

## On Design: A Philosophy of Design and Engineering

**Ron Britton**

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*On Design is an excellent collection that challenges engineers to strive for excellence and maintain the highest ethics.*

Ron Britton's *On Design* is a compendium of short, thoughtful articles on design engineering.

At first glance, it may seem easy to categorize this book by an engineering academic from the University of Manitoba as "for engineers only." However, Britton's eloquent writings on design and engineering are interesting enough to engage even those who are not engineering professionals.

*On Design* collects Britton's columns for the Association of Professional Engineers and Geoscientists of Manitoba. The first section of the book, "Thoughts on Design," consists of more than sixty brief articles penned from 2001 through 2015. The book's second section, "Engineering Philosophy 101," includes some forty articles written from 2006 through 2015. In each section, the articles are presented in chronological order.

The short-form writing enables anyone, engineer or otherwise, to selectively extract one piece or several pieces at a time. The brevity of the articles makes it possible to get a quick sense of Britton's perspective on a variety of issues, each anchored in design or engineering. Without exception, the writing is understandable, uncomplicated, and unadulterated. The author's viewpoint is expressed with clarity, and his opinions are well reasoned. Britton demonstrates both a depth of experience and a real passion for his subjects.

Many of the observations are certain to be highly instructional to engineering students in particular. About design, for example, Britton writes, "All designs are constrained by resource availability. Good design recognizes and deals with all types of resource constraints as design variables. By anticipating the limitations, the end product comes much closer to solving the problem." Britton also addresses the importance of teamwork and communication in creating good designs and in working together on engineering projects. This insight, peppered throughout the book, applies broadly across many professions and in a variety of businesses.

The second eye-opening section reveals some of the challenges that face engineers. Britton writes that "Engineers create solutions to problems; they do not find answers to questions. This requires a level of inventiveness and a willingness to look beyond singular solutions." Later, he speaks directly to engineers, stating, "We should acknowledge and manage the risks we cause to develop. If we don't champion the value of those risks, then we can rightly be accused of being the basic cause of our nation's economic woes." One of Britton's more provocative essays concerns the Volkswagen diesel emissions scandal, which sheds light on the real-world dilemmas of engineers.

*On Design* holds engineers to the highest standard; that comes through loud and clear in declarations like "Values have always been an unconscious part of engineering design." Throughout, Britton challenges engineers to strive for excellence and maintain the highest ethics. *On Design* is an excellent collection.

BARRY SILVERSTEIN (May 2, 2018)

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