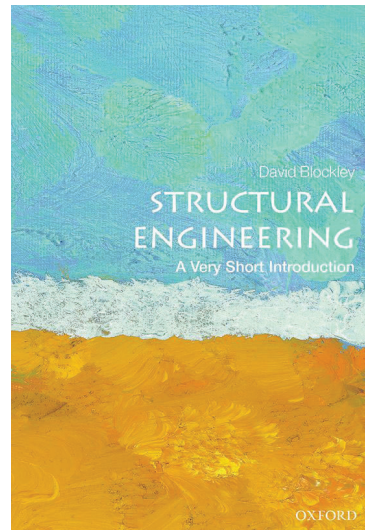


# Review



**Tianjian Ji** welcomes this short introduction to structural engineering, which goes some way to addressing the lack of books on engineering for the general reader.

## Structural Engineering – A Very Short Introduction



**Author:** David Blockley  
**Publisher:** Oxford University Press  
**Price:** £7.99  
**ISBN:** 978-0-19-967193-9

Oxford University Press has published a series of short introductions to a wide variety of disciplines, and *Structural Engineering*, written by Professor David Blockley, is one of over 350 titles.

It attempts to illustrate structural engineering in 110 pages. There are two challenges for writing such a book. The first is deciding what items should be selected to cover the essential aspects of structural engineering and to capture the nature of the subject. The second is how to enable the general reader to understand the contents of the book and appreciate the beauty of the subject.

This book contains six chapters:

- Everything has structures
- Does form follow function?
- From Stonehenge to skyscrapers
- Understanding structure
- Movers and shakers
- Resilience

In addition to the contents on design philosophy, materials, history, theory (from fundamentals, such as free body diagrams and equilibrium, to relatively advanced topics, such

as virtual work and finite element methods), typical types of structure, architecture and engineering etc., the author provides many of his own thoughts. He discusses the relationships and interaction between architects and structural engineers, and how like “forms and forces” they cannot be separated. It is the engineers who make architects’ ideas work, and provide structures that are safe and operate successfully. The resilience of structures, or of technical and social-technical systems, often linking with robustness and sustainability, now appears more frequently in recent publications. The author deals with this topic in one chapter, based primarily on his own understanding of the topic. This chapter, and the book, ends with the sentence: “One conclusion is for sure – good structural engineering can save orders of magnitude in cost and protect the lives of both the living and the yet to be born”.

Like a long-span bridge and a skyscraper, which are fixed to the ground, the author reminds the reader that a jumbo jet flying in the air and a cruise ship sailing on the sea are also large impressive structures. And he uses moving structures to describe some dynamic actions and behaviour. The relationships

between hard systems and soft systems are illustrated using a ship and crew (and passengers).

The author uses “thought experiment” to explain some technical contents, together with diagrams to facilitate their understanding, and he summarises three or four key points at the end of each of the first five chapters. Thought experiment is helpful, not only to understand some theories which cannot be demonstrated physically, but also to attract the attention of readers. As a university lecturer, I will now introduce this technique into my own teaching. On the other hand, some contents, such as virtual work and the formation of the finite element method, may be a little demanding for many of the general readers.

There are many books on science for the general reader, but far fewer such books on engineering. This short introduction to structural engineering contributes to the latter. It is evident that the book’s production required a vast knowledge and deep insight into the subject, coupled with a great deal of effort and indubitable ability and vision.

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Dr Tianjian Ji is Senior Lecturer at the University of Manchester and specialises in structural dynamics. He is keen to study and use structural concepts which bring practice, research and teaching together. Recently he has been studying seismic probabilistic risk assessment of nuclear power plants and tai chi movements for improving balance in older people.