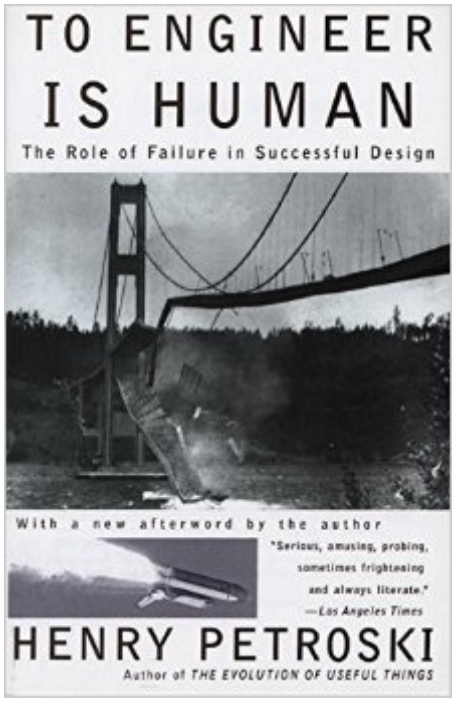
To Engineer Is Human: The Role Of Failure In Successful Design



Synopsis

How did a simple design error cause one of the great disasters of the 1980s - the collapse of the walkways at the Kansas City Hyatt Regency Hotel? What made the graceful and innovative Tacoma Narrows Bridge twist apart in a mild wind in 1940? How did an oversized waterlily inspire the magnificent Crystal Palace, the crowning achievement of Victorian architecture and engineering? These are some of the failures and successes that Henry Petroski, author of the acclaimed "The Pencil," examines in this engaging, wonderfully literate book. More than a series of fascinating case studies, "To Engineer is Human" is a work that looks at our deepest notions of progress and perfection, tracing the fine connection between the quantifiable realm of science and the chaotic realities of everyday life.

Book Information

Paperback: 272 pages
Publisher: Vintage (March 31, 1992)
Language: English
ISBN-10: 0679734163
ISBN-13: 978-0679734161
Product Dimensions: 5.2 x 0.6 x 8 inches
Shipping Weight: 8 ounces (View shipping rates and policies)
Average Customer Review: 3.7 out of 5 starsÂ Â See all reviewsÂ (63 customer reviews)
Best Sellers Rank: #44,522 in Books (See Top 100 in Books) #4 inÂ Books > Engineering & Transportation > Engineering > Mechanical > Drafting & Mechanical Drawing #8 inÂ Books > Computers & Technology > Graphics & Design > CAD #17 inÂ Books > Computers & Technology > Graphics & Design > Computer Modelling

Customer Reviews

To Engineer is Human is a surprisingly relevant book, despite being 15 years old now. Some of the examples may tax the memories of younger engineers and engineering students, but that’s exactly the point of this book, to emphasize the nature of engineering: improving what has already been done in the past.I, too, found the repetitive references to a limited number of examples tiring; I suspect this was done because Petroski had prior knowledge of these case studies and wished to minimize his research by drawing on what he knew about before writing. As an amateur historian of technology, I was also disappointed that few earlier historical examples were treated in any depth, the Crystal Palace being a notable exception.The book is an easy read. Henry Petroski’s prose is

easy to grasp and flows well, holding the reader’s interest, despite the repetition.

In this enlightening book, Petroski, who is professor of civil engineering, has succeeded admirably in conveying what engineering is and what engineers do in a manner that is accessible even to my grandmother, i.e., the general public. His presentation, although somewhat repetitive, is clear and sprinkled judiciously with humor. Moreover, it is illustrated with familiar analogies, and also numerous mechanical and civil engineering examples including everyday objects such as paper clips, toys and knives.To engineer is to design, `making something that has not existed before’. Petroski provides insights into the design process (which involves computers extensively nowadays) and its limitations, and also the means employed by engineers to prevent failures in their designs.He emphasizes, however, that it is not possible to anticipate all possible ways a design can fail and thus failures inevitably occur because engineers are, after all, humans. Numerous examples of catastrophic structural failures throughout history are presented and discussed. All involved the tragic loss of lives (for instance, the collapse of two crowded suspended walkways onto the crowded floor of the Kansas City Hyatt Regency hotel in 1981) except the collapse of the Tacoma Narrows bridge in Washington State in 1940.Petroksi also discusses the failure analysis or forensic engineering that is performed in the wake of a catastrophic design failure to understand how and why the failure occurred. He argues convincingly throughout the book that understanding such design failures can advance engineering more than successes. Design failures, like other failures in life, should be embraced, rather than denied or ignored, and learned from. Great engineers, and great people in general, are the ones who heed George Santayana’s famous dictum: `Those who cannot remember the past are condemned to repeat it.’

The answer is well explained in this book. By the time you built such a car, it might be so heavy it couldn’t move!The real interest in this book are the analyses of various disasters that should have been planned for, but weren’t.The most terrible engineering disaster (and the reason I bought this book) was the collapse of the sky walkway in a hotel in Kansas City in the 1980’s. I was just returning from KC when I heard the horrific news on the radio. The skyway collapsed during a dance, killing hundreds and injuring more in a dreadful disaster. I was very upset by this terrible event. Why did this happen?The explanation in "To Engineer Is Human" is really brilliant; the walkway was designed "properly" with a bolt that went through the beam supporting it. But it could not be built as designed because the bolt couldn’t be installed in the vertical support. Instead, the builders split the vertical support into two parts in order to install two bolts, and each part was then

able to move independently, causing a shear force that eventually led to the disaster. A brilliant analysis and one that showed that despite correct design, the plan must be able to be implemented to work--or else the execution of the plan may doomed to disastrous failure.That lesson is really important when you are engineering anything, even software. You may specify an important feature, but if the R&D department cannot implement the plan, the product may fail to meet its goals, even be defective.The book is a bit "thin"--I wanted more and wished it were longer and had more detail, but I will say it makes its point and memorably so. After reading it, your eyes will be opened to how things are designed, how things fail and how engineering affects our lives.

Why do buildings and bridges suddenly collapse, or why do airplanes fall outof the sky ? Even though since the start of the industrial revolution therelative number of disastrous accidents has gone down, it is still a daily event. Some great examples are given (most prominently the walkway of a Houston hotel that collapsed during the opening ceremony) with pictures and detailed analysis. Great stuff even for non civil-engineers since with some imagination you may learn some more general design lessons. The editorial side of the book is less impressing, most facts and interpretations are repeated 3 or 4 times throughout the book (excluding the introduction and back flap) so I never got further than 3 quarters into it, preventing myself from another deja vu. In any way, a veryimportant and useful read.

Design of Machine Elements and Machines: A Failure Prevention Perspective Feng Shui: Wellness and Peace- Interior Design, Home Decorating and Home Design (peace, home design, feng shui, home, design, home decor, prosperity) Human Factors Methods for Design: Making Systems Human-Centered Mind Control Mastery 4th Edition: Successful Guide to Human Psychology and Manipulation, Persuasion and Deception! (Mind Control, Manipulation, Deception, ... Psychology, Intuition, Manifestation,) Mind Control Mastery 4th Edition: Successful Guide to Human Psychology and Manipulation, Persuasion, and Deception! PHP: MYSQL 100 Tests, Answers & Explanations, Pass Final Exam, Job Interview Exam, Engineer Certification Exam, Examination, PHP programming, PHP in easy steps: A Beginner's Guide Engineer Ari and the Passover Rush