



Module: Business Processes  
Unit: Quality Management  
Lesson: Quality over Time

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# Quality over Time

## Introduction

In lesson one, we looked at some introductory definitions and concepts relevant to quality and quality management as well as beginning to look at how approaches to quality and quality management have changed over time. In this lesson we look at developments in quality over time in much more detail by looking at the works of key writers on quality management. Following the approach of Kelemen (2003) we consider these writers in three groups -

1. Early American writers
2. Japanese writers on quality
3. The 'new' western wave writers.

## Early American writers

### W.E. Deming

Deming was an American statistician who lectured and advised on process and quality control techniques to Japanese industrialists after World War Two. (Much of his approach built upon Shewhart's work on statistical process control). According to Kelemen (2003) his principal message to the Japanese was that variability is inevitable in any process and that these inevitable variations in process performance come about as a result of two reasons -

1. 'special causes' that can easily be identified and put right by workers who are working within the process
2. 'common causes' which are due to how the process concerned is designed and operated and can be put right only by the managers responsible for the process

Deming's recognition of these two types of cause led him to claim that 84% of quality problems (N.B. - some writers use a similarly high but slightly different % when making this point about Deming.) are the responsibility of management - i.e. they are the result of common causes and have to be dealt with by management.

This led him to recommend an approach to identifying and solving problems called the '*plan, do, check, action*' (PDCA) cycle. In a brief article at the Balanced Scorecard Institute accessible at:

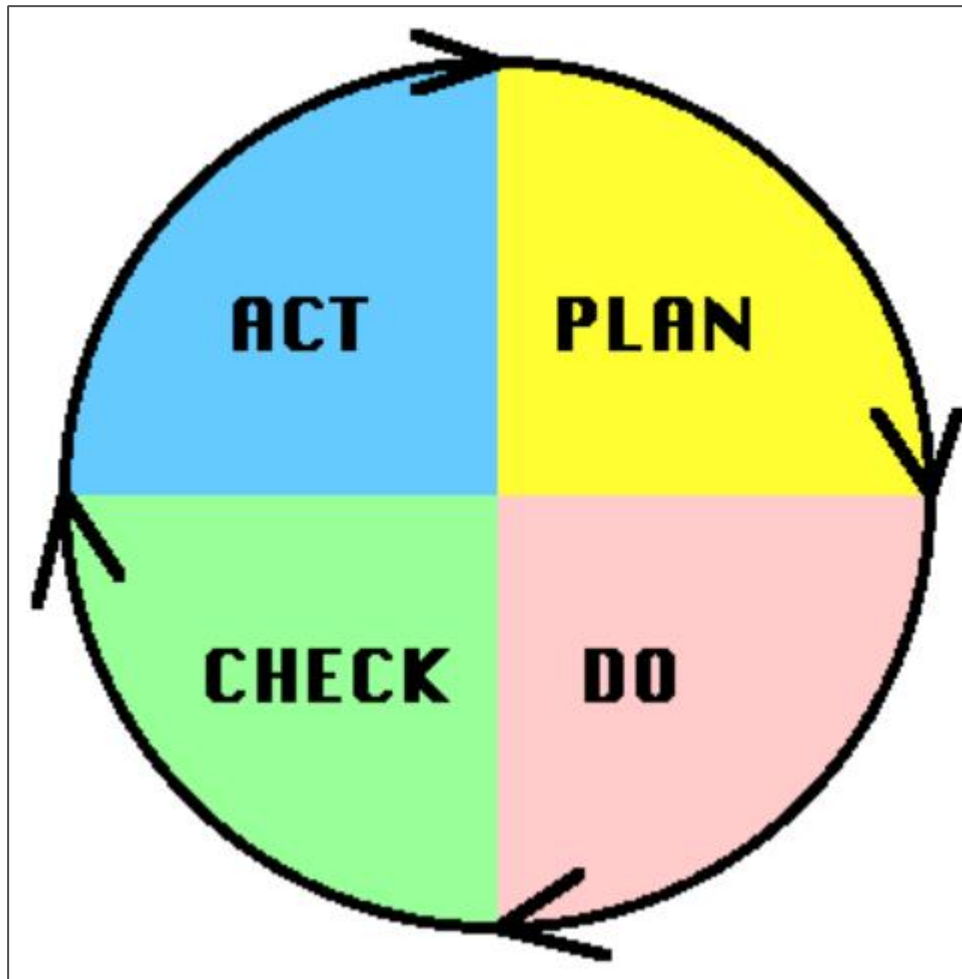
<http://www.balancedscorecard.org/thedemingcycle/tabid/112/default.aspx> ( Permission to reproduce pending )

Paul Arveson says this about the PDCA cycle:

*"W. Edwards Deming in the 1950s proposed that business processes should be analyzed and measured to identify sources of variations that cause products to deviate from customer requirements. He recommended that business processes be placed in a continuous feedback loop so that managers can identify and change the parts of the process that need improvements. As a teacher, Deming created a (rather oversimplified) diagram to illustrate this continuous process, commonly known as the PDCA cycle for Plan, Do, Check, Act\*."*

1. **PLAN:** Design or revise business process components to improve results
2. **DO:** Implement the plan and measure its performance
3. **CHECK:** Assess the measurements and report the results to decision makers
4. **ACT:** Decide on changes needed to improve the process"

Deming's PDCA cycle can be illustrated as follows:



**Figure 1.01 - Plan, Do, Check, Act cycle**

### **Deming's 'Seven Deadly Sins 'of Western Management**

In work that became well known in the west, Deming presented what he called 'seven deadly sins' of western managers, which, he claimed, hindered the achievement of quality. These were as follows -

1. Lack of consistency (the organisation is managed on a flavour-of-the-month basis, thus lacking a long-term strategy.)
2. Short-term profit focus.
3. Too much emphasis on performance appraisals.
4. Regular movement of managers between jobs either within or between organisations, i.e., job-hopping.

- 4.
5. Over-reliance on visible figures and a neglect of other less tangible aspects of the organisation.
6. Excessive medical costs supported by the company.
7. Excessive costs of liability.

## my learning space activity.....

Having read the seven points above consider which ones you feel are likely to be important outside Deming's immediate audience of the US and which might be quite specific to the US.

## feedback

Probably most of the first five would be applicable to a large number of companies in countries outside of the US, while the last two might be seen as a function of characteristics of the environment in which US companies operated when Deming was writing (and still largely are). These characteristics would be the significant medical insurance premiums US companies often pay for their staff and the strong tendency in American society to engage in litigation, hence the need for firms to bear high legal costs in cases brought against them.

### Deming's 14 Points of Transformation

While Deming carried out little analysis of exactly how the deadly sins he identified served to compromise quality, he did set out 14 principles of transformation to pave the way for successful quality performance. These 14 principles are presented (adapted slightly) as follows at the website Skymark, accessible at:

<http://www.skymark.com/resources/leaders/deming.asp> ( Permission to reproduce pending )

1. Create and communicate to all employees a statement of the aims and purposes of the company.
2. Adapt to the new philosophy of the day; industries and economies are always changing.
3. Build quality into a product throughout production.
4. End the practice of awarding business on the basis of price tag alone; instead, try a long-term relationship based on established loyalty and trust.
5. Work to constantly improve quality and productivity.
6. Institute on-the-job training.
7. Teach and institute leadership to improve all job functions.
8. Drive out fear; create trust.
9. Strive to reduce inter-departmental conflicts.

- 9.
10. Eliminate exhortations for the work force; instead, focus on the system and morale.
11. (a) Eliminate work standard quotas for production. Substitute leadership methods for these.(b) Eliminate MBO. Avoid numerical goals. Alternatively, learn the capabilities of processes, and how to improve them.
12. Remove barriers that rob people of pride of workmanship
13. Educate with self-improvement programs.
14. Include everyone in the company to accomplish the transformation.

### **Comments on some of Dr. Deming's points**

The first of the 14 points charges management with establishing continual improvement through the redefinition of the company's purposes. Quite simply, the company must survive, compete well and constantly replenish its resources for growth and improvement through innovation and research. In the fifth point, Dr. Deming states that only a commitment to a process of continual improvement truly rewards. A company cannot expect to ignite and feed a quality revolution from which it will prosper for all time. Instead, it must adopt an evolutionary philosophy; such a philosophy prevents stagnation and arms the company for the uncertain future. Part of the evolutionary mentality is to abandon practices that, despite their obvious short term benefits, ultimately detract from the company's effectiveness. Point number four specifically warns against this scenario: the purchasing department of a company consistently patronises those vendors who offer the lowest prices. As a result, such a company often purchases low quality equipment. Dr. Deming urges companies to establish loyal ties with suppliers of quality equipment. Points three and five effectively condemn mass inspection procedures as inefficient; a product should be monitored by the workers throughout the assembly process, to meet a series of quality standards (we return to this point later in this lesson). In the long term, the use of better equipment and a more intense worker-oriented method of inspection will markedly improve productivity and lower costs. In order to accomplish these goals, a company must develop a consistent, active plan that involves its entire labour force in the drive toward total quality.

### **Deming's Influence on US Business**

Further information on Deming's career and the impact it had on quality management can be gained by accessing and reading the following source

<http://mbsportal.bl.uk/taster/subjareas/busmanhist/mgmtthinkers/deming.aspx>

This source will revisit some of the main aspects of Deming's work but will also give you a considered critical verdict on the impact of his career as a whole.

You should now read that, make notes on the overall impact of Deming's career and post them in the group learning space

### **video Dr. Deming - the 5 Deadly Diseases**

To finish this section on WE Deming you might want to watch the you tube video Dr. Deming - the 5 Deadly Diseases, available at:

<http://www.reliableplant.com/View/27833/Deming-deadly-diseases-management>

This video produced by the Deming Institute back in 1984 interestingly makes points that to an extent foreshadow issues like the economic decline of the US and even some of the issues that led to events such as the Enron creative accounting scandal. Interestingly, even though it is addressed to a US audience primarily, the video does not cover the final two points in the earlier list of deadly sins, which our feedback suggested were very US specific.

## Joseph Juran

The second of our early American writers is Joseph M. Juran. Like Deming he was an engineer by background and he also was invited to advise Japanese industry on quality in the 1950s. As we saw in Lesson 1, he defined quality as 'fitness for purpose'. This is one of the high profile definitions of quality in the history of the subject; it does of course raise the question 'who decides on the purpose of a given product?' Most contemporary writers on quality would argue that the views of the product's user or customer are of most importance in determining the purpose of a product. To some extent Juran seems likely to have agreed with them. He set out a quality-planning map, consisting of a series of planned steps, which not only reflected his view that quality had to be planned and did not happen by accident but also saw customer needs as relatively high profile in planning quality.

The steps are as follows:

1. identify who the customers are;
2. determine the needs of those customers;
3. translate those needs into company language;
4. develop a product that can respond to customer needs;
5. optimise the product features so as to meet company needs as well as customer needs;
6. develop a process which is able to produce the product;
7. prove that the process can produce the product under operating conditions;
8. transfer the process to operations.

Juran saw quality control as something that should be incorporated within management control generally and like Deming he sees the majority of quality problems as being the fault of management - (although he sets the % a bit lower - at 80%).

He significantly introduced the concept of the internal customer that became a key concept in quality management literature. Flood (1993) commented approvingly that Juran's approach focused importantly on continuous improvement, saw planning as central to effective quality management and acknowledged the need to address the needs of both external and internal customers in quality management. On the other hand Kelemen (2003) criticises Juran (and also Deming) for taking a unitarist view of organisational life. In other words she believes that both Deming and Juran failed to recognise the likely existence of different groupings within organisations that would have different interests in the organisation, different views as to what organisational objectives ought to be and therefore may well disagree about what would constitute a quality product. In commenting this way, Kelemen is pointing to a pluralist view of organisations rather than a unitary one.

## group learning activity.....

If quality is fundamentally about meeting or exceeding customer requirements, do you agree or disagree with Kelemen's view that different views about what constitutes quality are likely to exist in most organisations?

Post your responses in the group learning space.

## Armand V Feigenbaum

The third of our trio of early American writers - Armand V Feigenbaum - is less well known generally than the previous two but has been argued to have made a more tangible contribution to quality management (Kelemen 2003). In his most important book, *Quality Control: Principles, Practice and Administration*, published in 1951, Feigenbaum defined quality in a customer oriented way in terms of being 'best for the customer use at the right selling price'.

For him quality control was a management tool consisting of 4 steps:

1. setting quality standards;
2. appraising conformance to these standards;
3. acting when standards are unmet or exceeded;
4. planning for improvements in the standards.

Within his writing he distinguished four types of control.

1. New design control refers to those mechanisms put in place to ensure that the design of a new product or process meets certain standards, as decided by the technical experts and managers.
2. Incoming materials control refers to those procedures by which materials from suppliers are checked against existing standards.
3. Product control is performed usually via acceptance sampling procedures.
4. Special process studies are those controls which ensure that the process of production is on target. Statistical process control is the most widely used technique for controlling and adjusting process variation.

He also attempted to quantify costs of quality (and of not achieving quality). He divided quality related costs into the following four categories.

- prevention costs - costs that relate to those activities aimed to build quality within the system in order to prevent defects and faulty products and services;
- appraisal costs - costs relating to the inspection and control of quality.
- internal failure costs (i.e. scrap, rework).
- external failure costs (i.e. warranty costs, complaints).

These can be broken down into two sets with the final two categories of costs being incurred as a result of some level of inadequacy or incompleteness in the activity that had generated the first two categories of cost.

Kelemen (2003) suggests that the concept of total quality management is often traced back to Feigenbaum's work, with him arguing that quality control within an organisation should be total and systematic, involving all functions within the organisation and not just the manufacturing function. He correspondingly emphasised human relations and employee participation within quality management to a greater extent than did contemporary writers on the subject. Kelemen (2003) also criticises him as taking a unitary rather than pluralist perspective on organisational life in general



and quality in particular, although it can be said that pluralist discussions of organisational behaviour were probably not well established in the 1950s when all three of the writers covered in this section were publishing their views.

## **Japanese writers on quality**

### **Kaoru Ishikawa**

We now turn to the Japanese writers on quality and firstly Kaoru Ishikawa. Ishikawa is best known for advocating a company wide, holistic approach to quality and also as the man who introduced quality circles.

### **Quality circles**

We reproduce below an article on quality circles from the Vector Study website, accessible at:

<http://vectorstudy.com/management-theories/quality-circles> ( Permission to reproduce pending )

The concept behind quality circles is widely believed to have been developed in Japan in 1962 by Kaoru Ishikawa as a method to improve quality, though it is also argued that the practice started with the United States Army soon after 1945, whilst restoring the war torn nation, and the Japanese adopted and adapted the concept and its application.

A quality circle is a volunteer group of employees from the same work area who meet together to discuss workplace improvement. The circle is empowered to promote and bring quality improvements through to fruition. Though quality circles are not the silver bullet solution for quality improvement, with the right top management commitment, resources, and organisation, they can support continuous quality improvement at shop floor level.

Because of the social focus of a Quality Circle group, they can not only improve the performance of an organisation, but also motivate and enrich the work lives of fellow employees. A typical Quality Circle group will display a good approach to:

- Analysing the context of a problem and its situation
- Defining exactly what the problem is and the relationship between its component parts
- Identifying and verifying that the causes are indeed causes, ensuring that solutions address the real problem
- Defining, quantifying and measuring the impact of a given problem
- Understanding the quality objectives
- Creating a solution to a given problem

Quality Circle groups generally address issues such as improving safety, improving product design, and improving manufacturing process. Because Quality Circle groups remain intact from project to project they have the advantage of consistency, though they retain the option to call in expertise or request training when needed.

Japanese Quality Circles demonstrated the effectiveness of worker teams in identifying and solving process problems in their own work areas. However the more serious quality problems from non-manufacturing organisations often arise in activities that span more than one department or

function.

The success of quality circles - even in Japan - was argued by many to be crucially dependent upon the quality of training received by participants in them. Also it was argued that, while circles flourished for many years in the Japanese culture they were less successful when transplanted into more individualistic cultures such as those of the US and UK. A number of tools were introduced for use within quality circles that have applications in quality management more generally. Below we present three of these.

## **Pareto charts.**

While these were derived from Vilfredo Pareto's research on wealth distribution, they can be used within quality management to prioritise areas where the greatest quality related benefit can be achieved for a given level of resources. Below we reproduce a brief article from the website [whatis.com](http://whatis.techtarget.com/definition/Pareto-chart-Pareto-distribution-diagram), accessible at:

<http://whatis.techtarget.com/definition/Pareto-chart-Pareto-distribution-diagram> ( Permission to reproduce pending )

The article summarises how Pareto charts can be used in quality management. As you will see from the article, although we are considering Pareto charts in the context of Ishikawa's quality circles, the application of Pareto's 80/20 principle to issues of quality management was first developed by Joseph Juran.

A Pareto chart, also called a Pareto distribution diagram, is a vertical bar graph in which values are plotted in decreasing order of relative frequency from left to right. Pareto charts are extremely useful for analysing what problems need attention first because the taller bars on the chart, which represent frequency, clearly illustrate which variables have the greatest cumulative effect on a given system.

The Pareto chart gets its name from Vilfredo Pareto, an Italian Economist. In 1906, Pareto noted that 20% of the population in Italy owned 80% of the property. He proposed that this ratio could be found in many places in the physical world and theorised it might be a natural law, where 80% of the outcomes are determined by 20% of the inputs.

In the 1940s, Pareto's theory was advanced by Dr Joseph Juran, an American electrical engineer who is widely credited with being the father of quality control. It was Dr. Juran who decided to call the 80/20 ratio the "The Pareto Principle." Applying the Pareto Principle to business metrics helps to separate the "vital few" (the 20% that has the most impact) from the "useful many" (the other 80%). The chart illustrates the Pareto Principle by mapping frequency, with the assumption that the more frequently something happens, the more impact it has on outcome.

The Pareto chart is one of the seven basic tools of quality control. The independent variables on the chart are shown on the horizontal axis and the dependent variables are portrayed as the heights of bars. A point-to-point graph, which shows the cumulative relative frequency, may be superimposed on the bar graph. Because the values of the statistical variables are placed in order of relative frequency, the graph clearly reveals which factors have the greatest impact and where attention is likely to yield the greatest benefit.

## A Simple Example

A Pareto chart can be used to quickly identify what business issues need attention. By using hard data instead of intuition, there can be no question about what problems are influencing the outcome most. In the example below, XYZ Clothing Store was seeing a steady decline in business. Before the manager did a customer survey, he assumed the decline was due to customer dissatisfaction with the clothing line he was selling and he blamed his supply chain for his problems. After charting the frequency of the answers in his customer survey, however, it was very clear that the real reasons for the decline of his business had nothing to do with his supply chain. By collecting data and displaying it in a Pareto chart, the manager could see which variables were having the most influence. In this example, parking difficulties, rude sales people and poor lighting were hurting his business most. Following the Pareto Principle, those are the areas where he should focus his attention to build his business back up.

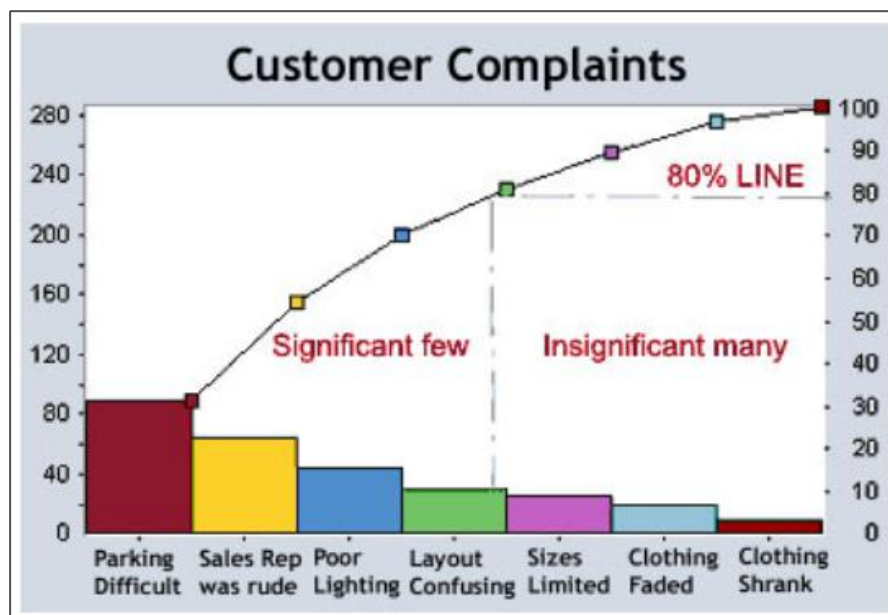


Figure 1.02 - A simple Pareto Chart

## Fishbone diagram.

A second tool available for use in quality circles and quality management more generally is the cause and effect or fishbone diagram. This tool was developed by Ishikawa and is therefore sometimes called an Ishikawa diagram. Below we reproduce an article written in 2009 by Kerri Simon, accessed from the website iSixSigma at:

<http://www.isixsigma.com/tools-templates/cause-effect/cause-and-effect-aka-fishbone-diagram/> (Permission to reproduce pending )

When utilising a team approach to problem solving, there are often many opinions as to the problem's root cause. One way to capture these different ideas and stimulate the team's brainstorming on root causes is the cause and effect diagram, commonly called a fishbone. The fishbone will help to visually display the many potential causes for a specific problem or effect. It is particularly useful in a group setting and for situations in which little quantitative data is available for analysis.

The fishbone has an ancillary benefit as well. Because people by nature often like to get right to determining what to do about a problem, this can help bring out a more thorough exploration of the issues behind the problem - which will lead to a more robust solution.

To construct a fishbone, start with stating the problem in the form of a question, such as "Why is the help desk's abandon rate so high?" Framing it as a "why" question will help in brainstorming, as each root cause idea should answer the question. The team should agree on the statement of the problem and then place this question in a box at the "head" of the fishbone.

The rest of the fishbone then consists of one line drawn across the page, attached to the problem statement, and several lines, or "bones," coming out vertically from the main line. These branches are labelled with different categories. The categories you use are up to you to decide. There are a few standard choices:

Service Industries (The 4 Ps)	Manufacturing Industries (The 6 Ms)	Process Steps (for example)
Policies	Machines	Determine Customers
Procedures	Methods	Advertise Product
People	Materials	Indent Purchase
Plant/Technology	Measurements	Sell Product
	Mother Nature (Environment)	Ship Product
	Manpower (People)	Provide Upgrade

Figure 1.03 - Suggested Categories for Fishbone Diagram

You should feel free to modify the categories for your project and subject matter.

Once you have the branches labelled, begin brainstorming possible causes and attach them to the appropriate branches. For each cause identified, continue to ask - "why does that happen?" and attach that information as another bone of the category branch. This will help get you to the true drivers of a problem.

Once you have the fishbone completed, you are well on your way to understanding the root causes of your problem. It would be advisable to have your team prioritise in some manner the key causes identified on the fishbone. If necessary, you may also want to validate these prioritised few causes with a larger audience.

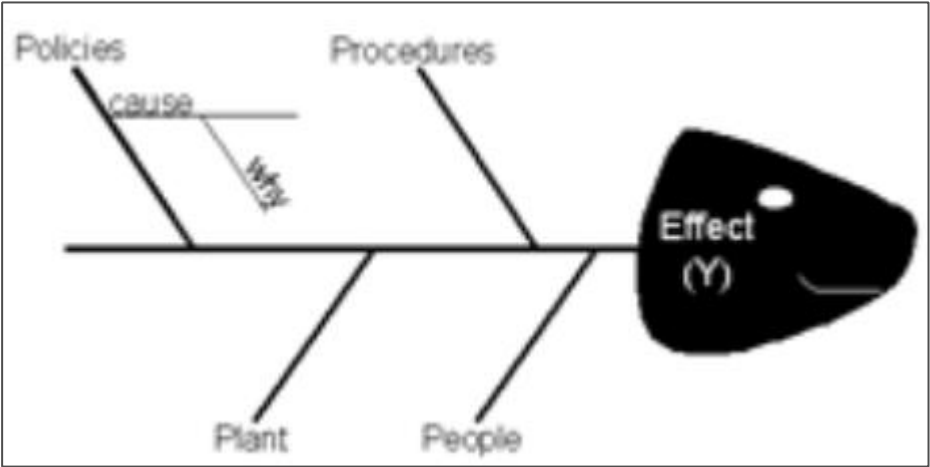


Figure 1.04 - Example Fishbone Diagram

Word and Excel. In order to prepare for the Group Learning space exercise below you should download a template, preferably using word.

## group learning activity .....

The article above has links to fishbone diagram templates. For your group learning exercise to reinforce your knowledge of this technique you should download a template and carry out the following steps

- Identify an effect you wish to analyse. This would be an issue you face at work or one in your own life. Place that in the template.
- Identify different categories of possible causes of this effect and insert them within the template in the category boxes. Here you can use some of the categories suggested within the article or choose your own.
- Try and identify different causes under each of your chosen categories and insert within the template.
- Submit your completed template to the group learning space as an attachment.

### Criticisms of Fishbone Diagrams

While the uses and benefits of fishbone diagrams are clear Kelemen (2003) reports that some have argued that they are too linear in approach and therefore do not take into account possible interrelationships between different causes e.g. there may be relationships between different categories of cause e.g. materials, methods and machines that are not captured by the diagram.

### Cause and Effect Diagram Training video

To further reinforce your understanding of the Ishikawa or fishbone diagram go to:

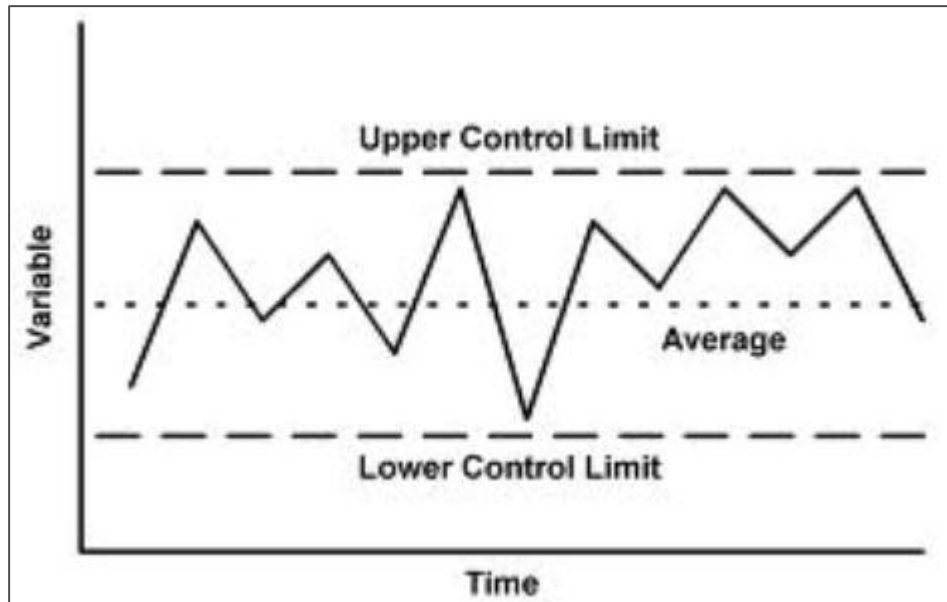
<http://www.velaction.com/cause-and-effect-fishbone-diagram/>

and watch the six minute video there entitled 'Cause and Effect Diagram Training video'. To find it you will need to scroll down almost to the end of the screen page. This video was produced by Jeff Hajek of Velaction Continuous Improvement. While no new major concepts are introduced by this excellent video I strongly recommend it to you to reinforce your understanding.

## Control Chart

A third tool is the Control Chart. These assist in identifying when variability in a process reaches beyond acceptable limits. Typically such charts consist of upper and lower control limits; measurements of a process or variable are inserted within the chart and the control limits enable one to identify when interventions are necessary to bring activity back within acceptable limits.

Here is a typical chart



**Figure 1.05 - Example Control Chart**

## Further information on Kaoru Ishikawa

Further information on Kaoru Ishikawa can be found in the article below downloaded from:

<http://www.skymark.com/resources/leaders/ishikawa.asp> ( Permission to reproduce pending )

Kaoru Ishikawa wanted to change the way people think about work. He urged managers to resist becoming content with merely improving a product's quality, insisting that quality improvement can always go one step further. His notion of company-wide quality control called for continued customer service. This meant that a customer would continue receiving service even after receiving the product. This service would extend across the company itself in all levels of management, and even beyond the company to the everyday lives of those involved. According to Ishikawa, quality improvement is a continuous process, and it can always be taken one step further. With his cause and effect diagram (also called the "Ishikawa" or "fishbone" diagram) this management leader made significant and specific advancements in quality improvement. With the use of this new diagram, the user can see all possible causes of a result, and hopefully find the root of process imperfections. By pinpointing root problems, this diagram provides quality improvement from the "bottom up." Dr. W. Edwards Deming --one of Ishikawa's colleagues -- adopted this diagram and used it to teach Total Quality Control in Japan as early as World War II. Both Ishikawa and Deming use this diagram as one the first tools in the quality management process. Ishikawa also showed the importance of the seven quality tools: control chart, run chart, histogram, scatter diagram, Pareto chart, and flowchart. Additionally, Ishikawa explored the concept of quality circles-- a Japanese philosophy which he drew from obscurity into world wide acceptance. Ishikawa believed in the importance of support and leadership from top level management. He continually urged top level



executives to take quality control courses, knowing that without the support of the management, these programs would ultimately fail. He stressed that it would take firm commitment from the entire hierarchy of employees to reach the company's potential for success. Another area of quality improvement that Ishikawa emphasized is quality throughout a product's life cycle -- not just during production. Although he believed strongly in creating standards, he felt that standards were like continuous quality improvement programs -- they too should be constantly evaluated and changed. Standards are not the ultimate source of decision making; customer satisfaction is. He wanted managers to consistently meet consumer needs; from these needs, all other decisions should stem. Besides his own developments, Ishikawa drew and expounded on principles from other quality gurus, including those of one man in particular: W. Edwards Deming, creator of the Plan-Do-Check-Act model. Ishikawa expanded Deming's four steps into the following six:

1. Determine goals and targets.
2. Determine methods of reaching goals.
3. Engage in education and training.
4. Implement work.
5. Check the effects of implementation.
6. Take appropriate action.

## **Genichi Taguchi**

The second of our Japanese writers on quality is Genichi Taguchi. Taguchi's main contribution was to push back consideration of issues of quality and reliability beyond the production process to the design stage. This of course is the stage at which the most fundamental issues of quality reside and where efforts must be focused if quality is to be designed into a product.

Taguchi approached quality issues in terms of the loss to society of poor quality from the time a produce is shipped. This includes costs falling upon the customer as a result of poor product performance and reliability. He developed a quality loss function, which demonstrated that reductions in variability introduced at the design or production stage led to a decrease in quality loss. This function allowed Taguchi to develop a means of evaluating design improvement proposals to identify whether the additional production costs they would generate would be justified by the resultant greater appeal of the product in the marketplace.

Further information on Taguchi's contribution to quality management is set out in the article below, downloaded from:

<http://www.skymark.com/resources/leaders/taguchi.asp> ( Permission to reproduce pending )

After WWII Japanese manufacturers were struggling to survive with very limited resources. If it were not for the advancements of Taguchi the country might not have stayed afloat let alone flourish as it did. Taguchi revolutionized the manufacturing process in Japan through cost savings. He understood, like many other engineers, that all manufacturing processes are affected by outside influences i.e. noise. However, Taguchi came up with methods of identifying those noise sources which have the greatest effects on product variability. His ideas have been adopted by successful manufacturers around the globe because of their results in creating superior production processes at much lower costs.

Here are some of the major contributions that Taguchi has made to the quality improvement world:

1. The Loss Function - Taguchi devised an equation to quantify the decline of a customer's perceived value of a product as its quality declines. Essentially, it tells managers how much revenue they are losing because of variability in their production process. It is a powerful tool for projecting the benefits of a quality improvement program. Taguchi was the first person to equate quality with cost.
2. Orthogonal Arrays and Linear Graphs - When evaluating a production process analysis will undoubtedly identify outside factors or noise that cause deviations from the mean. Isolating these factors to determine their individual effects can be a very costly and time consuming process. Taguchi devised a way to use orthogonal arrays to isolate these noise factors from all others in a cost effective manner.
3. Robustness - Some noise factors can be identified, isolated and even eliminated but others cannot. For instance it is too difficult to predict and prepare for every possible weather condition. Taguchi therefore referred to the ability of a process or product to work as intended regardless of uncontrollable outside influences as robustness. He was pivotal in many companies' development of products and processes that perform uniformly regardless of uncontrollable forces.

## Shigeo Shingo

As was the case with our earlier treatment of American writers on quality, our third Japanese writer is the least well known of the three. Shigeo Shingo focused on production issues and believed that statistical process control (SPC) and similar statistical control methods detect production errors too late. Instead he advocated a process of Poka-yoke or zero defects, which relies on the continuous monitoring of potential sources of errors in a production process. This, according to Shingo, generates much quicker feedback and corrective action in response to production errors. More information on Shingo can be gained by reading the brief tutorial notes below by John R Grout and Brian T Downs, downloaded from [http://facultyweb.berry.edu/jg\\_rout/tutorial.html](http://facultyweb.berry.edu/jg_rout/tutorial.html). Quotes from Shingo in the article are taken from Shingo 1986) ( Permission to reproduce pending )

Shigeo Shingo was one of the industrial engineers at Toyota who has been credited with creating and formalizing Zero Quality Control (ZQC), an approach to quality management that relies heavily on the use of poka-yoke (pronounced POH-kah YOH-kay) devices. Poka-yoke is Japanese for mistake-proofing. These devices are used either to prevent the special causes that result in defects, or to inexpensively inspect each item that is produced to determine whether it is acceptable or defective.

## Poka-yoke

A poka-yoke device is any mechanism that either prevents a mistake from being made or makes the mistake obvious at a glance. The ability to find mistakes at a glance is essential because, as Shingo writes, "The causes of defects lie in worker errors, and defects are the results of neglecting those errors. It follows that mistakes will not turn into defects if worker errors are discovered and eliminated beforehand". He later continues that "Defects arise because errors are made; the two have a cause-and-effect relationship. ... Yet errors will not turn into defects if feedback and action take place at the error stage". We suspect that Shingo and Deming would have a protracted discussion about whether workers or management are responsible for defects. No resolution of that issue is undertaken here.

An example cited by Shingo early in the development of poka-yoke shows how finding mistakes at a glance helps to avoid defects. Suppose a worker must assemble a device that has two push-buttons. A spring must be put under each button. Sometimes a worker will forget to put the spring under the button and a defect occurs. A simple poka-yoke device to eliminate this problem was developed. The worker counts out two springs from a bin and places them in a small dish. After



assembly is complete, if a spring remains in the dish, an error has occurred. The operator knows a spring has been omitted and can correct the omission immediately. The cost of this inspection (looking at the dish) is minimal, yet it effectively functions as a form of inspection. The cost of rework at this point is also minimal, although the preferred outcome is still to find the dish empty at the end of assembly and to avoid rework even when its cost is small. This example also demonstrates that poka-yoke performs well when corrective action involves trying to eliminate oversights and omissions. In such cases, poka-yoke devices are often an effective alternative to demands for greater worker diligence and exhortations to "be more careful."

An example of a poka-yoke device at General Motors (GM) was described by L J Ricard "GM's just-in-time operating philosophy", in{ RL - Y.K. Shetty and V.M. Buehler,( 1987)} "We have an operation which involves welding nuts into a sheet metal panel. These weld nuts will be used to attach parts to the car later in the process. When the panel is loaded by the operator, the weld nuts are fed automatically underneath the panel, the machine cycles, and the weld nuts are welded to the panel. You must remember these nuts are fed automatically and out of sight of the operator, so if the equipment jams or misfeeds and there is no part loaded, the machine will still cycle. Therefore, we have some probability of failure of the process. An error of this nature is sometimes not detected until we actually have the car welded together and are about to attach a part where there is not a nut for the bolt to fit into. This sometimes results in a major repair or rework activity."

"To correct this problem, we simply drilled a hole through the electrode that holds the nut that is attached to the panel in the welding operation. We put a wire through the hole in the electrode, insulating it away from the electrode so as it passes through it will only make contact with the weld nut. Since the weld nut is metal, it conducts electricity and with the nut present, current will flow through, allowing the machine to complete its cycle. If a nut is not present, there will be no current flow. We try to control the process so that the machine will actually remain idle unless there is a nut in place."

### **Three different types of inspection**

Shingo identified three different types of inspection: judgment inspection, informative inspection, and source inspection. Judgment inspection involves sorting the defects out of the acceptable product, sometimes referred to as "inspecting in quality." Shingo agreed with the consensus in modern quality control that "inspecting in quality" is not an effective quality management approach, and cautioned against it.

Informative inspection uses data gained from inspection to control the process and prevent defects. Traditional SPC is a type of informative inspection. Both successive checks and self-checks in ZQC are also a type of informative inspection. Successive checks were Shingo's response to the insight that improvements are more rapid when quality feedback is more rapid. Work-in-process undergoes many operating steps as it is moved through a manufacturing facility. Often inspections are conducted at intermediate stages in the process. Shingo's concern was that the inspections may not occur soon enough after production to give the best information necessary to determine the cause of the quality problem, so that it can be prevented in the future. By having each operation inspect the work of the prior operation, quality feedback can be given on a much timelier basis. Successive checks are having the nearest downstream operation check the work of the prior operation. Each operation performs both production and quality inspection. Effective poka-yoke devices make such an inspection system possible by reducing the time and cost of inspection to near zero. Because inspections entail minimal cost, every item may be inspected. Provided that work-in-process inventories are low, quality feedback used to improve the process can be provided very rapidly.

While successive checks provide rapid feedback, having the person who performs the production operation check their own work provides even faster feedback. Self-checks use poka-yoke devices to allow workers to assess the quality of their own work. Because they check every unit produced, operators may be able to recognise what conditions changed that caused the last unit to be

defective. This insight is used to prevent further defects. Self-checks are preferred to successive checks whenever possible.

Since the main difference between successive checks and self-checks is which work station performs the inspection, in this research we do not distinguish between the two types of informative inspection. Both successive and self-checks provide information "after the fact."

Source inspection determines "before the fact" whether the conditions necessary for high quality production exist. (Note that Shingo's use of the term source inspection is not the practice of having the buyer's representative inspect the quality of work-in-progress at the supplier's facility, which is also called source inspection.) Shingo writes, "It had dawned on me that the occurrence of a defect was the result of some condition or action, and that it would be possible to eliminate defects entirely by pursuing the cause." He further writes that "I realized that the idea of checking operating conditions before the operations rather than after them was precisely the same as my concept of source inspection."

With source inspection, poka-yoke devices ensure that proper operating conditions exist prior to actual production. Often these devices are also designed to prevent production from occurring until the necessary conditions are satisfied. This type of device is a "forcing function." The example from GM that "forces" the nut to be present before welding can occur is an example of source inspection.

Source inspection, self-checks, and successive checks are inspection techniques used to understand and manage the production process more effectively. Each involves inspecting 100 percent of the process output. In this sense, zero quality control is a misnomer. These inspection techniques are intended to increase the speed with which quality feedback is received. And although every item is inspected, Shingo was emphatic that the purpose of the inspection is to improve the process and prevent defects, and therefore is not intended to sort out defects (although in some cases that may also be an outcome) Shingo believed that source inspection is the ideal method of quality control since quality feedback about conditions for quality production is obtained before the process step is performed. Source inspection is intended to keep defects from occurring. Self-checks and successive checks provide feedback about the outcomes of the process. Self-checks and successive checks should be used when source inspection cannot be done or when the process is not yet well enough understood to develop source inspection techniques.

## **Zero Quality Control**

In Shingo's seminal book on ZQC, he criticised SPC and suggested that ZQC should supplant SPC as the preeminent tool for defect elimination in quality control. His main argument against SPC was that it is by nature an intermittent form of inspection, and therefore allows for some number of defects to occur. He further argued that SPC is designed to maintain the current level of defects, rather than to aggressively seek to eliminate them. In addition, Shingo claimed that "...a look at SQC methods as they are actually applied shows that feedback and corrective action - the crucial aspects of informative inspections - are too slow to be fully effective."

Given the fact that applications of SPC generally have substantial intervals between the taking of samples, it seems reasonable to argue that feedback will be faster with source inspection and informative inspection in ZQC. However, it is not clear that ZQC should be systematically faster than SPC at insuring corrective actions. Indeed, according to Shingo "Defects will never be reduced if the workers involved do not modify operating methods when defects occur." The willingness to take corrective action is a function of the attitude and commitment of both managers and workers, not an intrinsic attribute of a particular approach to quality management. Shingo's complaint about the actual implementation of SPC may also apply to ZQC.

A detailed, academic treatment of the relationship between SPC and ZQC is presented in working papers by Grout and Downs (1995). The essence of their conclusions is when used for informative

inspection,

1. ZQC is not as effective as SPC for defects that result from variance in measurement data
2. ZQC is a special case of SPC for defects that result from variance in attribute data.
3. ZQC's source inspection can be used effectively to eliminate mistakes and in conjunction with SPC to eliminate the recurrence of special causes

## **The New Western wave writers**

Kelemen (2003) identifies Phil Crosby and Tom Peters as two US writers who have been influential in developing the understanding of quality management beyond the concepts generated by the Japanese writers we have just finished looking at.

### **Phil Crosby**

Crosby defines quality as 'conformance to requirements', with the company concerned broadly having defined the requirements based upon its perceptions of its customers' requirements. Crosby sees quality as an inherent characteristic of a product rather than an added extra and is famous for his commitment to 'zero defects' and 'doing it right first time'. Probably his most famous book was that entitled 'Quality is Free', published in 1979. The title of his book reflected his view that efforts and resources expended in 'getting things right first time' would be paid for by the costs that would otherwise have been incurred by not getting it right first time i.e. costs of rework, scrap, compensating customers, loss of customers etc.

An overview of Crosby's life and work is given below in an article downloaded from the British Library Management and Business Studies Portal, which can be accessed at:

<http://www.mbsportal.bl.uk/tas ter/subjareas/busmanhist/mgmtt hinkers/crosby.aspx> ( Permission to reproduce pending )

Philip Crosby (1926-2001) wrote the best-seller Quality is Free at the time when the quality movement was a rising, innovative force in business and manufacturing. In the 1980s his consultancy was advising 40% of the Fortune 500 companies on quality management.

Crosby was born in West Virginia in 1926. A graduate of Western Reserve University, he saw service in the Korean War, and started his working life on the assembly line in 1952, becoming quality manager for Martin-Marietta where he developed the 'Zero Defects' concept. After working his way up, Crosby became Corporate Vice-President and Director of Quality at ITT for 14 years.

As a result of the interest shown in Quality is Free (1979), he left ITT to set up Philip Crosby Associates Incorporated and started to teach organisations quality principles and practice as laid down in his book. In 1985 his company was floated for \$30 million. In 1991 he retired from Philip Crosby Associates to launch Career IV Inc, a consultancy advising on the development of senior executives. Philip Crosby died in August 2001.

Quality, Crosby emphasised, is neither intangible nor immeasurable. It is a strategic imperative that can be quantified and put back to work to improve the bottom line. 'Acceptable' quality or defect levels and traditional quality control measures represent evidence of failure rather than assurance of success. The emphasis, for Crosby, is on prevention, not inspection and cure. The goal is to meet requirements on time, first time and every time. He believes that the prime responsibility for poor quality lies with management, and that management sets the tone for the quality initiative from the top.

Crosby's approach to quality is unambiguous. In his view, good, bad, high and low qualities are meaningless concepts, and the meaning of quality is 'conformance to requirements'. Non-conforming products are ones that management has failed to specify or control. The cost of non-conformance equals the cost of not doing it right first time and not rooting out any defects in processes.

'Zero defects' does not mean that people never make mistakes, but that companies should not begin with 'allowances' or sub-standard targets with mistakes as an in-built expectation. Instead, work should be seen as a series of activities or processes, defined by clear requirements, carried out to produce identified outcomes.

Systems that allow things to go wrong - so that those things have to be done again - can cost organisations between 20% and 35% of their revenues, in Crosby's estimation.

## **Quality Is Free- the 14 Steps**

His seminal approach to quality was laid out in Quality is Free and is often summarised as the Fourteen Steps.

1. **Management Commitment:** the need for quality improvement must be recognised and adopted by management, with an emphasis on the need for defect prevention. Quality improvement is equated with profit improvement. A quality policy is needed which states that '... each individual is expected to perform exactly like the requirement or cause the requirement to be officially changed to what we and the customer really need.'
2. **Quality Improvement Team:** representatives from each department or function should be brought together to form a quality improvement team. These should be people who have sufficient authority to commit the area they represent to action.
3. **Quality Measurement:** the status of quality should be determined throughout the company. This means establishing quality measures for each area of activity that are recorded to show where improvement is possible, and where corrective action is necessary. Crosby advocates delegation of this task to the people who actually do the job, so setting the stage for defect prevention on the job, where it really counts.
4. **Cost of Quality Evaluation:** the cost of quality is not an absolute performance measurement, but an indication of where the action necessary to correct a defect will result in greater profitability.
5. **Quality Awareness:** this involves, through training and the provision of visible evidence of the concern for quality improvement, making employees aware of the cost to the company of defects. Crosby stresses that this sharing process is a - or even - the - key step in his view of quality.
6. **Corrective Action:** discussion about problems will bring solutions to light and also raise other elements for improvement. People need to see that problems are being resolved on a regular basis. Corrective action should then become a habit.
7. **Establish an Ad-hoc Committee for the Zero Defects Programme:** Zero Defects is not a motivation programme - its purpose is to communicate and instil the notion that everyone should do things right first time.
8. **Supervisor Training:** all managers should undergo formal training on the 14 steps before they are implemented. A manager should understand each of the 14 steps well enough to be able to explain them to his or her people.

9. Zero Defects Day: it is important that the commitment to Zero Defects as the performance standard of the company makes an impact, and that everyone gets the same message in the same way. Zero Defects Day, when supervisors explain the programme to their people, should make a lasting impression as a 'new attitude' day.
10. Goal Setting: each supervisor gets his or her people to establish specific, measurable goals to strive for. Usually, these comprise 30-, 60-, and 90-day goals.
11. Error Cause Removal: employees are asked to describe, on a simple, one-page form, any problems that prevent them from carrying out error-free work. Problems should be acknowledged within twenty-four hours by the function or unit to which the problem is addressed. This constitutes a key step in building up trust, as people will begin to grow more confident that their problems will be addressed and dealt with.
12. Recognition: it is important to recognise those who meet their goals or perform outstanding acts with a prize or award, although this should not be in financial form. The act of recognition is what is important.
13. Quality Councils: the quality professionals and team-leaders should meet regularly to discuss improvements and upgrades to the quality programme.
14. Do It Over Again: during the course of a typical programme, lasting from 12 to 18 months, turnover and change will dissipate much of the educational process.

It is important to set up a new team of representatives and begin the programme over again, starting with Zero Defects day. This 'starting over again' helps quality to become ingrained in the organisation.

### **Quality Without Tears- the Quality Vaccination Serum**

In his 1984 book, *Quality Without Tears*, Crosby developed the idea of a Quality Vaccination Serum with the following ingredients:

1. Integrity for the Chief Executive Officer, all managers and all employees.
2. Systems for measuring conformance, and educating all employees and suppliers so that quality, corrective action and defect prevention become routine.
3. Communications for identifying problems, conveying progress and recognising achievement.
4. Operations so that procedures, products and systems are proven before they are implemented and are then continually examined.
5. Policies that are clear, unambiguous and establish the primacy of quality throughout the organisation.

### **The Eternally Successful Organisation - five characteristics of a successful organisation**

In *The Eternally Successful Organisation* (1988), a broader approach to improvements is reflected, and Crosby identified five characteristics essential for an organisation to be successful:

1. People routinely do things right first time.
2. Change is anticipated and used to advantage.

- 2.
3. Growth is consistent and profitable.
4. New products and services appear when needed.
5. Everyone is happy to work there.

Throughout his work, Crosby's thinking was consistently characterised by four absolutes:

1. The definition of quality is conformance to requirements.
2. The system of quality is prevention.
3. The performance standard is zero defects.
4. The measurement of quality is the price of non-conformance.

The major contribution made by Crosby is indicated by the fact that his phrases 'zero defects', 'getting it right first time', and 'conformance to requirements' have now entered not only the vocabulary of quality itself, but also the general vocabulary of management.

When Crosby's name is not mentioned in the very same sentence as the best-known quality thinker, Deming, then it would certainly be mentioned in the next. Crosby's practical and easy-to-read books on quality became - and remain - bibles to many, demystifying some of the jargon formerly associated with quality. His timing was perfect for the quality movement and his writing has marketed quality to a wide audience.

## Tom Peters

The second of our 'new western wave' writers and the last writer we consider in this lesson is Tom Peters - probably the one whose writings have had most popular appeal. An excellent overview of Peters and his writings is given in a BBC world service programme, which you can download at the following website address:

<http://www.bbc.co.uk/worldservice/learningenglish/work/handy/peters.shtml> ( Permission to reproduce pending )

If you are unable to access that or would like to reinforce your understanding of the programme by reading as well as listening, we reproduce the transcript of the programme below.

The Economist Magazine once wrote the following description of our next management guru - Tom Peters - giving one of his lectures: "Striding urgently back and forth," it wrote, "bellowing and bantering, he nearly achieves the difficult feat of making management seem exciting."

Tom Peters is probably the most charismatic performer of the twelve gurus on our list. He is passionate, evangelical almost, in his concern to put some sense and excitement into our organisations. He gives over 100 lectures a year and travels so much that he called his first horse Frequent Flyer. The passion and commitment carries through to his books, which have titles like 'Thriving on Chaos' and 'The Pursuit of Wow'. Tom's writing and lecturing is rooted in everyday experience. Nowadays he creates no formal theories but lots of maxims. His stories are parables, pregnant with messages for those caught in the entrails of organisations. He elevates common sense to a principle of action. He exhorts us, pleads with us, even, to make the most of our lives and our work and to make it easier for others to do the same. He regularly lectures to packed halls of one thousand or more managers who listen enthralled for a whole day while he castigates them for cluttering up their organisations with rules and procedures that breed distrust and stop their people using their initiative. No wonder that Newsweek magazine once described him as the best friend

and worst nightmare of business. Tom Peters is also charmingly honest about himself.

Here's his own summary of his career: "I hate labels. OK, for a while I was "the excellence guy." But - I'd like to think - you can't categorize me. I've done my "excellence thing" and my "customer thing." And my "women's thing." And my "design thing." And so on. Pin me down if you will. I bet you can't."

## **In Search Of Excellence**

Tom Peters, in short, is a breath of fresh air in the overheated, fetid jungle of management thinking. That said, not all his ideas turn out to be right. His first big book, written with his McKinsey colleague Robert Waterman, was 'In Search Of Excellence'. It came out in 1982. Written in his breezy upbeat style it sold millions. It put a management book on the best seller list for the first time ever. Most importantly, it made management ideas a serious topic of conversation in organisations. And, of course, it made Tom a fashionable guru, the first time I heard the word used of a management thinker.

The book looked at 43 successful companies and sought to analyse the reasons for their success over twenty years. It was a neat idea. A book that sought to learn from the best rather than preach to them from theory. A book that looked for the good news rather than the bad. A book on management that relied on stories more than statistics and charts. Peters and Waterman came up with seven checkpoints for analysis, what they called the Seven S Framework; and eight characteristics of excellence. Any ideas?

The excellent companies, they said:

- had a bias for action, they were do-ers
- they were close to the customer; they understood their clients' needs
- they had autonomy and entrepreneurship, they were independent and innovative and believed in productivity through people; the staff mattered
- they were hands-on and value-driven; they got on with the job
- stuck to the knitting, they only did what they did best
- had a simple form and lean staff, no unnecessary divisions
- and had a tight-loose structure, tight control where it mattered, loose where they gave people autonomy.

All good sense, you might say, but wonderfully new at the time. I remember picking the book up before it became famous and hugging it to myself, thinking that I had found the secrets of management and hoping that I could do something with it before it became common knowledge.

The trouble was that the 43 excellent companies did not stay excellent for long. Many, including the star of the book, the computer company IBM, faltered soon after. Some, like the cheap airline People Express, went bust. Peters apologized in his later books. 'There are no excellent companies' he said then. I told him that he was the first writer, even perhaps the first person, to make a second small fortune by apologizing for getting it wrong the first time. But, of course, he wasn't entirely wrong. The eight characteristics may not be enough to guarantee success, but they point to the way modern companies need to be managed. And the Seven S Framework that Peters and Waterman developed with Richard Athos and Richard Pascale, two academic colleagues, remains a useful tool for analysis of any organization.

## **The Seven S Framework**

So what about these Seven S's - the checkpoints for analysing the health of a company? Well, they stand for :

Strategy, Structure and Systems, the so-called hard S's, and the soft S's of Staff, Style, Shared Values and Skills.

These all need to be in harmony with each other. There's no use inventing a great new strategy if you do not have the skills of the staff to implement it.

Obvious again, like all important insights, but the check list helps to remind you not to get carried away without pausing to check that all the ingredients for your journey are in place.

It is a tribute to the influence of Peters and Waterman that the concepts of their book have now become part of the common language of management.

## **Thriving on Chaos**

Peters, however, was finished with semi-academic check-lists and recipes. He had come to believe that the hierarchies of the big organisations were what were holding them back. His next huge bestseller 'Thriving on Chaos', preached revolution and the one after that 'Liberation Management' is a celebration of the coming death of middle management. He does not mince his words "Middle Management as we have known it since the railroads invented it after the Civil War is dead. Therefore middle managers as we have known them are cooked geese." Peters sought to put people, creativity, technology and speed at centre stage. Crazy times, he proclaimed, call for crazy organizations.

## **WOW**

Tom Peters, if you've just tuned in, is one of the management thinkers on my guide to the gurus of management from the BBC and I'm Charles Handy, one of the gurus myself. Tom's answer to what he saw as the deadening effect of middle management was WOW, spelt in big capital letters: W.O.W. By WOW he meant 'stepping out and standing out', both individuals and corporations, from the growing crowd of lookalikes. 'In short,' he said, 'it is crucial to be different as well as excellent, or you will end up as an excellent corpse.' Going small was one key. Deconstruct the company, he advised, eliminate bureaucratic structures and subdivide into 'spunky units' with their own personalities and disrespectful chiefs. The recommendations pile up: hire curious people, go for youth, teach and measure curiosity, support off-beat education, give people generous sabbaticals and insist that everyone take vacations. Above all, make it fun.

It was not, however, going to be enough to re-energize the corporation and the ranks of middle managers. The whole world of work, he realised, was changing. 90 per cent of jobs, he claims, are likely to be completely transformed or eliminated in the next ten to twenty years. We shall, each of us, have to take control of our own destiny and look after ourselves. Or, as he puts it: "In a world where success depends upon brainpower and curiosity, the self-managed growth of the individual becomes paramount, and the wise corporation wittingly turns itself into a tool for fostering individuals' growth."

So Tom Peters wrote a series of books on the new world of work with titles like 'Brand You 50', 'The Professional Service Firm 50', and 'The Projects 50'. In the new Peters style, there is no great theory or model here, but 50 good ideas in each book. The titles are the clue to his thinking. We shall each have to brand ourselves, to create a separate and different reputation for our work. Building on that, we need to behave like a professional service firm with our own standards of excellence, codes of conduct and values.

The firms that remain will need to turn every task into a project an identifiable job of work with a



beginning and an end. They must then allow individuals to assign themselves to those projects, rather as consultancy firms already do. As giant firms like computer software company EDS have demonstrated, there is no limit to the size of the project-organized business. Peters comes back, again and again, to his message that business is 90 per cent people and only ten per cent technology. And more and more of those people are going to be women.

In the new world of work, he believes, the attitudes that most women come with will be an asset. They are better at building relationships and at the softer S factors in Peters' S Framework, the style, the staff and the shared values. As a result women are often better team players than men. And that's going to matter hugely as more and more organizations become collections of projects with self-nominated teams.

## **Innovation**

Peters' most recent campaign is designed to foster innovation. His book, 'The Circle of Innovation', has his now familiar list of zany chapter titles - 'Create Waves of Lust', 'We are All Michelangelos' and 'You Can't Live Without an Eraser.' We must, he says, reach beyond re-engineering, total quality management, empowerment and other recent management fads to constant re-invention and even revolution.

Peters has this huge belief in our human capacity. He doesn't accept "...this notion that there's a large share of humanity that wants to come into work and face a predictable environment."

He talks about the chain-store company Nordstrom with its many thousands of employees. What's special, he says, about that company is the ordinary people who seem to behave in extraordinary ways. ... They are given inordinate leeway... to do whatever it takes to thrill the customer.

Tom Peters is often the first person who comes to mind when anyone mentions management gurus. But, in some ways, he is very different from all the others. It isn't just his colourful style, his flair for self promotion or his frenetic energy on the platform. Someone once calculated that he walked 7 miles during the course of a lecture. He is not a philosopher or a social historian like Peter Drucker. He no longer has any all-embracing theories of the world of organizations nor any fancy formulas for change. What he does have is a knack for getting under an organization's skin. He is just as likely to interview the chauffeur as the chief executive. His book 'Liberation Management' is part-dedicated to two workers in a heavy manufacturing plant who totally changed the way they work. He earths his ideas in the humdrum reality of life and expresses them in equally earthy language.

His books and his seminars gush with ideas and froth with examples. I relish them myself and, while I discard some of his stuff as over-the-top or unworkable, I have always been inspired by his unconventional way of looking at the world and by his often extraordinary insights. Let him sum up his contributions himself. He says "I now find myself with ten books in my quiver. Some stuff is wrong. Some stuff is right. I hope all of it is provocative."

You can get an insight into Tom Peter's style - and his thoughts on leadership by looking at the brief video available at:

<http://www.youtube.com/watch?v=v-DYHdxcAw8>

## group learning activity.....

To further your learning from this lesson, choose one of the quality management experts we have discussed. In just 300 words summarise what you consider to be their main contribution to the development of quality management. Then discuss in a further 200 words at most the lessons that an organisation with which you are familiar might learn from their work.

Post your work on the group learning space.