

Book Review: **Effective Innovation: The Development of Winning Technologies** by Don Clausing and Victor Fey.

Reviewed by

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ISBN 0-7918-0203-5

Hard cover, 247 pages, with index

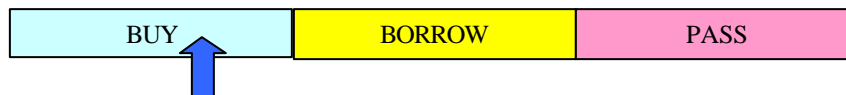
Cost: \$69 (\$55 for ASME members) or £56.00

Published simultaneously by

ASME Press (US) <http://www.asme.org> and

Professional Engineering Publishing (UK) <http://www.pepublishing.com>

We are borrowing The American Society for Training and Development book review scale—this gives readers a quick look at the conclusion of the book review, and helps them decide if they even want to read the review.



The reviewers make no claim at all that this is an “unbiased” review—all the reviewers know both authors from extensive work together in TRIZ and in Quality Function Deployment. Both Fey and Clausing have appeared in the TRIZ Journal, with popular articles that have been valued (measured by number of downloads!) by our readers.

We would welcome their book, **Effective Innovation: The Development of Winning Technologies**, to the small library of TRIZ books available in English, but this is not specifically a TRIZ book. It is a collection of stories about the product development process, and a model for development that is derived from those stories. There are 2 chapters specifically on TRIZ that present an excellent introduction to the subject. Readers of the earlier book by Victor Fey and Eugene Rivin, *The Science of Innovation: A Managerial Overview of the TRIZ Methodology*, will recognize many of the examples, but new ones have also been added. Later chapters on Failure Mode Analysis and Robust Engineering point out the opportunity to use TRIZ for problem solving, but don’t have actual TRIZ case studies.

The book is organized based on the classic TRIZ principle of nesting. Introductory and summary chapters surround six chapters that elaborate a six-step effective innovation process. The core and leading portions of that process are TRIZ techniques. These techniques are structured in a four-stage process called “TechNav” – a “comprehensive process for conceptual development of next-generation technology candidates...”

Many of the topics are illustrated with features of the paper feed mechanism on the Xerox 1075 copier. This is not surprising, given Clausing’s history with the Xerox Company, but it is an old case (1981) and, although the TRIZ illustrations are clear, many readers would prefer more current cases, where TRIZ was actually used. Many short but more

recent examples actually developed with TRIZ are included to illustrate specific tools and techniques: those examples are likely more relevant to today's technologists.

Effective Innovation provides an informative discussion of the laws of technological system evolution, with good examples from diverse areas. There is excellent presentation of how the laws were developed, with an acknowledgement of the subjective nature of data review decisions leading to them. The authors emphasize that S curves and the laws of technological system evolution operate in a dynamic and changing environment. This important aspect is well presented and vital to today's rapidly churning technological business arena.

Both experienced readers and those getting started in TRIZ will find the chapter on the laws of evolution useful and interesting. The section on guiding technology evolution (applying TechNav) is particularly descriptive. This Four Phase approach outlines the steps necessary to conceptually develop next-generation technology candidates:

- Phase 1: Analysis of the Past and Current System's Evolution
- Phase 2: Determination of Strategic Opportunities
- Phase 3: Problem Formulation and Concept Development
- Phase 4: Concept Selection.

An S-curve based assessment of a system past and current evolution leads the TechNav process. The laws and lines of technological system evolution are then utilized to establish strategic directions for development. TRIZ Principles for overcoming system conflicts, substance-field analysis and the standard approaches to solving problems are then integrated into the Algorithm for Inventive problem Solving. Specific TRIZ tools are clearly and concisely presented and discussed with examples throughout this structured elaboration of the proposed methodology.

As an adjunct to the TechNav process, Pugh Concept Selection is presented to help select the highest potential concepts for further development. The methodology is strongly advocated for gaining a common understanding among team members, for developing deeper insight into the workings of proposed concepts, and for drawing out "better insights into the type of conceptual features that are strongly responsive to the requirements."

Surprisingly, Clausen and Fey present limited approaches to help achieve innovation in the sales, marketing, supply chain and infrastructure arenas, i.e. "other enterprise processes," even though innovations in these process are mentioned as "critical". They emphasize the value of "technology integration" at the subsystems and components level of technological systems, and urge readers to "exercise your influence to the maximum...for collateral innovations..." in other parts of their business.

It is easy for reviewers to pick on specific faults in the book—the preponderance of mechanical engineering examples, the reference to the 76 Standards in a book that hasn't been published yet, a few confusing examples where the roles of the tool and object

change multiple times (it won't confuse experts, but the experts probably won't read the examples in detail anyhow. Beginners need very clear examples!)

During Clausing's tenure at Xerox and at the Massachusetts Institute of Technology, he participated in the introduction of Quality Function Deployment and a number of other methodologies into commerce and academia. It is quite surprising that he does not include a QFD-style, "voice of the customer" focus in the development of the criteria used in the Pugh method.

But, a few flaws don't change our overall recommendation—Buy this book. If you "Pass" you'll miss Fey and Clausing's clarity of thought and systematic presentation of the ***Effective Innovation*** method. If you "Borrow" you won't have the book when you need it to improve your own applications of TRIZ and other methods to your system of innovation.

Don Clausing has been a consistent and dependable advocate of managing technology and innovation to serve the customer and the business. Victor Fey, with his history as a TRIZ Master and a TRIZ innovator, offers valuable insights and understanding deep into the origins of TRIZ, and continues to advance the field. We appreciate their contributions and the sharing of their knowledge through ***Effective Innovation: The Development of Winning Technologies***.