

THE GREAT STRUCTURES IN ARCHITECTURE

Antiquity to Baroque

WIT*PRESS*

WIT Press publishes leading books in Science and Technology.

Visit our website for the current list of titles.

www.witpress.com

WIT*eLibrary*

Home of the Transactions of the Wessex Institute, the WIT electronic-library provides the international scientific community with immediate and permanent access to individual papers presented at WIT conferences. Visit the WIT eLibrary at <http://library.witpress.com>

International Series on Advances in Architecture

Objectives

The field of architecture has experienced considerable advances in the last few years, many of them connected with new methods and processes, the development of faster and better computer systems and a new interest in our architectural heritage. It is to bring such advances to the attention of the international community that this book series has been established. The object of the series is to publish state-of-the-art information on architectural topics with particular reference to advances in new fields, such as virtual architecture, intelligent systems, novel structural forms, material technology and applications, restoration techniques, movable and lightweight structures, high rise buildings, architectural acoustics, leisure structures, intelligent buildings and other original developments. The Advances in Architecture series consists of a few volumes per year, each under the editorship - by invitation only - of an outstanding architect or researcher. This commitment is backed by an illustrious Editorial Board. Volumes in the Series cover areas of current interest or active research and include contributions by leaders in the field.

Managing Editor

F. Escrig

Escuela de Arquitectura
Universidad de Sevilla
Spain

Honorary Editor

C. A. Brebbia

Wessex Institute of Technology
Ashurst Lodge, Ashurst
Southampton
UK

Honorary Editor

P. R. Vazquez

Fuentes 170
Pedregal de San Angel
01900 Mexico D.E.
Mexico

Associate Editors

C. Alessandri

University of Ferrara
Italy

W. P. De Wilde

Free University of Brussel
Belgium

M. Majowiecki

University of Bologna
Italy

F. Butera

DI Tec, Politecnico di Milano
Italy

C. Gantes

National Technical University of Athens
Greece

S. Sánchez-Beitia

University of the Basque
Country, Spain

J. Chilton

University of Nottingham
UK

K. Ghavami

Pontifica Univ Catolica
Brazil

J. J. Sendra

Universidad de Sevilla
Spain

G. Croci

Istituto di Tecnica delle Costruzioni
Italy

K. Ishii

Yokohama
Japan

M. Zador

Technical University of Budapest
Hungary

A. de Naeyer

University of Ghent
Belgium

W. Jäger

Technical University of Dresden
Germany

R. Zarnic

University of Ljubljana
Slovenia

THE GREAT STRUCTURES IN ARCHITECTURE

Antiquity to Baroque

F. Escrig

Universidad de Sevilla, Spain

WITPRESS Southampton, Boston



THE GREAT STRUCTURES IN ARCHITECTURE

Antiquity to Baroque

Series: Advances in Architecture, Vol. 22

F. Escrig

Published by

WIT Press

Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK
Tel: 44 (0) 238 029 3223; Fax: 44 (0) 238 029 2853
E-Mail: witpress@witpress.com
<http://www.witpress.com>

For USA, Canada and Mexico

WIT Press

25 Bridge Street, Billerica, MA 01821, USA
Tel: 978 667 5841; Fax: 978 667 7582
E-Mail: infousa@witpress.com
<http://www.witpress.com>

British Library Cataloguing-in-Publication Data

A Catalogue record for this book is available
from the British Library

ISBN: 1-84564-039-X
ISSN: 1368-1435

Library of Congress Catalog Card Number: 2004116314

No responsibility is assumed by the Publisher, the Editors and Authors for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein.

© WIT Press 2006.

Printed in Great Britain by Athenaeum Press Ltd.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Publisher.

CONTENTS

INTRODUCTION	vii
Chapter 1: STONES RESTING ON EMPTY SPACE	1
Chapter 2: THE INVENTION OF THE DOME	21
Chapter 3: THE HANGING DOME	45
Chapter 4: THE RIBBED DOME.....	65
Chapter 5: A PLANIFIED REVENGE. UNDER THE SHADOW OF BRUNELLESCHI	97
Chapter 6: THE CENTURY OF THE GREAT ARCHITECTS.....	121
Chapter 7: THE OMNIPRESENT SINAN	151
Chapter 8: EVEN FURTHER	169
Chapter 9: THE PERFECT SYMBIOSES FORM-FUNCTION IN THE HIGH BAROQUE ARCHITECTURE	181
Chapter 10: SCENOGRAPHICAL ARCHITECTURE OF THE 18 TH CENTURY	211
Chapter 11: THE VIRTUAL ARCHITECTURE OF THE RENAISSANCE AND THE BAROQUE	245

INTRODUCTION

I have always found amazing the fact that someone in the past spent his time piling stones up to mark or to delimit an area. But I get even more astonished when I come to think that somebody dared to live within that pile of stones and, in addition, felt safer inside it than outside. That leads me to the conclusion that in those days people had to have a great faith in their own skill to take shelter in the shade of a wall of rough stones and that they fully relied on the physical laws to dare to live under a slab canopy.

You could think that to build a dolmen, people only needed enough energy to move the huge stones it was made of, its stability being guaranteed by the inertia of those colossal masses. But when someone first succeeded in making a ceiling of pebbles, supported by a material as weak as mud, that represented a step forward as great as the control of fire. Nevertheless, that must have happened so long ago that no mythology tells about a God owning the power to keep stones floating in the air. The Bible considers so obvious the existence of domes that not only does not mention it, but when an arch or a temple is to be made, wooden architraves are used, choosing the noble building way instead of the popular brick based architecture. Neither do the Babylonian legends mention anything referring to architecture. And the Egyptians either, since they deified the human architect that constructed Zoser's pyramids. Greek mythology makes reference to all the forces of nature and to all the human passions and liking, but not to architecture. The Nordic ancient cultures, more primitive, can deify the axe because it is an instrument for wood building, which they never do with architecture itself. And we could go on with the Oriental mythologies with similar results.

Why something so important stays outside the consideration of men? In my previous book *Towers and Domes* I advanced some hypotheses, but I must insist on the instrumental character of the domestic architecture and on the symbolic character of the great architecture as a means to achieve other objectives.

We could also think that architecture is something so recent that appeared when the legendary corpus of tradition was already finished, so that everything to be added to tradition would show an unmistakably human character.

In case that is right, this book tries to start from the origins without fearing to ignore undocumented precedents. In the opposite case, the historical sequence reveals itself as tricky. In any case, what is left is the proof of the existence of these works, which have evolved in a progressive and sequential order as mentioned.

The story that I tell, which starts in the antiquity and finishes in the Baroque in this first volume, reaching the present time in the following one, intends to reflect on the great adventure of architecture. Every matter is open to opinions and everything is objectionable. That is settled. But from the viewpoint of someone who practices architecture, this text will possibly serve to understand better the monuments, to get closer to them and find out whether they should be conserved or modified, and to be humbler when thinking that our tools are all-powerful. If we realised that our advantage is based in the fact that we have new materials invented by chemists and that using sun-cooked bricks our results would not be different to those of Babylonian craftsmen, we would be more modest. Instead of committing outrages favoured by the resistance of concrete and steel, we could study the importance of the forms and its optimisation.