Chapter 7

Armand V. Feigenbaum

Quality is simply a way of managing a business organisation.
(Logothetis, *Managing for Total Quality*, 1992)

KEY LEARNING POINTS

Armand V. Feigenbaum's definition of quality: a way of running a business organization.

Key beliefs: systems thinking, relevant measurement, participation.

Principal methods: the four steps to quality, operating quality costs.

INTRODUCTION

Armand Feigenbaum originated the approach to quality known as Total Quality Control (TQC), which has a clear industrial focus. After completing a doctorate at MIT (the Massachusetts Institute of Technology), Feigenbaum joined the General Electric Company, where he was manager of world-wide manufacturing operations and quality control, before becoming president of General Systems Company. His book *Total Quality Control* (1986), completed while he was still a doctoral student, and his other works were discovered by the Japanese in the early 1950s. He was also involved with them through his business contacts with Hitachi and Toshiba.

Bendell (1989: 15) states that Feigenbaum presented a case for a 'systematic, or Total approach to quality', and it is argued by Bank (1992: xv) that he was the first to do so. Logothetis (1992: 94) suggests that to Feigenbaum, 'quality is simply a way of managing a business organisation', while Gilbert (1992: 22) concurs with that and adds that Feigenbaum sees 'quality improvement as the single most important force leading to organisational success and growth'.

Feigenbaum's contribution has been widely recognized. He was founding chairman of the International Academy for Quality and is a past president of the American Society for Quality Control, which awarded him the Edwards Medal and Lancaster Award for his international contribution to quality and productivity (Bendell, 1989: 15).

7.1 PHILOSOPHY

Feigenbaum's philosophy is clearly founded in his early idea of the 'total' approach, reflecting a systemic attitude of mind. He saw it as fundamental to quality improvement that all functions in an organization should be involved in the quality process and that quality should be built into the product rather than failure being inspected out. He defines quality as 'best for the customer use and selling price' and quality control as 'an effective method for co-ordinating the quality maintenance and quality improvement efforts of the various groups in an organization so as to enable production at the most economical levels which allow for full customer satisfaction'.

There is no difficulty in accepting the systemic nature of Feigenbaum's philosophy. While the work of both Deming (see Chapter 6) and Juran (see Chapter 9) can be interpreted in a systemic manner, Feigenbaum is explicit from the outset that such an approach is vital. In the contemporary, complex world of organizations, there is every need to manage from a systemic perspective – recognizing and dealing with interactions across internal and external organizational boundaries and at all levels within them, as well as with the suppliers, customers and other stakeholders in the enterprise.

The issue of building quality in can also be addressed here. This recognizes that organizations do not simply manufacture products; they also design and develop them. Feigenbaum appears to be suggesting that many quality problems can be eradicated from both the products and the manufacturing process by paying attention to the quality issue from the conception of the idea, right through to delivery of the first and subsequent items. Basic design techniques here might include colour-coding wires so that electronic products cannot be incorrectly wired, or varying bolt positions in otherwise apparently symmetrical pieces of metal so that they can only be mounted correctly.

Looking at Feigenbaum's definition of quality, two constraints are discovered which have not previously been seen: 'customer use' and 'selling price'. The first of these is perhaps no different from Deming's 'needs of the consumer' or Crosby's 'conformance to requirements', but it suggests a constraint, rather than an ideal to aim for. It seems to imply that there are, perhaps, limits to useful quality. The issue of selling price clearly indicates that for any given price, Feigenbaum perceives limitations to the expectations of quality. This can perhaps be interpreted as saying that a quality differential, in terms perhaps of longevity, performance or reliability, between, say, a car costing US$10,000 and one costing US$100,000 is to be expected and is acceptable. This also implies developing an understanding of the real use to which a customer will put the product.

His definition of quality control emphasizes the integral nature of the quality process, stressing 'co-ordination' of maintenance and improvement efforts across 'groups'. It is notable that he does not say 'functions' or 'departments'. This should be interpreted as a recognition of the human relations aspects of organizations.

To summarize Feigenbaum's philosophy, a commitment to a systemic, 'total' approach and an emphasis on designing for quality and involving all departments are evident. Supporting this is recognition of, and reliance on, the human aspects of the organization. Statistical methods are used as necessary, which contrasts quite sharply with the greater statistical emphasis in the work of Deming.

7.2 ASSUMPTIONS

Feigenbaum's apparent assumptions about the world reveal a different understanding from that of Deming of Crosby.

First is his explicit assumption of a world composed of systems. He works with the inter-relationships that he perceives to exist between all aspects within the organization, and, importantly, in its environment or market. He recognizes the contribution made by suppliers, and the constraints, particularly on performance expectations and price, imposed by customers.

The systemic view is clear again in his second assumption, that human relationships are a basic issue in quality achievement. This concurs with the developments in management thinking being made by the human relations school that were occurring at the time of his early work.

In these assumptions, he clearly focuses attention on the whole enterprise, from suppliers to users, through every function and to all the groups who are involved in it. The development in more recent times of global businesses serving global markets, of ever more complex and interdependent relationships between organizational, social and individual well-being and the emergence of many more virtual organizations based on strategic partnerships, leads to the conclusion that this systemic view must be sustained.

An organization can today be more clearly seen to exist within an eco-system comprising economic and social relationships, in which it will ultimately either thrive or become extinct. Although not explicitly referring to adaptation of the organization, Feigenbaum's commitment to 'full customer satisfaction' implies constant awareness of customer needs and expectations within the organization, and the need for change to satisfy them.

Feigenbaum further assumes that continuous improvement is both desirable and achievable. Referring again to his definition of quality, we can see the potential for conflict and contradiction. For example, if customer expectations on performance and price are met, then quality, by his definition, has been achieved. However, unless the process of TQC ends, then further improvement will arise. This in turn implies a need for the organization to interact with its customers, aiming to alter their expectations of quality, perhaps as suggested by Galbraith (1974). There is a danger, therefore, that as with that of Crosby, Feigenbaum's approach can be interpreted as a finite, ends-oriented and discrete programme, whereas his intent appears to have been for continuous improvement.

7.3 METHODS

Flood (1993: 35) has reduced Feigenbaum's philosophy to a four-step approach, but these steps (Box 7.1) should be viewed as a simplification of his overall method. Nevertheless, the steps may certainly be seen as capturing the fundamental essence of Feigenbaum's approach, which is intended to lead to a 'Total Quality System'. This is defined by Bendell (1989: 16) as

> the agreed companywide and plantwide operating work structure, documented in effective, integrated technical and managerial procedures, for guiding the co-ordinated actions of the people, the machines and the information of the company and plant in the best and most practical ways to assure customer quality satisfaction and economical costs of quality.

VIGNETTE 7.1 MCDONALD'S, HONG KONG: FULL CUSTOMER SATISFACTION

McDonald's, Hong Kong, which has built its business on the three characteristics of food quality, convenience and price, has clearly developed a unique approach to the idea of full customer satisfaction. The two letters reprinted below show that McDonald's has recognized that customer satisfaction in its case goes well beyond simply serving the right food at the right time and price. The first letter demonstrates its commitment to the total McDonald's experience. The customer does not mention food but is impressed by the quality of overall service and the hygiene standards of the washrooms.

January 19, 1996

The Managing Director
McDonald's Restaurant (HK) Ltd.
Upper G/F, Park Vale
1060 King's Road
Quarry Bay, H.K.

Dear Sir:

I would like to draw your attention to the outstanding performance and good job done by your staff of the Sai Kung Court outlet.

I live in Sai Kung, occasionally I pay visits to your Sai Kung Court outlet for afternoon coffee. In each of the visits, I am so impressed by the cleanliness and tidiness of the shop. Your staff work hard to do the cleaning work in turns, while the staff at the counters handling customers efficiently. In addition, the lady's room is not big though, it is always filled with paper rolls and smells pleasant. The excellent quality of hygiene standard and customer service should be considered as a model among the McDonald's shops.

Congratulations for hiring such a team of good staff in providing comfortable environment. I'll certain keep visiting this shop with my family.

Best regards,

Christine Chan

Christine Chan
A Fan of the McDonald's

cc: Shop Manager, Sai Kung Court

The second letter shows how far McDonald's has gone in becoming a part of the community in which it thrives as a business. Again, food is not the issue; it is service which counts.

March 19, 1996

Miss Doctor Law
First Assistant
McDonald's Restaurants (H.K.) Ltd.
Upper G/Fl., Park Vale
1060 King's Road
Quarry Bay
Hong Kong

Dear Miss Law,

I wanted to write to you to express my deep thanks for looking after my daughter Erin yesterday. The first aid assistance and the very helpful and concerned attitude you showed greatly helped her. It took me 2 hours to drive from my office to your restaurant due to heavy traffic and your understanding was much appreciated.

McDonald's is an amazing part of the community. When Erin was looking for somewhere safe and friendly to shelter she headed straight for the familiar "Golden Arches".

She has had her leg stitched and is resting comfortably now. Thank you again for your help and I hope you enjoy the chocolates.

Kind regards,

Mark I. McCallum

cc: Mr. Don Dempsey (McDonald H.K.)

These examples emphasize the 'total' understanding expressed in Feigenbaum's work. Customer service for McDonald's Hong Kong goes well beyond the standard products and services offered, to include the broader aspects of the McDonald's experience and interaction with the community.

Box 7.1 *Armand V. Feigenbaum's four steps to quality*

Step 1	Set quality standards
Step 2	Appraise conformance to standards
Step 3	Act when standards are not met
Step 4	Plan to make improvements

The Weberian, bureaucratic overtones and dangers inherent in this definition are quite clear. A heavy reliance on documentation and integration of procedures and on co-ordinating the people, machines and information certainly presents an opportunity to those 'keener on talking about work than doing any' (Beckford, 1993). The recent standard ISO 9000:2000 challenges this notion of documentation, with its shift from compliance with documented procedures to a focus on customer satisfaction and continuous improvement and with particular attention paid to active management of skills – a change which Feigenbaum would surely have welcomed. It is fair to say that contemporary information technology makes possible far greater availability of information than was the case when Feigenbaum formulated his approach.

To counter the danger, Feigenbaum used in the first sentence the word 'agreed'. This stresses that everyone must be committed to the design of the organization through effective communication. However, while proposing that gradual development of the programme is preferred, little is said about how agreement is achieved, which permits scope for either autocratic or democratic processes to be employed. While Feigenbaum proposes participation as a means of harnessing the contribution of people and encouraging a sense of belonging, it remains the case that the approach need not be used in this participative manner.

A further tool is the measurement of what Feigenbaum calls 'operating quality costs'. These are divided into four self-explanatory categories and have been met before, in Chapter 3:

- prevention costs, including quality planning;
- appraisal costs, including inspection costs;
- internal failure costs, including costs arising from scrap and rework;
- external failure costs, including warranty costs and complaints.

It can be seen again how Feigenbaum's concept of total quality extends from product development right through to product use – that is, product quality in the hands of the consumer. Bendell (1989:16) states that

> reductions in operating quality costs result from setting up a total quality system for two reasons:
>
> 1. Lack of existing effective customer-orientated customer standards may mean current quality of products is not optimal given use.
> 2. Expenditure on prevention costs can lead to a several fold reduction in internal and external failure costs.

The proposal overall is that by measuring quality at every critical stage, the total costs of running the organization will be reduced. A similar concept is met in the food manufacturing industry, which uses a system called HACCP – Hazard Analysis Critical Control Points to evaluate and ensure food product quality and safety at points of risk. This would include such aspects as temperature. If, for example, a product must be boiled, then the HACCP system would test it to ensure that boiling point is actually reached. The emphasis on design again stresses the importance to Feigenbaum of designing quality in to the product.

Overall, Feigenbaum's approach is best seen as part of the kaizen management practices, which are oriented towards management responsibility and involve effective team working across the organization. These tools will be examined in more depth in the appropriate chapters.

7.4 SUCCESSES AND FAILURES

Feigenbaum's approach has undoubtedly been successful and has been adopted in whole or in part by a number of organizations. There is little doubt that his recognition of quality as a way of running an organization, rather than as a secondary activity, was a major breakthrough in thinking in this area, yet even today, many organizations continue to consider quality as an added extra rather than a fundamental of organizational effectiveness. Recent experience with a number of organizations internationally has shown that many continue to focus on 'badge-hunting' through a quality management system rather than on organizational survival through quality products or services. Finally, his systemic concept of 'total' – that is, quality running throughout the organization, from its inputs to its outputs – has immense value.

Flood (1993: 36) again provides a summary of the principal strengths and weaknesses of Feigenbaum's approach, from which the following is adapted. He sees its main strengths as being the following:

- It stresses a total or whole approach to quality control.
- It places emphasis on the importance of management.
- Socio-technical systems thinking is taken into account.
- Participation is promoted.

The principal weaknesses he identifies are as follows:

- The work is systemic but not complementarist.
- The breadth of management theory is recognized but not unified.
- The political or coercive context is not addressed.

It can be added to this critique that the industrial orientation of the approach provides little of real value for service-based organizations. Similarly, it could be said that, as with Deming, there is a lack of clarity of method: ample instruction in what to do is not supported by guidance on how to do it.

The necessity and contribution of the systemic view proposed has already been acknowledged. Similarly, the focus on the importance of management to the process is supported, although as Bendell (1989: 16) suggests, 'modern quality control is seen by Feigenbaum as stimulating and building up *operator responsibility* and interest in quality'. While this is to be achieved through management commitment to the programme, the need for management to *sell* the ideas is stressed, suggesting a certain resistance by employees to accepting the concepts of quality. Although Feigenbaum fully accepts the value of a participative approach, the question has again to be raised – how is such participation to be achieved? Even Flood's choice of the word 'harnessing' in respect of individual contributions is suggestive of a less than wholehearted commitment, having overtones of compulsion.

Looking at the weaknesses, Feigenbaum's work says nothing about the identification and selection of tools, whether management theories or systems approaches, which are most appropriate for a particular organizational or national context. For contemporary managers, this issue is of great importance. Many organizations are globally based, and to achieve agreement, which Feigenbaum requires among the top management, account must be taken of the varying cultures and expectations of the participants. An approach which works well in Hong Kong may fail completely in Tokyo, Los Angeles or London.

Finally, Flood's comment that nothing is said about political or coercive contexts is valid. Feigenbaum's assumption that people can and will work together for the improvement of the organization and its outputs is clear in his work. However, his recognition of the need to *sell* the total quality concept perhaps suggests that a degree of political or coercive pressure may, for him legitimately, be brought to bear to achieve the end result. That said, it is perhaps a little unfair to criticize someone for not offering a solution to a problem he did not set out to address.

7.5 CRITICAL REVIEW

There appear to be three founding ideas to Feigenbaum's work: his acceptance of the systems paradigm; a belief in appropriate measurement; and the recognition of participation as a means of developing and encouraging support for change and enabling creativity. Feigenbaum's strong academic background in issues of quality control, supported by his extensive practical managerial experience, undoubtedly provided a substantial platform for the further development and successful application of his ideas.

The apparent lack of a well-developed, clear methodology telling managers how to proceed with his approach is a major drawback. It is suspected that personal and management styles are much greater factors in the success or failure of a Total Quality Control initiative than is normally recognized. Adoption by the most senior management of a collaborative, team-based working pattern is not easily achieved or maintained – especially in organizations where rewards are calculated on the basis of personal rather than team achievement.

Functionally structured companies, for example, normally have power bases within each function. If these power bases are strong, then they may resist the perceived loss of individual or function power that arises from any other orientation. Companies are often heard of which are 'production led', 'marketing led' or 'accounting led'. These are companies which are dominated by a particular power group within a professional specialization. They appear to perceive the world from a particular professional standpoint, and in so doing, perhaps undervalue the contribution of other professions. Adoption of a team-based approach where each profession is valued for its contribution to the whole, perhaps in the form of a project or matrix management system, is unlikely in such companies. Similar comments can be made about issues such as sexual orientation, gender and race – take for example, the privileged positions of WASPs (White Anglo-Saxon Protestants) in the United States, Oxbridge graduates in the United Kingdom, or Bumiputras (indigenous Malaysians) in Malaysia. Professional and other biases must be overcome in the creation of organizations based on expertise, but Feigenbaum says nothing of how to achieve this.

The quantitative aspects of Feigenbaum's approach are welcome. Reliance on statistics 'where appropriate' is a useful guide, encouraging managers to use discretion in their choice

of measurements. This contrasts quite sharply with the strong emphasis on measurement proposed by Deming. Feigenbaum is quite selective about what it is useful to measure and when. Like Deming, he proposes, through the four-way division of operating quality costs, a form of customer chain analysis which can be seen to be helpful in identifying not simply the costs of quality but, very importantly, where they arise.

Feigenbaum has undoubtedly made a substantial contribution to work in the field of quality, and certain current developments in quality management carry powerful influences from his work. However, enthusiasm for his approach must be tempered by recognizing some weaknesses with respect to methodology and cultural context, and the important understanding that his work does not go beyond the industrial sector.

SUMMARY

This chapter has introduced the principal strands of the work of Armand Feigenbaum, presenting and reviewing his philosophy, assumptions, methods, and successes and failures. Readers may wish to refer to Feigenbaum's own *Total Quality Control* (1986) to enhance and further develop their understanding.

QUESTION

The chapter suggests that difficulties might arise from Feigenbaum's definition of a 'Total Quality System' with its 'Weberian, bureaucratic overtones'. Critically review Feigenbaum's work in the context of this suggestion.