 on Control Charting in 1975. Jeff Hooper (2006 Medal recipient) remembers Dick as a "*master developer of concepts and terminology*" that he leveraged in this role and in his later work with ISO TC 176 and ASTM. He served as the ASQC Liaison Representative to the European Organization for Quality Control (EOQC), Japanese Union of Scientists and Engineers (JUSE) and UK Institute of Quality Assurance (IQA) in 1976 and led the US Technical Advisory Group to ISO TC 176 on Quality Assurance in 1980. ANSI/ASQC Z-1.15-1979 was the US offering to the newly formed ISO Technical Committee 176 on Quality Management and Quality Assurance in 1980 and became ISO 9004 in 1987, passing through several revisions prior to its current version, ISO 9004:2018. Of note, while ISO 9001, 9002, and 9003 had titles including the words "quality systems," the term "management" was only included in 9004 - a direct link back to Dick Freund's vision. Dick was then key to convincing the ASQC Board of Directors to sponsor formation of the Registrar Accreditation Board (RAB), with substantial financial support; the RAB likely would not exist today (as ANAB), without these efforts.

Upon his retirement from Kodak in 1983, months after I started as a quality engineer in the Paper Service Division (sadly, I did not get to work with him directly, but the Kodak quality systems he designed forever influenced my understanding and appreciation of quality systems), Dick formed his own consulting firm, Quality Planning Services, and lectured at the Center for Quality & Applied Statistics of Rochester Institute of Technology. Dick also continued to serve ASQ as liaison to the ASA Committee on Quality and Productivity and in 1988, he served as one of the original nine judges for the Malcolm Baldrige National Quality Award (MBNQA). Dick passed away in 1989.

Donald (Don) Marquardt

Don Marquardt began working in DuPont's Engineering Research Lab in 1953, after two years in the US Army as a Research Analyst at Camp Detrick, MD. His practical experience in the Army positioned him for responsibilities focused on technology support and consulting in applied math, numerical analysis, statistics and computing. Through self-study and evening classes he received a Master's degree in math and statistics from the University of Delaware in 1956.

In 1964 Don became supervisor of a new statistics consulting group composed of six consultants. By the mid-1970s the group grew to 25 and by the mid-1980s to 35, mostly PhD statisticians. He supported research, developed methodologies and was widely published, all heavily influenced by the emerging power of computing.

From the early-1970s to the late-1980s, the group internally published a reference text of product quality management processes, procedures, practices and technology known as DuPont's Product Quality Management (PQM) System. It provided a comprehensive and implementable system to manage quality in the chemical industry. Many of the ideas within PQM are now contained in *ASQ's Quality Assurance Specifications for the Chemical and Process Industries* book. I remember receiving a copy my first day at DuPont and thinking "*Wow, this is the way to document a quality system!"*

Through the mid-1960s to the late-1980s Don developed a statistical consulting model that DuPont business units were willing to pay for – at a time when industrial statistics groups were focused on research and development. The model was built on two concepts:

1. Design of Experiments (DOE) training structured to build awareness, value and some skills in statistical design of experiments. *Strategy of Experimentation*, as it was called, highlighted the practical business benefits of DOE. Over 30 years, some 25,000 DuPont employees and another 10,000 from other companies attended this training.
2. Consultant as entrepreneur. Each consultant in the group was expected to develop their consulting business in an assigned territory (business unit or corporate function). Combined with implementation of the Dalton method for career development in the 1980s this created business focus, developed long-term business relationships, and empowered consultants as leaders. Other DuPont Engineering consulting groups adopted the model.

In 1989, the Applied Statistics Group merged with the DuPont Quality Management Services organization to form the DuPont Quality Management &Technology Center. With an expanded mission

to include non-statistical applications of quality management, Don continued to lead the group until his retirement in 1991.

From the mid-1980s to mid-1990s Don was Director-at-large of ANSI Committee Z-1 on Quality Assurance and member of the US Technical Advisory Group (TAG) to ISO Technical Committee 69 on Statistical Methods where he worked closely with Dick Freund. As leader of the US Delegation to meetings of ISO Technical Committee 176 on Quality Management and Quality Assurance, Don used his DuPont knowledge and experience of strategic planning to establish a Strategic Planning Committee for the TAG which included identifying under-represented stakeholder groups and professional and trade associations and inviting their participation. Don was instrumental in forming the Liaison Group between the US TAGs for ISO TC176 and ISO TC 207 on Environmental Management, and today this Group has expanded to include representatives from all US TAGs involved in developing ISO Management System Standards. His knowledge of European Union Directives and standards bodies and relationships with international leaders of ISO member bodies was much respected and gave the US Delegation a strong position at the table. Don was an astute judge of talent and a remarkable mentor, supporting others within the TAG to step into leadership positions, including Jeff Hooper (2006 Medal recipient) and Charlie Cianfrani. He further served as a member of the US Technical Advisory Group (TAG) to Technical Committee 207 on Environmental Management and as a founding member of the Registrar Accreditation Board (RAB; now ANAB) in 1990.

During this time, he also created awareness and took actions to prepare DuPont for the business need to be registered to ISO 9001. By the late 1980s, just two years after the ISO 9000 series of standards was released, Du Pont had the distinction of being the US industry leader in ISO 9001 registrations.

Somehow, Don also found time to serve as ASA President in 1986, serve on the ASQ Shewhart Medal and Lancaster Medal Committees, and to conduct adjunct teaching at the Penn State Great Valley campus and the University of Delaware. He also served as a senior examiner for the first Malcolm Baldrige National Quality Award in 1988.

While he retired from DuPont in 1991, much of his standards work continued through membership on the ASQ Standards Group Leadership Council and his management consulting and training business until his death in 1997.

Always a gentleman, he humbly accepted recognition for his contributions to statistics and quality management over the decades:

- ASQ Youden Prize, 1974
- ASQ Shewell Prize, 1984
- ASQ Fellow, 1985 (check this date)
- Shewhart Medal, 1986
- ASA Fellow, 1975
- ASA Founder's Award, 1995
- AAAS Fellow, 1983
- ANSI Meritorious Service Award, 1992.

Don was keenly aware of what it took to have strategic impact and the importance of the human element. Charlie Cianfrani remembers that "*Don taught technical excellence was necessary but not*

sufficient to be successful in the world of international standards development – the human interaction component was also a critical aspect of our work."

In summary, both men actively provided leadership to the development, implementation, and improvement of management system standards in the United States and worldwide. Today there are over one million companies and organizations in over 170 countries that are certified as conforming to ISO 9001, by far the most widely used Management System Standard in the world. Both men, by the lives they led and the contributions they made to the now widely accepted field of management system standards, serve as models for all quality professionals who continue their quality management legacy by applying the standards in their organizations.

For more information on the Freund-Marquardt Medal and to obtain the nomination form, go to ASQ's award web page at: https://asq.org/about-asq/asq-awards/freund.

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