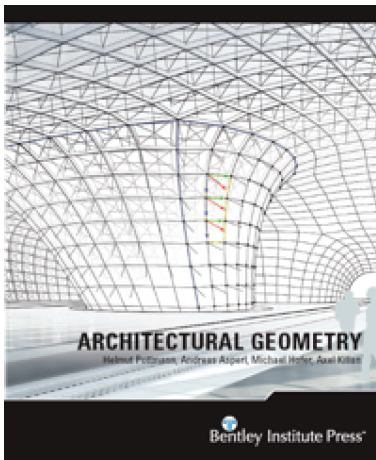


# Book Review

H. Pottmann, A. Asperl, M. Hofer and A. Kilian

Architectural Geometry. Bentley Institute Press (2007), 724 pages, 2200 figures in color, ISBN 978-1-934493-04-5. (<http://www.architecturalgeometry.at/>)



The book by Pottmann, Asperl, Hofer, and Killian is positioned at the interface of geometry and architecture. With an intended target audience of students and practitioners of architecture and industrial design, the book gives a gentle introduction to important geometric concepts and avoids lengthy derivations and complex proofs.

Starting with basic concepts in geometry such as projections, Boolean operations and planar and spatial transformations, the authors move on to give an overview of the different digital representations of curves and surfaces for architectural design. Classical topics in geometric modelling such as splines, are complemented with more domain-specific concepts such as offset and developable surfaces that draw a direct connection to structural considerations and manufac-

turing. The challenges of model making and assembly are discussed in a chapter on digital prototyping and fabrication. The reverse process, reconstruction of a digital shape representation from a physical model is also treated.

The book closes with advanced topics on shape optimization and discrete free-form surfaces, guiding the reader toward is the cutting edge of research. Recent developments on geometric optimization for planar quad meshes and offset meshes impressively demonstrate the great potential of this field for enabling innovative designs that are currently not deemed possible.

Every chapter contains examples of architectural designs that provide direct context to the material discussed in the text. Architects and designers who want to push the limits of their discipline will find exciting new trends and developments. The more mathematically inclined reader might miss proofs or derivations of the presented geometric results. The authors intentionally omitted such advanced mathematical material and refer the reader to the relevant references at the end of each chapter. Nevertheless, the book has much to offer for mathematicians and computer scientists. Many open problems are discussed that provide a rich playground for research and innovation.

This book is a visual gem. Not less than 2200 illustrations and photographs provide visual explanations of geometric concepts, illustrate the application of the discussed topics in classical or contemporary architecture, and stimulate the reader's imagination. A truly delightful read, "Architectural Geometry" is predestined to become the bible of the recently emerging field of architectural geometry.

**Reviewer:** Prof. Dr. Mark Pauly, Applied Geometry Group, ETH Zürich, <http://www.agg.ethz.ch/people/pauly>