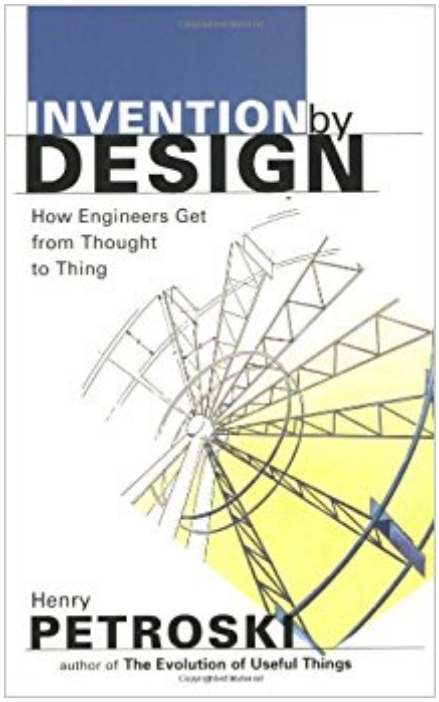
Invention By Design; How Engineers Get From Thought To Thing



Synopsis

Henry Petroski's previous bestsellers have delighted readers with intriguing stories about the engineering marvels around us, from the lowly pencil to the soaring suspension bridge. In this book, Petroski delves deeper into the mystery of invention, to explore what everyday artifacts and sophisticated networks can reveal about the way engineers solve problems.Engineering entails more than knowing the way things work. What do economics and ecology, aesthetics and ethics, have to do with the shape of a paper clip, the tab of a beverage can, the cabin design of a turbojet, or the course of a river? How do the idiosyncrasies of individual engineers, companies, and communities leave their mark on projects from VelcroÃ Â® to fax machines to waterworks?Invention by Design offers an insider's look at these political and cultural dimensions of design and development, production and construction.Readers unfamiliar with engineering will find Petroski's enthusiasm contagious, whether the topic is the genesis of the Ziploc baggie or the averted collapse of Manhattan's sleekest skyscraper. And those who inhabit the world of engineering will discover insights to challenge their customary perspective, whether their work involves failure analysis, systems design, or public relations. Written with the flair that readers have come to expect from his books, Invention by Design reaffirms Petroski as the master explicator of the principles and processes that turn thoughts into the many things that define our made world.

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Customer Reviews

Invention, Petroski has steadfastly maintained, comes from a failure of design. The paperclip that

can only be used in one direction, that becomes easily tangled in a box, or that tears the paper has led inventors to a cycle of improvements and patents. That's the story of the case studies here, many of which Petroski has used in other books?the paperclip, zipper and aluminum can appeared in The Evolution of Useful Things, the pencil in The Pencil; and the San Francisco-Oakland Bay Bridge in Engineers of Dreams. But Petroski still manages to add something new. When talking about the Bay Bridge, for example, he goes into great depth here about the impact of factors far removed from statics, dynamics and hydraulics. He looks at the importance of John Roebling's personal charisma and the impact of the 1879 failure of the Firth of Tay bridge on the subsequent construction of bridges. In the same way, his sections on "Facsimile and Networks" and "Airplanes and Computers" offer very interesting insights into the economics of implementing large-scale projects (fax machines became popular in part because of Federal Express's promotion of its new ZapMail, which turned into a $300 million bath for the company). Those who don't know Petroski's work will find this an enjoyable introduction. Those who do, will appreciate the additional gloss. --This text refers to an out of print or unavailable edition of this title.

Petroski (The Pencil, LJ 3/1/90) has done much to make the nerdy world of engineering interesting and accessible to the reader. Here, he's after a different audience, one interested in the philosophy and cultural study of the process of invention. By examining the relationship between the invention of devices and their refinement over time by others, Petroski identifies design principles that engineers use to make things work. Written as a series of case studies ranging from the paper clip to the zipper to the FAX machine to the Boeing 777, this book is engaging but tends to instruct rather than entertain. Little exercises that ask the reader to, say, imagine refinements to the basic plastic sandwich bag hint at this book's history as an engineering course curriculum, but it's still good reading for those interested in the gestalt of engineering design. Quotations and illustrations from patent applications are particularly fascinating and are used well. For popular science collections.?Mark L. Shelton, Univ. of Massachusetts Medical Ctr., Worcester --This text refers to an out of print or unavailable edition of this title.

Engineers build and design everything from zippers, paper clips, and beer cans to bridges, waterworks, and airplanes. What can such disparate items possibly have in common that they each fall under the heading of engineering?There's more to it than just fiddling about with plans and models. Engineers think and engineers do. They understand the abstract principles fundamental to

one area and then extend these principles to a wide variety of non-obvious applications.The book devotes a chapter each to several aspects of engineering and illustrates abstract ideas with concrete examples: paper clips and design, pencils and analysis, zippers and development, aluminum cans and failure, fax machines and networks, airplanes and computing, waterworks and society, bridges and politics, and finally buildings and systems.Chapter two looks at stress analysis of cantilever beams (beams that come out of a wall at a 90 degree angle, e.g. to support a veranda) and how this relates to making better pencils.In chapter eight, Petroski describes the place of engineering in society. Building a bridge is usually a large scale public project, and the politics of selecting sites and securing funds matter as much as the technical concerns of selecting a design and material.Each chapter develops the main theme that engineering is much more than tinkering or mastering technical skills. It is the art that gets us from thought to thing.Vincent Poirier, Tokyo

I found that Henry Petroski's novel, Invention By Design, is extremely informative about the patent process and ways to make sure your designs and ideas are not copyrighted. For an inventor or designer beginning their career, like myself, I found this book very helpful and a genuine advantage for my designs. By reading this novel, it will help you understand and rethink certain aspects of your creations. When sketching the designs for a product, I recommend an Inventors Notebook, full of graph paper and note pages. While making your notebook, make sure to include many dates of events, and discoveries, as this will improve your legitimacy of your concept, if ever needed. The novel will let your ideas flow right onto paper, with near step by step instructions as to, what is next in the process. Should I get this name copyrighted? Could my product be produced for less than the average consumer is willing to pay for such an item? These are a few of the questions that Henry Petroski hits upon in his novel, Invention By Design.

I have gotten this book for a book project in a sophomore physical science class. At first I wasn't very thrilled about the book because I didn't know how complicated it would be to read. On the other hand, I was looking forward to learning about how engineers really do get from thought to thing. Before ordering this book I wanted to know some part of the process of engineers and what goes through their mind when thinking of a certain invention and actually putting it to use. Henry Petroski does a good job in the beginning introduction by explaining engineering ideas and making points on what goes through an engineers mind. Petroski does a good job in his overall outline of the book and how he creates a type of novel that involves simple examples. Petroski talks about a paper clip in his first chapter. I don't know any object that could be more simplistic than a paper clip. What I

thought was interesting was that Petroski focused more on the history and about the paper clip than I would have expected. I wasn't reading this book so I could learn about the history of aluminum cans and zippers, I was expecting to learn a certain process that engineers go by and have in mind with all objects. I would recommend this book to anybody interested in the engineering career and history of great engineers.

I'll be honest. Not that impressed. Very unorganized. He goes on through a whole chapter or more of just the history of paper clips. I didn't even know that was possibly. Not very interesting and not very helpful. He uses words that (if you don't have inventing experience) you wouldn't understand. I had to google words on several occasions. And I'm not even done with the book

Like other books by Petroski, has a lot of obscure information, but his style is very wordy and laborious.

An early book by the author, and not as interesting as subsequent works.

Seems to be derived from other Petroski Material, really not up to his great writing.

Great book for those considering mechanical engineering. My son found it very inspiring and it may have been what tipped the scales in his decision.

Light (Physics, for Scientists & Engineers, Chapters 22-35) The Wright Guide to Camping With the Corps of Engineers: The Complete Guide to Campgrounds Built and Operated by the U.S. Army Corps of Engineers (Wright Guides) The Inuit Thought of It: Amazing Arctic Innovations (We Thought of It) Native American Thought of It: Amazing Inventions and Innovations (We Thought of It) Reformed Thought on Freedom: The Concept of Free Choice in Early Modern Reformed Theology (Texts and Studies in Reformation and Post-Reformation Thought) Thought Vibration: or the Law of Attraction in the Thought World NLP: Persuasive Language Hacks: Instant Social Influence With Subliminal Thought Control and Neuro Linguistic Programming (NLP, Mind Control, Social Influence, ... Thought Control, Hypnosis, Communication) The Religious Thought of Hasidism: Text and Commentary (Sources and Studies in Kabbalah, Hasidism, and Jewish Thought, V. 4) Existentia Africana: Understanding Africana Existential Thought (Africana Thought) Design, When Everybody Designs: An Introduction to Design for Social Innovation (Design Thinking, Design Theory) The Art of Invention: The Creative Process of Discovery and Design Design: The Invention of Desire