

Theory of Knowledge

W. Edwards Deming's "System of Profound Knowledge" is made up of four components, all of which interact with the others:

- Appreciation for a system
- Some knowledge of the theory of variation
- Theory of knowledge
- Psychology

Of the four components, perhaps the one that's most difficult to grasp for many people is theory of knowledge. After all, how can one have sound knowledge of the theory of knowledge without some theory of knowledge upon which to base their knowledge of the theory of knowledge?

In his texts and lectures, Deming tried to simplify the situation by noting that any plan – however simple it might be – requires prediction; and that prediction must be based on some theory. He went on to insist that examples without theory teach nothing; no number of examples will teach a theory and no number of case studies will teach a theory.

In my work, it's not uncommon for managers to note, "Deming said that performance appraisal is wrong. Give us an alternative to our performance appraisal system." Educators observe, "You claim that the system of grading students is wrong. Give us an alternative to our grading system."

Over time I've learned that the best response to such requests is not to provide alternatives, but rather to ask a question. "If I give you an alternative to your appraisal or grading system, do you promise me you'll implement it?" Of course, the managers and educators always say "No." Next, I ask, "If I give you an alternative to your appraisal or grading system, what will you do with it?" The most common response: "We'll examine it."

Then I always ask, "You'll examine it relative to what?" Their answer: "The current system!"

I was doing those people a disservice, handing out alternatives to performance appraisal and grading like candy. I don't want people to compare the alternatives to what they're doing now. I want them to compare it (the alternative) and what they're doing now to a rational theory. (I've always found the best way to present the theory is to conduct Deming's classic bead experiment. It is a powerful method for introducing people to systems thinking and theory of variation.)

Expansion on Theory of Knowledge

Following are some of Deming's notes about the third component of profound knowledge that he recorded in his paper, "A System of Profound Knowledge." His estate graciously allowed me to include that paper as an appendix in my own text.

1. Any rational plan, however simple, requires prediction concerning conditions, behavior, 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 evidence that Method B will be better is not convincing.
2. A statement devoid of prediction and explanation of past events conveys no knowledge.
3. There is no evidence, no theory, without prediction and explanation of past events.
4. There is no observation without theory.
5. Interpretation of data from a test or experiment is prediction – what will happen on application of the conclusions or recommendations that are drawn from the experiment? This prediction will depend on knowledge of the subject matter. It is only in the state of statistical control that statistical theory aids prediction.
6. Experience is of no help in management unless studied with the aid of theory.
7. An example is of 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.
8. Communication (as between customer and supplier) requires operational definitions.
9. No number of examples establishes a theory, yet a single unexplained failure of a theory requires modification or even abandonment of the theory.
10. There is no true value of any characteristic, state, or condition that is defined in terms of measurement or observation. Change of procedure for measurement or observation produces a new number.
11. 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.

Notes

W.E. Deming, "A System of Profound Knowledge," published in J.F. Leonard, *The New Philosophy for K-12 Education: A Deming Framework for Transforming America's Schools*, ASQ Quality Press, Milwaukee, WI (1996), pp. 315-316.