

PROFESSIONAL READING LIST

The Defense Acquisition Professional Reading List is intended to enrich the knowledge and understanding of the civilian, military, contractor, and industrial workforce who participate in the entire defense acquisition enterprise. These book recommendations are designed to complement the education and training vital to developing essential competencies and skills of the acquisition workforce. Each issue of the *Defense Acquisition Research Journal* will include one or more reviews of suggested books, with more available on our Web site <http://dau.dodlive.mil/defense-acquisition-professional-reading-program>.

We encourage our readers to submit book reviews they believe should be required reading for the defense acquisition professional. The books themselves should be in print or generally available to a wide audience; address subjects and themes that have broad applicability to defense acquisition professionals; and provide context for the reader, not prescriptive practices. Book reviews should be 450 words or fewer, describe the book and its major ideas, and explain its relevancy to defense acquisition. Please send your reviews to the managing editor, *Defense Acquisition Review Journal* at DefenseARJ@dau.mil.

Featured Book

To Engineer is Human: The Role of Failure in Successful Design

Author: Henry Petroski

Publisher: Vintage

Copyright Date: 1992

Hard/Softcover/Digital:

Softcover, 272 pages, <http://www.amazon.com/To-Engineer-Is-Human-Successful/dp/0679734163>

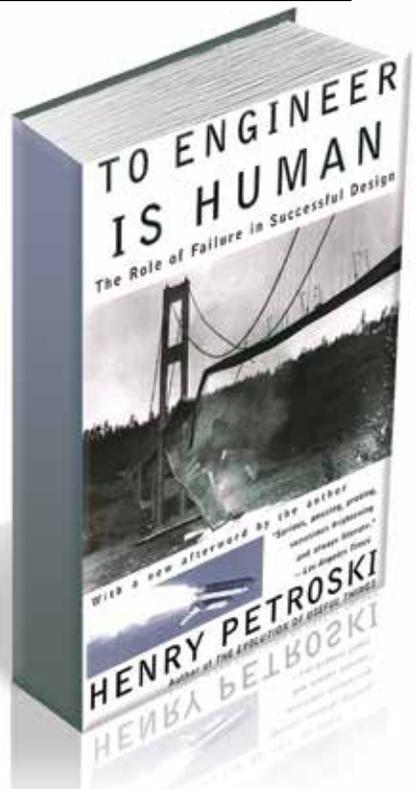
ISBN:

ISBN-10: 0679734163

ISBN-13: 978-0679734161

Reviewed by:

Henry Petroski, Professor of Civil Engineering and History, Duke University



Review:

This book has its origins in the basic question: What is engineering? It sets forth the premise that understanding *failure* is essential to understanding and achieving success in engineering. Fundamentally, engineering is figuring out how things work, solving problems, and finding practical uses and ways of doing things that have not been done before. Successful engineers properly anticipate how things can fail, and design accordingly. Case studies of past failures thus provide invaluable information for the design of future successes.

Conversely, designs based on the extrapolation of successful experience alone can lead to failure, because latent design features that were not important in earlier systems can become overlooked design flaws that dominate the behavior of more complex systems that evolve over time. This paradox is explored in *To Engineer is Human* in the context of historical case studies, which provide hard data to test the hypotheses put forward. Among the historical data points are the repeated and recurrent failures of suspension bridges, which from the 1850s through the 1930s evolved from John Roebling's enormous successes—culminating in the Brooklyn Bridge—to structures that oscillated in the wind and, in the case of the Tacoma Narrows Bridge, twisted itself apart and collapsed in 1940. Lessons learned from these cases and others are generalized to apply across a broad spectrum of engineering structures and complex systems. They also help explain why failures continue to occur, even as technology advances.