The Environmental Imagination

Technics and poetics of the architectural environment
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The Environmental Imagination explores the relationship between technics and poetics in environmental design in architecture. Working thematically and chronologically from the eighteenth century to the present day, this book aims to redefine the historiography of environmental design. The author looks beyond conventional histories to recognise that environmental matters are not purely a technical matter: they are a collaboration between poetic intentions and technical means.

The essays in this book assess the work of several leading nineteenth- and twentieth-century figures to demonstrate the growth of environmental awareness. A consideration of the qualitative dimension of the environment is added to the existing, primarily technological, narratives. Essays on earlier buildings highlight the response of pioneering architects to the ‘new’ technologies of mechanical services and their influence on the form of buildings, while the late twentieth-century design is explored in particular depth to illustrate individual strands of the environmental diversity of modern practice. The architects discussed range from John Soane to Peter Zumthor.

The Environmental Imagination will appeal to those interested in both architectural technology and history and theory.

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For Christine
Dean Hawkes

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Contents

Preface vi
Acknowledgements viii
Introduction x

Part I From Enlightenment to Modernity 1
Essay 1 Soane, Labrouste, Mackintosh: pioneers of environment 3

Part II The Twentieth-Century Environment: themes and variations 31
Essay 2 Le Corbusier and Mies van der Rohe: continuity and invention 33
Essay 3 The ‘other’ environmental tradition: Erik Gunnar Asplund and Alvar Aalto 61
Essay 4 The poetics of ’served’ and ’servant’: Louis I. Kahn 87
Essay 5 ’I wish I could frame the blue of the sky’: Carlo Scarpa 111

Part III Image and Environment 143
Essay 6 Architecture of adaptive light: Sigurd Lewerentz 129
Essay 7 The sheltering environment: Fehn and Zumthor 145
Essay 8 The art museum: art, environment, imagination – Moneo, Siza, Caruso St John, Zumthor 157
Essay 9 Sacred places: Zumthor, Siza, Holl 185
Essay 10 Airs, waters, places: Therme Vals 203

Selected bibliography 220
Index 226
Illustration credits 233
A decade ago, I assembled a collection of essays, *The Environmental Tradition*. In these I attempted to make connections between the theory and the practice of environmental design in architecture. I also sought to bring a historical perspective to the field. A further aim, and with hindsight perhaps the most important, was to show that the nature of the environment within a building lies at the very heart of the architectural project.

The present book tries to penetrate more deeply into the thinking of architects as they imagine the environment, the atmosphere, the ambience of their buildings. In most circumstances this involves establishing some kind of relationship between the elements of architecture, space, form, material, and mechanical systems for heating, ventilating, lighting. Together, these constitute the technics of the architectural environment, but technics or techniques or technologies alone, however important their role, fail to touch the central point. As I hope these essays go some way to show, the significant environmental propositions in architecture rest upon acts of imagination in which technics are brought to bear in the service of poetic ends.

Although the book follows a broad chronological structure, spanning the nineteenth and twentieth centuries, it does not attempt to present a continuous historical account of environmental design in this period. The method is to examine the work of specifically selected architects, identifying and exploring a variety of themes. The description, analysis and interpretation of the major buildings that are discussed are based on extensive visits and observations, supplemented by documentary and archival research. The essence of the environment that I am trying to capture must be directly experienced, it cannot be completely discerned from images and verbal descriptions alone. For the purposes of this kind of research the only reliable instruments of observation are the human senses. As a consequence, I have spent many hours in some remarkable buildings. These include: churches by Steven Holl, Sigurd Lewerentz, Alvaro Siza and Peter Zumthor; art museums by Caruso St John, Carlo Scarpa, Sverre Fehn, Louis Kahn, Rafael Moneo, Alvaro Siza, Peter Zumthor; Asplund’s Gothenburg Law Courts and Aalto’s Säynätsalo Town Hall, and the waters at Zumthor’s Therme Vals. This is the most indulgent research imaginable, but at all times it has, I hope, been purposeful.
The works of many other architects could, maybe should, have served to demonstrate my thesis. For example, I am conscious of the absence of Semper, Schinkel and Horta from my account of the nineteenth century. In the twentieth century, Scharoun and Terragni could be represented as major poets of the architectural environment, to say nothing of Barragan and Utzon, and I am acutely aware of the absence of Wright; then there is Ando. I also recognize that very few British architects are represented here. Maybe in the future these and others will be given their due attention.

I wish to acknowledge the help of many in supporting this project. First of all, I thank the Leverhulme Trust for the award of an Emeritus Research Fellowship, 2002–2003. This funded my series of research visits to buildings in Europe and the USA and made a substantial contribution towards the cost of making new drawings of many of the buildings. I am grateful to Peter Carolin and Malcolm Higgs for their support of my application to Leverhulme. The drawings were prepared with care and excellent judgement by Simon Blunden.

Many individuals went to great lengths to allow me access to buildings and archives. I am particularly grateful to Katariina Pakkomaa and colleagues at the Alvar Aalto Archive in Jyväskylä and to Patricia Cummings Loud, who welcomed me to the Kimbell Art Museum in Fort Worth and, later, read and helped me to improve my essay on Louis I. Kahn. I also thank Margaret Richardson at the Sir John Soane Museum in London, for a long and insightful conversation on Soane. My long-standing friendship with Sergio Los has for many years inspired and informed my thinking on the architectural environment. On numerous occasions we have together visited and discussed Carlo Scarpa’s buildings in the Veneto. In specific connection with this book I enjoyed the hospitality of Sergio and Natasha Pulitzer in Vicenza and benefited from Sergio’s critique of my Scarpa essay. I wish also to thank Mary Ann Steane in Cambridge for conversations and for her helpful comments on some of the essays. I am also grateful for the help, over many years, of the Librarians at the Welsh School of Architecture in Cardiff and the Faculty of Architecture and History of Art at Cambridge, Silvia Harris and Maddy Brown respectively.
Over the years I have been privileged to work with many outstanding students whose work has, either directly or indirectly, contributed to these essays. Among these Todd Willmert occupies a special place. His distinguished research on Sir John Soane, which he began when he was a post-graduate student in Cambridge, laid the foundation for my discussion of Soane and his recent work on Le Corbusier’s fireplaces inspired me to undertake my comparison of Corbusier and Mies. Other students whose work has been of direct help are Nigel Craddock, again on Soane, and Edward Ng for his insights into both Soane and Mackintosh. I should like to express my thanks to Emma Toogood, whose graphic analysis of the insolation of the Villa Mairea provided precise verification of my empirical observations. I wish also to thank numerous other colleagues and students in Cardiff, Cambridge and elsewhere who have helped to shape my thoughts.

The raw material of these essays formed the basis of a series of lectures that I gave in 2003–2004 as Visiting Professor at the Department of Architecture, University of Huddersfield. I am grateful to the Head of Department, Richard Fellows, for inviting me to join the school in that capacity and for his willingness to expose his staff and students to my ideas as they took shape. I must also, as always, thank Caroline Mallinder at Taylor & Francis for her patience and tact in bringing the hook to print.

For over forty years, I have enjoyed the tolerance, care and love of my wife, Christine. I dedicate this book to her.

Dean Hawkes, Cambridge, February 2007
I only wish that the first really worthwhile discovery of science would be that it recognised that the unmeasurable is what they're really fighting to understand, and that the measurable is only the servant of the unmeasurable; that everything that man makes must be fundamentally unmeasurable.¹

I begin with this quotation from Louis Kahn because it seems to me that it poses a fundamental question about the nature and utility of science and its cousin, technology, and their relationship to the concerns of architecture. The aim of this book is to explore the relationship between the scientific method and the devices of technology as they have been applied to the determination of the environmental properties of buildings. To establish a wide context for the discussion, I begin with a brief historical review of the emergence of what may be termed 'architectural science'.

My starting point is the Renaissance and, specifically, with the works of Andrea Palladio (1508–1580) and his English contemporary, Robert Smythson (1537(?)–1614). The Villa Capra (1550–1551), also known as La Rotonda, near Vicenza (Figure 0.1) is arguably Palladio's most celebrated villa.² It may be represented as the summation of the ideals of Renaissance architecture in its synthesis of form, proportion and symbolism. But it was also conceived as a practical dwelling in which these same principles of form and proportion serve as precisely calculated mediators between the variables of the climate of the Veneto and the more moderate conditions required for domestic life. In the Four Books,³ Palladio explained the principles by which the size of windows should be related to the dimensions of the rooms which they serve:

> It is to be observed in making the windows, that they should not take in more or less light, or be fewer or more in number, than what necessity requires: therefore great regard ought to be had to the largeness of the rooms which are to receive the light from them, because it is manifest, that a great room requires more light to make it lucid and clear, than a small one: and if the windows are made either less or fewer than that which is convenient, they will make the places obscure, and if too large, they will scarce be habitable,