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DAY 7:

TARGETS, APPRAISALS, PERFORMANCE INDICATORS, QUOTAS, SPECIFICATIONS, PAY FOR PERFORMANCE, FINANCIAL INCENTIVES, LEAGUE TABLES and OTHER OBSTACLES

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(9.00am – 1.00pm; 2.00pm – 6.00pm)

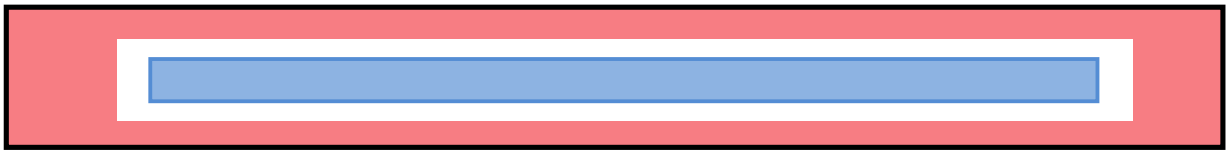
Introduction (p 1)
Three kinds of numerical targets (p 3) — *begins Activities 7-a and 7–b*

Performance Indicators (p 6) — *contains Pause for Thought 7-c*
"Just do it"? (p 7)
Many more true stories (p 9) — *continues Activities 7-a and 7–b*
Annual performance reviews; Key performance targets (p 9); My monthly reports (p 10)
Two little stories from the construction industry (p 10) and two from the aircraft industry ... (p 11)
... and no less than five from the railways (p 11); More "spiky chairs" (p 12)
West Midlands Employment Service (p 12); How to rise up the OFSTED league tables (p 13)
Alarming; A pharmaceutical company; Three from BDA conferences (p 14)
"BT staff phoned each other to hit Whitehall targets"; Reducing accidents? (p 15)
A red-beads foreman (p 15); How to please the boss; "We do not have targets" (p 16)
Activity 7–d (p 18 *[WB 108]*)

The thirteenth obstacle (p 19)
Activity 7–e (p 20 *[WB 109]*)

Pause for Thought 7–f (p 23 *[WB 112]*)
Pause for Thought 7–g (p 24 *[WB 113]*)
Pause for Thought 7–h (p 25 *[WB 114]*); A cutting process (p 26)

Introduction to the Major Activity: The Obstacles to the Transformation (p 27)



Reread page 27.
Major Activity 7–i (p 28 *[WB 115]*); 1. Hope for instant pudding; 2. The supposition that solving problems, automation, gadgets, and new machinery will transform industry (p 28 *[WB 115]*)

3. Search for examples (p 29 *[WB 116]*)
4. "Our problems are different." (p 29 *[WB 116]*)
5. Obsolescence in Schools (p 30 *[WB 117]*)
6. Poor teaching of statistical methods in industry (p 30 *[WB 117]*)
7. Use of … tables for acceptance (p 31 *[WB 118]*)
8. "Our Quality Control Department takes care of all our problems of quality." (p 31 *[WB 118]*)
9. "Our troubles lie entirely in the workforce." (p 32 *[WB 119]*)
10. False starts (p 32 *[WB 119]*)
11. "We installed quality control." (p 33 *[WB 120]*)
12. The unmanned computer (p 33 *[WB 120]*)
13. The supposition that it is only necessary to meet specifications (p 34 *[WB 121]*)
14. The fallacy of zero defects (p 34 *[WB 121]*)
15. Inadequate testing of prototypes (p 35 *[WB 122]*)
16. "Anyone that comes to try to help us must understand ... ." (p 35 *[WB 122]*); "Out-of-hours" note (p 36)

DAY 7: TARGETS, APPRAISALS, PERFORMANCE INDICATORS, QUOTAS, SPECIFICATIONS, PAY FOR PERFORMANCE, FINANCIAL INCENTIVES, LEAGUE TABLES AND OTHER OBSTACLES

For those who attended one of Dr Deming's four-day seminars but arrived with little prior knowledge of what he would be saying (as was the case with most of those delegates in London in July 1985), his verbal onslaughts against performance appraisals and numerical targets generally hit them as being among the most controversial aspects of his teaching. Also, to those many whose "way of life" regarding quality was all about meeting specifications, requirements, standards and so on, his insistence on their inadequacy would be greeted with some shock and disbelief. But, as pointed out long ago (Day 1 page 27), "Deming *is* Different". (However, he did always come up with good reasons for being different!)

In fact, these topics and others in today's title are all strongly interrelated. As an obvious example, the appraisal of your performance often includes how you have measured up against various targets (objectives, requirements, goals) that were set for you a year previously—officially with your agreement, I imagine (as if you had any option).

Some 35 or so years later, our situation has become both paradoxical and self-contradictory. On the one hand, numerous people now have some considerable awareness of the shortcomings of employing such methods and techniques in management and, indeed, in government—particularly, of course, the majority who are at the *receiving* end of these approaches. Many now speak passionately on the dangers of e.g. the "target culture" and performance-related pay: we have just seen examples toward the end of Day 6. And it seems to me that the large majority of these are not bad, lazy people who are primarily interested in idling away their time and getting away with the absolute minimum possible effort and involvement in their work. From what I have seen and heard, far more often they are those who are—or sadly, in some cases, *were* (past tense)—wholly committed to their work, wanting nothing better than to be able to do a great job for their organisations and their customers. Instead, they are increasingly frustrated by the obstacles and *dis*incentives created by such "management techniques" as just mentioned, having found that they only serve to *prevent* them from doing that great job as opposed to providing anything supportive.

Why do these techniques have such harmful effects? If you worked successfully at the First Project on Days 4 and 5, you are already well able to produce answers to that question. But cynics, because of their negative view of "theory", might try to argue that those answers are "merely theoretical". Very well, if they instead need practical examples, let them read and argue against the proliferation of short true stories already commenced toward the end of Day 6 and the many more which continue here, starting on page 9.

Yet managements and governments still actively persist in using these things, despite both the theory and the facts.

You will recall that we have more than touched upon several of these topics previously; e.g.

1. performance appraisal directly through the third Deadly Disease and indirectly through Point 12 (pride of workmanship);
2. numerical targets directly through Point 11 and indirectly through the fifth Deadly Disease (dependence on only visible figures); and
3. the limited nature of judging quality or performance in terms of merely satisfying requirements or reaching standards, specifications or targets through our discussions on such matters as continual improvement and delighting customers as opposed to merely satisfying them.

But these are such crucial topics that we should take a further look at them. And there are yet more.

"The supposition that it is only necessary to meet specifications" is the 13th in an even longer "list" from Dr Deming than the 14 Points: one of "a whole parade of obstacles", as he expresses it on *Out of the Crisis* page 107[126]. I have treated these "obstacles" rather briefly in *DemDim* (pages 52–55), and so I need to say more about them here. On that same page in *Out of the Crisis* Deming pointed out that "most of them are easier to cure than the Deadly Diseases"—so, at early stages of trying to figure out useful changes that could be made in your organisation, perhaps some of these might be worth your consideration. The Obstacles are generally more focused than the very wide-ranging 14 Points and the Deadly Diseases, which is perhaps why they are not quite so "famous" as the Points and Diseases. However, because of that tighter focus, they may be found easier to understand and to deal with. You will work on these "Obstacles to the Transformation" as today's Major Activity.

However, before that, we shall spend time on the particular Obstacle just cited. I've already hinted at the reason. Probably more than any of the other Obstacles, the one concerning the meeting of specifications challenges what is still very common practice, making it worth closer attention. Also, although one might imagine that this topic of "meeting specs" is primarily appropriate for manufacturing, some simple changes of words soon make clear that it has far wider relevance. Deming's implication that conformance to specifications is an inadequate judgment of quality is important way beyond just manufacturing contexts.

But the argument can be taken even further, and this is what we shall show—or, indeed, *you* will show—in a sequence of Activities and Pauses for Thought immediately preceding today's Major Activity. (These Activities and Pauses for Thought are mostly "red", i.e. there is continued discussion immediately following within the main text rather than in the Appendix.) The context there is not manufacturing, but again the argument is relevant both to manufacturing and much more widely.

Much of our work in the course so far has contained a mixture of things to start doing and things to stop doing—and *why*. Our study of the 14 Points and Deadly Diseases in the First Project was, of course, a substantial example. But today we concentrate almost entirely on things to *stop* doing. In contrast, the remainder of the course mostly turns attention onto what to do instead.

Today's study is, in essence, structured in four parts. The work just described on conformance to specifications is the third of those four parts, and the Major Activity on the Obstacles is the final part. Returning to this first part, here we have rather a mixture. After this introduction, we first expand upon our previous considerations of targets, i.e. the "numerical goals" of Point 11, with some clarifications of what kinds of goals and targets are the real menace, and why. There is then some discussion on the related matter of Performance Indicators. After that, I briefly look ahead and suggest some "Do"s and "Don't"s for when the time comes to start actively thinking of putting theory into practice.

Finally, I'll say a little about the second of the four parts, which continues the series of short true stories that began toward the end of Day 6. There is rather more involved with these true stories than just browsing through them! As with the true stories on Day 6, the stories here provide material that you can and should use in a number of today's Activities. You will meet Activities 7–a and 7–b (pages 4 and 5 *[WB 105 and 106]*) before reaching today's stories and so you should use yesterday's stories, along with any of your own, when initially working at those two Activities. But, later on, you should then return to these Activities and add to what you will already have written, now using some of today's new material. While reading through today's stories you should also be recording some thoughts in advance for Activity 7–d. Take a quick look at that now: it's on page 18 *[WB 108]*. It's up to you as to whether you choose to read through the whole batch of stories first and then go back to work on the Activities, or do both simultaneously. Do whichever comes more naturally to you. But, in either case, and very importantly, also note down your own experiences that any of these true stories bring to your mind.

I gave you a relatively easy time yesterday. But today definitely needs a full day's work!

THREE KINDS OF NUMERICAL TARGETS

Let's spend a little time revisiting those massive issues of targets and appraisals. First, let's be sure of what we are talking about. *All* "targets"? *All* "appraisals"? Well, no.

First, a reminder about appraisals. I've pointed out on Day 5 page 22 *[WB 90]* that the term "performance appraisal" means different things to different people. If it is really true that an organisation's "performance appraisal" procedure is genuinely designed for coaching and help rather than for judgment, then fine—except, as I also implied there, in order to avoid confusion maybe it ought to be called something different.

In this section we shall concentrate on numerical targets. However, as already pointed out in the second paragraph of page 1, there is a strong link between them and appraisals since the latter often involve the setting of targets and then the judgment of success or failure depending on whether or not these targets are subsequently met.

Concerning numerical targets, I was indebted to my good friend, the late John Dowd, for pointing out to me over 35 years ago that there are three types of management figures which may be referred to as "numerical targets". They may *look* the same but they need to be treated very differently. The three are:

1. facts of life;
2. numbers for guidance and help; and
3. numbers for judgment, punishment, reward, etc.

All three terms mean what they say! A "fact of life" means something that is *known* to be true—it's not a matter of opinion, it's not a matter of argument. Probably unpleasant, but *true* nonetheless! So, for example, suppose your organisation has borrowed a lot of money from a bank and is told that, unless it reaches a certain profit figure by the end of the year, the bank will close it down. If this bank is known to be one that keeps its promises, that profit figure *is* a fact of life, and you would be foolish to treat it in any other way.

"Numbers for guidance and help" should also be what they say. They may include predictions, forecasts, anything to help you decide priorities, numbers which will help you to understand what is needed from you elsewhere in the company and by its customers. But note again: "for guidance and help", *not* "for judgment, punishment, reward", for that's the third category. A number in the third category is not used for the purpose of the second category—except perhaps in the sense of guiding and helping you to survive in a bad management environment!

What I mean by the second category is guidance and help for you to understand how to try to contribute well to the organisation's and/or your team's needs and objectives. Further, it can sometimes be useful for individuals to set *themselves* "numbers for guidance and help" (indeed, I have done so myself), especially e.g. when there are deadlines that just have to be met. But then that's the individual's *own* choice on how to proceed, not somebody else's—and that's a very different matter. In the third category, it is the *numbers* themselves that *become* the objectives. For, by definition, reward or punishment will ensue depending on whether or not those numbers are met. They include the numerical targets set in your annual performance review. They include commission steps for salespeople (e.g. Gallery Furniture's 10% commission for weekly sales of $7,000 or above, but only 5% commission for $6,999.99 or less). They include "work standards" such as described on Day 5 page 27 *[WB 95]*: examples are the number of customers that supposedly should be dealt with per hour in, say, a bank or a supermarket; or the number of central heating boilers to be serviced or printers to be repaired in a day by an engineer. It should be noted that many types of number (including some of those just mentioned) *could* be in either Category 2 or in Category 3. Which it is depends upon the style of management.

Of course, Dr Deming was not criticising Category 2; and facts of life *are* facts of life (c.f. his reference to the bank account in the final Deadly Disease (Day 5 page 26 *[WB 94]*). His frequent "verbal onslaughts" were against Category 3: i.e. against bad management style rather than against the numbers themselves.

> Incidentally, in view of another fact of life: *variation*, one might sometimes make a case for providing a "target *range*" rather than a single target *number*. But that still doesn't solve the problem of bad management style, since then that range would be treated as "specifications" (i.e. "OK" inside and "not OK" outside); and, as you already know, we shall be spending time on that particular problem a little later today.

Activity 7–a is also on Workbook page 105.

ACTIVITY 7–a

Think of a few further examples of the three kinds of numerical targets. With Categories 2 and 3, mention features of the corresponding management style as appropriate. There may be some examples in your own organisation that you could include: they may affect you personally, or your department, or elsewhere. You may also recall some from the "True Stories" on Day 6 and there may well be yet more for you to insert as you read through the further such stories beginning on page 9.

Category 1—facts of life:

Category 2—numbers for guidance and help:

Category 3—numbers for judgment, punishment, reward:

(There is a little discussion on Appendix page 31.)

Activity 7–b is also on Workbook page 106.

ACTIVITY 7–b

Remind yourself (e.g. by looking back at what you've written about Point 11 and the 3rd and 5th Deadly Diseases (on Day 5 pages 10–11, 22–23 and 26–27 respectively) of some of the reasons why Category 3 is incompatible with the Deming philosophy. Again include specific examples from the true stories on Day 6 and be ready to add more here as you read through today's further true stories on pages 9 –18.

PERFORMANCE INDICATORS

Targets, appraisals, pay for performance, league-tabling, and all the rest: one aspect common to them all is the use of "performance indicators". A target is set for a performance indicator. Your appraisal depends on your performance as measured by one or more performance indicators, including comparisons with the targets set for them a year ago. The position in a league table depends on a performance indicator, and so of course does the amount of pay for performance. Several of our two batches of true stories are concerned with performance indicators that have been particularly poorly thought out, so that supposedly increased "performance" actually has very undesirable consequences.

So a rather severe trouble is that performance indicators do not indicate performance very well. Recall from the *Deadly Diseases* video which hopefully you were able to watch on Day 5:

"Pay for merit; pay for what you get; reward performance. Sounds great. Can't be done."

There are two particular problems**.**

Pause for Thought 7–c is also on Workbook page 107.

PAUSE FOR THOUGHT 7–c

Can you think what those two problems might be? You may find a clue in the above introduction.

- First, surely the *actual* "performance" of an individual or an organisation is usually extremely multi-faceted. Even the performance of *machines* can be multi-faceted, let alone performance of *people*. Yet any performance indicator is ***a*** performance indicator—***singular***. Sometimes an attempt is made to invent a performance indicator which is a *combination* of other performance indicators—but that would still be just *one* combination out of infinitely many that could be suggested.
- Second, a performance indicator, if it can indicate performance at all, can only do so in a very local sense: what is the performance *here*, or by *this person*? It cannot relate to the *system* within which "here" or "this person" exists. Yet we have surely agreed by now that it is the system which is responsible for the large majority of "performance"—with figures such as 85%, 94%, 98% having been suggested. The performance indicator shows nothing of how you or your department have been helped or hindered by what is happening elsewhere, nor how what you do helps or hinders others.

The conclusion is surely that, quite simply, performance indicators cannot do what their name implies, except in the most primitive and simplistic of ways. Therefore all that depends upon them rests on extremely thin ice. So there's a thought about those issues in Dr Deming's teaching which some people regard as "controversial": maybe they shouldn't be regarded as so controversial after all.

"JUST DO IT"?

At this time, as we have moved into the second half of the course, I think I can anticipate what some students may be beginning to think. You are learning about all this wonderful theory (and it is!): you are learning about what is good and what is bad—and, importantly, *why* it's good or *why* it's bad. And you know that the purpose of the theory is to guide better practice. But *how* can it be done? Even if you are in a senior management position, what do *you* do—what *can* you do—after Day 12? Will you be left high and dry with all these marvellous new ideas but with no guidance on how to set about things?

No, you won't. Firstly, Day 12 will hopefully provide much helpful general learning and guidance on how to start moving the theory into practice. But, more important than that, in my opinion the natural sequel to this course was already written and published in 1998—but not by me. Sadly, the author was destined never to know that I would be recommending it in this way. That sequel is Peter Scholtes's invaluable *The Leader's Handbook*, fortunately completed before he suffered a serious stroke. He struggled valiantly to overcome the problems with which that left him but, following more strokes, Peter eventually passed away in 2009—a tragic loss. *The Leader's Handbook* comprises some 400 pages of masterly practical advice, activities and exercises which will prove ideally suited to those who successfully complete this course and then need genuine and wise help and guidance on putting Deming's management theory into practice.

Let me return for a moment to Mack's presentation yesterday. Back in 1991, when first hearing him tell his story of Gallery Furniture, there was one particular moment when my eyebrows shot up in surprise. That was when, regarding his doubts about replacing the commissions system by salaries, both Ed Baker and Dr Deming urged him to "just do it" (Day 6 page 11). That advice sounded crazy to me! And so, I still believe, it would be—in the large majority of circumstances.

But Mack was not in that "large majority of circumstances". His situation was far more favourable than most. For a start, he was (and still is at this time of writing, well over 25 years later) the undoubted boss of Gallery Furniture—recall him saying on Day 6 page 10: "Top Management (which was Me)"! Next, Gallery Furniture was what we refer to as an SME (small or medium-sized enterprise): it was of a size where Mack knew personally every one of his employees—a tremendous advantage. Third, he was already a very rare kind of boss in the sense that, not only had he heard of Deming's work, he had already been enormously active in learning about it by his repeated attendance at Dr Deming's four-day seminars and other related events. Fourth, he had already made substantial strides in turning his company toward the direction of the Deming philosophy and away from what he had learned at the University of Texas (and was generally being taught in other business schools and MBA courses—and still largely is).

And, of course, all this and more was already known to Ed Baker and Dr Deming when they gave him that advice. So the advice was not as flippant as it might have sounded: it was given with genuine and detailed knowledge about Mack and his particular situation. Mack had already laid the foundations.

But, in just about any other circumstances, such advice would have been dangerous. And so I am including this mention here because I don't want you or anyone else to be misled by those three little words. You and almost everybody else are in nothing like Mack's advantageous situation—which, of course, he had largely created for himself by his own good sense and ambition and enthusiasm plus, in particular, his unusual willingness as the head of a company to learn and to keep on learning.

You see, I have known people who, with all best intentions (and, indeed, Deming warned us about best intentions!), having learned quite a lot of what Deming had to teach, then advanced too bravely and too enthusiastically to "where angels fear to tread". Seemingly they had forgotten that the wisdom which had now become so clear to them was still unrecognised, indeed unknown, to most of those around them. Sadly but inevitably, that did far more harm than good. It ruined not only their own reputation but also that

of the Deming philosophy itself within their company. One needs, of course, to proceed positively but also with due caution and understanding of where everybody else is. Even Mack, in his own especially favourable circumstances, still didn't "just do it". He judged that Gallery Furniture was not yet ready for the "leap of faith"—just a "hop of faith"! It was a further three months before he decided to take the leap. But, even then, notice how he did it: the move to salaries was designed in a very carefully-judged manner so that "nobody would lose" (Day 6 page 12).

Mack was so right. Great care *must* be exercised in disposing of anything that has become "the way we do things round here". Although you and others may now be getting to recognise the damaging aspects of the practices being considered here during Day 7, there *were* reasons why those practices were originally put in place. Let me remind you of what I said near the bottom of Appendix page 23. To just suddenly throw out any such "bad practice" may leave a vacuum—and what floods in to fill that vacuum may well be worse than what you threw out. Further, it is often extremely difficult to stop doing something simply because you now know it's bad—as I am sure will be confirmed by most who have managed to stop smoking or have climbed back from addiction to some other drug.

A wiser and much safer approach is to gradually introduce better ways of doing things—particularly things which it is thought by many that a "bad practice" can achieve. In so doing, the bad practice does not have to be suddenly, painfully and contentiously abandoned: it simply becomes ever more redundant.

As an excellent illustration, let me summarise how Peter Scholtes dealt with what was his particular hate: the usual judgmental kind of performance appraisal. In a chapter of *The Leader's Handbook*, engagingly titled "Performance Without Appraisal", he first produced a comprehensive list of reasons why some managers *think* they need performance appraisal (in practice he would get his clients to develop their own list). His list in *The Leader's Handbook* is as follows:

a. Identifying and responding to outstanding performers *[he includes both outstandingly good and outstandingly bad: he called them "positive outstanding" and "negative outstanding")]*
b. Creating a basis for pay
c. Providing feedback to individual employees
d. Giving direction and focus to the workplace
e. Identifying career goals
f. Identifying education and training needs
g. Identifying candidates for promotion
h. Identifying candidates for layoff
i. Fostering communication between employees and their supervisors
j. Creating a paper trail that will serve as a defence against *[law-]*suits for wrongful dismissal or other perceived unfair treatment
k. Conforming to regulatory requirements
l. Motivating employees

And then he carefully considers every one in this list of reasons and develops a *better* way of dealing with each of them—a way that is, of course, much more consistent with Deming's teaching. Those alternative ways can be steadily brought in while the performance appraisal scheme is still retained—but, as this happens, the performance appraisal operation will be *seen* and *understood* to be increasingly less necessary even in the eyes of those who were originally highly supportive of it. Thus, when the time comes to finally dispose of it, there will be no vacuum to fill, no withdrawal symptoms to face.

That is a little illustration of Peter's very special wisdom. So be sure you will not be left alone when trying to put Dr Deming's management theory into practice if you have *The Leader's Handbook* by your side.

MANY MORE TRUE STORIES

Having assembled my collection of short true stories for Day 6, I copied it to a few friends and asked if they might have any further such contributions. These next nine pages show the results of that request! Some accounts may remind you of true stories of your own: if so, record them for use in Activity 7–d on page 18 *[WB 108]*. I suggest you immediately make relevant notes for that Activity as you read through these pages.

> So almost everything that follows here has been told to me by friends who were only too happy to let me publish their stories. However, in some cases they were, for probably obvious reasons, a little shy about their names being publicly associated with particular experiences. Therefore, in order to preserve their anonymity I shall refer to all of them as either "John" or friends of "John". Thus I would like to express my gratitude to the various Johns and friends who include Mitch Beedie, Malcolm Gall, Jackie Graham, Balaji Reddie, Peter Worthington, Dave Young, and the late Nigel Clements. My own few comments are printed in italics. The stories often use the first person: "I" or "me", etc; but, unless printed in italics, the "I" or "me" refers to John rather than to myself.

Before John had become familiar with Dr Deming's teaching, he was clearly quite surprised when he saw what happened when his own company started introducing (a) Annual Performance Reviews and (b) Key Performance Targets. Here firstly are John's accounts on those two topics:

Annual performance reviews

The company established a system of annual review for all employees. A software system was established plus training for all staff and reviewers. Each individual was required to carry out a self-assessment giving themselves achievement scores against roughly 6 or 8 aspects under the subjects of company behaviours, role skills and role behaviours. This was required to be followed up by a "half-hour" (*sic*) interview with your line manager. In practice, these turned out to last two to three hours for those who tried—or a cursory interview for those who did not—plus they caused a great deal of anxiety for many individuals, not to mention the time commitment.

One little chink of light came from the opportunity to discuss one's future and to identify one's training needs.

> *[How sad that John's company couldn't have thought of doing the latter—possibly **more** than once a year —without the bother and expense of all the rest.]*

Key Performance Targets

Key Performance Indicators (KPIs) are promoted by business improvement consultants, ISO 9001 assessors and EFQM, Six-Sigma, and the like. Clients see these as ways to judge their supplier's compliance with these concepts and frequently impose substantial additional ranges of KPIs. Under these pressures, in order to accrue any benefits from applying KPIs and to demonstrate that the company was following this trend, it established an array of KPIs covering the whole company. A dashboard system was established to pull these data together. People were delegated to collect data and report centrally. A lot of time was spent each month collecting and collating the data plus responding to all sorts of queries about what each KPI meant. When the results were published, yet more queries arose, especially regarding the peculiarities of particular forms of contract imposed in different regions.

Managers who took targets seriously soon lost interest when their time became spent on identifying and enquiring into anomalies in reporting. Other managers, perceiving that the numbers could lead to extra work and more questions from top management, simply fudged the figures to make them in line with (or perhaps slightly better than) the competing regions. The result was no gain for the company other than it could demonstrate that they were "doing KPIs". The cost and time commitments were large, including the development of software to record and report the data. Unfortunately, the effort entirely missed the point

of helping businesses measure performance in a way that would support continual improvement. Little practical use was ever made of all this effort.

Incidentally, the original reporting system continued throughout this initiative; in fact, the 50+ pages of monthly tables of data, but with very few trend graphs, is still reported today …

John's further stories now follow. First, having just described what happened when his company introduced those Performance Indicators, he fondly recalls this letter from a friend in India:

My monthly reports

"If I remember right, it was in 1994 that I had this experience. I had to submit, on a monthly basis, a report to top management with figures for typical 'indicators' of the company's performance. There were indicators like the cost per hour of producing goods, profits made per hour, inventory turnaround, etc. I religiously submitted this report to management every month without fail, sometimes selectively with graphs indicating favourable trends.

However, I never got any reaction from the relevant people in the organisation. After a year or fifteen months of doing this I accidentally discovered why. I had gone up to the office to submit my report as usual (religious), but the lady was not there. After waiting for her for about 20 minutes, I called on another extension number, only to be told that she had left for the day because she was unwell. I was also told to put the report in the box-file marked with my name. I proceeded to look for the file and, after much searching, found it. I opened it to discover all my reports in absolutely 'virginal' condition! They had not even been looked at for the past fifteen months! Imagine my shock and dismay. I punched my report and filed it as instructed.

As I walked away, a thought crossed my mind. What if I give the next report by only changing the year on the earlier monthly report (January 1994 to January 1995)? I would save myself the trouble of preparing the report which otherwise took away much of my precious time. My experiment proved successful, as I received no feedback from the relevant authorities. This misdemeanour continued for six months. Soon I was going to run out of reports, so I tried something even more audacious. I decided to only change the *month* from the current report and resubmit it. Even this trick worked!

I continued like this for about a year and there was still no response from the authorities. Frustrated, I did not submit my report the next time around. Guess the reaction from the authorities? They promptly called me up the very next day with the query: 'Where is your monthly report?'.

Amen!"

Two little stories from the construction industry …

1. A firm of house-builders had to perform well relative to their sales forecasts each quarter in order to avoid the wrath of the city analysts and thus maintain their share price. It was hugely revealing to look at a run chart of their monthly sales figures showing a very distinct high spike in the third month of each quarter. It was of course even more revealing to look at a run chart of monthly cancellations where there was a similar pattern of spikes, but this time in the first month of each quarter—i.e. one month later than the sales spikes.

2. In the same firm of house-builders, the Sales Negotiators had to produce daily counts of visitors to the Show Homes. Visitors were regarded as being of two types: "Net Visitors" were defined as "those showing a real interest in buying", all other visitors being termed (at least in the trade) "carpet-treaders". The counts recorded were of (a) "Gross Visitors" (i.e. visitors of both types) and (b) "Net Visitors". At some stage a target was introduced on Sales Negotiators for the proportion of "Net Visitors". It was quite astonishing how people visiting the Show Homes apparently suddenly developed a much greater interest in buying a new home!

… and two from the aircraft industry …

1. Four different types of blades were needed in a particular aircraft engine. The manager of the blade shop was given a production target to meet of so many blades per week. There was no problem in meeting that target: when the manager saw that the production number was a little low (generally because there were increased orders for the more complex type of blades), he switched the production to the "simplest blade": that way the target was always met. Needless to say, after a few months the question of a certain amount of over-stocking arose—how strange!

2. Production in an aircraft engine company was averaging 12 engines per month. The Chief Executive Officer demanded 16 engines per month. Fortunately, the Managing Director of this company had learned about variation and constructed a control chart of the engine production over the past 18 months. The chart showed the process was in statistical control with an Upper Control Limit of 14. His response to the CEO consisted of

(a) the control chart, and

(b) questions about investment in more trained fitters, a larger site, etc.

The case was proven!

[A brief extract from page 15 of the Optional Extras section may be useful here. It states that:

> *"the control chart can serve very effectively as a **communication language** within and between departments in an organisation, between different levels of management, and even between organisations."*

I'll further remind you from Day 1 page 7 that Deming "was also clear that, the more senior someone is in the organisation, the more essential such [communication] ability becomes. As far as he was concerned, the most important control charts in any organisation should be right there on the Chief Executive's desk."]

… and no less than five from the railways

1. The railway industry in Britain has well-known targets for punctuality, typically defined as no more than ten minutes late (see "British Rail Redefines Punctuality", *DemDim* page 113). What might seem quite miraculous is the way that a train could be running, say, 15 minutes late at its penultimate "station-stop" (as they often call it) but can be only five minutes late at its ultimate destination—i.e. "on-time" according to the target. Perhaps less well-known is the often-used means of improving performance against the target called "timetable padding": this involves the judicious use of "recovery time" where additional time (perhaps five to ten minutes) is added to the schedule close to the train's ultimate destination. A system against which franchisees' performance is judged by the official regulator only measures the punctuality of trains at their destination—but not at calling points *en route*. Of course, it only measures punctuality of trains but not of customers, whose journey might involve more than one train …

Having read that report which John has just cited, an Australian friend sent me the next two offerings:

2. "Your rail example reminds me of an Australian rail system that could not meet the timetable to within 3 minutes as they used to do and were getting hammered by the press. So they fixed it—by changing the definition to 'within 5 minutes'. When that didn't work they went to 10 minutes. That worked—no longer in the headlines! Unfortunately the system hasn't changed. I wonder how long it will be before they have to go to 15 minutes!"

3. "On the Melbourne rail system, a bonus is paid for on-time trains. A relatively new company running trains on the system has come up with a new way of meeting the timetable: it skips stations! So yes, if a

train is running late, it goes straight through a station in order to get back on schedule—ignoring passengers that wanted to get off or on the train at that station! Needless to say, the train users are not happy. But the bonuses are still getting paid since there is nothing in the contract that says a train mustn't skip a station!"

After that brief excursion to the other side of the world, back to John's stories:

4. In one region of the rail network, carriages were washed daily. The management set a target of 37 carriages per day (why 37?—who knows?). However, on many occasions there were not even 37 carriages available, maybe only 29. Not to worry: the target was still met. Agreed, it meant that on those occasions some carriages were washed more than once. There's always a way!

[John commented: "And so the crazy world of arbitrary targets lives on ... "]

5. This next story comes from a signalling installation company who ran their work as "projects" chargeable to their customers (mainly Network Rail). All project managers and engineers had to record their use of time in terms of either "Chargeable" (i.e invoiceable to a customer) or "Non-chargeable" hours. In one division there was a weekly target of 1,850 Chargeable hours, but they were only occasionally achieving this. There was a weekly meeting in which project managers had to explain any non-achievement of target to the Finance Director—in fact, there was a league-table mentality where the project manager furthest from the target had to sit in a specific place designated "The Spiky Chair" to receive a particularly gruelling interrogation during the meeting. Of course, there was a terrible culture of fear about all this, lots of preparation of defence ("It wasn't my fault: I can pass the blame onto someone else") and lots of preparation of additional background data to be used "just in case" in order to question the integrity of the base data or to give credibility to the buck-passing.

It sticks vividly in my memory that, during a seminar I was giving to the Finance Director and the team about understanding variation and the use of process behaviour *[control]* charts, the Finance Director suddenly stood up and said: "Hold it right there, John" and left the room. Of course, I was somewhat perplexed by this, but he returned a couple of minutes later with some paper and said: "Let me use that computer, John". (I had been demonstrating some software for producing control charts.) He tapped in some weekly Chargeable Hours data, and the resultant control chart had a mean of about 1,600 hours with an Upper Control Limit of 1,900 hours. He looked at the screen and said: "You mean, our system isn't *capable* of meeting the target we've set for it—except occasionally with luck?". I nodded. "You mean, we have to work together on our system to improve it to the state we would like it to be?". I nodded again.

I can tell you that the immediate change in the atmosphere in that room was palpable: people breathed out and relaxed in that instant. It was the beginning of "All One Team" and "Scientific Approach" and, believe me, it didn't do any harm either to "Obsession with Quality"!

More "Spiky Chairs"!

I think of tales from the boardroom, remembered from reports in the press (so I regret I have no references). There was the well-known bank, Bank H (as with -BOS), where the CEO, an import from Asda who knew how to get the sales of vegetables up, awarded a cabbage to be held by the executive reporting the lowest sales. Similarly there was the chairman of Company M (as with -&S) who gave the manager with the worst results a rubber chicken to hold (hopefully not from their food department).

West Midlands Employment Service

At a meeting with the area managers, John presented their performance data in control-chart form—the first time they had seen this. One particular performance measure was "Date of Claim + 6", i.e. the percentage of benefit claims per month paid within six days. The Government's target for this measure was 92%.

The first control chart they looked at was for the city of Coventry. The process was clearly seen to be in statistical control with an Upper Control Limit of 92.4%. The area manager's management style had been "carrot and stick". But, since the chart indicated statistical control, she realised that the process was predictable and therefore that she was looking at her future performance as well as the past. Without more ado she declared (quite bravely) that she needed to manage the area differently. She created teams of "ordinary" office workers to look at the process of paying benefits. Some nine months later, this manager and her teams demonstrated their new reality through a control chart which still showed statistical control but now with a *Lower* Control Limit of about 92.5%. They proudly and truthfully stated that "the target remains at 92% but is now irrelevant".

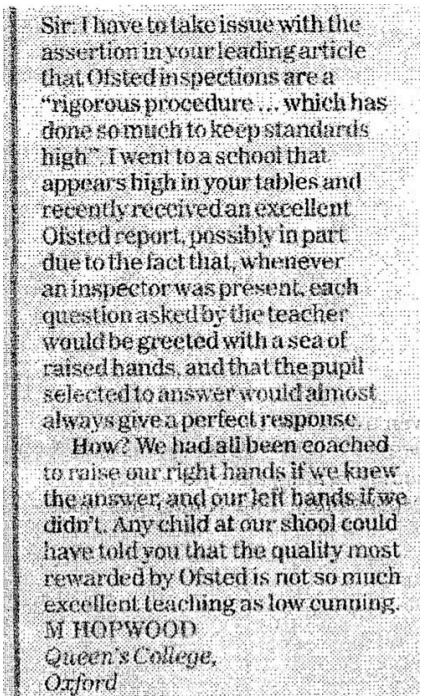
> *[That reminded me of an observation in Peter Scholtes's* The Leader's Handbook *(page 353): "The carrot and stick approach was developed for use with jackasses, and its legitimate use is limited to that species."]*

How to rise up the OFSTED league tables

OFSTED stands for England's Office for Standards in Education, Children's Services and Skills. The Office describes itself as follows: "We report directly to Parliament and we are independent and impartial. We inspect and regulate services which care for children and young people, and those providing education and skills for learners of all ages."

OFSTED publishes many of its findings in the form of league tables.

The letter to The Independent *newspaper shown alongside was published on 18 November 2000. Since it is a rather poor copy, you may find it a little difficult to read. Therefore, just in case, the second item on Appendix page 31 provides a transcription.*



Sir: I have to take issue with the assertion in your leading article that Ofsted inspections are a "rigorous procedure ... which has done so much to keep standards high". I went to a school that appears high in your tables and recently received an excellent Ofsted report, possibly in part due to the fact that, whenever an inspector was present, each question asked by the teacher would be greeted with a sea of raised hands, and that the pupil selected to answer would almost always give a perfect response.

How? We had all been coached to raise our right hands if we knew the answer, and our left hands if we didn't. Any child at our shool could have told you that the quality most rewarded by Ofsted is not so much excellent teaching as low cunning.

M HOPWOOD
Queen's College, Oxford

The day before I started putting together this collection of John's stories (in April 2013), I found the following article in the current issue of the same newspaper:

Schools tricking OFSTED inspectors by sending problem pupils home

Hundreds of schools are illegally excluding children—sometimes to get rid of them during Ofsted inspections or having them taken off the school's roll for high-stakes tests—an investigation by the Children's Commission for England has found.

Illegal practices uncovered during the investigation—which included a survey of 1,000 teachers—include:

- Sending pupils home for disciplinary reasons without recording it as an exclusion—6.7 per cent of schools were guilty of this (1,600 schools)
- Sending children with statements of special education needs home if their teaching assistant is unavailable—2.7 per cent (650 schools)
- Pupils being put down as "authorised absent" or "educated elsewhere" when the school had encouraged them to stay away—2.1 per cent (540 schools)
- Schools encouraging parents to educate their children at home—1.8 per cent (or 192 schools) were guilty of this.

Etc, etc.

Alarming

In hospital last year the guy next to me had an alarm sounding each time his vital signs became unplugged. Initially the nurses reattached the leads. But eventually they just left it sounding. What does that tell every other patient in the ward?

A Pharmaceutical Company

The sales representatives of this company do not sell to General Practitioners and hospital doctors but rather give advice on their company's products. They told me that they felt they were doing a good job: the doctors would welcome their visits (unlike those of other salespeople), and the repartee was great! Well, it's the usual story—management thought they were shirking (how would they know?) and set a target for the number of visits: 14 visits per week, whereas the current rate was around 10 to 12. Many of the sales representatives moaned to me about this target: they felt they could no longer give a meaningful service to their clients—it would become more like "Here's the leaflet and samples; see you in two months time!". However, when I met with the sales representatives some time later they were "all smiles". Odd! So I asked about the situation with the target. "No problem", they replied. On probing further, I discovered the reason: they had invented a couple of imaginary clients whom they could use whenever they felt the target wasn't going to be met.

[As John again said to me: "There's always a way!".]

The earlier story (on page 11) about the four types of blade needed for aircraft engines was reminiscent of one told at an Annual Conference of the British Deming Association. Here it is, along with two others:

Three from BDA Conferences

1. This one goes back to the days of the Soviet Union and concerns the production of nails. The powers-that-be in Moscow set each nail factory a numerical target, i.e. they were tasked with achieving a certain quantity of nails each year. In understandable fear of their jobs, what the factory management decided to do was to make many more small nails than large ones, thus achieving the numerical target easily. This resulted in a national shortage of larger nails. The powers-that-be cottoned on to what had been happening, and so they introduced a new numerical target. From now on the factories were to produce a certain *tonnage* of nails per year. In response to this, the factory management decided to manufacture many more large nails than small ones, as it was easier to achieve a tonnage target this way. The result? Yes, a national shortage of small nails. Oh dear …

2. Next, an American bank told its branches that if they could close each day for six months with a completely balanced account (i.e. no money left over, no money missing) then each member of the branch would receive a (considerable) bonus. Apparently the scheme was a huge success as each branch started to balance their accounts perfectly. What the directors of the bank didn't know was *how* the branches were achieving the target. What each branch actually did was to simply set up a "balancing" account and at the end of each day they paid any money left over into it or drew any amount missing out of it. The directors were blissful in their ignorance and the branch staff were delighted with their guaranteed bonuses. There was only one loser, of course: the customer.

[Or, I suppose, John, there were some lucky customers who gained!]

3. Finally, a software company in Britain offered its developers a bonus for every "bug" they found and fixed in their systems. After a while, as the systems were improved, there were less and less bugs to find and therefore less bonuses to enjoy. The developers were not happy with their resultant loss of income, so

they started to *introduce* new bugs into the systems and then fix them. Again, the directors were blissfully ignorant about all of this and the developers were delighted.

[A frequent quotation from Dr Deming that we haven't seen earlier was "Who gives a hoot about profit?".]

A story rather similar to those above was widely reported in the Press on 30 October 2008. The headline in The Times *was:*

"BT staff phoned each other to hit Whitehall targets"

This concerned a call centre set up by the Ministry of Defence in Kettering, England and run by British Telecom. If calls were answered too slowly then service targets would not be met and a fine would be incurred. Staff would be financially penalised. Staff discovered that if they phoned each other at quiet times and answered quickly then the target would be met. This practice did not slow the system to give rise to any customer complaints and it went on for nearly six years before discovery. Quoting from a BBC News report:

"BT has been forced to pay the Ministry of Defence £1.3m in compensation after some of its staff met call-answering targets by phoning each other. The National Audit Office found they fixed figures to help BT avoid fines for not answering calls quickly enough. The targets were part of a £3bn Private Finance Initiative (PFI) deal to operate the Forces' telephone system. BT has sacked some of the 'small number of staff' involved and the call centre no longer operates.

The company has also paid £1,021,000 in service payments, the £122,000 cost of investigating the fraud, and the £197,000 cost of the fake calls."[a]

[Apparently about 1.25 million bogus calls had been made!]

Reducing Accidents?

I was working with a mining company. I was confused as to why someone who was obviously totally incompetent in addition to suffering from a broken leg was on Reception. Eventually I understood. The manager of the mine had to report to the Board if anyone was injured on the job and was unable to work for at least one shift. This gentleman had had a serious accident with a loader: he had broken his leg and been to Accident & Emergency at the local hospital. But they had managed to get him back to the premises in time for his next shift, and so they did not have to log the incident!

[John remarked to me: "Give enough of a stick, and systems develop to ensure the stick does not need to be used."]

John learned of the following matter because the travelling salesperson concerned (whom I'll call Anne) lived next door to him at the time. She was seeking to sell soft toys and other novelties to gift shops in her area. I will simply quote extracts from two letters to Anne which were written, just over one month apart, by her Regional Sales Manager whom John described as a "Red-Beads Foreman" style of boss:

A Red-Beads Foreman

Dear Anne 7 March

Congratulations on opening two new accounts and the instant rapport you seem to develop with your customers. This will help you to gain their trust and lead to a good working relationship. To date you have opened eight new accounts, which is fantastic. Well done—keep up the good work. … With your undoubted enthusiasm and sales ability I am sure it will not be long before we start seeing you climb to the top of the weekly sales update. I am glad you are in my team, Anne.

(continued on the next page)

Dear Anne 9 April

As you are aware, since you started your career with us, your weekly business has not been of the standard we would like from any new salesperson working for us. Four weeks ago I targeted you for a minimum of £3,000 per week. Yet as at week ending 26 March you still failed to meet this, booking £8,907 over those targeted weeks and averaging only £2,226 per week. … Failure to meet these targets may result in disciplinary action being taken.

> *[John also produced a copy of what struck me as a most peculiar league table in which Anne was placed low down at 24th position—she was certainly doing badly. The person at top position in the table was the key account manager for a well-known national chain of card and gift shops. Anne's sales area was a thinly-populated region of Shropshire and mid-Wales (described by John as containing more sheep than people, even in the high tourist season!). There is an old saying about the nonsense of comparing apples with pears (or was it oranges?), but I think this case beats that!]*

How to please the boss

A lady was inspecting finished items from a very high-tech manufacturing process. The items she was inspecting had a value of between £500 and £1,000 each at the inspection stage. After she inspected them she put each item on one of two piles labelled GOOD and BAD. The BAD ones were scrapped.

One day, a process improvement consultant picked up one of the items on the BAD pile and asked her what was wrong with it. "Nothing", she replied. The consultant asked: "Then why put it on the BAD pile?". "Well," she said, "when I started this job my boss told me that I should expect to find about five BAD ones in each batch of twenty-five. These days there seem to be more GOOD ones coming through than there used to be, but if I don't scrap about five out of twenty-five my boss may think I'm not doing a thorough inspection job."

Tens of thousands of pounds were being wasted.

"We do not have targets"

The British Government's Department of Work and Pensions (DWP) is responsible through its jobcentres both for helping unemployed people find work and for supervising payments of benefits to those not in work for whatever good reason (e.g. physical or mental illness, disability, etc). In the early years of the current decade, the DWP was attempting to crack down on abuse of the relevant benefits systems. In March 2013 this led to some interesting exchanges in the British Parliament. I therefore relate this story mostly using excerpts from the pages of Hansard, the official documentary record of proceedings in Parliament, slightly modified for clarity and accuracy.

Jobseekers (Back to Work Schemes) Bill, 19 March 2013, Second Reading.

Mr Liam Byrne (Birmingham, Hodge Hill) (Lab): A couple of years ago now, the Secretary of State gave an assurance to the House that individual jobcentres or jobcentre districts did not have targets for sanctioning jobseekers and that there were not any kind of league tables that ranked jobcentres or districts for sanctions. Will the Minister confirm that that is still his Department's policy?

Mr Mark Hoban (the Minister of State, Department for Work and Pensions): Absolutely. There are no league tables in place. We do not set targets for sanctions; I have made that point in previous discussions ... The decisions that need to be made are the right ones. They need to be based on whether people have breached their agreements they have set out with the jobcentre, and there are no targets in place.

…

Mr Byrne: I have heard the Minister's assurances this afternoon that there is no series of targets and that there are no league tables. We will hear further evidence on that point over the course of the debates in this House. I hope that the assurances that we have heard this afternoon withstand those tests.

…

Mr Russell Brown (Dumfries and Galloway) (Lab): Staff are under so much pressure. I can tell both Ministers here that there will for ever be a question mark over targets. Let me assure them and the Secretary of State that if evidence ever comes my way that clearly indicates that there are targets that have been denied by Ministers, I will make the House fully aware. I hope that honorable Members on both sides would do likewise. If that evidence is to be found, if that is happening, then it is only right that we expose it.

…

Esther McVey (the Parliamentary Under-Secretary of State for Work and Pensions): Slave labour was mentioned, but that is not an issue. Targets were mentioned. There are no targets whatsoever.

The annual Budget speech was presented the following day, 20 March, after which the debate on the Budget commenced. The debate continued in the morning of Friday 22 March. In the meantime an e-mail written by a jobcentre adviser manager, Ruth King, had been leaked and become public knowledge.

Budget Resolutions and Economic Situation, 22 March 2013 (debate continued from 20 March).

Mr Byrne: We need action on jobs now … If we require any proof of the need for a big plan for jobs, we have only to look at the story by Mr Patrick Wintour in today's *Guardian*. Here we learn some of the terrible ways in which front-line jobcentre staff are now being asked to reduce the unemployment figures—targets for sanctions and league tables for jobcentres. So tough is the pressure on staff that they are threatened with disciplinary action by their superiors if they fail to deliver for Ministers. They are even given a dictionary of which phrases to spot so that they can catch out jobseekers who have turned up to jobcentres for help. The leaked e-mail tells staff to look out for phrases such as "I pick up the kids", "I look after my neighbour's children" and "I didn't come in yesterday because my husband was ill". It beggars belief that Ministers told the House on Tuesday that no such targets or league tables existed, yet we see from this e-mail that it is deep within the DWP's culture. …

How on earth could Ministers not have known? How on earth could the House have been given information earlier in the week that was the opposite of the truth? I know that the Secretary of State will apologise, because he is a decent man. On Tuesday, the Minister of State, Department for Work and Pensions (Mr Hoban) said: "There are no league tables in place. We do not set targets for sanctions." The Under-Secretary of State for Work and Pensions (Esther McVey), said: "There are no targets whatsoever."

Mr Iain Duncan Smith (the Secretary of State for Work and Pensions): First, I can absolutely commit to the fact that there are no targets for any sanction whatsoever. To emphasise that, I should point out that the head of Jobcentre Plus has issued a reminder to everybody in the estate that there are no targets and that there will be no targets, and that anybody using those targets will be disciplined.

…

Mr Byrne: My admiration for jobcentre staff working under this regime is unbounded. They are good people trapped in bad systems, with a Secretary of State who, I fear, is out of touch. I have a copy of the e-mail that Mr Wintour reports today, and this is its concluding paragraph:

"Guys, we really need to up the game here *[on the issuing of sanctions]*. The 5% target is one thing—the fact that we are seeing over 300 people a week and only submitting six of them for possible doubts is simply not credible." The e-mail says: "So the bottom line. I have until 15 February, along with other area managers, to show an improvement, and then it is a Performance Improvement Plan for me. She continues: "Obviously if I am on a PIP … to improve my team's Stricter Benefit Regime referral rate, I will not have a choice but to consider implementing PIPs for those individuals who are clearly not delivering SBR within the team."

…

And so it continued: this was just a brief sample. If I were to reproduce everything relevant from the debates then the story would take up very many pages—but, at least, you now have a flavour. If you wish to read much more,

Hansard is fully open and available for examination on https://hansard.parliament.uk*; simply e.g. put "targets" in the Search box, and off you go! You might also like to search on the internet for press reports on the matter; in particular, look for reports in the* Guardian *newspaper during late March 2013 where you can find several articles which include further extracts from the leaked e-mail and much more evidence from a number of jobcentre advisers. There were also many contributions to discussion websites. One of those provides a fitting conclusion here:*

There are targets in place for many things for DWP staff. That's not an issue here. The point is that the necessity (or otherwise) for a sanction is not amenable to being dictated by target. And if ministers didn't understand this basic fact, why did they bother to deny the existence of said targets? Why not just say: "Yes, there are targets for sanctions. So what?"

UK readers may have recognised several parallels between the above account and something that happened some five years later and led to the resignation from the Government of Ms Amber Rudd in April 2018. The third item on Appendix page 31 provides a brief summary.

Activity 7–d is also on Workbook page 108.

ACTIVITY 7–d

(a) If you have not already been doing so while reading through those stories, please return to Category 3 in both Activity 7–a (page 4) and Activity 7–b (page 5) and add some more to your answers there.

(b) The space below is left for some brief notes on your own true stories (see the top of page 9).

UK readers may also recall that, before the 2010 General Election, David Cameron set the target of reducing net migration to "the tens of thousands". *Mail Online* later reported that in 2012 Mr Cameron claimed that "immigration was falling and was close to the target". The Office for National Statistics states annual migration figures (in thousands) between 2011 and 2017 as being 205, 177, 209, 313, 332, 248 and 244. Mr Cameron's successor, Theresa May, subscribed to the same target. I suggest that Dr Deming's familiar question "By what method?" appears to be appropriate.

THE THIRTEENTH OBSTACLE

Specifications are really no more and no less than two-sided numerical targets. Thus some of what has already been covered earlier today and also while you were discussing Point 11 on Day 5 pages 10–11 *[WB 78–79]* is immediately relevant here with minor rewording.

One major difference in application of the concepts is that whereas targets, appraisals, league-tabling, etc almost invariably apply to *people*, singly or in groups, specifications are more often applied to *things*. In that case, the use of a "performance indicator" can be less problematic. Recalling the two particular difficulties with performance indicators spelled out in Pause for Thought 7–c on page 6 *[WB 107]*:

(a) in some cases—but maybe not as many as might be thought—it may now be feasible for a single performance indicator to be an adequate measure of performance (e.g. the weight or length or volume of a product); and

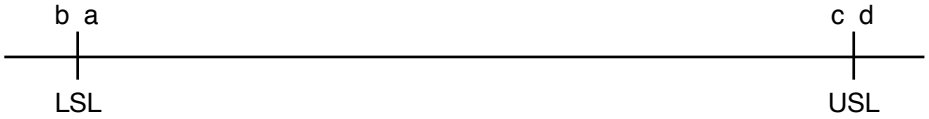
(b) if something goes wrong, it is rather less likely that the "thing" itself will get blamed, so investigators will instead now look for "What caused it?". This question at least admits the possibility of considering the *system* that caused it; sadly, of course, in many organisations the question gets replaced by "*Who* caused it?".

But, even if the "performance indicator" is a more reasonable proposition in the context of a "thing", the mentality of it being sufficient for that performance indicator to merely conform to specifications is still an obvious barrier to continual improvement. You know the idea. We have Lower (LSL) and Upper (USL) Specification Limits for the quantity to be measured or counted. If that quantity lies between the LSL and the USL then it is within specifications, i.e. it is "OK". But if it is below the LSL or above the USL then it is outside specifications and is thus "not OK".

To confirm, this is just the same thinking as we have with targets except that "OK" now corresponds to being within the range defined by two numbers whereas, with targets, "OK" corresponds to reaching or going beyond the single defining number. The Gallery Furniture salesman would get his 10% commission if he sold $7,000 of furniture or more (Day 6 page 8); Dr Deming's student, Christine, would have been "OK" if she made 25 or more calls per hour (Day 6 page 22); the performance of the police was "OK" if they reached the scene of the crime in 10 minutes or less (same page).

The concept of specifications rather than a target normally arises where there is some "nominal" or "optimum" value for the number being recorded. Realising that perfection is rare, specifications are therefore provided to indicate *how much error* (deviation from optimum) is acceptable. But one of the two logical flaws in this is immediately obvious. The optimum is *best*—that's precisely what the Latin word "optimum" means. Thus anything which is not at the optimum is less than best! The general truth in practice is that, the further away the number is from the optimum, the less suitable the "thing" becomes for its intended purpose. So the criterion of conformance to specifications is, to put it mildly, a rather crude criterion of "goodness". Let me clarify what I mean.

Here is a scale on which I have marked the two specification limits and also four possible results:



Results "a" and "c" are "OK": they are within specifications, they have met requirements, and so the "things" represented by those figures are presumed suitable to be passed on to the customer, be the customer external or internal. Results "b" and "d" are outside specifications, they have not met requirements,

and so the "things" represented by those figures are presumed *not* suitable to be passed on to the customer: they must be scrapped or reworked. These are very different consequences: "b" and "d" result in costly wastage or remedial action; "a" and "c" do not. *Yet obviously there is essentially no practical difference between "a" and "b" nor between "c" and "d".* That's the second logical flaw.

An effective way of representing a more realistic view was described and discussed by Genichi Taguchi at a famous meeting in Tokyo in 1960 at which Dr Deming was present. The "Taguchi loss function" was not really a new idea, especially amongst mathematicians; but Dr Taguchi did a good job of making it known and showing its relevance in "the real world". It is obvious why it appealed to Dr Deming: it wholly avoids the illogicalities just demonstrated with regard to conformance to specifications, and it is entirely consistent with his thesis of continual improvement.

1960 was the first of four years in which Dr Taguchi was awarded Japan's Deming Prize.

We shall spend the next few pages discussing and working with the Taguchi loss function. But, if you need more, the Taguchi loss function appears in *DemDim* Chapter 11 and is then the subject of the whole of Chapter 12. So, as usual, if you're interested, you know where to look! However, parts of Chapter 12 are expressed in more mathematical terms than is necessary for students on this course. So, if you would prefer to steer clear of anything unduly mathematical then please don't bother with Chapter 12.

Rather than my introducing the Taguchi loss function to you, I'd like you to introduce it to yourself by using a little exercise that I often got the delegates at my seminars to carry out. You will then soon see that ideas about the Taguchi loss function are neither just some abstruse piece of Mathematics nor only restricted to manufacturing situations.

Activity 7–e (pages 20–22) is also on Workbook pages 109–111.

ACTIVITY 7–e

Think of your normal work situation—or one of them if there are several. For example, you may have a "desk job", so imagine yourself sitting there in front of the computer, or doing some paperwork, writing a report, reading a manual, drawing a control chart—or working on this course!

Everybody's work is affected to some extent by the conditions under which they are working. Let's focus in particular on the *temperature* in your office (or wherever you are).

1. Write down what you would regard as the most comfortable, the "ideal", temperature for your work:

   ..... (e.g. *21°C*)

2. Now write down a fairly wide temperature scale around that ideal value (for illustration, I'm using three steps of 5°C either side of 21°):

	.....	.....	.....	.....	.....	.....	.....
Thus, e.g.,	*6°C*	*11°C*	*16°C*	*21°C*	*26°C*	*31°C*	*36°C*

3. Presumably, whatever work you are doing, you will do it best at your "ideal" temperature. So let's represent that amount and quality of work done at the ideal temperature by 100% in whatever connections you deem relevant: accuracy, amount, creativity, concentration, quality in any appropriate sense. Now think of working at those other temperatures. If it is noticeably hotter or colder than your ideal temperature, your work is very likely to suffer. So, compared with the 100% at the ideal

temperature, what would be the approximate percentages representing the amount and goodness of your work at those other six temperatures? Firstly, copy over your seven temperatures from page 20 and then write in your approximate percentages underneath them:

.....	.....	.....	.....	.....	.....	.....
.....%	.....%	.....%	100%	.....%	.....%	.....%

Here are my own answers:

6°C	*11°C*	*16°C*	*21°C*	*26°C*	*31°C*	*36°C*
5 %	*50* %	*85* %	100%	*90* %	*55* %	*15* %

4. Now *subtract* your percentages from 100%, therefore obtaining the percentage *loss* in your work through having to suffer a temperature which is too high or too low:

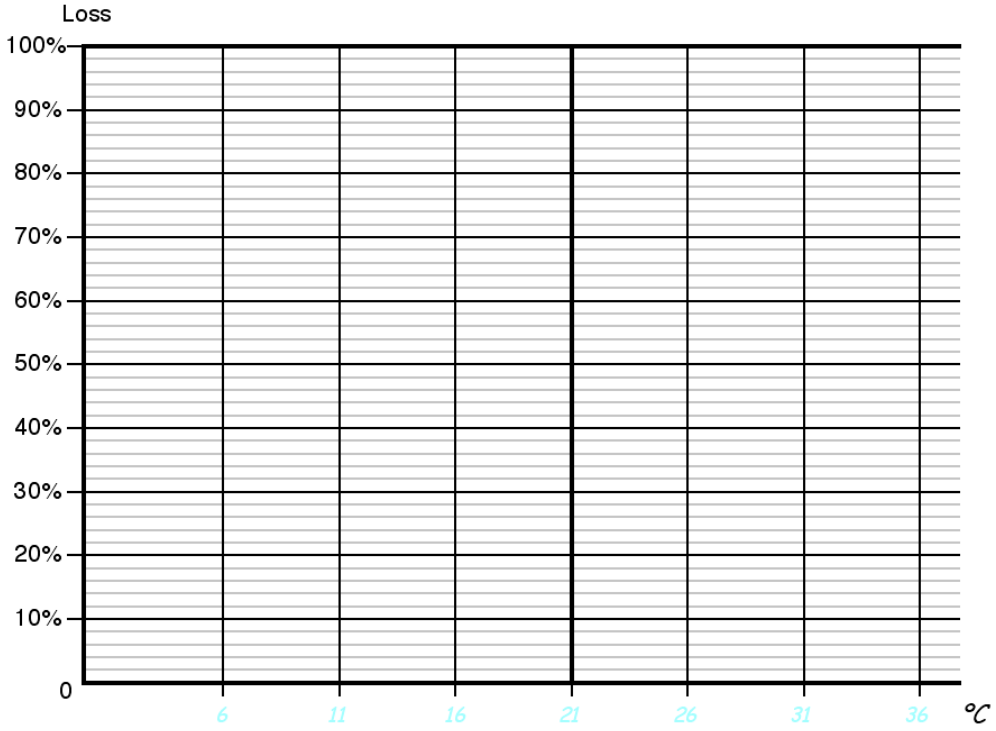
.....%	.....%	.....%	0%	.....%	.....%	.....%

Here are my answers:

95 %	*50* %	*15* %	0%	*10* %	*45* %	*85* %

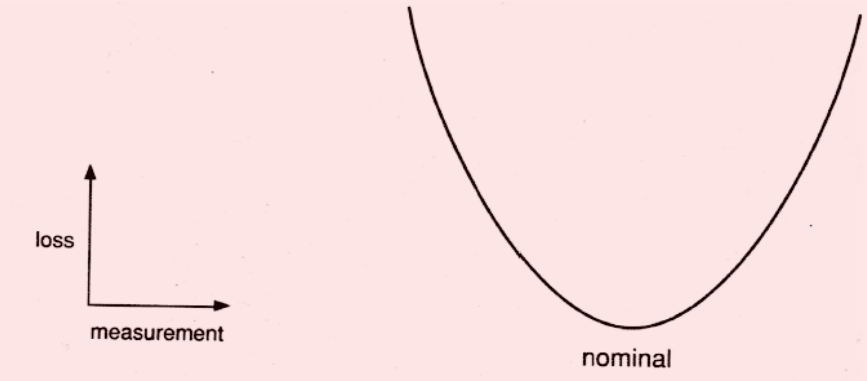
5. Write your seven temperatures along the horizontal axis at the bottom of the graph-paper below. You will see that I have included my own temperature scale printed faintly in blue: so simply over-write my temperatures with your own. Then, referring to your temperatures along the horizontal and your percentage losses on the vertical axis, plot your relevant seven points on the graph-paper.

If you are not very confident about plotting points and drawing graphs, please feel free to first study my illustration (using my own temperatures and percentage losses) overleaf.

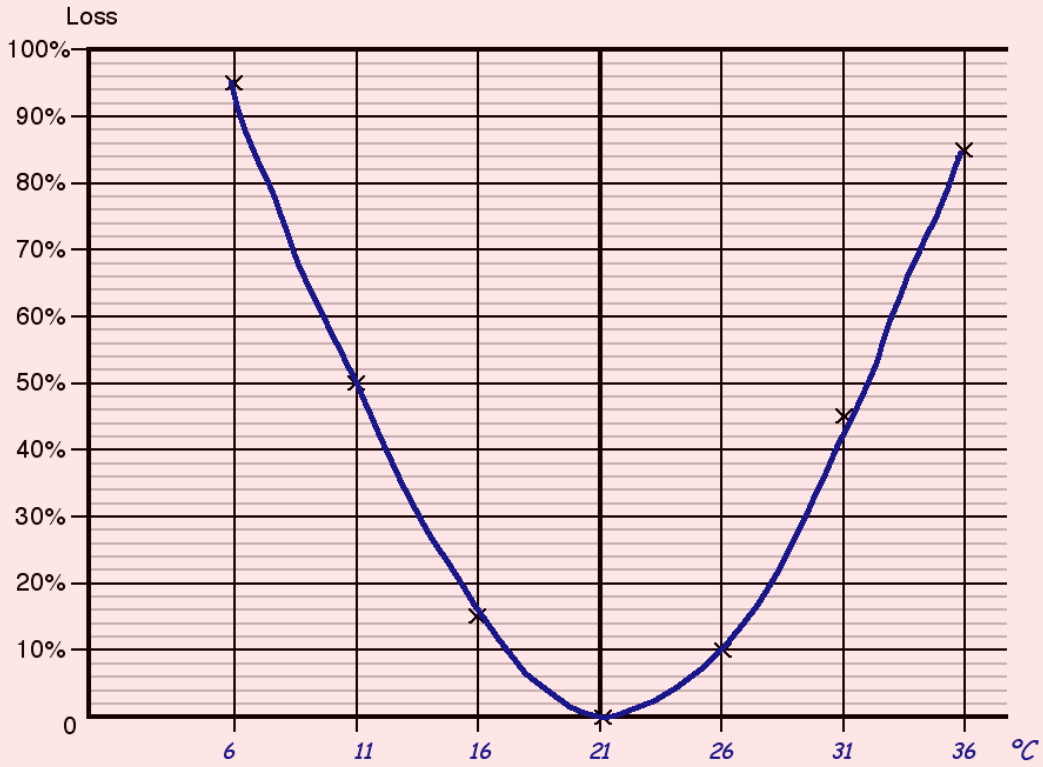


6. Finally, draw a smoothish curve approximately through your seven points. Don't bother about trying to be *too* artistic!

Just about everybody gets a graph which looks something like Figure 34 on *DemDim* page 173:



This picture shows the nicely symmetric model often illustrated and used by mathematicians as the Taguchi loss function. Mathematicians know it as a "parabola". Actual loss functions are not usually *exactly* symmetric about the nominal/optimum value. Mine isn't, for I tend to lose efficiency rather more if I'm cold than if I'm hot; for many people it may be the other way round. So the fine detail doesn't matter—but the general shape does. Here is my graph:



NB Of course, if you went even further out in either direction, i.e. to even higher or lower temperatures, your loss function has to flatten out at 100%—it has no further to go! But that only happens at really ridiculous temperatures (or whatever else we're considering): the typical Taguchi shape applies primarily to the kinds of variation normally met in practice.

Pause for Thought 7–f is also on Workbook page 112.

PAUSE FOR THOUGHT 7–f

What does this shape of the Taguchi loss function (the "parabola") tell you about how the loss varies with temperature (or whatever else is being represented on the horizontal axis)?

1. Clearly, as already stated, and as we would naturally expect, the further away the temperature etc is from the optimum (in either direction), the greater is the loss. With the "perfect" symmetric Taguchi loss function, the way that the loss increases is the same on both sides: in other cases the loss will rise more steeply on one side than on the other—i.e. when the harm done is greater in one direction than in the other.

2. Note how the graph is almost flat for a degree or two either side of the optimum value. This implies that it isn't necessary to be *exactly* at the optimum value (even if this were possible): virtually 100% of the work still gets done as long as the temperature is fairly close to the optimum—another nice practical point.

3. Not only does the loss increase as the temperature moves away from the optimum in either direction: the *rate of increase* increases, i.e. the curve gets steadily steeper the further we move away from the optimum.

   Thus, for example, whatever the amount of loss incurred if the temperature strays, say, 2^{o} from the optimum, there is rather more than double that loss if the temperature is 4^{o} away from the optimum.

So, the Taguchi loss function is the "natural" kind of loss function—broadly speaking (not in fine detail, of course) it reflects common experience. It is probably approximately what you produced in Activity 7–e. Few would argue with its general logic, and it is very widely applicable.

But, in comparison, let's return to the concept of conformance to specifications. Remember that then anything (such as a temperature) within the specifications is supposedly "OK", whereas everything else is "not OK". Everything inside the specifications is deemed satisfactory for the customer: everything outside is scrapped or reworked. There may well be specifications defined on the temperature of your office by your company or, indeed, by law: e.g. 15ºC to 25ºC. If the temperature goes outside that range then you are entitled to complain; if it stays within the range, you are not.

Pause for Thought 7–g is also on Workbook page 113.

PAUSE FOR THOUGHT 7–g

So, rather than the Taguchi shape, what shape of loss function would justify the use of "conformance to specifications" thinking and behaviour? Remember: *all* values inside the specifications are then treated just the same as if they were *exactly* at the optimum, whereas *no* value outside the specifications is accepted: that's rejected or illegal, etc *irrespective* of how close it is to the relevant specification limit.

Obviously there is zero loss at the optimum value. But now, supposedly, *everything* inside the specifications is "acceptable", "OK", whether it's at or near the optimum or not. Everything here is treated identically: off it goes to the customer! It follows that the loss function which represents conformance-to-specifications thinking must be zero *throughout the specification range.* But then what happens? Think back to the little diagram near the bottom of page 19. If the value "a" changes to "b" or the value "c" changes to "d", we get the step change from "OK" to "not OK" and all that that implies. It matters not *how far* a value is outside specifications: if it's out, it's out. So the conformance-to-specs loss function must simply be at some high value *everywhere* outside specifications. This loss function is illustrated in Figure 36 on *DemDim* page 182. Turn to that page now and take a good look at it!

What does the difference between the shape of that loss function on *DemDim* page 182 and that of the Taguchi loss function imply? As *DemDim* Chapter 12 demonstrates, a very great deal! Two of the most important differences are demonstrated in the following Pause for Thought.

Pause for Thought 7–h is also on Workbook page 114.

PAUSE FOR THOUGHT 7–h

What do those two loss functions apparently tell you about:

1. the need or otherwise for continual improvement?

   Taguchi loss function (illustrated on page 22):

   "Conformance to specifications" loss function (illustrated on *DemDim* page 182):

2. the need or otherwise to keep a process properly centred, particularly if we have a very "capable" process, i.e. one which suffers from relatively little variation?

   Taguchi loss function:

   Conformance to specifications loss function:

1. *Taguchi:* No matter how much a process has been improved, while there is still some variation there is still some loss, and so further improvement will continue to reduce the loss, giving the customer yet better product/service.

   whereas

   Conformance to specifications: Once the process has been improved (i.e. the variation reduced) sufficiently for everything to be within specifications, there is now zero loss, so there is no need to improve any further—in fact, it's a waste of money so to do. Goodbye, continual improvement.

2. *Taguchi:* There is more to be gained from properly centring a process which has small variation than one which has large variation. If the process has large variation, it is far more important to reduce that variation. For example, if the process has large variation, an off-centre process may still sometimes get near the optimum by luck: if the process has low variation, it cannot. If the process has low variation then (depending on how off-centre it is) its average Taguchi loss can be slashed to a tiny fraction of its original level by properly centring it; if it has large variation, it cannot.

   whereas

   Conformance to specifications: It doesn't matter if a process is off-centre—as long as it is not off-centre enough to reach out-of-specification values. In fact, an apparent benefit of reducing variation is that one can allow the process to drift *more* off-centre! (In case you have come across the concept, this is often heralded as an advantage by "six-sigma" enthusiasts. There is much more about "six-sigma" on Appendix pages 43–50—but I'll classify it as very optional reading!)

As implied earlier, these and related matters are studied in greater detail than is necessary for this course in *DemDim* Chapter 12. But that chapter's final illustration is worth a quick look now:

A cutting process

A company was having trouble with a cutting operation for metal rods, etc—or, rather, its customers were having trouble! The cutting process had been designed to ensure 100% conformance to specifications—and was indeed achieving it. So why were the customers having trouble? An investigation of the output showed why—if you're interested, take a look at the weird distribution shown on *DemDim* page 191 in Figure 40. True, everything *was* within specifications. *But*—half of the output was piled up just to the right of the Lower Specification Limit, and the other half was piled up just below the Upper Specification Limit, with *nothing* in the middle! I think you'll immediately see how horrible this is from the viewpoint of the Taguchi loss function—yet it *is* 100% conforming to specifications!

> If you are uncomfortable with the use of the concept of "distribution" in this description, you can simply think in terms of a histogram having roughly the shape illustrated.

I'll leave you to read the details if you want. In brief, the design of the cutting operation had been based on the undeniable logic that, if something is cut too short, it's scrap; whereas if it's cut too long then it will still be usable after another piece has been cut off. So the operation was deliberately designed to perform an initial cut at around the Upper Specification Limit (see Figure 39 on *DemDim* page 190). The length of each rod thus produced was then measured. If the length was found to lie in the *left*-hand half of that distribution shown in Figure 39, it was therefore within specifications and so was delivered to the customer (the *right*-hand part of Figure 40). But, if it was in the *right*-hand half of the distribution in Figure 39, a further piece would be chopped off, producing the *left*-hand half of Figure 40. Q.E.D.!

> In case you are not familiar with that abbreviation (beloved by mathematicians!), it stands for the Latin "Quod Erat Demonstrandum" which roughly translates to: "Thus it has been demonstrated".

To complete the story, I'll refer you to the first complete paragraph on *DemDim* page 177. The obviously-better strategy involved *no* second cuts (no rework) and a reduction in average Taguchi loss to about 1/70 (yes, one-*seventieth*) of the previous strategy's Taguchi loss!

INTRODUCTION TO THE MAJOR ACTIVITY: THE OBSTACLES TO THE TRANSFORMATION

So, finally, on to Deming's "parade of obstacles": there are no less than 16 of them. Although you are now already very familiar with the 13th of these (regarding conformance to specifications), the topics are mostly ones that have not been mentioned previously. The Obstacles are generally more tightly focused than the issues in the 14 Points and the Deadly Diseases, and so it may well be quicker and easier for you to "get your teeth into" some of them: they should usually not demand as much breadth and depth of thought as often needed with those larger issues. Be relaxed about timings this afternoon: feel free to concentrate on the ones that strike you as being of greatest interest.

Some of the Obstacles are versed in terms most relevant to manufacturing. However, as we have seen previously, there are likely to be analogies with other areas that could be worth investigating: what Deming writes in such terms is often found to be just as relevant elsewhere if expressed slightly differently. But, remembering when *Out of the Crisis* was written (the mid-1980s), I rather suspect that Dr Deming was particularly keen to help manufacturing companies in America, realising the danger that, unless they changed, much of their business would soon be lost to companies on the other side of the world. Sadly, I fear that many did not listen.

So, even if you are not involved in manufacturing, devote some thought as to whether such analogies may exist in your own line of business. For example, Deming often uses the term "production workers", but obviously that can be generally interpreted simply as those who do the work compared with those whose job is to manage it. However if, after some thought, you feel sure that a particular Obstacle cannot be relevant in your area of activity then feel free to move on and spend extra time on those that are.

For years, in my seminar "Understanding the Deming Philosophy", I asked delegates to recount stories from their own experience which illustrated why Dr Deming regarded all that follow as being "Obstacles" to the progress he wanted us to make. Invariably those stories came so thick and fast that I would be surprised if you do not also quickly think of some while being introduced to the Obstacles. While they are fresh in mind, write down brief accounts in the spaces provided. Also try to expand on the problems that these Obstacles pose and then consider the situation in "your organisation" (interpreted if necessary as on Day 6 page 3). Does some form of that Obstacle exist there and, if so, what might be done about it?

Since my coverage of most of these Obstacles in *DemDim* is very brief, I'll expand a little more on them in the following pages. In each case, read both my sentence or two in *DemDim* (pages 52–55) followed by my comments on the coming pages. It isn't necessary for me to provide any more than this since Dr Deming's discussions of the Obstacles in *Out of the Crisis* are particularly clear and helpful. However, if you do not have a copy of *Out of the Crisis* then I would therefore be putting you at something of a disadvantage! So, just in case, I have reproduced some extracts from the *Out of the Crisis* coverage on Appendix pages 32–37. (In many cases there is, of course, much more in *Out of the Crisis.*) In what follows, I have referenced the relevant page(s) in both the Appendix and *Out of the Crisis*.

> **NB** As indicated at the bottom of *DemDim* page 10, I think there can be no doubt that, like me, Dr Deming regretted the weakness of the English language in lacking single words for "he or she", "him or her", "man or woman", etc. In the circumstances, and as you will have seen before, Dr Deming makes no bones about referring to people, both male and female, simply in the masculine form. Of course, he did not intend any offence by so doing, and indeed traditionally his use of English is correct. I repeat this here because, within the extracts I have chosen, such usage appears quite often, and again I beg that this may cause no offence. In the rare cases that he uses the feminine form, it is usually because he is thinking of a particular individual.

Major Activity 7–i (pages 28–35) is also on Workbook pages 115–122.

MAJOR ACTIVITY 7–i

Please begin by reading through page 27 again.

1. Hope for instant pudding. (*Out of the Crisis* pages 107–108[126–127]; Appendix page 32.) The everlasting search for the "quick fix"! The term "instant pudding" relates to certain kinds of what are known as "convenience foods": buy a packet, stir in some water, heat, and serve! Expensive and not very nutritious.

2. The supposition that solving problems, automation, gadgets, and new machinery will transform industry. (*Out of the Crisis* page 108 [pages 127–128]; Appendix page 32.) Firstly, solving problems only puts right what should not have been wrong. For the other items mentioned here, the point is that you cannot "buy" transformation. At the beginning of *The New Economics* Chapter 4, Dr Deming emphasises that "The first step is transformation of the individual" who then "will perceive new meaning to his life, to events, to numbers, to interactions between people". Again, you cannot "buy" that.

3. Search for examples. (*Out of the Crisis* pages 109–110[128–129]; Appendix pages 32–33.) A large topic, the subject of *DemDim* Chapter 16. Also see Paragraph 7 (pages 275–276) in the Theory of Knowledge section of *DemDim* Chapter 18. One trouble is that you can usually find numerous examples to support just about *any* idea, whether that idea be good *or* bad. Mindless copying of examples is therefore—well—mindless! Dr Deming similarly warns against simply relying on experience. You have seen something of this on Day 6 pages 1–2: you will see more on Day 11.

4. "Our problems are different." (*Out of the Crisis* page 110[130]; Appendix page 33.) This is one of the most common excuses by managers who do not want to learn and do not want to change.

5. Obsolescence in Schools *[i.e. Schools of Business].* (*Out of the Crisis* pages 110–111[130–131]; Appendix page 33.) On *Out of the Crisis* page 110[130], Deming quotes Robert Reich in a private communication as follows: "As profits declined, generally, from 1970 onward, many American companies attempted to bolster their earnings by acquisition and paper profits. The people in finance and law became the important people in the company. Quality and competitive position were submerged. Schools of Business responded to popular demand for finance and creative accounting. The results are decline."

> Robert Reich, who was Secretary of Labour in Bill Clinton's administration, is featured in conversation with Dr Deming in the first two of the *Deming Library* videos: *The New Economic Age* and *The 14 Points*.

6. Poor teaching of statistical methods in industry. (*Out of the Crisis* pages 111–113[131–133]; Appendix pages 33–34.) A basic problem here is that the large majority of "conventional" statistics teaching is to do with matters such as probabilities, distributions, sampling from "populations", and the like. The subject is essentially treated as a branch of Mathematics, dependent on mathematical models. But the real world is primarily concerned with ever-changing *processes* that therefore do not fit neat mathematical models. Quite unlike most statistical tools, the control chart, as understood, taught and used by Drs Shewhart and Deming, is not dependent on mathematical models: it is designed for the real world. Because of not understanding this fact and its importance, many teachers try to force the control chart into the conventional mathematical mould—thus destroying its unique virtue! This is all touched upon in the Overture, in my discussion on Pause for Thought 2–b on Appendix page 7, and in the Springboard article cited on Day 1 page 8. There is also much more in the Optional Extras section.

7. Use of *[*Military Standard 105D and other*]* tables for acceptance. (*Out of the Crisis* page 113[133]; Appendix page 34.) This alludes to old-fashioned "acceptance sampling" schemes where batches are sampled and then accepted or rejected according to the number of defective items found in the sample. What's wrong with that? Well, for a start, an essential requirement for deciding on the details of such a plan is the specification of an acceptable proportion of defectives! And, having mentioned that word "specification", how is a "defective" defined?—which brings us back to some of the problems with "conformance to specifications" and also takes us forward to operational definitions on Day 11. There is much more in *Out of the Crisis* Chapter 15.

8. "Our Quality Control Department takes care of all our problems of quality." (*Out of the Crisis* pages 113–114[133–134]; Appendix page 34.) Substantially, this takes us back to the delusion that quality can be obtained by inspection (c.f. the third of the 14 Points on Day 4 pages 20–21) or by "quality assurance".

9. "Our troubles lie entirely in the workforce." (*Out of the Crisis* pages 114–115[134–135]; Appendix pages 34–35.) Same comment as with Obstacle 4 (page 29). This nonsense is, of course, entirely contradictory to all we have learned about most of the problems (85%, 94%, 98%?) lying in the *system* (common causes).

10. False starts. (*Out of the Crisis* pages 115–117[135–138]; Appendix page 35.) Just think back over the years in your organisation. How many great new initiatives, flavours of the month, the latest panacea, have been tried? Where are they now?

11. "We installed quality control." (*Out of the Crisis* page 117 [pages 138–139]; Appendix page 35.) As with Obstacle 2, quality cannot be "bought"; see my comments on that Obstacle (page 28). Any management that thinks it can "install quality control" will achieve neither quality nor control.

12. The unmanned computer. (*Out of the Crisis* page 118[139]; Appendix page 35.) With the great changes in computer technology since the mid-1980s when *Out of the Crisis* was published, the nature of this Obstacle has changed—but it *is* still an Obstacle! The complaint then was that computers would mostly produce "reams of figures" which were difficult to analyse. Nowadays one can produce a proliferation of multi-coloured multi-dimensional graphs at the touch of a key—which are also often difficult to analyse! See the superb fifth chapter: "Graphical Purgatory" in Don Wheeler's *Making Sense of Data*.

13. The supposition that it is only necessary to meet specifications. (*Out of the Crisis* pages 118–119[139–141]; Appendix page 36.) After your work with the Taguchi loss function, I think I need add nothing here! And you are now so familiar with this matter that I suggest you soon move on to the remaining three Obstacles.

14. The fallacy of zero defects. (*Out of the Crisis* pages 119–120[141–142]; Appendix page 36.) With "defect" = "outside specifications", this is equivalent to Obstacle 13 above. In addition, Dr Deming saw zero-defects policies as often inviting tampering, suffering effects we have seen in the Funnel Experiment. Recall also Mack's mention of Zero Defects (Day 6 page 11).

15. Inadequate testing of prototypes. (*Out of the Crisis* pages 120–121[142–143]; Appendix pages 36–37.) Prototypes are usually tested in "laboratory-controlled conditions"—which are likely to be substantially different from the very variable conditions to be experienced in use.

16. "Anyone that comes to try to help us must understand all about our business." (*Out of the Crisis* page 121[143]; Appendix page 37.) Strongly linked with Obstacle 4 (page 29) and my comment there. We have already pointed out on Day 6 page 6 that Dr Deming referred to Profound Knowledge as "outside knowledge"; another pertinent quote (e.g. on *The New Economics* page 39 [54] is "A system can not understand itself." Real help comes from *new* knowledge.

(Please move to the next page for concluding remarks.)

So ends our concentration on the "Old Climate".

For the rest of the course: forward with the "New Climate"!

"Out-of-hours" note

Depending on your circumstances, you may find yourself able to work through tomorrow's Major Activity fairly quickly. However, that exercise is naturally customisable to your own particular circumstances and there is likely to be more than one way of doing that. It might therefore be possible for you to carry out two or more versions of that Major Activity within the time available, and that could be very useful. For this reason, it would be a good idea to produce duplicates of the tables involved. Look at the bottom of Day 8 page 3 for advice on this.

Approvals, Acknowledgments and Information

[a] (page 15) This quotation from a BBC News report published on 30 October 2008 is included with the approval of the BBC.