

**N**

**DAY 11:**

**A SYSTEM OF PROFOUND KNOWLEDGE**

**PARTS C and D**

*12 Days to Deming*

# DAY 11: A SYSTEM OF PROFOUND KNOWLEDGE, PARTS C AND D

(9.00am – 1.00pm; 2.00pm – 6.00pm)



---

Introduction to Day 11 (p 1); Part C: Theory of Knowledge; Introduction to Part C (p 3)  
Area 1: Prediction (p 4); Step 1 (p 4)



Area 1, Step 2 (p 4 [WB 186])



Area 1, Step 3 (p 7 [WB 189])  
Area 2: Theory and learning (p 8); Steps 1 and 1a (p 8); A theory of knowledge in seven words (p 9)  
Area 2, Step 1a continued (p 9)



Area 2, Step 2 (p 10 [WB 190])



Area 2, Step 3 (p 12 [WB 192])  
Area 3: Operational definitions (p 13); Steps 1 and 1a (p 13)



Area 3, Step 2 (p 14 [WB 193])



Area 3, Step 3 (p 16 [WB 195]); Step 3 (complete) (p 17 [WB 196])



Step 4: Activity 11–a (p 18 [WB 197])



Part D: Knowledge of Psychology; Step 1: Browsing session (p 22)



Step 2: Dr Deming's May 1990 version (p 22 [WB 201])



Step 3: *DemDim* version (p 31 [WB 210])



Step 4: Activity 11–b (p 32 [WB 211])



Coda (p 36); “Out-of-hours” note (p 36)

---



## DAY 11: A SYSTEM OF PROFOUND KNOWLEDGE, PARTS C AND D



# SECOND PROJECT CONTINUED

Welcome back to the second half of this major project. Here we shall study Parts C and D of the System of Profound Knowledge: respectively “Theory of Knowledge” and “Knowledge of Psychology”.

In the May 1990 version of the System of Profound Knowledge, Part C is deceptively short. If I were simply to reproduce that version here then it would occupy no more than two-thirds of a page, and almost a third of that would be taken up by the blank lines between the paragraphs! Part C contains just nine items, along with a couple of brief examples of the first issue raised. Dr Deming expanded quite considerably on his wording by the time of *The New Economics*, but I think there is much value in sticking to these few briefly-stated but deep issues for your initial study of this subject. However, in their original ultra-compact form, they most certainly are not easy material for the newcomer. In fact, the material is not necessarily easy for many “old hands” either! But (and you’ll surely have become aware of this already) “Deming does what he does because he wants us to *think*”. Those were, in fact, the exact words that Bill Scherkenbach said to me on the evening before that first London four-day seminar in 1985, i.e. on the day before I first met Dr Deming. I’m sure of that because I wrote them down at the time!

In the context of this course, the relatively small number of issues in Part C has the advantage of leaving time within the half-day to carry out some extra learning. This learning is on two topics that have been mentioned several times but so far never actually studied during the course. In fact, they are both extremely important and useful topics in their own right and would therefore be well worth studying even outside the context of the System of Profound Knowledge. Further, like our understanding of variation and the use of control charts, both have their origin in the work of Walter Shewhart, one quite explicitly and the other in concept with Dr Deming then providing the finishing touches.

Were you (ill-advisedly!) attempting to study the System of Profound Knowledge without any previous exposure to Deming’s work, you would probably expect Part D to be the most immediately accessible of the four parts. To many newcomers, Deming’s statements about appreciation for a system, optimisation of a system, suboptimisation, variation, statistical control, common and special causes, etc, etc, plus what is still to come in Part C, might all seem pretty daunting. By comparison, Part D is on Psychology: it’s about

*people*—how people behave, how people react in various situations, what motivates or demotivates them, and so on. Much more familiar—so one might think.

And therein lies the problem. For, without the benefit of the background that we have now built up during this course, the newcomer is rather likely to jump to hasty conclusions about what Deming writes in that final part: “I agree with what he says there”, or “No, that’s not true”, or even “Come on—that’s ridiculous!”. But hopefully you’ll be much more wary about jumping in with reactions such as “No, he’s wrong about that”. By now you should be pretty confident that Deming never said or wrote anything without good reasons. So, rather than “He’s wrong”, the much wiser and more fruitful reaction would be to wonder: “*Why* is he saying this?”—which, you’ll recall, was one of the sample reactions included in my guidance for Step 2 of the four-step procedure. And, in some cases, you might not be able to discover the reasons today, or tomorrow, or for a while longer. But keep at it, and in time the answers will come. And then you’ll have *really* learned something new—and fruitful. At least, that’s repeatedly been my experience over more than 30 years. And since you’ve now managed to reach the 11th Day out of the 12 in this course, I believe it will prove to be true for you as well.

## **PART C: THEORY OF KNOWLEDGE**

The details of how we'll work through Part C are somewhat different from the procedure we use in the other three parts. Not only is Deming's writing particularly brief here: almost all of the material will be new to you—and it is powerful stuff! That's why I shall provide you with rather more help and additional reading in this part.

One way that I have found to be helpful to newcomers is to divide the items in Part C into three areas—rather than throwing them at you all at once! The three areas are:

- Area 1. Prediction;
- Area 2. Theory and learning; and
- Area 3. Operational definitions;

and there will be just three items in each area. Naturally, as you would expect in Dr Deming's work, there are plenty of links between these three main areas. However, it is easier to start by working on them separately and then letting the links between them develop naturally—as they soon will.

Therefore, one of the main changes this morning will be for you to carry out the first three steps of the four-step procedure (i.e. the browsing session, Dr Deming's May 1990 version, and *DemDim* Chapter 18) *separately for each* of the three areas rather than trying to deal with everything all together. Thus, in each case, you will *only* deal with the extracts from this morning's material and *DemDim* Chapter 18 which relate to that particular area. This will take up the bulk of the time. Then, just before finally moving on to Activity 11-a, I'll suggest you carry out the normal complete Step 3, i.e. take another look through the whole of the relevant section of *DemDim* Chapter 18. This will be in order to bring all three areas together in your mind before starting the Activity: of course, you won't need to spend long on it since you will by then have already introduced yourself to the whole section during the three "mini Step 3"s. There's no need for you to try to memorise all these logistics—I'll carefully guide you through them as and when the time comes!

There are some other differences specific to Part C. Firstly, Deming did not make many changes to Part C before the time that I rewrote *DemDim* Chapter 18 in 1992. So the *DemDim* version is quite similar to the 1990 version in that it comprises a relatively small number (ten in that case) of compactly-stated items. However, I have added quite a lot of associated commentary, most often using Deming's own words and occasionally my own. The same is true of what follows here in the course material except that most of this commentary is mine. Nevertheless, the overall amount of material in both the *DemDim* version and here is still quite small. Therefore, in this case, I recommend that you *definitely* read through all of what's available during your initial short browsing sessions (even though you will already have looked at it all during your preparation time) whereas in Parts A and B you may have skipped some of the similar material.

The final major difference in Part C compared with elsewhere will be for you to read through two chapters from *DemDim* that you haven't previously looked at. In both cases I shall provide an introduction to the subject-matter here. The chapters concerned (both around ten pages) are Chapter 9 for Area 2 and Chapter 7 for Area 3.



## Part C, Area 1: Prediction

### Area 1, Step 1: Browsing session

Relevant reading:

Prelude C: “Preludes” pages 15–19. Prelude C is mostly related to Area 2, but there are also a couple of matters directly related to this first area.

DemDim: page 274, paragraph 1 to page 275, paragraph 4.

Today’s material: pages 4–6 [WB 186–188].



*The rest of this page and the next three pages (pages 4–7) are also on Workbook pages 186–189.*

### Area 1, Step 2: Dr Deming’s May 1990 version

1. Any rational plan, however simple, requires prediction concerning conditions, behaviour, comparison of performance of each of two procedures or materials.

For example, how will I go home this evening? I predict that my automobile will start up and run satisfactorily, and I plan accordingly. Or I predict that the bus will come, or the train.

Or, I will continue to use Method A, and not change to Method B, because at this moment evidence that Method B will be dependably better in the future is not convincing.

(As on Day 10, in the first two items here and on the next page I will start by suggesting how you might explain these items to your interested friend. But then also keep an eye on your summary of the four-step procedure to guide you in making further notes on these topics.)

*Part C starts out more straightforwardly than did Parts A and B. Any plan is surely resting on thin ice if it isn't founded on wise predictions! And this is clearly very pertinent to management. In fact, elsewhere (DemDim page 264) Deming stated more pointedly that "Management ... is action based on prediction". I'd certainly hope so! But how do people in management make their predictions? For a start, do they know anything about stable and unstable processes, common and special causes, interpreting a control chart? To put it mildly, that's all pretty relevant for figuring out what's predictable and what isn't! Or do they just depend on "experience" or citing examples of where "it worked before"? (See also Items 4 and 5 in Area 2.) Say I tossed a coin yesterday and it came down Heads. I now have some experience, I now have an example. Does it predict anything about what will happen if I toss the coin today?*

*So yes, of course, managers along with others need to predict successfully. But what do they know about how to do it? Deming's work can help them—a lot.*

2. A statement devoid of prediction or explanation of past events is no help in management of a system.

*[We need to be careful about that word "explanation": some people are skilled at finding a "reason" for anything! An observation from Dr Don Wheeler that I have often repeated is:*

*"Prediction requires knowledge; explanation does not."*

*Dr Deming was instead presumably referring to the kind of explanation that **does** require some knowledge! By the time of The New Economics (page 69[102]), he had avoided the problem by revising his wording to:*

*"... a statement, if it conveys knowledge, predicts future outcome, with risk of being wrong, and ... fits without failure observations of the past."*

*which is closer to the version you have already seen on Prelude C page 15.*

*An important emphasis in the Theory of Knowledge part of The New Economics Chapter 4 (page 72 [106]) is that "information is not knowledge". Indeed, a considerable part of Theory of Knowledge concerns how to **use** information to create and develop knowledge. Again you have had a good introduction to this in Prelude C.]*

*Let's develop that important emphasis since it will add focus to this item. As soon as you think about it, it is obvious enough that information and knowledge are indeed different. Particularly because of ever-developing technology, information has mushroomed in recent decades. I do not believe that knowledge has increased at anything like the same rate. I'd say this suggests that not all of that information is being used very effectively to develop knowledge.*

*Dr Deming was particularly conscious of the difference between information and knowledge in the context of education. He spoke of it at the dedication of the Cedar Crest Academy, Washington in October 1985, referring in particular to an article titled "Why Johnny can't think" in Harper's Magazine (April 1985). Here are some brief extracts from his address:*

*"Johnny never had the chance to think. Children don't get a chance to think any more. Examinations are check-block [tick-box] systems. Children fill their heads with answers. If you have enough information in your head, you can mark the right answers, very simple. It is a labour-saver, because the teacher can tabulate in a flash the results of fifty pupils, bar diagram and comparisons. Neither the teacher or pupil need to think. All so simple. The Educational Testing Service grades applicants the same way; am I right?*

*Johnny with his head full of answers, like a dictionary, is not thinking. A dictionary is pretty important, of course. I use one frequently. But the dictionary can't think for me. The dictionary does not lay out a course of action for us. It does not contain knowledge. It contains words.*

*Marking the right blocks [ticking the right boxes] does not explain anything. They don't help Johnny to predict or explain what happened in the past. Science has advanced by explaining what happened in the past, as in geology, geometry, anthropology, geography, chemistry. Science is not a dictionary full of words, but is knowledge of the world, and this means temporal spread to explain what happened in the past, and what to predict in the future."<sup>a</sup>*



(Over to you now for your reactions, thoughts, comments for the rest of Part C.)

3. Interpretation of data from a test or experiment is prediction—what will happen on application of the conclusions or recommendations that are drawn from a test or experiment? This prediction will depend largely on knowledge of the subject-matter. It is only in the state of statistical control that statistical theory aids prediction.

*[These last two sentences contain important emphases for statisticians in particular. Sometimes it seems that conventional statisticians act as if “knowledge of the subject-matter” should, on the contrary, be effectively **ignored** lest it bias or prejudice conclusions, i.e. as if conclusions should depend wholly on the data being analysed. Further, as regards the use of data for prediction purposes, we are again reminded that the essence of the difference between statistical control and the lack of it is respectively **predictability** and the lack of it.]*

*If you are a statistician, you might prefer to remain unaware of the following paragraph! It is an extract from Chapter 7: “Management is Prediction” on page 263 of The Essential Deming<sup>p</sup>. Here Deming was primarily (but not wholly) discussing the area in which he first became famous: sampling and survey analysis.*

*“The procedure of sampling, the construction of a satisfactory questionnaire, and the proper procedure for interviewing, all require thorough knowledge of the subject and of the difficulties that are to be met in carrying out the survey. That is why it has been stated that applied statistics is 90 percent knowledge of the subject-matter and only 10 percent statistics; it was Shewhart who first made this statement with regard to statistical work in engineering and manufacturing.”]*



**Area 1, Step 3: *DemDim* version**

Now briefly read through *DemDim* page 274, paragraph 1 to page 275, paragraph 4 again, revising your earlier comments if necessary and adding any further notes below.



## Part C, Area 2: Theory and Learning

### Area 2, Step 1: Brief browsing session

Relevant reading:

Prelude C: “Preludes” pages 15–19. You’ve already read this earlier. But since Prelude C is mostly related to this second area, you might like to skim through it one more time before proceeding.

*DemDim*: page 275, paragraphs 5–7 (ending on page 276). Note that paragraph 5 neatly provides a strong link between the first two of our three areas.

Today’s material: pages 10–11 [*WB 190–191*].

### Area 2, Step 1a: A chapter from *DemDim*

The first topic for your additional reading is what the Japanese and others call the Deming Cycle—though, as mentioned on Day 9, Deming himself always referred to it as the *Shewhart* Cycle. For reasons that you will soon see, it is also known as the PDSA Cycle. I think you will recognise it as a formalisation of what was happening in the little story related by Balaji in his Prelude C.

The Deming Cycle is the subject of *DemDim* Chapter 9. So please read through the whole of that chapter after this introduction. I’ll ask you to take a couple of initial looks inside the chapter before you read it all. In fact, you’ll be able to turn the pages of Chapter 9 relatively quickly since you were already introduced to much of its content during Day 9.

Recall those beautifully simple diagrams that we saw early on Day 9: Walter Shewhart’s distinction between the “Old Way” and the “New Way”. They are redrawn near the beginning of *DemDim* Chapter 9 (*DemDim* page 140). Also recall that magnificent phrase by which Shewhart described the “New Way” (i.e. the circle compared with the line) as “a dynamic scientific process of acquiring knowledge” (Day 9 pages 5–6).

On Day 9 we recognised both the “Organisation Viewed as a System” diagram and the Deming Chain Reaction as applications or extensions of that “New Way” thinking. Just as immediately, here we can surely extend it to the Shewhart Cycle—and, of course, we can now recognise why Dr Deming gave it that name. Look at the illustration of the Cycle on *DemDim* page 143—and, if proof were needed of what Dr Deming called it, his sketch on that page is reproduced directly from an overhead-projector “scroll” on which he wrote during a four-day seminar.

Also take a look at the late Professor George Box’s diagram of the “Scientific Improvement Process” (*DemDim* page 141). This is an excellent alternative representation of the same kind of thinking. Suppose we start with some tentative theory (which, as Deming observed, might be as little as a hunch—see *DemDim* page 247). A plan is carried out in order to test the theory and, as a result, some data are obtained. Those data are analysed and, as a result of that analysis, the theory is updated. Then the sequence is repeated in order to test the updated theory—and so on. And, all the time (referring to the bottom of Professor Box’s diagram), *knowledge increases*.

I suggest that we have here yet another “simple and profound” combination. If you have not come across it before, take a couple of minutes to study carefully Dr Deming’s sketch on *DemDim* page 143—I think it speaks for itself. Now, you may have come across something like it elsewhere under the name of the PDCA (Plan–Do–Check–Act) Cycle—see *DemDim* page 144. But, instead, Dr Deming always referred to the Shewhart Cycle as PDSA (Plan–Do–**Study**–Act). The difference is crucial: the third step of the Cycle is the one where the real learning takes place (as the question in his sketch indicates), so “Study” is much

more appropriate than the simplistic “Check” which rather sounds like a mere Yes or No. Indeed, Deming sometimes suggested that one might consider use of the Cycle as *starting* with “Study” since that study could lead to the initial theory or hunch (as indeed we saw in one of the illustrations in Prelude C).

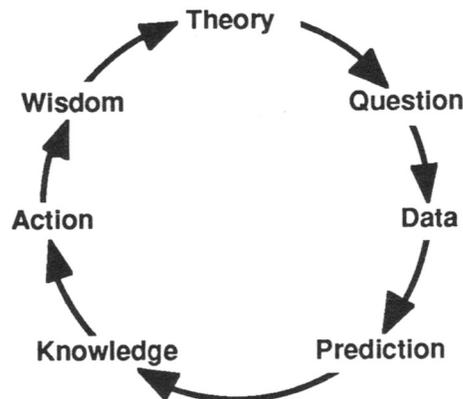
Note also the remark in brackets in the second step: “Carry it out (preferably on a small scale)”. Why a small scale? Because “it” might not work—and it would be preferable to have this demonstrated by a small amount of harm rather than a lot!

I recall attending a four-day seminar in America in the year which followed a major revision of the American income-tax paperwork. In order to illustrate this aspect of the second step of the PDSA Cycle, Dr Deming observed:

“You know, a sample of five would have been sufficient for the Internal Revenue Service to learn how impossible is this tax form. They did not need a sample of 80 million.”

### A Theory of Knowledge in seven words

Finally, now that you have seen the Deming/Shewhart Cycle as well as being familiar with the general concept of Shewhart’s circle definition of the “New Way”, I cannot resist showing you the following illustration. This was constructed by Bill Scherkenbach and appears on page 196 of his second book: *Deming’s Road to Continual Improvement*. Bill rightly claims that this seven-word diagram<sup>c</sup> really represents a complete theory of knowledge. If at some time you would like to read a much more substantial discussion on Theory of Knowledge, I can do no better than recommend you to pages 190–220 of Bill’s book.



**Now turn to *DemDim* page 139 and read Chapter 9.** You’ll be able to skip through some of these pages very quickly.

(Continue to Area 2, Step 2 overleaf.)



Pages 10–12 are also on Workbook pages 190–192.

## Area 2, Step 2: Dr Deming's May 1990 version

4. Without theory, there is nothing to modify or to learn by comparison with experience.

*[In earlier versions, Dr Deming combined this with Item 5 and stated compactly that “Both experience and examples teach nothing without theory”. It is helpful to consider the PDSA Cycle in relation to all three items (4, 5 and 6) in this second area.*

*And don't be put off by that word “theory”. I'll reproduce here the whole of the quotation from Dem-Dim page 247 to which I referred earlier:*

*“A theory may be complex. It may be simple. It may only be a hunch, and the hunch may be wrong. We learn by acceptance, or by modification of our theory, or even by abandoning it and starting over.” (Also see Item 6 opposite.)*

*We are surely back to Shewhart's “dynamic scientific process of acquiring knowledge”.]*

5. An example is no help in management unless studied with the aid of theory. To copy an example of success, without understanding it with the aid of theory, may lead to disaster.

*[Recall my warnings about case studies on the opening page of Day 6. Also, isn't it possible to find examples of success of just about **any** idea or proposal? The trouble is that you can often find examples of its failure as well. So where does that get us?]*

6. No number of examples establishes a theory, yet a single unexplained failure of a theory requires modification or even abandonment of the theory.

*[Doubtless, the people to whom Daniel Boorstin referred, relating to Pause For Thought 2–b, had countless examples to confirm that the Earth is flat ... .]*

(Continue to Area 2, Step 3 overleaf.)



**Area 2, Step 3: *DemDim* version**

Now briefly read through *DemDim* pages 275–276, paragraphs 5 to 7 again, as usual revising your earlier comments if necessary and adding any further points below.



## Part C, Area 3: Operational Definitions

### Area 3, Step 1: Brief browsing session

Relevant reading:

*DemDim*: page 276, paragraphs 8–10.

Today's material: pages 14–15 [*WB* 193–194].

### Area 3, Step 1a: A chapter from *DemDim*

The other chapter for your additional reading is Chapter 7, which has the same title as above. Before turning to that chapter, I'll summarise the main features of operational definitions and the important ways in which they differ from what are more ordinarily regarded simply as "definitions". As with Area 2, this introduction will ask you to take an initial look at a couple of points within the chapter before going back to the beginning. It will not be necessary for you to ponder over every detail of this chapter: it mainly consists of a host of illustrations and you'll only need to get a broad idea of what those illustrations are telling you.

So what's the difference between an ordinary definition and an *operational* definition? Attempting single-word answers, I'd say that it's the difference between *what* and *how*. Whereas a definition is concerned with ideas and concepts, an *operational* definition is concerned with how something is to be observed, measured, counted, recorded, decided, etc. In Dr Deming's own words (*Out of the Crisis* page 237[276]):

"An operational definition puts communicable meaning into a concept."

There are two prime aspects of an operational definition:

- preventing ambiguity; and
- fitness for purpose.

Easy enough? Well, maybe not. I'll illustrate with three examples: "punctual", "unemployed" and "clean":

1. **punctual:** I guess none of us would have much difficulty in defining the word "punctual", say in relation to the arrival time of a train at a station. However, recalling what we saw on Day 7 page 11, your definition would probably differ from the "official" one! Re-read the top of *DemDim* page 113. You will notice that the brief extract from the newspaper article there also suggests a *purpose* for the change of (operational) definition!
2. **unemployed:** Similarly, presumably we all know what is meant by "unemployed"; some readers may be all too familiar with the concept. But look at the bottom paragraph of *DemDim* page 111. Apparently the British Government was having some difficulties with the "fitness for purpose" aspect of its operational definition!
3. **clean:** This was one of Dr Deming's favourite illustrations, and he would use it to demonstrate the importance of the "fitness for purpose" aspect. He would point out that if somebody asked him to "clean this table", he would not know what to do unless he understood *why* it should be cleaned. Clean enough to eat off it? That would be one thing. Clean enough to perform a surgical operation on it? That would be quite another.

One consequence of this thinking is that, in general, an operational definition cannot be classified in any absolute sense as "right" or "wrong". Well, OK, maybe it could be so bad that it's useless for every conceivable purpose! But the more important point is that an operational definition that is "right" for one purpose could be either wholly inadequate or else unnecessarily sophisticated for another.





9. There is no such thing as a fact concerning an empirical observation. Any two people may have different ideas about what is important to know about any event. [E.g. in obtaining some result, one person may be most concerned with how long it takes to obtain the result whereas another may be more interested in its precision.]

*[Don't forget: an empirical observation depends on the operational definition by which it was obtained—and an operational definition is neither "right" nor "wrong". Of course, if no operational definition was in place on which to base the empirical observation, still less could it convey a "fact".*

*However, Deming's second sentence indicates that he is thinking in much broader terms than just this. That second sentence is obviously true. But why does it appear in the same item? What are the links between the two sentences?*

*Many news bulletins report empirical observations on matters such as unemployment, inflation, growth, the stock market, the structural deficit, national debt, and so on. Yet what happens in interpretations by politicians? It often seems that an empirical observation provides ammunition for both those in government **and** those in opposition—because of entirely different "facts" concerning that observation! It is also very likely that the two parties may indeed "have different ideas about what is important to know about" the observation.*

*It is worth pointing out that, at a trivial level, Deming's first sentence is not literally true. "We have just recorded the value 1.23" and "The value we have just obtained lies between 1.00 and 2.00" are facts—but such facts are mere information rather than knowledge (see Item 2). Deming was surely referring here to facts that might yield knowledge and aid better practice. An empirical observation cannot e.g. indicate whether the process from which it came is in or out of statistical control. So should we not question how important are our particular "empirical observations"? Further, a process can be in control with respect to some features but not others. So the choice of quantity to record and chart is also of consequence.*

*Would you trust apparently important "facts" deduced from unimportant or inappropriate data? I fear that many do.]*

(Continue to Area 3, Step 3 overleaf.) 

**Area 3, Step 3: *DemDim* version**

And so, finally with Area 3, read through paragraphs 8–10 on *DemDim* page 276 again, revising your earlier comments and adding any new points below.

**Step 3 (complete): *DemDim* version**

As you know, the complete *DemDim* version of Part C is on pages 274–276. So read through those three pages one more time (jotting down any final notes and revisions) to bring together all three areas into your mind before proceeding to Activity 11–a.

For your future reference, the section of Chapter 4 in *The New Economics* which relates to Part C runs from the middle of page 69[bottom of page 101] to page 73[107].



**Step 4:**

**ACTIVITY 11-a**

This Activity is as those on Day 10, but now in connection with Part C: “Theory of Knowledge” (check back to Day 10 page 16 if need be). However, here I would recommend a widening of emphasis. Most of the System of Profound Knowledge is concerned with *why* things should be done or not done. But parts of the Theory of Knowledge are more about *how* to do things rather than *why* they should be done. As an example, the PDSA Cycle is concerned with *how* to learn and to improve rather than to *why* we should try.

Therefore, in this Activity, you could consider alternative questions linking into the Points and Diseases, e.g. how important is it to *apply* the Theory of Knowledge if we are to adopt this Point or to cure this Disease effectively?—i.e. the opposite kind of link compared with those usually considered so far. But a link is a link, in whichever direction it goes! So, in each case, allocate your 0–5 scores according to whichever kind of link strikes you as the more important and relevant.

(See Appendix page 41.)

POINT 1. [Create constancy of purpose.](#) (Day 4 pages 16–17.)

POINT 2. [Adopt the new philosophy. We are in a new economic age, created in Japan.](#)  
(Day 4 pages 18–19.)

POINT 3. [Eliminate the need for mass inspection as a way to achieve quality.](#) (Day 4 pages 20–21.)

POINT 4. [End the practice of awarding business solely on the basis of price tag.](#) (Day 4 pages 22–23.)



POINT 5. Improve constantly and for ever the system. (Day 4 pages 24–25.)

POINT 6. Institute modern methods of training. (Day 4 pages 26–27.)

POINT 7. Adopt and institute leadership aimed at helping people to do a better job. (Day 5 pages 2–3.)

POINT 8. Encourage effective two-way communication and other means to drive out fear throughout the organisation. (Day 5 pages 4–5.)

POINT 9. Break down barriers between departments and staff areas. (Day 5 pages 6–7.)



POINT 10. Eliminate the use of slogans, posters, and exhortations. (Day 5 pages 8–9.)

POINT 11. Eliminate work standards that prescribe quotas for the workforce and numerical goals for people in management. (Day 5 pages 10–11.)

POINT 12. Remove the barriers that rob hourly workers, and people in management, of their right to pride of workmanship. (Day 5 pages 12–13.)

POINT 13. Institute a vigorous programme of education, and encourage self-improvement for everyone. (Day 5 pages 14–15.)

POINT 14. Clearly define top management's permanent commitment to ever-improving quality and productivity. (Day 5 pages 16–17.)



DISEASE 1. The crippling disease is lack of constancy of purpose. (Day 5 pages 18–19.)

DISEASE 2. Short-term thinking defeats constancy of purpose. (Day 5 pages 20–21.)

DISEASE 3. The effects of performance appraisal are devastating. (Day 5 pages 22–23.)

DISEASE 4. Mobility of management causes instability. (Day 5 pages 24–25.)

DISEASE 5. One cannot be successful on visible figures alone. (Day 5 pages 26–27.)





## PART D: KNOWLEDGE OF PSYCHOLOGY

For Part D we return to the more usual procedure as described on Day 9 and as largely used for both Parts A and B yesterday.

### Step 1: Browsing session

Relevant reading:

Prelude D: "Preludes" pages 20–25.

*DemDim*: pages 277–279. Although there are only three pages here, they contain quite a lot of fleshing out of the various topics, some of which is from Dr Deming and some is from me. I think this section will be particularly helpful to you as you tackle this final part of the System of Profound Knowledge.

Today's material: pages 22–30 [WB 201–209].



*The rest of this page and the next thirteen pages (pages 22–35) are also on Workbook pages 201–214.*

### Step 2: Dr Deming's May 1990 version

1. Psychology helps us to understand people, interactions between people and circumstances, interactions between teacher and pupil, interactions between a leader and his people and any system of management.

(As usual, I'll suggest a few possible thoughts for your interested friend:)

*Like Part C, Part D starts off without anything controversial. Don't think that the only job of a psychologist is to help people who have "psychological problems". This is for you, this is for me, this is likely to be for most people that we know or with whom we have any contact. For whom might Dr Deming's teaching on Psychology be inappropriate? I suppose it could be for some who do have serious psychological problems. Using a couple of familiar adjectives, the latter need special care and consideration whereas the relevance of Deming's teaching is otherwise common to everybody.*

*Note also that, as you would expect, Deming concentrates in this opening statement on the interactions between people and all sorts of things—interactions: the big feature of systems. In terms of the "boxes and lines" diagram on Day 9 page 9, that diagram is too simple. The boxes representing people should have many more lines attached to them.*

2. People are different from one another. A leader must be aware of these differences, and use them for optimisation of everybody's abilities and inclinations. Management of industry, education, and government operate today under the supposition that all people are alike.

*Some care is needed in interpreting that first short sentence. A common reaction is: "Of course, people are different"—often intended pejoratively. But, in particular, I think we must beware of confusing perceived differences in effort and in natural ability.*

*Dr Deming's second sentence clarifies that he is thinking of the latter. Surely it is a fact of life that there are huge natural differences between people. Should we just rue that fact, thinking it makes management more difficult? It is surely more fruitful and profitable to regard the differences positively, realising that potential for progress is greatly enhanced by recognising and combining different abilities and talents in a cooperative environment. After all, "Variety is", as we pointed out long ago, "the spice of life".*

*Item 3 on the next page is also highly relevant to this: "People learn in different ways". Of course that's true. The frightening thing is that the way those who are trying to learn are tested and examined often means they are being assessed inappropriately. They are being assessed more on how well or badly their natural tendencies happen to fit the teaching and examination methods than on how hard they've worked or on how good they might be at using the subject-matter.*

*Now look at the final sentence. I'm sure most managers would deny that they were managing under such a supposition, particularly as regards natural ability. But isn't much of what they do only justifiable under such a supposition? Consider merit ranking, financial incentives, bonuses. Aren't these intended to both encourage and reward effort? But isn't it the truth that in practice they are often just as much, if not more so, a judgment on natural ability? What's the point of rating natural abilities where, as discussed in my second paragraph, the real gains are achievable by recognising and combining them?*

*Finally, isn't effort greatly dependent on the way an individual reacts to, and interacts with, the "system" within which he finds himself? It isn't at all uncommon to find that a person who produces little effort in one system (environment, culture, job, etc) nevertheless makes massive effort in another system—and it isn't just a case of whether he's paid more or has the greater pressure put on him. So really, isn't it the system that should be appraised rather than the individual? Considerations of intrinsic and extrinsic motivation, to be studied in Item 5 and onward, are also highly relevant here.*



(Now, for the final time, I hand over to you to write your thoughts and comments in the gaps provided, with the help of my guidance for Step 2 of the four-step procedure.)

3. People learn in different ways, and at different speeds. Some learn best by reading, some by listening, some by watching pictures, still or moving, some by watching someone do it.

4. A leader, by virtue of his authority, has obligation to make changes in the system of management that will bring improvement.

*[Yet again we return to the issue of the major sources of difficulty and waste being the systems (common-cause variation) within which people work, rather than the people themselves (possibly part of special-cause variation). The responsibility for improvement therefore lies with those who have authority over systems, not with those who suffer from them. Implicit in the statement is the need for managers to improve their understanding and mode of leadership. There will be some important material on improving leadership in the morning of Day 12.]*

5. There is intrinsic motivation, extrinsic motivation, overjustification.

*["There is" is a rather innocent beginning to this substantial section (which continues all the way through to page 30!). Dr Deming placed great value on a deep understanding of these three concepts.*

*Intrinsic motivation for work (of any kind) is motivation coming "from within": i.e. one approaches the work with the desire to do a good job because of **wanting to**, because of job-satisfaction, because of interest and excitement in the task, because of desire to please the customer, indeed because of "joy in work".*

*As opposed to this, extrinsic motivation is motivation for reasons unrelated to the job itself: e.g. to do with pay, or fear of being fired; external target-setting and competition also belong in this category. Dr Deming believed that we are all born with considerable natural intrinsic motivation but that management fails to recognise this; the consequence is that management concentrates on less-fruitful extrinsic motivation, regrettably simultaneously **destroying** much of that precious intrinsic motivation.*

*Overjustification is concerned with the devaluing effect of extrinsic reward being given when the intrinsic reward was more than sufficient. It demonstrates to the recipient that the giver does not understand or value intrinsic motivation. This can start to change the balance between the two in the recipient's mind, and a vicious circle is likely to be generated. See also the "Life Diagram" (highly recommended) on DemDim page 389.*

*All that follows on the next five and a half pages concerns these matters.]*

- People are born with a need for relationships with other people, and with need to be loved and esteemed by others. There is innate need for self-esteem and respect.





- Some extrinsic motivators rob employees of dignity and of self-esteem. If for higher pay, or for higher rating, I do what I know to be wrong, I am robbed of dignity and self-esteem.

*["Wrong" can be interpreted in two ways. If I am encouraged to do what I believe to be **incorrect**, there may be some loss of dignity and self-esteem: there will certainly be loss of respect for the company and its management. If I am encouraged, or indeed required, to do what I know to be **morally wrong**, these losses become vast.]*

- No-one, child or other, can enjoy learning if he must constantly be concerned about grading and gold stars for his performance, or about rating on the job. Our educational system would be improved immeasurably by abolishment of grading.

*[For yet more about Dr Deming's thoughts on the harm of merit rating etc, see DemDim Chapter 30; for particular arguments relating to education, see Chapter 31.]*



- One is born with a natural inclination to learn and to be innovative. One inherits a right to enjoy his work. Psychology [as Deming viewed the subject] helps to nurture and preserve these positive innate attributes of people.

- Extrinsic motivation is submission to external forces that neutralise intrinsic motivation. Pay is not a motivator.

*[At least, pay is not an **intrinsic** motivator; there is also considerable evidence that it is often not as important an **extrinsic** one as many people think. Some appreciation of Maslow's well-known Hierarchy of Needs is helpful for understanding this matter. For a discussion of this and other related topics, see the BDA booklet A8: Performance Appraisal and All That!.*

*"Pay is not a motivator" is worth long consideration and discussion. Note that on DemDim page 279 this is usefully qualified to "... pay, **above a certain level, is not a motivator**" (my emphasis). One might possibly add "... except to get yet more pay". And this, of course, is in contrast to motivation for doing a better job, which is what Deming is focusing on here. Recall one of the many points raised while contrasting the horizontal with the conventional vertical organisation chart—the contrast between (a) pleasing the customer and (b) pleasing the boss.*

*Regarding these matters, recall also the reference to Norb Keller of General Motors on "Preludes" page 21.]*



- Overjustification comes from faulty systems of reward. Overjustification is resignation to outside forces. It could be monetary reward to somebody, or a prize, for an act or achievement that he did for sheer pleasure and self-satisfaction. The result of reward under these conditions is to throttle repetition: he will lose interest in such pursuits.

*[This is addressed with illustrations on the second half of DemDim page 279, at the end of the Psychology section in Chapter 18. Also recall "Preludes" page 25 (following the heading "Are we no better than rats?").]*

- Monetary reward under such conditions is a way out for managers that do not understand how to manage intrinsic motivation.

*[This, Deming's final remark in the May 1990 version of the System of Profound Knowledge, is yet one further observation that deserves much consideration and discussion.]*



**Step 3: *DemDim* version**

Now read through *DemDim* pages 277–279 again, revising your earlier comments and adding new thoughts below.

For your future reference, the section of *The New Economics* Chapter 4 relating to Part D is on pages 73–78[107–115].



*(Continue to Activity 11–b overleaf.)*

**Step 4:**

**ACTIVITY 11-b**

Last lap! As previously, but now in connection with Part D: “Knowledge of Psychology”. In this case, there are definitely links of both the kinds (i.e. the “what and why” and the “how”) considered in Activity 11-a. That is, some parts of this Psychology section of the System of Profound Knowledge demonstrate the need to adopt the 14 Points and cure the Deadly Diseases; other parts give very helpful guidance on how to do those things successfully.

*(See Appendix page 42.)*

POINT 1. [Create constancy of purpose.](#) *(Day 4 pages 16–17.)*

POINT 2. [Adopt the new philosophy. We are in a new economic age, created in Japan.](#)  
*(Day 4 pages 18–19.)*

POINT 3. [Eliminate the need for mass inspection as a way to achieve quality.](#) *(Day 4 pages 20–21.)*

POINT 4. [End the practice of awarding business solely on the basis of price tag.](#) *(Day 4 pages 22–23.)*



POINT 5. Improve constantly and for ever the system. (Day 4 pages 24–25.)

POINT 6. Institute modern methods of training. (Day 4 pages 26–27.)

POINT 7. Adopt and institute leadership aimed at helping people to do a better job. (Day 5 pages 2–3.)

POINT 8. Encourage effective two-way communication and other means to drive out fear throughout the organisation. (Day 5 pages 4–5.)

POINT 9. Break down barriers between departments and staff areas. (Day 5 pages 6–7.)



POINT 10. Eliminate the use of slogans, posters, and exhortations. (Day 5 pages 8–9.)

POINT 11. Eliminate work standards that prescribe quotas for the workforce and numerical goals for people in management. (Day 5 pages 10–11.)

POINT 12. Remove the barriers that rob hourly workers, and people in management, of their right to pride of workmanship. (Day 5 pages 12–13.)

POINT 13. Institute a vigorous programme of education, and encourage self-improvement for everyone. (Day 5 pages 14–15.)

POINT 14. Clearly define top management's permanent commitment to ever-improving quality and productivity. (Day 5 pages 16–17.)



DISEASE 1. The crippling disease is lack of constancy of purpose. (Day 5 pages 18–19.)

DISEASE 2. Short-term thinking defeats constancy of purpose. (Day 5 pages 20–21.)

DISEASE 3. The effects of performance appraisal are devastating. (Day 5 pages 22–23.)

DISEASE 4. Mobility of management causes instability. (Day 5 pages 24–25.)

DISEASE 5. One cannot be successful on visible figures alone. (Day 5 pages 26–27.)

(Please move to the next page for the conclusion.)



## CODA

You're there! I hardly need to tell you that this has been a massive piece of work. And, if you have managed to make a really good attempt at it, I venture to suggest that you're now probably further down the road in your understanding of Dr Deming's unique System of Profound Knowledge than virtually anybody else has ever been after just two (or even eleven!) days' work (except for others who have also worked up to, and then through, this project!).

There is one remaining page from Balaji Reddie: his own Coda on page 26 of "Four Preludes and a Coda". I suggest there could be no better way of concluding this project than for you to remind yourself of what he wrote there. So please do that now.



---

### "Out-of-hours" note

I need to give you advance notice of some unusual equipment you'll need to find in order to carry out one of Day 12's Activities (see the middle of Day 12 page 2). Make a note in your diary!

Please try to collect together a few different-coloured pens and/or pencils—at least half-a-dozen or so, maybe two or three more. The reason is that that Activity will ask you to draw a very multi-coloured diagram!

You would also find it useful to make some extra copies of Day 12 page 9 [WB 218] or, preferably, enlargements of the diagram on that page. Finally, a separate copy of the table on Day 12 page 4 [WB 216] would save you some time as you fill it in by referring back to Days 10 and 11.

---

### Approvals, Acknowledgments and Information

- <sup>a</sup> (page 5) This quotation from *Dedication of the Cedar Crest Academy, Washington in October 1985* has been reproduced with the approval of the Cedar Crest Academy.
- <sup>b</sup> (page 6) This quotation from *The Essential Deming: Leadership Principles from the Father of Quality* has been included with the approval of the W Edwards Deming Institute and McGraw-Hill Education.
- <sup>c</sup> (page 9) This diagram from *Deming's Road to Continual Improvement* has been reproduced with the approval of Bill Scherkenbach and SPC Press Inc.