B3

WORKBOOK

DAYS 7–9

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

Activity 7–a comes from Day 7 page 4.

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 Day 7 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.)

(Continue straight on with Activity 7–b overleaf.)

Activity 7–b comes from Day 7 page 5.

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 pages 78–79, 90–91 and 94–95 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 Day 7 pages 9–18.

Continue on Day 7 page 6.

Pause for Thought 7–c comes from Day 7 page 6.

PAUSE FOR THOUGHT 7–c

"There are two particular problems." Can you think what those two problems might be? You may find a clue in the introduction to this Pause for Thought on Day 7 page 6.

- 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.

Continue on Day 7 page 7.

Activity 7–d comes from Day 7 page 18.

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 105) and Activity 7–b (page 106) 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 Day 7 page 9).

UK readers may also recall that, before the General Election of 2010, 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, has subscribed to the same target. I suggest that Dr Deming's familiar question "By what method?" appears to be appropriate.

Continue to "The Thirteenth Obstacle" section beginning on Day 7 page 19.

Activity 7–e (pages 109–111) comes from Day 7 pages 20–22.

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? First, copy your seven temperatures from above 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:

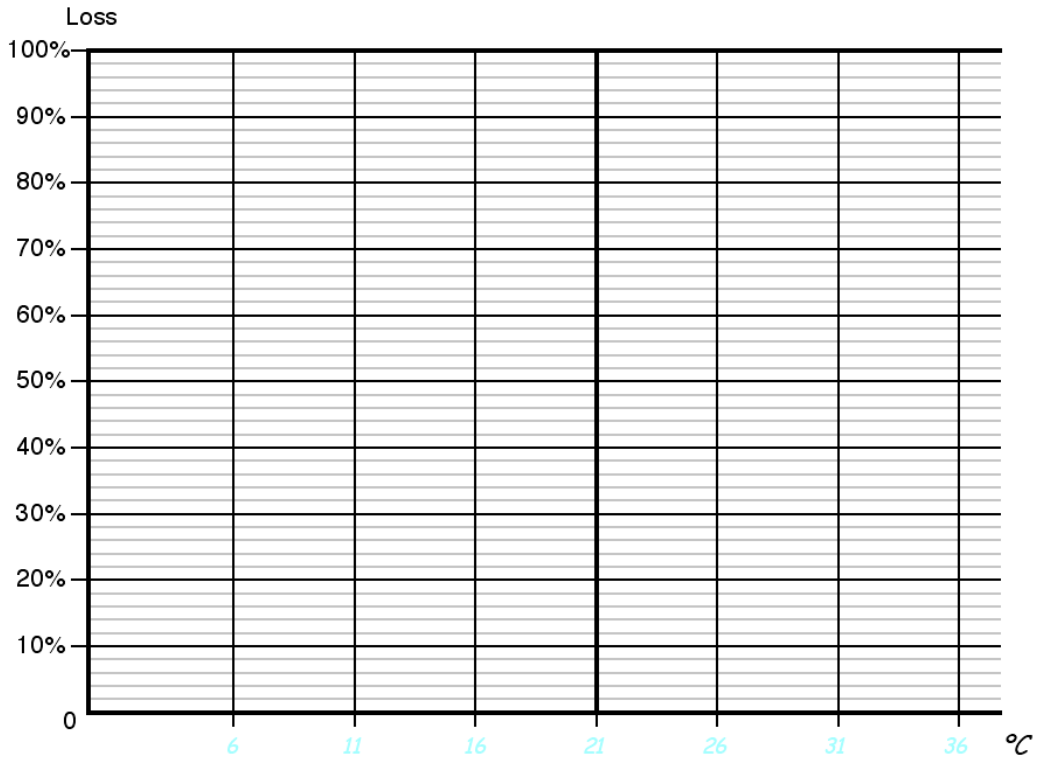
95 %	*50* %	*15* %	0%	*10* %	*45* %	*85* %

Next, to prepare for Item 5 overleaf, copy over to the top of the next page both (a) your seven temperatures from Item 2 and (b) your percentage losses from Item 4.

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

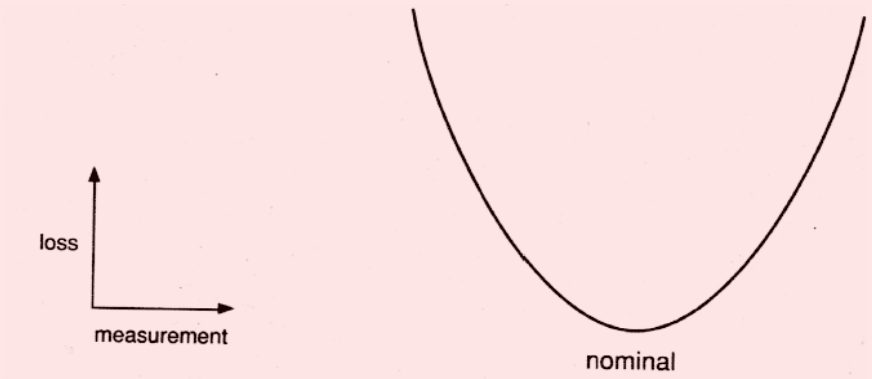
5. Write your seven temperatures along the horizontal axis at the bottom of the graph-paper below. You will see that I have included my own temperature scale printed faintly in blue: so simply over-write my temperatures with your own. Then, referring to your temperatures along the horizontal and your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

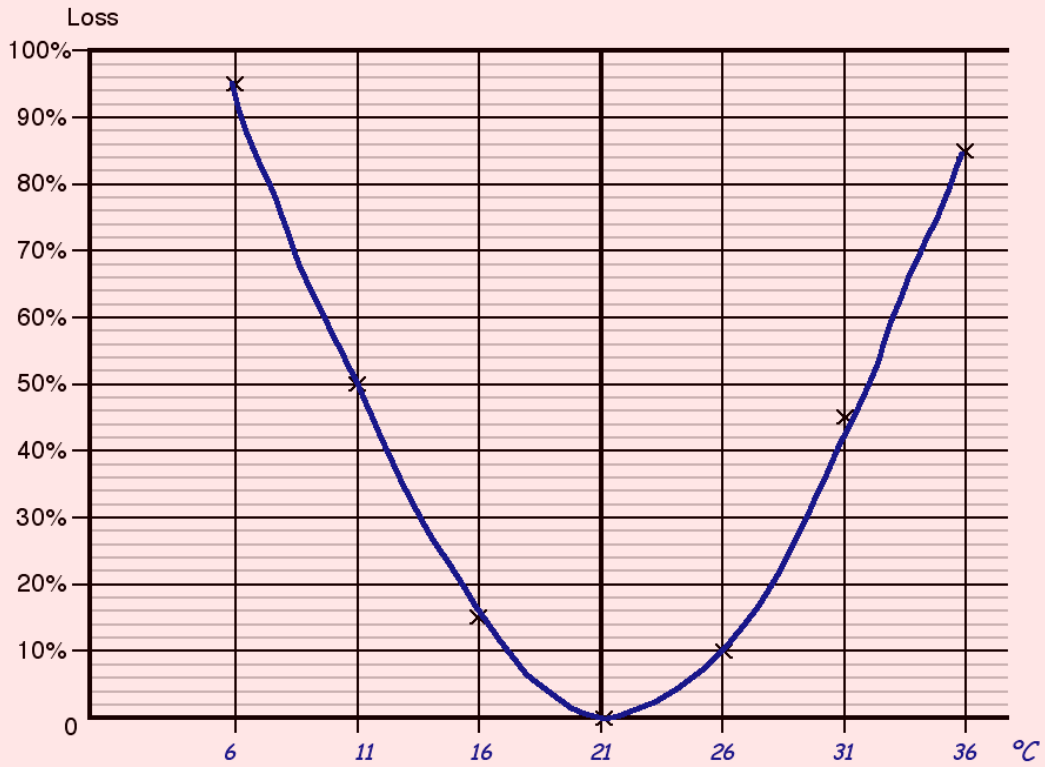


6. Finally, draw a smoothish curve approximately through your seven points. Don't bother about trying to be *too* artistic!

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.

(Continue straight on to Activity 7–f overleaf.)

Pause for Thought 7–f comes from Day 7 page 23.

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.

Continue (briefly) under the above Pause for Thought near the bottom of Day 7 page 23.

Pause for Thought 7–g comes from Day 7 page 24.

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 Day 7 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!

Continue (even more briefly!) at the bottom of Day 7 page 24.

Pause for Thought 7–h comes from Day 7 page 25.

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 111):

   "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!)

Continue on Day 7 page 26.

Major Activity 7–i (pages 115–122) comes from Day 7 pages 28–35.

MAJOR ACTIVITY 7–i

Please begin by reading through page Day 7 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.

This page comes from Day 7 page 29.

3. Search for examples. (*Out of the Crisis* pages 109–110[128–129]; Appendix pages 32–33.) A big 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.

This page comes from Day 7 page 30.

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.

This page comes from Day 7 page 31.

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 pages 60–61) or by "quality assurance".

This page comes from Day 7 page 32.

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 116). 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?

This page comes from Day 7 page 33.

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 115). 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*.

This page comes from Day 7 page 34.

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).

This page comes from Day 7 page 35.

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 116) 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.

There are some brief concluding remarks on Day 7 page 36.

DAY 8: A NEW CLIMATE

On Day 8 page 14 I shall ask you to make a choice of three Areas (sections, departments, etc) on which to base your first use of Major Activity 8–d which will begin a little further on. So, for your reference when you subsequently reach that Major Activity, note those Areas here:

Area *A* ..... ; Area *B* ..... ; Area *C* ..... .

(This page is otherwise not being used since Activities 8–a, 8–b and 8–c are all designed to be laid out on two facing pages.)

Activity 8–a (pages 124–125) comes from Day 8 pages 4–5.

ACTIVITY 8–a

Is there much Joy in Work in your organisation—either on your part or anybody else's?

What kind of things in your organisation prevent, or at least obstruct, Joy in Work?

What harm does lack of Joy in Work do to your organisation?

What kind of things could be done in your organisation to encourage and enable more Joy in Work?

What kind of benefits to your organisation could result if there were to be more Joy in Work?

Continue on Day 8 page 6.

Activity 8–b (pages 126–127) comes from Day 8 pages 6–7.

ACTIVITY 8–b

Is there much innovation in your organisation—either on your part or anybody else's?

What kind of things in your organisation prevent, or at least obstruct, innovation?

What harm does lack of innovation do to your organisation?

What kind of things could be done in your organisation to encourage and enable more innovation?

What kind of benefits to your organisation could result if there were to be more innovation?

Continue on Day 8 page 8.

Activity 8–c (pages 128–129) comes from Day 8 pages 8–9.

ACTIVITY 8–c

Is there much cooperation in your organisation—either on your part or anybody else's?

What kind of things in your organisation prevent, or at least obstruct, cooperation?

What harm does lack of cooperation do to your organisation?

What kind of things could be done in your organisation to encourage and enable more cooperation?

What kind of benefits to your organisation could result if there were to be more cooperation?

Continue on Day 8 page 10.

The tables on pages 130–139 come from Day 8 pages 29–38: see Note 2 at the bottom of Day 8 page 3.

TABLES FOR USE WITH THREE AREAS

Areas and their Options	Effects of Options		
	Effect on *A:*	Effect on *B:*	Effect on *C:*
A:			
B:			
C:			

TABLE ONE

Areas and their Options	Effects of Options			
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Net Effect on the Company
A:				
B:				
C:				
Net Effect of Adopted Options				

TABLE TWO

Areas and their Options	Effects of Options			
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Net Effect on the Company
A:				
B:				
C:				
Net Effect of Adopted Options				

TABLE THREE

Areas and their Options	Effects of Options			
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Net Effect on the Company
A:				
B:				
C:				

TABLE FOUR

Areas and their Options	Effects of Options			
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Net Effect on the Company
A:				
B:				
C:				
Net Effect of Adopted Options				

TABLE FIVE

TABLES FOR USE WITH FOUR AREAS

Areas and their Options	Effects of Options			
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Effect on *D:*
A:				
B:				
C:				
D:				

TABLE ONE

Areas and their Options	**Effects of Options**				
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Effect on *D:*	Net Effect on the Company
A:					
B:					
C:					
D:					
Net Effect of Adopted Options					

TABLE TWO

Areas and their Options	Effects of Options				
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Effect on *D:*	Net Effect on the Company
A:					
B:					
C:					
D:					
Net Effect of Adopted Options					

TABLE THREE

Areas and their Options	Effects of Options				
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Effect on *D:*	Net Effect on the Company
A:					
B:					
C:					
D:					

TABLE FOUR

Areas and their Options	Effects of Options				
	Effect on *A:*	Effect on *B:*	Effect on *C:*	Effect on *D:*	Net Effect on the Company
A:					
B:					
C:					
D:					
Net Effect of Adopted Options					

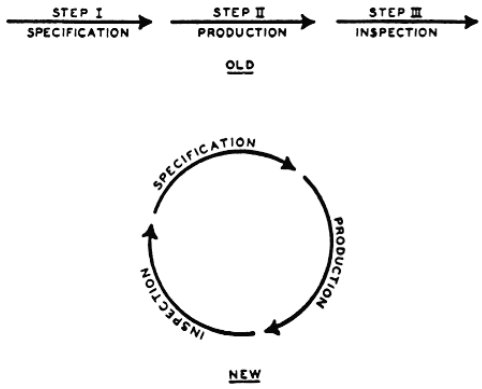
TABLE FIVE

DAY 9: A SYSTEM ... OF PROFOUND KNOWLEDGE

These two Pauses for Thought (pages 141–142) come from Day 9 pages 4–5.

PAUSE FOR THOUGHT 9–a

So what *is* the important difference between the "Old Way" and the "New Way"?



It's simply the difference between a line and a circle! The line stops (or disappears). But the circle keeps going round.

PAUSE FOR THOUGHT 9–b

What kind of things does that simple change from a line to a circle signify to you?

The "Old Way"

You do *this* (Step 1), then you do *that* (Step 2), then you do *something else* (Step 3)—and that's it! Done; finished; gone. And later, presumably you may do something similar again, one or more times. And each time it's simply: done; finished; *gone!*

The "New Way"

The circle immediately creates thoughts of feedback, learning, improvement. Having gone around the circle once, *Step 3 leads back into Step 1*. We *learn* from what happened the first time around and, as a result, we may appropriately alter (improve) Step 1, according to what has just been learned. And that in turn is likely to alter (improve) what happens in Step 2, which is likely to alter (improve) what happens in Step 3. And the learning from that second cycle is fed into the third cycle, improving what happens throughout yet further.

Continue following the above comments on Day 9 page 5.

.....

Activity 9–c comes from Day 9 page 7.

ACTIVITY 9–c

With regard to your organisation, suggest some ways in which the improvement of quality would *reduce* cost.

(If you need a hint, you will find one on Appendix page 38.)

Continue at the section "Organisation charts—vertical or horizontal?" on Day 9 page 7.

Pause for Thought 9–d comes from Day 9 pages 8–9.

PAUSE FOR THOUGHT 9–d

How would you describe the relationship between Shewhart's diagram of the "New Way" (refer back to the diagram on Day 9 page 3 and also to your thoughts here on page 141) with Deming's "Production (or Organisation) Viewed as a System" flow diagram on Day 9 page 2? And what might that tell you about the *purpose* of Deming's flow diagram?

Surely the "New Way" diagram is an embryonic version of Deming's flow diagram—and in fact, with Shewhart's particular choice of words, of Deming's original "*Production* Viewed as a System" flow diagram. So what does that tell us about the *purpose* of the flow diagram? We have already seen that the "New Way" diagram immediately relates to *improvement*. So is that not the essential purpose of Deming's flow diagram itself? Remember his description of what the flow diagram does and what the consequence is: "A flow diagram is an organisation chart. Anybody that works there ... can see what his job is." By contrast, what does the conventional organisation chart do, and what does it show? It shows the "chain of command". Rather than helping people to see what their *job* is, it tells them who their *boss* is (they probably knew already!). But, of course, sadly the truth is that, in organisations where the conventional organisation chart is the more appropriate picture, this *does* show people what their job is there: it is to please the boss. If Deming's "organisation chart" is the more appropriate, their job is instead to please their consumer(s), be they internal or external.

Continue at the section "Where's the fault?" on Day 9 page 9

Major Activity 9–e (pages 144–148) comes from Day 9 pages 11–15.

MAJOR ACTIVITY 9–e

With what you have learned this morning fresh in mind, it is now time for you to try to develop a "macro" flow diagram of your organisation. To prepare the ground for that, I will quote in advance an extract in Dr Deming's own words from Day 10:

> "A system of schools (public schools, private schools, parochial schools, trade schools, for example) is not merely pupils, teachers, school boards, and parents. It should be, instead, a component in a system of education in which pupils from toddlers on up take joy in learning, free from fear of grades and gold stars, and in which teachers take joy in their work, free from fear of ranking. It would be a system that recognises *[and appreciates]* differences between pupils and differences between teachers. The reader, after study of the rest of this paper, might wish to try to construct a system of medical care."[a]

The reason for Dr Deming beginning this extract by discussing a "system of schools" is that a "system of medical care" is of a similar order of magnitude—i.e. countrywide or larger! Thus the components to be included in the diagram will also generally be large. Notice further that his system of schools is clearly a *good* system.

By "this paper" Deming was referring to the May 1990 version of the System of Profound Knowledge whose full text is reproduced between the final pages of today's material and the end of Day 11. The full text is also contained in *A System of Profound Knowledge*, BDA Booklet A9 pages 3–20).

The procedure in this Major Activity is divided into five stages. The first stage gives you some initial practice at constructing a flow diagram by attempting to follow Dr Deming's suggestion above. Clearly, some of the detail in any such attempt will depend on local circumstances, such as the country in which you are living, and maybe which region of the country. The fine detail does not matter: but the concept does.

Stage 1. Therefore first spend a little time beginning to try to construct a system of medical care in the space below, of similar layout to Dr Deming's famous flow diagram and repeatedly referring back to it on Day 9 page 2 or *DemDim* page 133. But remember to keep it "macro": do not try to make it detailed or complicated—be guided by the nature of what is in his diagram. Also, don't expect to complete this task right now, as there is some help for you in the Appendix. However, as usual, do what you can first *before* turning to the Appendix, for that is Stage 2 below. Then at Stage 3 I shall give you some suggestions about how to tackle the flow diagram of your organisation. You might like to look ahead at those thoughts in Stage 3 right now (on the next page) and then also use them to help you with this initial practice diagram.

Stage 2. Now study my attempt on Appendix page 38. That may give you some further ideas as to what you might include in your attempt at Stage 1. So then spend a little more time revising your Stage 1 diagram.

Stage 3. And now try to apply what you have learned during the first two stages to develop an "Organisation Viewed as a System" flow diagram of your own organisation.

It would probably be sensible to start with the central track, broadly summarising the main aspects of what the organisation does. In Deming's diagram the central track starts at "Receipt and test of materials", then proceeds through production, assembly and inspection, and goes as far as "Distribution". A useful way to then proceed with the rest of the diagram is to ask yourself lots of questions. What comes into the system? Where does it come from? What important contributions enter the central track "from the side" (like the "Tests of processes, machines, methods, costs" in Deming's diagram)? What goes out of our system? To where, to whom? That is, who and where are our "consumers"? How do we get to learn what our consumers think about what they get from us? What do we do with that information? How do we use it to help improve the system?

Stage 4. Next, considering your flow diagram constructed at Stage 3, describe examples of how what happens in one part of the flow diagram is being hindered by some things happening (or not happening) elsewhere in the flow diagram. Does consideration of the *conventional* organisation chart explain why those harmful things are happening? What could be done to *help* rather than *hinder*?

Stage 5. Finally construct a modified version of your Stage 3 diagram, bearing in mind your answers at Stage 4, thus showing how your organisation could become a *better* system than it is now.

After the break, continue on Day 9 page 16.

(Page intentionally left blank.)

Pages 150–151 (from Day 9 pages 28–29) are used in the "Preparation for the Second Project" section beginning on Day 9 page 26.

	Obsession with Quality	All One Team	Scientific Approach
14 POINTS 1. Create constancy of purpose			
2. Adopt the new philosophy			
3. Cease dependence on mass inspection			
4. End lowest tender contracts			
5. Constantly improve systems			
6. Institute training			
7. Institute leadership			
8. Drive out fear			
9. Break down barriers			
10. Eliminate exhortations			
11. Eliminate arbitrary numerical targets			
12. Permit pride of workmanship			
13. Encourage education			
14. Clearly define top management commitment and action			
DEADLY DISEASES 1. Lack of constancy of purpose			
2. Emphasis on short-term profits			
3. Performance appraisal			
4. Management job-hopping			
5. Running a company on visible figures alone			

Summary of the four-step procedure

Step 1: Browsing session

Suggestions:

- Read the relevant part of Balaji's "Contributions" (around six pages);
- Read the relevant part of *DemDim* chapter 18 (average of four pages);
- Browse through the material for the half-day up to, but not including, the Activity.

The purpose of this browsing session is similar to a gymnast's "limbering-up" session before getting onto the strenuous exercise. The difference is of course that, rather than limbering up your muscles, you'll be limbering up your brain!

Step 2 *[analogous to the gymnast's "strenuous exercise"!]*: Dr Deming's May 1990 version

Choices for your work on each item (remember: "*choices*"—not to attempt them all!)

- Immediate reactions upon reading it (e.g. "Really important", "I'm already familiar with this", "My organisation is doing the direct opposite to this", "Why is he saying this?", "What does he mean by that?", "What does this imply?", "Why is my organisation doing the direct opposite to this?", "What would be the benefits if my organisation *stopped* doing the direct opposite to this?".
- Try to answer one or more of those questions.
- Note down any illustrations from your own experience relevant to this item.
- If your initial reaction was something like "I'm already familiar with this", try writing a brief explanation of the item to your friend who is not yet familiar with Dr Deming's work.
- Further, with Step 4 in mind, I'll include an additional suggestion: immediately note down any links to any of the 14 Points or curing the Deadly Diseases that occur to you.

Step 3: *DemDim* version

Read the relevant part of *DemDim* Chapter 18 (irrespectively of whether or not you browsed through it in Step 1) and, while doing so,

- see if you need to update some of your earlier comments;
- see if you can answer any of your earlier questions;
- comment on matters included here which were not in the May 1990 version, and again make a note of any further links with the 14 Points and/or the Deadly Diseases.

Step 4: Activity (connections with the Points/Diseases)

First, use your notes made with respect to the final bullet-points in both Steps 2 and 3 above to jot down relevant comments against some of the Points and/or Diseases. Next, with the aid of your table on page 150, add further comments prompted by your considerations during the First Project. Lastly, read through Dr Deming's words in Step 2 one more time and then trace through the 14 Points and Deadly Diseases in turn, seeing if any further inspiration strikes you! Finally, and fairly speedily, allocate your scores on the 0–5 scale indicating what you now perceive as the strengths of the links with the current part (A, B, C or D) of the System of Profound Knowledge.

Approvals, Acknowledgments and Information

[a] (page 144) The May 1990 version of Dr Deming's System of Profound Knowledge which is used during Days 9–11 is fully transcribed in the Deming A5 Booklet A9 (formally BDA Booklet A9): *A System of Profound Knowledge*, available via office@deming.org.uk.