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Value-added management . . .

_The dogmas of the quiet past are inadequate to the stormy present._
Abraham Lincoln

_Faced with the choice between changing one's mind and proving that there is no need to do so, almost everybody gets busy on the proof._
John Kenneth Galbraith

1.1 Managers and change

You are going to have to change. After that, you are going to have to change again; and again after that. In fact, you are going to have to continue to change for the rest of your life. You are going to have to change more often, and more completely, than any generation before you in human history.

We will all have to change because the world is getting bigger: there are more people, more ideas, more products, more religions, more information, more cultural systems, and indeed more of just about everything than we have ever had before, and it is all clamoring for our attention. We will have to change because the world is getting smaller: there is no place to go if we want to avoid others and live by our current, comfortable rules. Change is a major premise of this book, but it is not the theme of the book. The theme is our response to change: how we can learn from it, survive it and even benefit from it. To do so, we need help; we need knowledge; we need the tools of survival. Design of experiments (DoE) is presented as such a tool in this book.

It is easy to tell a person to change. It is much harder to provide a way to do so, and a path to follow. Our actions should be based on profound theoretical knowledge, but they must be actions. Theoretical knowledge and a desire to use it are important, but the benefit comes when something is actually done. This book is about what to do.

Specific techniques, examples and applications of design of experiments are presented in later chapters. This chapter is to show why we must expend time and energy to obtain new knowledge. Change, survival and benefit are the driving forces to do so. Since change is only a premise, it is presented here as a fact, not as a proposition to be proved. The examples and illustrations are therefore more anecdotal than scientific. They are intended to calibrate us to the world in which we live as soon-to-be twenty-first
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century managers (if indeed that job description survives into the next century). They are to prepare us to participate fully in the rest of the book. Most of us believe we are ready and willing to change when we are required to do so, but we must also be able to recognize when and where change must occur. Let me illustrate this with the story of the paint spill.

A few years ago, I had a colleague who had been in the US Air Force in the early 1960s. One of his assignments had been to supervise a maintenance crew at a remote base in New England. One Saturday, they were assigned to repaint all the markings on a black asphalt runway with bright yellow paint. This was an enormous task, but as the sun set late in the afternoon, they were almost done. Then one of the crew accidentally knocked over a five-gallon bucket of paint, permanently marking a part of the runway with a bright, yellow, irregular glob. It was getting dark, and something had to be done, so my friend made a crisp management decision. He ordered the crew to paint a solid bright yellow circle to incorporate the spill. After they finished, the circle became just one more of the runway markings. Many years later, he had occasion to revisit the base, and he noted with some surprise and a touch of pride that the bright yellow circle was still intact, having been updated every time the runway was painted.

Most of us read this story with amusement at the unthinking adherence of all those paint crews to a tradition which started with a clumsy mistake. We also read it with a certain amount of smugness. We would never continue such a silly practice, because we think for ourselves. We don’t do unnecessary and wasteful work, because we are on top of the job. Yet, if the truth is told, almost all of us are perpetuating traditions which are no more justified than that yellow circle. We do not do it on purpose, of course, but we still do it. Do you know where the paint spills are in your own organization? Can you recognize the bright yellow circles in your own life?

The irony is that we are amused at someone else’s behavior, but when the context is considered, that behavior is probably less silly than many of our own behaviors. The Air Force could probably afford the inefficiency of repainting the circle every few years for several decades. Most of us who are not in the Air Force, however, live and work in situations with almost no tolerance for such inefficiency. We live in a society which not only expects us to change when we are forced to do so, but which expects us to recognize and even seek out opportunities to drive change. I suspect that most of us are less prepared than we think we are to do so.

In a recent survey of Fortune 500 companies, Schieman & Associates found that many managers find ways to blame resistance to change on others (Harrington, 1991). ‘Inappropriate organizational culture’ was stated by 65% as the key barrier to change. The most commonly cited barrier was ‘employee resistance to doing things in new ways.’ Many executives blamed themselves or each other, with such phrases as ‘top management that does not walk the talk,’ ‘senior management’s denial of facts’ and ‘poor