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# Bamboo Architecture Design

## Architecture Materials

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Resource-Driven Sustainable Bamboo Construction in Asia-Pacific Bamboo Areas  
Parametric Experiments in Architecture  
Bamboo Gridshells  
Health and Well-Being Considerations in the Design of Indoor Environments  
Green Architecture  
Bamboo Architecture & Design  
Bamboo  
Building with Bamboo  
Cultivated Building Materials  
Modern Bamboo Structures  
Bend and Build  
Designing and Building with Bamboo  
Contemporary Design in Detail: Sustainable Environments  
Bamboo Architecture  
Materials for a Healthy, Ecological and Sustainable Built Environment

Application of Bamboo in Building Envelope  
Booming Bamboo  
Bamboo Architecture in Competition and Exhibition  
Co-Building with Bamboo  
Biomimetics for Architecture & Design  
Material Architecture  
2019 International Bamboo Construction Competition  
Building with Bamboo  
The Grassroute Guide  
Contemporary Bamboo Architecture in China  
Bioinspired Structures and Design  
Bamboo Style  
Engineered Bamboo Structures  
Bamboo Architecture & Design  
Modern Bamboo Structures  
Materials in Progress  
New Bamboo  
Bamboo Architecture  
Bamboo and Sustainable Construction  
Building with Bamboo

## Understanding Green Building Materials

Simón Vélez, Architecte

Building from Tradition

Bamboo Contemporary

How to Build with Bamboo

*Bamboo  
Architecture  
Design  
Architecture  
Materials*

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### **ORLANDO ELVIS**

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*Resource-Driven  
Sustainable Bamboo  
Construction in Asia-  
Pacific Bamboo Areas*  
Lulu.com

For Colombian architect  
Simon Vélez (born 1949),  
botany has been

inextricable from  
architecture. His work has  
been significantly  
determined by his  
country's tropical  
resources, in particular its  
lush vegetation and  
abundance of guadua  
bamboo--a common  
species throughout the  
valleys of Colombia.  
Working in close  
collaboration with the  
engineer-constructor

Marcello Villegas, Vélez  
has devised bamboo  
buildings that are  
extraordinary not only in  
appearance but also in  
their structural simplicity,  
and in their suitability for  
scenarios in which  
construction tools and  
resources are minimal.  
Vélez has so successfully  
popularized guadua  
bamboo that today even  
his wealthiest clients are

commissioning luxury residences in this material formerly associated with peasant dwellings. He has also successfully persuaded numerous public administrations, town councils and businesses concerned about the environmental impact of their activities to adopt and promote guadua bamboo; he has designed bamboo buildings in Germany, France, the United States, Brazil, Mexico, China, Jamaica, Colombia, Panama, Ecuador and India. In this monograph,

illustrated throughout by Deidi von Schawen's photographs, author Pierre Frey guides us through a range of works by Vélez, examining his construction methods--in bamboo, steel and wood--as exemplifying a new kind of vernacular architecture. *Parametric Experiments in Architecture* Woodhead Publishing  
"The chapters in this book will address issues concerning Indoor Environmental Quality (IEQ), which are described more simply as the

conditions inside the building and cover issues such as air quality, access to daylight and views, pleasant acoustic conditions and occupant control over lighting and thermal comfort"--  
**Bamboo Gridshells**  
Links Books  
This volume uncovers contemporary architecture and design's resurgent love affair with bamboo. Light, stiff, strong and incredibly fast growing, bamboo is a true super-plant, and in construction it is becoming a super-

material. Used in many cultures for generations, it is enjoying a renewal of interest around the world due to its unique properties and the wide range of uses it can be put to. Collected here are some of the most beautiful, creative and cutting edge bamboo projects of recent years, illustrated with full color photographs, plans, and the architects' explanations of their techniques and inspirations.

*Health and Well-Being Considerations in the*

*Design of Indoor Environments* CRC Press  
This book presents international projects with a focus on the amazing versatility of this eco-hero in architecture and interior design An inspirational collection:  
More flexible than wood and stronger than steel, and extremely light, architecture involving and consisting of bamboo has developed into one of the most fascinating areas of global building culture. It is a material with many faces and one of the most important raw materials in

the world. In addition to its individual and natural appearance, above all, it is the the unique material properties that significantly promote this trend. Architects, engineers and material scientists are constantly optimizing the combination methods of bamboo with other building materials, thus expanding the range of its possible applications. What is more, the giant grass is found on all continents (with the exception of Europe) and, as the fastest-growing

plant species, is in basically infinite supply.

### Green Architecture

Springer

A visual look at the architectural details of sustainable residential spaces The Contemporary Design in Detail series takes a highly visual look at architectural design details that are more often dealt with in a technical textbook format.

**Bamboo Architecture & Design** Walter de Gruyter 'Booming Bamboo' provides a comprehensive overview of the enormous potential of this

sustainable resource. Not only for architecture and design but also for a multitude of other applications. After covering the "bamboo basics" (growth, properties, cultural history, industrialisation), the first part of the book introduces the many benefits of bamboo as a fast-growing, renewable resource. The second part presents the various ways in which bamboo can be transformed into many different exciting materials and fabrics.

**Bamboo** Koenemann

"Bamboo has been used as building material for many centuries in all regions in which it grows, especially in Asia, Africa and South America. Today it is gaining in popularity also among Western architects and engineers due to its reputation of a quickly replenishing and therefore sustainable raw material. In addition, its tensile as well as compressive strength, which can compete with those of steel, stone and concrete, make bamboo a very desirable construction material. The

range extends from traditional building styles and their modern interpretation to the combination of bamboo with other materials. Frequently, beyond its use for purely construction purposes it also serves as a primary design element. This volume presents contemporary projects that show the impressive versatility of its usage"-- Provided by publisher.

**Building with Bamboo**  
Braun Publishing  
Fascinating bamboo buildings and architectural designs from

around the world from the International Bamboo Building Design Competition, the 2010 Shanghai World Expo and several other competitions and exhibitions. Architects and designers from 64 countries submitted 250 designs in 12 building categories such as family houses, urban buildings, emergency shelters, commercial and public buildings, pavilions, and even tree houses. The buildings and designs use bamboo and other natural building materials, and

range from modest to majestic, commercial to humanitarian, and practical to fanciful. The results are truly exciting and innovative, providing a fresh outlook for the possibilities for using bamboo to build a new green world. At the 2010 Shanghai World Expo, great architects showcased bamboo in eight remarkable pavilions, demonstrating the contribution bamboo can play in a better life. *Cultivated Building Materials* Birkhäuser  
Bamboo is considered one

of the most sustainable and versatile building materials, driving the development of multiple techniques for its study and utilization. With new techniques to better analyze, comprehend, and exploit its uses, the plant can be used in numerous applications. From direct building material to composites, this book explores the latest developments in the application of bamboo in the sustainable construction industry.

**Modern Bamboo Structures** Birkhäuser

Building from Tradition examines the recent resurgence of interest in the handmade building and the use of local and renewable materials in contemporary construction. In the past, raw materials were shaped to provide shelter and to accommodate the cultural, social, and economic needs of individuals and communities. This is still true today as architects, engineers, and builders turn once again to local resources and methods, not simply for

constructing buildings, but also as a strategy for supporting social engagement, sustainable development, and cultural continuity. Building from Tradition features global case studies that allow readers to understand how building practices—developed and refined by previous generations—continue to be adapted to suit a broad range of cultural and environmental contexts. The book provides: • a survey of historical and technical information about geologic and plant-

based materials such as: stone, earth, reed and grass, wood, and bamboo;

- 24 detailed case studies examining the disadvantages and benefits to using traditional materials and methods and how they are currently being integrated with contemporary construction practices.

### **Bend and Build**

Routledge

Traditionally a building material of the warmer climate zones, bamboo is becoming increasingly popular amongst

architects in the northern hemisphere; bamboo has several advantages – it is very stable, of low weight, and highly elastic, in addition to being readily available as well as renewable. The applications of bamboo in architecture have diversified considerably, so that today, even structures with large spans – such as bridges – are built with this material. Renowned universities such as the ETH Zurich or the SUTD in Singapore have conducted research on

engineered bamboo which will further expand its use. The third edition of this manual provides a systematic overview of the applications and processing methods of this renewable material. Recent inspiring bamboo buildings have been added.

### **Designing and Building with Bamboo**

Createspace Independent Publishing Platform

From the world's leading publisher of Architecture and Architectural Practices, comes a look into how VTN Architects

have used bamboo to create groundbreaking projects. With the climate crisis raging and awareness of humanity's detrimental impact on the environment now patently apparent, the need for architects to come up with sustainable new solution has never been more pressing. A key part of any green approach to architecture is the use of local natural materials with a low environmental impact. Bamboo, which has been widely used in Asian architecture for centuries as scaffolding

and for bridges, pavilions, houses and other structures, is an ideal material in this context: lightweight, strong and readily available. In an effort to meet the challenges of the 21st century, VTN Architects has developed new ways of working with two species of bamboo in particular, the flexible Tam Vong and the sturdier Luong, creating a manufacturing workflow that allows for the production of standardised modules, a knitting technique that

enables the material to span large distances and environmentally friendly traditional treatments such as mud-soaking and smoking. In Bamboo Architecture, we see how these methods have been applied in award-winning, groundbreaking projects such as the Wind and Water Café, Diamond Island Community enter, and the majestic Vedana Restaurant, alongside an illuminating introduction by Masaaki Iwamoto and an interview with the studio principal Vo Trong Nghia who offers an

inspiring vision for the future of natural, green architecture.

### **Contemporary Design in Detail: Sustainable Environments**

Birkhäuser

This book offers a comprehensive overview of the use of bamboo in the building industry. It systematically demonstrates bamboo's utility in terms of its properties, describing the material properties of typical industrial bamboo products, and discussing their performance evaluation and

optimization as building components and in the creation of building envelopes. The book presents the recent developments regarding the innovative ways to design and represent architecture through parametric survey tools, and describes the experimental geometrical-generative design process of a connection joint for free-form lightweight structures employing beams made of bamboo culms. It examines algorithmic-generative design themes, through

processes of optimization, analysis, and geometrical-spatial verification, employing the potential of digital form-finding design and digital manufacturing techniques to validate the defined technological solution. This book appeals to scientists and professionals and is a valuable resource for civil engineers, designers and students interested in this unique plant material and its application in the building industry. Videos via app: download the SN More Media app for free, scan an image or a link

with play button and access the videos directly on your smartphone or tablet.

### **Bamboo Architecture**

CRC Press

Traditionally a building material of hot climate zones in Asia and Latin America, bamboo is increasingly discovered by architects of the Northern hemisphere as well. It is lightweight, highly elastic and ductile, and in addition offers qualities especially in demand in an era of limited resources, renewability and abundant availability.

Architects and engineers have significantly widened the applications of bamboo in recent years and today even wide-span bridges can be built from it. Impressed with its technical and aesthetic possibilities, European, Japanese and North American architects have adopted bamboo for a variety of construction tasks, ranging from exclusive private residences to experimental pavilions, and from airy canopies to schools or museums. The book provides a detailed

manual for bamboo constructions and presents a broad selection of built examples, among them the spectacular bamboo pavilions of the 2010 Shanghai World Exposition, a parking garage in Leipzig, Germany, the Nomadic Museum in Mexico City and Richard Rogers' Terminal 4 at Madrid Airport.

### **Materials for a Healthy, Ecological and Sustainable Built Environment**

Braun

Publishing AG

Bamboo has gained the

name of "plant steel" in the field of construction. Since ancient times, it has been widely used in Asia and Latin America. For many years bamboo had lost its role as a construction material in parts of the world where it grows indigenously due to an increase in the use of more modern material. It was gradually replaced by concrete, steel, and wood and became known as a "poor man's wood." Thanks to the research and design carried out by key worldwide architects and engineers in recent

decades, this attractive natural material is being reconsidered as a construction and basic design material. This book features international examples of current projects where bamboo has been used as the main material.

### **Application of Bamboo in Building Envelope**

Routledge

Bamboo materials are well available in the world. Bamboo has much shorter maturity than trees, thus can be harvested with shorter cycles of plantation.

Despite the fact that human society has a long history of using bamboo, there is still a lack of modern and industrialized application of bamboo materials in construction. Promoting the application

*Booming Bamboo*

Springer Nature  
This highly illustrated text brings together two areas which have both grown in popularity in recent years: gridshells and bamboo. Bamboo is a fast-growing, naturally available, renewable resource which is quite strong and lends itself to structural

applications. In this unique text, David Rockwood demonstrates the viability of bamboo as a building material and considers the advantages – as well as the challenges – of working with bamboo. Its properties, workability, connections, assembly, erection processes, structural behavior, and final use are explored in detail through a series of design-build experiments and case studies from Hawai'i and Vietnam. The only book available on the subject, *Bamboo Gridshells* provides a

comprehensive introduction to this emerging technology which will be of interest to anyone working in the areas of sustainable or environmental design, ecological construction, low technology strategies, or alternative materials. *Bamboo Architecture in Competition and Exhibition* W. W. Norton & Company  
This volume builds upon the 2019 International Bamboo Construction Competition (IBCC 2019) from the Concepts to the Realized Pavilions.

Several designed projects are described, and particular attention is devoted to the realized prototypes. It also presents the Bamboo Eye, an important example of architecture realized by INBAR for the 2019 Beijing Horticultural Expo. As such, the volume provides an overview of the use of bamboo poles and engineered bamboo products for temporary and normal constructions, and represents a compact review of the applications of bamboo poles and/or engineered bamboo

products in the construction industry. This book will be of interest for researchers, architects and structural engineers in field of bamboo constructions.

*Co-Building with Bamboo*  
Design Media Publishing  
(UK) Limited

Since 1997, architect and installation artist Markus Heinsdorff has focused much of his work on the potential and possibilities afforded by bamboo. This volume shows how that interest played out in his design for the Sino-German pavilion at Expo

2010 in Shanghai. *Biomimetics for Architecture & Design* Springer Sustainability. At VTN Architects, Green Architecture is our approach to building structures that minimize the harmful effects of construction projects on human health and the environment. Through our designs, we attempt to safeguard air, water, and earth by choosing eco-friendly building materials and construction practices. Each of our projects also

aims to reintroduce green spaces into the country's increasingly high-density urban areas and tackle the resulting environmental problems such as urban flooding, overheating, and air pollution. called 'Luong' (Latin name: *Dendrocalamus barbatus*). Elements of Green Architecture: At VTN Architects, Green Architecture is our approach to building structures that minimize the harmful effects of construction projects on human health and the

environment.