



INTRODUCTION

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The man and the times

Joseph Moses Juran, born on December 24, 1904 in Romania, emigrated at the age of 8 to the United States and he was educated subsequently at the University of Minnesota and Loyola College at the University of Chicago (Zairi 1996). His degrees in electrical engineering and jurisprudence were to provide the basis for his later role as a significant leader in the quality movement.

Juran worked in a variety of occupations: engineer, industrial executive, government administrator, university professor, labour arbitrator, corporate director and management consultant. His advice to governments and corporations has led to his receiving over thirty medals, fellowships and other honours. The most prominent of these is Japan's Order of the Sacred Treasure, conferred by Emperor Hirohito in 1981. This rare honour was in recognition of his contribution to the 'development of quality control in Japan and the facilitation of US and Japanese friendship' (Zairi 1996).

Selected works

Juran's reputation as a leader of the quality movement rests on his quality control handbook (first published in 1951) and other publications, his lectures and consultancy work and his challenges to senior management to accept responsibility for quality. He saw quality as aimed at creating a competitive advantage through 'big leaps, breakthrough and innovation' (Zairi 1996).

As Taylor had his predecessors (Wood and Wood 2002), so too did Juran. Reynard (2000) discussed manufacturing quality in the pre-industrial age, using the practices of eighteenth-century French paper-makers to show how they responded to market demands for high-quality paper. Innovation, high levels of output and high levels of skills were needed to meet the market that had been growing since the sixteenth century, stimulated by tastes beyond the exchange of information and literary works. Reynard notes that





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All levels of administration cultivated a taste for paperwork, finding in written records the bases of accountability and cumulative experience indispensable to the reforming ambitions that came to characterise the period. Commerce itself . . . floated on a sea of paper. It naturally relied on paper to steady its grasp of production and sales, but also attempted to shape markets through a rising tide of advertisements.

(2000: 497)

He also points to increasing specialisation of labour and responses to market segmentation.

Reynard's article presaged two characteristics of the quality movement in the twentieth century: measurement through record-keeping and highly skilled labour operating sophisticated machines.

Juran himself was aware of the history of ideas about quality and practices of quality (Juran 1995). He contributed an article on the history of managing for quality in the United States and an essay on trends and prognosis for quality in a volume that included work by others on the history of quality in ancient China, on shipbuilding in Scandinavia and on Swiss clocks (excerpts from this book can be found in Bigliuzzi *et al.* 1995).

Juran's frequently quoted observation that the 'vital few' of any population or group often exert disproportionately larger effect than the 'trivial many' in the same population or group is now widely applied in initial analyses of the work of an organisation (see, for example, Eldredge 1998). Juran applied the concept to the activities of work, using the term 'vital few and trivial many' to express the elements of the principle (Juran 1960). Juran coined the phrase, the 'Pareto Principle' as a generalisation from Vilfredo Pareto's work on the concentration of wealth. He later explained this choice of name and noted that others, including Lorenz, had also considered similar generalisations (Juran 1975; Lorenz 1904–5).

The publication of Juran's handbook in 1951 was both the culmination of his work in Japan and the stimulus for a greater understanding and acceptance of the need for improvements in quality in the United States.

The major concepts that informed his work may be summarised as seeing quality from the customer's perspective, the Pareto principle and the recognition that quality is a management responsibility (Zairi 1996).

Juran used the phrase 'fitness for use' to emphasise the importance of customers and 'that every activity has a triple role of customer, processor and supplier' (Zairi 1996). Reeves and Bednar (1994) work through the difficult task of defining quality, noting that a 'search for the definition of quality has yielded inconsistent results'. The authors note the influence of Shewart's work in the 1930s (Shewart 1931, 1939) and see Juran's 1951 work as expanding on Shewart's. They state that Juran 'separated quality into two components: quality of design and quality of conformance'. This





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definition preceded his trilogy (Juran 1986) and his subsequent proposal that quality was fitness for use. Reeves and Bednar (1994: 436) then assess the strengths and weaknesses of five definitions of quality and conclude that 'because no definition of quality is best in every situation, managers and researchers must examine the strengths and weaknesses of each before adopting a definition to guide their work'.

Finally, in arguing that quality was the responsibility of senior managers, Juran was reflecting on the contrast that he noted between American and Japanese leaders. Both he and W. Edwards Deming had provided advice to American chief executives in the late 1940s and early 1950s before they were invited to visit Japan. Juran felt that the Japanese listened to his advice and understood its application to their work. They saw that 'quality is a part of the job and not a separate activity' (Zairi 1996).

Juran (1986) developed his trilogy to stress that quality is a corporate function. The three universal processes for managing quality are quality planning, quality control and quality improvement (Zairi 1996).

Impact

Juran the man and his work have had a profound impact on business and academic research. He shared his passion for quality and his interests in Japanese business with his contemporary Deming (see Wood and Wood 2005), though each made distinctive contributions to both scholarship and business life.

Juran was relentless in his pursuit of quality. He was a fearless critic of American failures in quality and saw the importance of quality in international trade and society. For example, he observed in 1991 that:

Quality is also now recognized as a major defense against the threats of a technological society – threats to human safety and the environment.

(Juran 1991: 81)

In 1991, he pointed to the recently introduced annual Malcolm Baldrige National Quality Award as a prize that 'has grown in stature and influence to a degree unprecedented in my 66 years of experience in this field' (Juran 1991: 85). The importance of the Baldrige Award was also noted several years later by Rich (1997), who identified continuous improvement as the key to future success.

Juran was confident and strong in his challenge to other established academic and practising leaders, claiming in 1992 that the premises on which Taylor based his work were obsolete (Juran 1992). He perceived a role for workers that required their involvement in work in tasks that Taylor could probably never have imagined: supplier, customer and processor. He argued





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for job enlargement to provide workers with ownership, broader scope and multiple functions – the polar opposite of Taylor’s high levels of specification and supervision. He saw managers as obstacles to bringing workers into the planning process (Juran 1992).

Reviewing Japanese interest and achievements in quality, Juran observed in 1993 that in contrast to the United States, where he faced audiences of 70 chief executive officers (CEOs) for one hour, in Japan, in his first presentation there on quality, he faced 170 CEOs attending for two days. Not only was the attendance high, the response was eventually to challenge the industrial hegemony enjoyed by the United States in some manufacturing markets. Juran lamented the failure of managers in the US to see what could be achieved by improving the production process. He recalled his early work at Western Electric when he was able to increase the production of circuit breakers by 15 per cent and lower the cost of production ‘without extra people, extra machines, or extra material’. In proposing that the process he used be replicated throughout the plant, he was told it was not the responsibility of the inspection department. There was no person or unit ‘in charge of process improvement’ (Juran 1993: 44).

Organisational context was to become an important theme in understanding the unwillingness of organisations to adopt quality processes. Dean and Snell (1991) investigated integrated manufacturing and its impact on jobs. Just-in-time inventory control and total quality management were believed to have significant impacts on job design in the application of integrated manufacturing and the role of self-managed teams. The authors note that organisational context was the important moderator in the relationship, and their research points to the viability and potential for such teams, echoing Juran’s views on the responsibility of managers for quality (Dean and Snell 1991: 39).

Juran’s work has been adopted and applied in several different disciplines, their related occupations and by manufacturers in other nations, most notably the Japanese. While manufacturing processes have been the most active in adopting Juran’s ideas and recommendations, other perhaps unexpected applications and experiments have emerged in other areas of work.

Eldredge (1998), for example, reports research into the behavioural patterns of library users. He tested the ‘virtual few’ and the ‘trivial many’ principle and found that circulation rates in a health sciences library confirmed Juran’s principle. Gelinias *et al.* (1997) report the application of Juran’s notion of ‘fitness-for-use’ to a project involving what kinds of writing activities from all those available would be most suitable for students on an accounting information systems course. The authors concluded that their work should be ‘useful to business faculty in all disciplines . . . [and] fitness for use may be equally effective in bridging the goals of writing instruction with other business courses’ (Gelinias *et al.* 1997: 399). Ricós *et al.* (2004) undertake a similar task with their interest in consistency in medical laboratory results.





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Health care professionals in the United States report their responses to cost containment and the use of continuous improvement techniques to assist. Xakellis (1997: 599) states that 'providers as well as payers are striving for higher quality health care with lower costs and less variability'. Xakellis then reports the use of measurement in improving value, a redefinition of what quality care means, the establishment of a quality improvement programme and examples of successful programmes. He concludes that the use of continuous quality improvement to 'improve the care of pressure ulcers offers long-term care facilities the potential to improve the quality of care while containing cost and reducing variability' (Xakellis 1997: 605).

Seagull (2000) draws on Juran's use of the Pareto principle to encourage other pediatric psychologists to apply these ideas to their practices in assessing children referred to them. She indicates the variety of data sources in the health care system and argues that the most useful data has to be gathered in the shortest time. She urges her colleagues to take a systemic view of their work.

Similarly, McKinley and Lyons (2000) have advocated that Juran's ideas be applied to research laboratories to enhance management of these facilities. They assert that quality assurance provides confidence in the work of laboratories and 'results in acceptance by scientific peers and clients and enhances professional reputation, leading to customer satisfaction and increased marketing potential for organisational sustenance and growth' (McKinley and Lyons 2000: 1974). They summarise the major techniques and practices, including charting, and stress the importance of staff training for the adoption of quality assurance.

The international standards movement can be seen to have its origins in the quality movement; a recent article describes the role of the United Nations Industrial Development Organization (UNIDO) and calls for the intensification of efforts to spread information and awareness of standards. Wilson (1999: 74) notes that 'UNIDO has conducted two extensive surveys to assess the implications of quality and environmental standards in developing countries' and observes that developing countries 'lose as much as 5% of the total value of their exports because of an inability to conform to international standards'.

The public sector has responded to Juran's ideas. Wagenheim and Reurink (1991) see customer service management as having both internal and external foci that lead to improvements in efficiency and effectiveness. They state:

management requirements exist to support performance including quality, participatory management, technology, information systems, and training. These management requirements that are designed to support the customer-satisfying processes also result in cost reduction and an increase in innovation, motivation, and morale for the





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organization. Thus the customer-service perspective initiates a positive reinforcing cycle . . . , the demands of measurement and monitoring will, however, require ‘significant change and effort’.

(Wagenheim and Reurink 1991: 263–9)

Schiefer (1999) has examined the application of quality management to the use of information communication technology (ICT) in the agri-food sector in Germany. He observes that traditional farm management concepts moving to wards quality management need different management support from ICT. The ICT applications ‘need to be changed from their status orientation to a process orientation which allows a time oriented documentation and analysis of the “life history” of individual products or services in the processes’ (Schiefer 1999: 94).

Perhaps the most significant impact of Juran’s ideas is to be found in the development and application of Six-Sigma in the automotive industry in the United States. This important methodology is credited with assisting the design and development of new products more quickly and more cheaply than other methods. The most outstanding application was that led by Jack Welsh at General Motors. Munro (2000) reviews its history and raises doubts about its capacity to ‘ensure true cultural change’.

Harrison and Stupak (1993) refer to the endorsement of total quality management (TQM) by the then President of the United States, George Bush. They question whether it is possible to fit the ideas and practices within the public sector. Having discussed its history and its relationship to other management movements, the authors see TQM as ‘heavily grounded in the systems theory view of holistic organizations’ (1993: 427). They note that TQM stresses ‘strategic planning and measurement based on satisfaction of the customer’ (1993: 427). Finally, they speculate that

academic researchers and managerial practitioners may find themselves opening to a ‘new paradigm’ of looking at organizations and derivative human behavior from a higher praxis plane called TQM. For some, this will be revolutionary, while for others it will be a matter of natural evolution toward a more democratic, productive, and humanistic organizational world.

(Harrison and Stupak 1993: 427)

The use of measurement and Shewart’s control charts has been the cause of some debate around the application of Juran’s ideas. Nelson (2003) assesses the statistical limits on the use of control charts and laments the ignorance of workers about the choice of values for control of processes.

The utility of concepts of quality and the universality of their application to organisations has been challenged. Sitkin *et al.* (1994: 538) argue that ‘the





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potential contributions of TQM could be lost if its theoretical underpinnings and boundary conditions are not critically assessed'. Their analysis leads them to the conclusion that 'TQM is not a panacea that can be unthinkingly used, but that it must be implemented with a clear sense of the degree to which the context is characterized by uncertainty, nonroutineness, and/or instability' (1994: 538).

The selection

The selection is organized into the following categories:

- Juran – the man and his publications
- Statistical processes
- Quality Juran style
- Quality Juran style – international perspective
- Six Sigma

References

- Bigliuzzi, M., Spaans, C., Dunaud, M. and Juran, J. M. (1995) 'A history of managing for quality', *Quality Progress* 28, 8: 125–9.
- Dean, J. W. J. and Snell, S. A. (1991) 'Integrated manufacturing and job design: the moderating effect of organizational inertia', *Academy of Management Journal* 34, 4: 776–804.
- Eldredge, J. D. (1998) 'The vital few meet the trivial many: unexpected use patterns in a monographs collection', *Bulletin of the Medical Library Association* 86, 4: 496–503.
- Gelinas, U. J. J., Rama, D. V. and Skelton, T. M. (1997) 'Selection of technical communication concepts for integration into an accounting information systems course: a WAC case study', *Technical Communication Quarterly* 6, 4: 381–401.
- Harrison, S. J. and Stupak, R. J. (1993) 'Total Quality Management: the organizational equivalent of truth in public administration theory and practice', *Public Administration Quarterly*, 16, 4: 416–29.
- Juran, J. M. (ed.) (1951) *Quality-control Handbook*, New York: McGraw-Hill.
- Juran, J. M. (1960) 'Pareto, Lorenz, Cournot, Bernoulli, Juran and others', *Industrial Quality Control* 17, 4: 25.
- Juran, J. M. (1975) 'The non-pareto principle: mea culpa', *Quality Progress* 8, 5: 8–9.
- Juran, J. M. (1986) 'The quality trilogy', *Quality Progress* 19, 8: 19–24.
- Juran, J. M. (1991) 'Strategies for world-class quality', *Quality Progress* 24: 81–5.
- Juran, J. M. (1992) 'Developmental quality planning', *National Productivity Review* 11, 3: 287–300.
- Juran, J. M. (1993) 'Made in the U.S.A.: a renaissance in quality', *Harvard Business Review* 71, 4: 42–50.
- Juran, J. M. (1995) *A History of Managing for Quality: the Evolution, Trends and Future Directions of Managing for Quality*, Milwaukee, Wis.: ASQC Quality Press.





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- Lorenz, M. O. (1904–5) 'Methods of measuring the concentration of wealth', *American Statistical Association* 9: 200–19.
- McKinley, P. G. and Lyons, D. J. (2000) 'Application of quality systems attributes to laboratory management', *Communications in Soil Science and Plant Analysis* 31, 11–14: 1973–80.
- Munro, R. A. (2000) 'Linking six-sigma with QS-9000', *Quality Progress* 33, 5: 47–53.
- Nelson, L. S. (2003) 'When should the limits on a Shewhart Control Chart be other than a center line ± 3 -sigma?' *Journal of Quality Technology* 35, 4: 424–5.
- Reeves, C. A. and Bednar, D. A. (1994) 'Defining quality: alternatives and implications', *Academy of Management Review* 19, 3: 419–45.
- Reynard, P. C. (2000) 'Manufacturing quality in the pre-industrial age: finding value in diversity', *Economic History Review* 53, 3: 493–516.
- Rich, A. B. (1997) 'Continuous improvement: the key to future success', *Quality Progress* 30, 6: 33–7.
- Ricós, C., Alvarez, V., Cava, F., García-Lario, J. V., Hernández, A., Jiménez, C. V., Minchinela, J., Perich, C. and Simón, M. (2004) 'Integration of data derived from biological variation into the quality management system of medical laboratories', *Accreditation and Quality Assurance* 9: 128–31.
- Schiefer, G. (1999) 'ICT and quality management', *Computers and Electronics in Agriculture* 22: 85–95.
- Seagull, E. A. (2000) 'Beyond mothers and children: finding the family in pediatric psychology', *Journal of Pediatric Psychology* 25, 3: 161–9.
- Shewhart, W. A. (1931) *Economic Control of Quality of Manufactured Product*, s.l.: Van Nostrand.
- Shewhart, W. A. (1939) *Statistical Method from the Viewpoint of Quality Control*, Washington DC: US Department of Agriculture, Graduate School.
- Sitkin, S. B., Sutcliffe, K. M. and Schroeder, R. G. (1994) 'Distinguishing control from learning in Total Quality Management: a contingency perspective', *Academy of Management Review* 19: 537–64.
- Wagenheim, G. D. and Reurink, J. D. (1991) 'Customer service in public administration', *Public Administration Quarterly* 15, 3: 263–9.
- Wilson, S. R. (1999) 'The impact of standards on industrial development and trade', *Quality Progress* 32, 7: 71–5.
- Wood, J. C. and Wood, M. C. (eds) (2002) *F. W. Taylor*, London: Routledge.
- Wood, J. C. and Wood, M. C. (eds) (2005) *W. Edwards Deming*, London: Routledge.
- Xakellis, G. C. (1997) 'Quality assurance programs for pressure ulcers', *Clinics in Geriatric Medicine* 13, 3: 599–606.
- Zairi, M. (1996) 'Juran, Joseph M.', in M. Warner (ed.) *International Encyclopedia of Business and Management*, vol. 3, London: Routledge, pp. 2445–50.

