

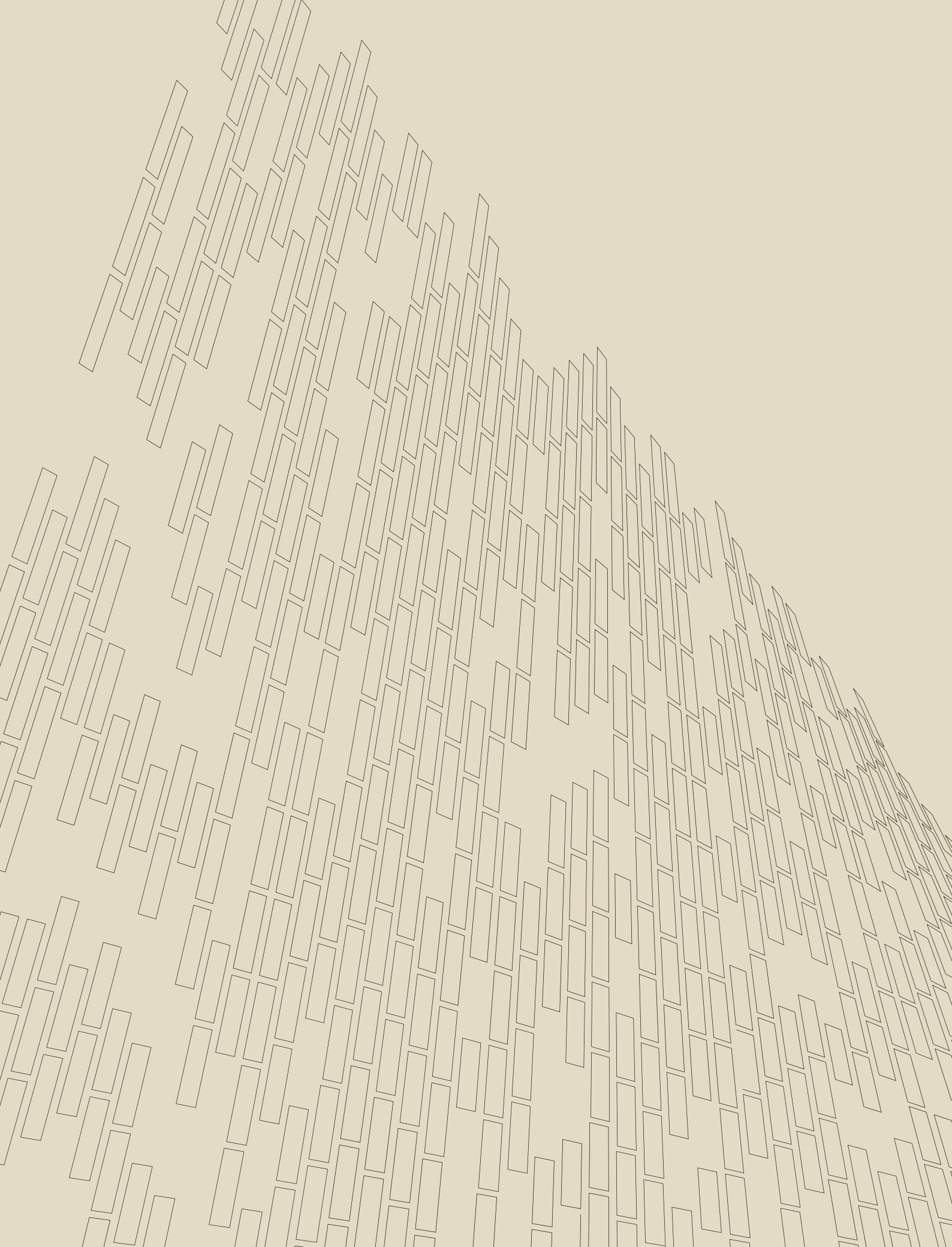


.....  
ARCHITECTURAL DESIGN

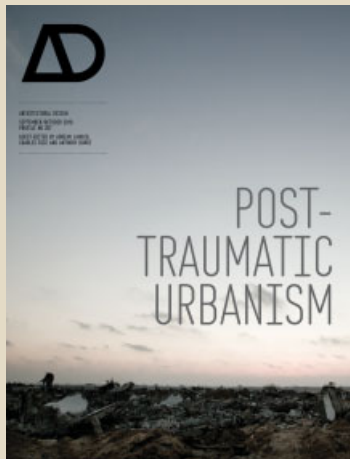
JULY/AUGUST 2010  
PROFILE NO 206

GUEST-EDITED BY RIVKA OXMAN  
AND ROBERT OXMAN  
.....

# THE NEW STRUCTURALISM







Volume 80 No 5  
ISBN 978 0470 744987

SEPTEMBER/OCTOBER 2010  
PROFILE NO 207

### POST-TRAUMATIC URBANISM

GUEST-EDITED BY ANTHONY BURKE, ADRIAN LAHOUD AND CHARLES RICE

Urban trauma describes a condition where conflict or catastrophe has disrupted and damaged not only the physical environment and infrastructure of a city, but also the social and cultural networks. Cities experiencing trauma dominate the daily news. Images of blasted buildings, or events such as Cyclone Katrina exemplify the sense of 'immediate impact'. But how is this trauma to be understood in its aftermath, and in urban terms? What is the response of the discipline to the post-traumatic condition? On the one hand, one can try to restore and recover everything that has passed, or otherwise see the post-traumatic city as a resilient space poised on the cusp of new potentialities. While repair and reconstruction are automatic reflexes, the knowledge and practices of the disciplines need to be imbued with a deeper understanding of the effect of trauma on cities and their contingent realities. This issue will pursue this latter approach, using examples of post-traumatic urban conditions to rethink the agency of architecture and urbanism in the contemporary world. Post-traumatic urbanism demands of architects the mobilisation of skills, criticality and creativity in contexts with which they are not familiar. The post-traumatic is no longer the exception; it is the global condition.

- Contributors include: Andrew Benjamin, Ole Bouman, Tony Chakar, Mark Fisher, Christopher Hight, Brian Massumi, Todd Reisz, Eyal Weizman and Slavoj Žižek.
- Featured cities: Beirut, Shenzhen, Berlin, Baghdad, Kabul and Caracas.
- Encompasses: urban conflict, reconstruction, infrastructure, development, climate change, public relations, population growth and film.



Volume 80 No 6  
ISBN 978 0470 746622

NOVEMBER/DECEMBER 2010  
PROFILE NO 208

### ECOREDUX: DESIGN REMEDIES FOR AN AILING PLANET

GUEST-EDITED BY LYDIA KALLIPOLITI

This issue of Δ explores the remarkable resurgence of ecological strategies in architectural imagination. As a symptom of a new sociopolitical reality inundated with environmental catastrophes, sudden climatic changes, garbage-packed metropolises and para-economies of non-recyclable e-waste, environmental consciousness and the image of the earth re-emerges, after the 1960s, as an inevitable cultural armature for architects; now faced with the urgency to heal an ill-managed planet that is headed towards evolutionary bankruptcy. At present though, in a world that has suffered severe loss of resources, the new wave of ecological architecture is not solely directed to the ethics of the world's salvation, yet rather upraises as a psycho-spatial or mental position, fuelling a reality of change, motion and action. Coined as 'EcoRedux', this position differs from utopia in that it does not explicitly seek to be right; it recognises pollution and waste as generative potentials for design. In this sense, projects that may appear at first sight as science-fictional are not part of a foreign sphere, unassociated with the real, but an extrusion of our own realms and operations.

- Contributors include: Matthias Hollwich and Marc Kushner (HWKN), David Turnbull and Jane Harrison (ATOPIA), Anthony Vidler and Mark Wigley.
- Featured architects: Anna Pla Catalá, Eva Franch-Gilabert, Mitchell Joachim ('Terreform One'), François Roche (R&Sic(n)), Rafi Segal, Alexandros Tsamis and Eric Vergne.



Volume 81 No 1  
ISBN 978 0470 747209

JANUARY/FEBRUARY 2011  
PROFILE NO 209

### TYPOLOGICAL URBANISM: PROJECTIVE CITIES

GUEST-EDITED BY CHRISTOPHER CM LEE AND SAM JACOBY

How can architecture today be simultaneously relevant to its urban context and at the very forefront of design? For a decade or so, iconic architecture has been fuelled by the market economy and consumers' insatiable appetite for the novel and the different. The relentless speed and scale of urbanisation, with its ruptured, decentralised and fast-changing context, though, demands a rethink of the role of the designer and the function of architecture. This title of Δ confronts and questions the profession's and academia's current inability to confidently and comprehensively describe, conceptualise, theorise and ultimately project new ideas for architecture in relation to the city. In so doing, it provides a potent alternative for projective cities: Typological Urbanism. This pursues and develops the strategies of typological reasoning in order to re-engage architecture with the city in both a critical and speculative manner.

Architecture and urbanism are no longer seen as separate domains, or subservient to each other, but as synthesising disciplines and processes that allow an integrating and controlling effect on both the city and its built environment.

- Significant contributions from architects and thinkers: Lawrence Barth, Peter Carl, Michael Hensel, Marina Lathouri, Martino Tattara and Pier Vittorio Aureli.
- Featured architects include: Ben van Berkel & Caroline Bos of UNStudio, DOGMA, Toyo Ito & Associates, I'AUC, OMA, SANAA and Serie Architects.



ARCHITECTURAL DESIGN

---

GUEST-EDITED BY  
RIVKA OXMAN AND  
ROBERT OXMAN

---

# THE NEW STRUCTURALISM

DESIGN, ENGINEERING AND ARCHITECTURAL TECHNOLOGIES

04|2010

---

ARCHITECTURAL DESIGN  
VOL. 80, NO. 4  
JULY/AUGUST 2010  
ISSN 0003-8504

PROFILE NO 206  
ISBN 978-0470-742273

---

 **WILEY**  
wiley.com



GUEST-EDITED BY  
RIVKA OXMAN AND  
ROBERT OXMAN

# THE NEW STRUCTURALISM

DESIGN, ENGINEERING AND ARCHITECTURAL TECHNOLOGIES

5 EDITORIAL

*Helen Castle*

6 ABOUT THE GUEST-EDITORS

*Rivka Oxman and Robert Oxman*

8 SPOTLIGHT

Visual highlights of the issue

14 INTRODUCTION

The New Structuralism:  
Design, Engineering and  
Architectural Technologies

*Rivka Oxman and Robert Oxman*



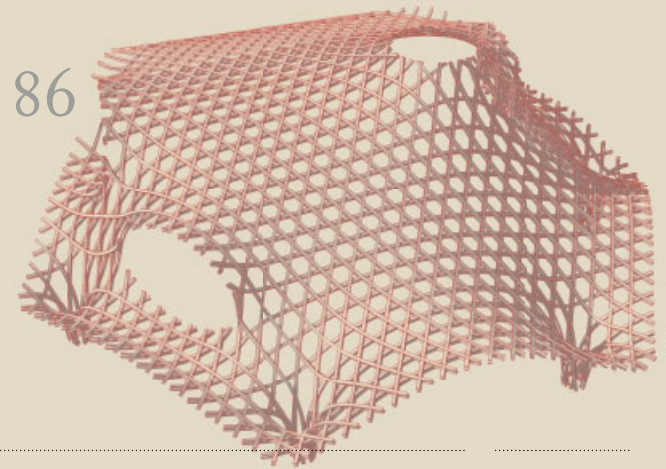
EDITORIAL BOARD

Will Alsop  
Denise Bratton  
Paul Brislin  
Mark Burry  
André Chaszar  
Nigel Coates  
Peter Cook  
Teddy Cruz  
Max Fordham  
Massimiliano Fuksas  
Edwin Heathcote  
Michael Hensel  
Anthony Hunt  
Charles Jencks  
Bob Maxwell  
Jayne Merkel  
Mark Robbins  
Deborah Saunt  
Leon van Schaik  
Patrik Schumacher  
Neil Spiller  
Michael Weinstock  
Ken Yeang  
Alejandro Zaera-Polo

24 Radical Sources of  
Design Engineering  
*Werner Sobek*

*The renowned proponent of ultra-lightweight structures charts how his consultancy has developed a far-reaching approach to practice.*

- 
- 34 Structured Becoming: Evolutionary Processes in Design Engineering  
*Klaus Bollinger, Manfred Grohmann and Oliver Tessmann*
- 40 Structuring Strategies for Complex Geometries  
*Wolf Mangelsdorf*
- 



- 
- 46 On Design Engineering  
*Hanif Kara*

*Innovative design-led engineer Hanif Kara advocates a holistic approach to architecture and engineering.*

---



- 
- 52 Weaving Architecture: Structuring the Spanish Pavilion, Expo 2010, Shanghai  
*Julio Martínez Calzón and Carlos Castañón Jiménez*
- 60 Optioneering: A New Basis for Engagement Between Architects and their Collaborators  
*Dominik Holzer and Steven Downing*
- 64 Heinz Isler's Infinite Spectrum: Form-Finding in Design  
*John Chilton*
- 

- 72 Architectural Geometry as Design Knowledge  
*Helmut Pottmann*
- 78 Structuring Materiality: Design Fabrication of Heterogeneous Materials  
*Neri Oxman*
- 86 Materialising Complexity  
*Fabian Scheurer*
- 94 Fabricating Design: A Revolution of Choice  
*Frank Barkow*
- 102 Timberfabric: Applying Textile Principles on a Building Scale  
*Yves Weinand and Markus Hudert*
- 108 Encoding Material  
*Fabio Gramazio, Matthias Kohler and Silvan Oesterle*
- 116 The Return of the Future: A Second Go at Robotic Construction  
*Martin Bechthold*
- Bechthold examines the recent revival in robotic technologies in construction.*
- 122 A Deeper Structural Theory  
*Nina Rappaport*
- 130 COUNTERPOINT  
Digital Solipsism and the Paradox of the Great 'Forgetting'  
*Neil Spiller*





**Editorial Offices**

John Wiley & Sons  
25 John Street  
London  
WC1N 2BS

T: +44 (0)20 8326 3800

**Editor**

Helen Castle

**Freelance Managing Editor**

Caroline Ellerby

**Production Editor**

Elizabeth Gongde

**Design and Prepress**

Artmedia, London

**Art Direction and Design**

CHK Design:  
Christian Küsters  
Hannah Dumphy

Printed in Italy by Conti Tipocolor

**Sponsorship/advertising**

Faith Pidduck/Wayne Frost  
T: +44 (0)1243 770254  
E: fpidduck@wiley.co.uk

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, scanning or otherwise, except under the terms of the Copyright, Designs and Patents Act 1988 or under the terms of a licence issued by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London W1T 4LP, UK, without the permission in writing of the Publisher.

**Subscribe to AD**

AD is published bimonthly and is available to purchase on both a subscription basis and as individual volumes at the following prices.

**Prices**

Individual copies: £22.99/\$45.00  
Mailing fees may apply

**Annual Subscription Rates**

Student: UK£70/US\$110 print only  
Individual: UK £110/US\$170 print only  
Institutional: UK£180/US\$335  
print or online  
Institutional: UK£198/US\$369  
combined print and online

**Subscription Offices UK**

John Wiley & Sons Ltd  
Journals Administration Department  
1 Oldlands Way, Bognor Regis  
West Sussex, PO22 9SA  
T: +44 (0)1243 843272  
F: +44 (0)1243 843232  
E: cs-journals@wiley.co.uk

[ISSN: 0003-8504]

Prices are for six issues and include postage and handling charges. Periodicals postage paid at Jamaica, NY 11431. Air freight and mailing in the USA by Publications Expediting Services Inc, 200 Meacham Avenue, Elmont, NY 11003. Individual rate subscriptions must be paid by personal cheque or credit card. Individual rate subscriptions may not be resold or used as library copies.

All prices are subject to change without notice.

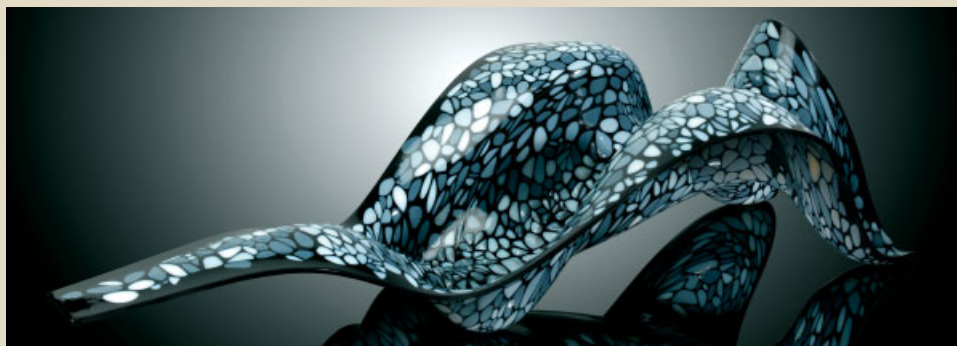
**Postmaster**

Send address changes to Publications Expediting Services Inc, 200 Meacham Avenue, Elmont, NY 11003

**Rights and Permissions**

Requests to the Publisher should be addressed to:  
Permissions Department  
John Wiley & Sons Ltd  
The Atrium  
Southern Gate  
Chichester  
West Sussex PO19 8SQ  
England

F: +44 (0)1243 770620  
E: permreq@wiley.co.uk



Front cover: Gramazio & Kohler (Architecture and Digital Fabrication, ETH Zurich), The Sequential Wall, Zurich, 2008. Image © Gramazio & Kohler, ETH Zurich  
Inside front cover: Concept by CHK Design