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Review

Bob Lang finds this to be an intriguing and informative text on the design of tall buildings and is particularly drawn to the structural details from real-life projects which demonstrate the consequences of engineers' decisions.

SIGNING

Designing Tall Buildings: Structure as Architecture (2nd ed.)

Author: Mark Sarkisian
Publisher: Routledge
Price: £110.00 (hardback); £31.99 (paperback)
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The most cursory rummage around your local bookshop will reveal two types of book in this field. One, a technical text, perhaps focusing on analysis, heavily numerate and particular. The second, more graphic in nature, perhaps aimed at setting an agenda more than solving absolute problems. Seldom, it seems, do these two aspects sit side by side in a single source. Why should this be? One answer is that it requires an author of considerable skill, judgement and experience to produce it. Mark Sarkisian displays all of these assets, in abundance, in this, his latest book. Here, practical design advice and design references sit side by side with creative conjecture.

Those faced with tall-building design as a profession will recognise immediately what Sarkisian has to say and understand the background to his chosen topics. Those not so employed will find an intriguing, eminently readable text. All will benefit and be informed.

The opening chapter concentrates on the history of tall-building design and construction; setting the scene and providing a basis for critical thinking when presented with what follows. The final chapter concentrates on the future, giving consideration to the environment and the application of genetic algorithms to define form. The section on the idiosyncrasies of bamboo, the strength and stiffness it displays, is particularly interesting. Sandwiched between these chapters is a wealth of information, guidance and advice to practitioners. All presented in a clear and logical form.

MARK SARKISIAN

There are a number of particularly strong sections in the book, mainly discussing antiseismic design of tall buildings. For example, a critical, personal appraisal of performancebased design is given, shedding light on the consequences of the post-event condition of structures. Also, the engineering challenges of appropriating ductility in tall buildings are reasoned and described well; highly creative structural systems which relieve the structure of unwanted force in an extreme condition.

The evolution of structural form is dealt with, aided by real examples of well-known structures whose form is explained. Often, these are forms which have been developed so as to minimise the forces experienced by a structure, due to a combination of wind, seismicity and settlement under self-weight. Factual data are presented, drawn from some of the world's tallest buildings. Useful target deflections and material data are given. Further, the important issue of damping is considered and how it might be quantified - all presented as a practitioner's guide. Useful as this is, more could have been said to champion the instrumentation of our buildings. Suggesting how we might generate hard data, to calibrate our analytical assessments of building performance and presumed damping.

A section of the book is dedicated to describing alternative structural forms which are chosen as a function of building height. There is a reassuring clarity to what is presented, with a solid supporting logic. As there has to be, there are a number of constants populating the models which suggest a transition through core and moment frame through to explicit tube and multi-tube forms; all real and relevant. Of particular interest is the description of structures which separate the ductile system from the gravity system, yet still have architectural presence when aligned with solid engineering principles.

Finally, what sets this work apart are structural details. Details which are drawn from jobs that have (or are) being built; details which graphically demonstrate the consequences of decisions made by the engineer. Details which give credibility to a concept that would otherwise be just a credible structural diagram.

When an engineer can survive the rigours and complexity of the construction process, yet still feel free to exercise their imagination, it requires courage and competence. We see both demonstrated in this book. Yes, there are editorial questions; would a larger format be appropriate? Could some repeated elements of text be edited out? But I have said little to detract from this fine piece of work which articulates the issues confronting us, day to day, in a manner that is neither pompous nor demeaning. Perhaps just one question remains – since when has structure not been architecture?

Robert Lang FICE, FIStructE

Bob Lang is a Director of Arup. He has wide experience of multidisciplinary engineering and a particular interest in the design and construction of tall buildings. Recent projects



include BBVA Bancomer in Mexico City (opened February 2016) and two towers, Project Atrio in Bogota, presently under construction. He was a plenary speaker at the Council for Tall Buildings and Urban Habitat Conference in London (2013).