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Tom DeMarco and Timothy Lister's *Waltzing with Bears: Managing Risk on Software Projects* is a book about risk; arguably, it's not a software engineering book at all, because many of the ideas it expresses apply across any enterprises that must identify, estimate, mitigate, and manage risks. That may be why the edition I have includes a front cover blurb (beside the nifty dancing bear) not from some software guru but from a professor at Harvard Business School. *Waltzing with Bears* is of interest to anyone who must manage risk. In fact, it's probably a good book to read for anyone with a mind to a mathematical and rational approach to problems, not just managers. At least an informal appreciation of the concepts in the book can help when you're selling a house, making an investment choice, changing jobs, or selecting a grad school. So why is the book subtitled *Managing Risk on Software Projects*? There are two reasons. First, of course, DeMarco and Lister are software engineers, and that's where their expertise lies; therefore most of their examples come from software projects. This is a book mostly about software for the same reason than Henry Petroski tends to go on about falling bridges: the authors are wisely writing what they know, to instance a general phenomenon or idea. Second, as noted by Brooks almost 30 years before *Waltzing with Bears*' publication, software projects have a disturbing tendency to be late, over-budget, and to generally fail in various and sundry ways. Why?

DeMarco and Lister propose that a tendency towards "can-do" thinking pervades the software industry, and results in an active avoidance of serious risk management efforts. This lack of acceptance of uncertainty (and how to deal with it) results in failure, delay, and disaster. What's the answer? Serious, effective risk management, according to this book. DeMarco and Lister don't take the reader's acceptance for granted; in fact, the first 4 chapters of the book present a philosophical, rational, and anecdotal case for the criticality of risk management. The next 3 chapters present the best arguments against risk management, note the cases where you can't (or shouldn't) do risk management, and prepare the reader for the potential clash between risk management and corporate culture.

Waltzing with Bears contains a lot of graphs. For anyone with a background in simulation, probability, and statistics, much of the book will be light reading, a straightforward way of taking some informal estimates of risk and past performances and producing quantified uncertainty about the future. This heart of the book, however, will be extremely helpful (and is very readable) for those without such a background. The graphical format helps escape the prison of a single number that often destroys the information contained in a good risk analysis. When someone wants to know "when can the project be done?" and use that as a target date, showing a graph that indicates there is non-zero probability of being done on April 1st is a powerful response. Only an April fool will *expect* that April 1st will be the actual date of completion, given the graph only reaches 20% cumulative probability of completion by June. The possible is not the probable. One side-effect of reading *Bears* is a healthier appreciation of the radical difference between "it could happen" and "you might want to bet on it happening."

What may surprise even the jaded simulator and estimator, however, is the startling notion that “If a project has no risks, don’t do it.” The idea at first is highly counter-intuitive: we all try to minimize risks. The problem is that if a project has no risk, yet hasn’t already been done, the reason is probably that the project also has very little value. It’s the equivalent of a cinch bet -- where you only win 1 cent. Projects with no risk almost certainly can’t break new ground or promise great rewards. The situation is analogous to scientific research: only experiments that conceivably won’t produce the expected results are likely to contribute seriously to the growth of knowledge. Some of the other nuggets of wisdom in the book can at first seem too cute to be useful, but on later reflection turn out to be critical. For instance, perhaps the single most useful one-sentence claim in the book is the following: “Projects that finish late are almost always projects that started far too late.” Sure, everybody “knows” this, but taking the idea to heart is difficult. This SEN column was delivered a day late. Why? Because I didn’t start early enough -- I acted without taking into account the risk of travel and illness.

Like many of the classics of software engineering, one of the virtues of this book is that it is not closed to the world beyond software and technology development. The prologue opens in London, in 1876 with Clifford’s lecture on the “Ethics of Belief.” Risk management cannot be separated from the moral case for sound epistemology. The shipowner who sends sailors off to their death in a poorly built ship, though he has convinced himself it will surely not sink, is not so different from the manager who subjects a development and testing team to a death-march in an effort to produce a software system that, even if delivered as hoped, cannot be justified rationally. There is no reason to *irrationally* send good men and women off to *likely* doom.

For a book about a potentially rather dry topic, *Waltzing with Bears* is fun to read. One of its strongest recommendations as a classic is that, even if you’re not deeply interested in project management (an attribute I will admit to possessing, just ask my graduate students) you won’t begrudge the time spent with this book. *Waltzing with Bears* weighs in at under 200 pages, and those pages fly by. In a less entertaining book, the source of the title, a Dr. Suess song, might seem like an artificial attempt to make a dull topic more appealing. However, the lighthearted title and comic image fit well with this book’s enjoyable take on a somewhat grim topic. The brevity doesn’t imply a lack of content; in fact, this is one of the harder classics to summarize, because chapters 8 through 22 contain so much interesting material that *needs* the graphs, anecdotes, and discussions of the book that it can’t be turned into a 400-word abstract without serious loss. The risk to analyze here is missing a short and valuable book.