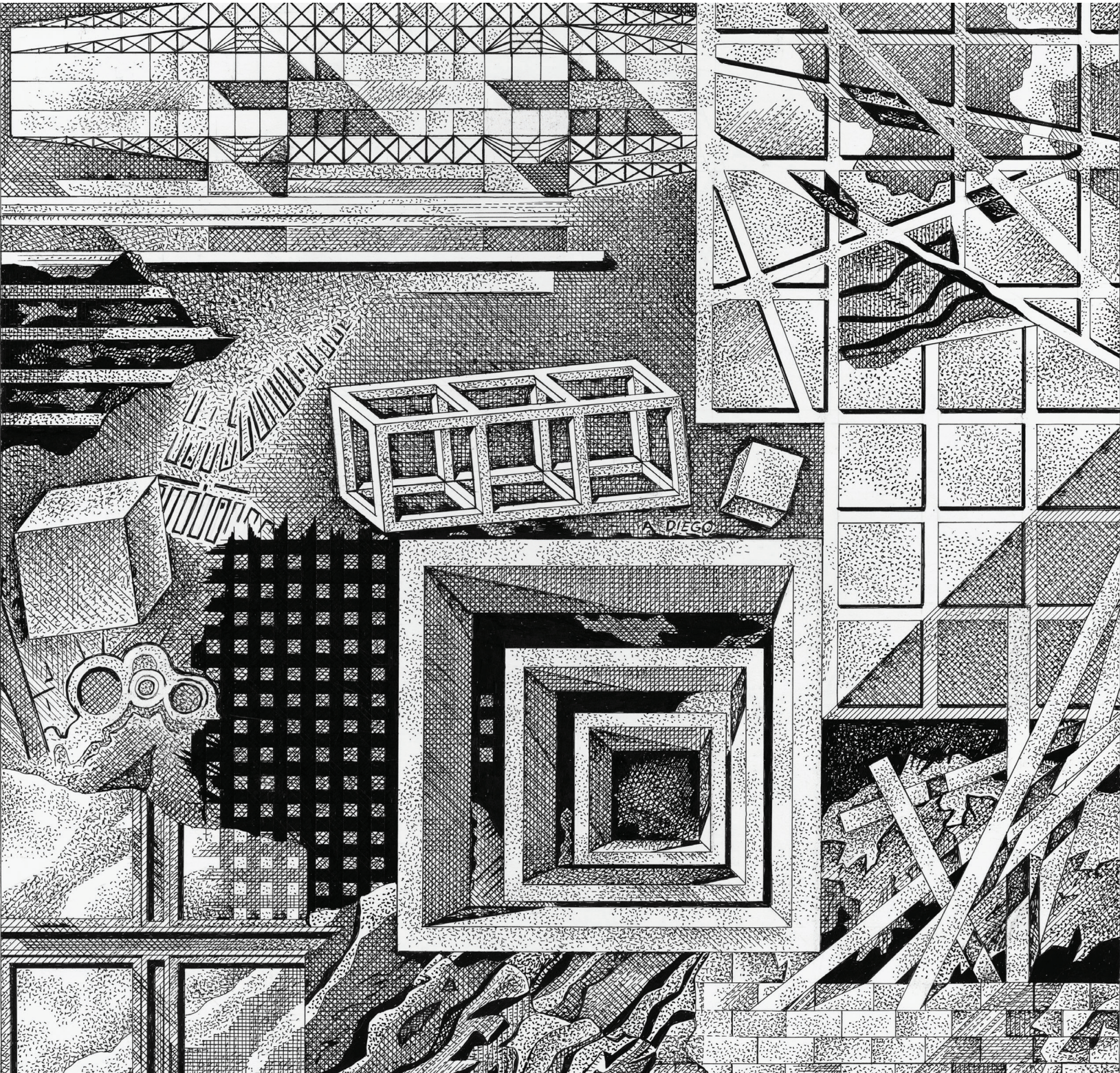


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"CRAFTING 'SCIENTIFIC' RESEARCH IN ARCHITECTURE

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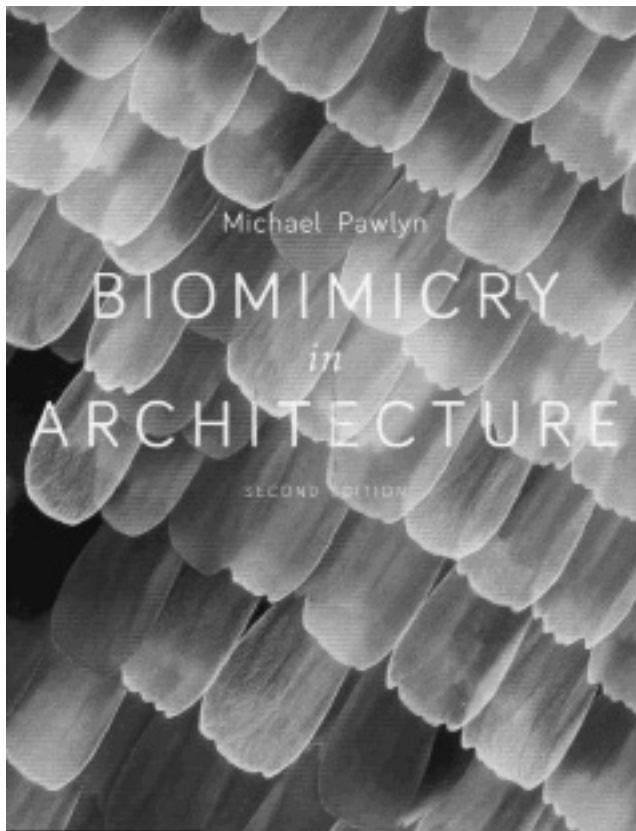
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Biomimicry in Architecture

SANTINA DI SALVO

POLIS University



Author: M. Pawlyn
Publisher: Riba
Pages: 176
Year: 2016
ISBN: 978-1859-466-285

Michael Pawlyn is an architect and biomimicry expert, known for his pioneering work in the field of sustainable design. He has written extensively about the application of biomimicry in architecture, and his book, “Biomimicry in Architecture”, published in 2011, is considered a seminal work in the field. The book is an informative and engaging book that explores the principles of biomimicry and how they can be applied in the field of architecture. Specifically, it explores how architects can learn from nature to create buildings that are more efficient and resilient.

The book is divided into three sections. The first section, “Understanding Biomimicry”, provides an introduction to biomimicry and its relevance to architecture. It discusses the scientific concepts of biomimicry, which involves studying and imitating processes to create more sustainable designs by drawing inspiration from the natural world. Considering on how nature has evolved over billions of years to create efficient and sustainable systems, Pawlyn explains how architects can use biomimicry methods to solve some of the most pressing environmental challenges facing our planet, such as climate change, resource depletion, and biodiversity loss.

The second section of the book, “Case Studies in Biomimicry”, provides a detailed analysis of several projects from around the world where biomimetic principles have been applied in architecture to create self-cleaning surfaces, responsive facades, and energy-efficient structures, providing examples of urban planning interventions that mimic natural systems, such as using green roofs and walls to imitate the way that plants absorb water and filter pollutants. These examples include:

- *The Eastgate Centre*, designed by architect Mick Pearce, which uses termite mounds as a model for natural ventilation. Termites build mounds that maintain a constant temperature despite the fluctuations in the outside environment. The Eastgate Centre mimics this by using a system of vents and fans that draw in cool air at night and expel warm air during the day, reducing the building's energy consumption by up to 90%.

- *The Eden Project*, designed by architect Nicholas Grimshaw, which is a series of interconnected geodesic domes that house a range of plants from different biomes around the world. The domes were inspired by the structure of soap bubbles and are made of lightweight materials that allow them to be self-supporting. The project uses natural ventilation and other sustainable strategies to reduce its environmental impact.

- *The Bullitt Center in Seattle*, which is a commercial building designed to be net-zero energy and net-zero water, using a variety of strategies inspired by nature to reduce its energy consumption. Specifically, the building's design is inspired by the human body and uses natural ventilation, daylighting, and solar energy.

- *The Water Cube*, which was the aquatic center for the 2008 Beijing Olympics. The building's design is inspired by the structure of soap bubbles and uses ETFE cushions to create a lightweight and efficient structure.

The final section of the book looks at the future of biomimicry in architecture. Pawlyn argues that biomimicry has the potential to transform the field of architecture and that architects who embrace this approach will be better equipped to create buildings that are not only more sustainable, but also more beautiful, functional and enjoyable to inhabit.

Some of the strengths of "Biomimicry in Architecture" include:

- 1) In-depth case studies. The book includes several detailed case studies of biomimetic designs, which help to illustrate the concepts discussed in the text with diagrams and pictures. These case studies cover a range of scales, from individual building components to entire urban systems, and provide insights into the design process and the challenges and opportunities of biomimetic design.

- 2) Interdisciplinary approach. Pawlyn emphasizes the importance of interdisciplinary collaboration in biomimetic design. He highlights the need for architects, engineers, biologists, and other experts to work together to develop effective biomimetic solutions that consider both form and function.

- 3) Focus on sustainability. The emphasis on biomimicry as a means to create innovative architecture is a significant strength. It shows how biomimicry can help to reduce the environmental impact of buildings and create designs that are more responsive to their environments.

In summary, the compelling argument for why biomimetic science is a crucial and effective approach in architecture and design, makes "Biomimicry in Architecture" a must-read for those interested in innovative materials and sustainable design solutions, because of its comprehensive coverage, real-world case studies, future trends, inspiring design solutions and authoritative source. "Biomimicry in Architecture" by Pawlyn is a must-read for those interested in innovative materials and sustainable design solutions. The book presents a compelling argument for the importance and effectiveness of biomimetic science in architecture and design, providing comprehensive coverage, real-world case studies, future trends, inspiring design solutions, and authoritative source.

It presents extraordinary design solutions that not only promote

sustainability but also enhance functionality, aesthetics and resilience of built environments. Throughout the book, Pawlyn gives a wealth of information on the latest research and developments in biomimicry, offering valuable insights and practical guide on how architects and designers can incorporate biomimicry into their work. In fact, the innovative and creative design solutions showcased in the book serve as an inspiration for architects, urban designers and product designers looking to push the boundaries of sustainable design. For that reason, it is highly recommended for architects, engineers, and anyone interested in the intersection of design and biology. "Biomimicry in Architecture" challenges to have a different thinking about the design process and technologies, providing a solid foundation for understanding the fundamentals of biomimetics for contemporary green design. Actually, the book covers various aspects including structures, materials, waste, water, thermal control and energy, providing a comprehensive overview of how biomimicry can be applied to different areas of architecture and design, making it a valuable resource for professionals and students alike, encouraging readers to think critically about the opportunities of innovative materials in the future, making it relevant and forward-thinking.