The Martin Centre
50th Anniversary Conference

EMERGING
ARCHITECTURAL
RESEARCH

Allies and Morrison
Welcome to The Martin Centre 50th Anniversary Conference, which celebrates the establishment of the centre for Land Use and Built Form Studies (LUBFS) by Leslie Martin and Lionel March in 1967. The advent of LUBFS, which became the Martin Centre for Architectural and Urban Studies in 1974, made an immense contribution to the development of organised research in architecture, which still resonates with us today. The purpose of this conference is not only to celebrate the creation of the Martin Centre and its contribution to architectural and urban research over the last 50 years but also to place it within the wider national and international context of emerging architectural research.

The first day will start by revisiting the ‘heroic’ period, seeking to understand the complex forces that were at play. By examining the formation of the various research groups and the work carried out during that period, we will trace the evolution of the various research strands over the past 50 years. To gain a wider perspective, we will have the opportunity to hear responses to the work that started at the Martin Centre from a wide range of speakers from other institutions.

The second day will bring an understanding of how architectural and urban research has progressed and changed. The forever evolving nature of this research will be explored through a series of parallel sessions, corresponding to the current research groups in the Department of Architecture, University of Cambridge. Contributors from a range of institutions will be invited to join the various groups and participate in the plenary session discussion that will follow.

The conference will be concluded by three diverse conversations that will cast light on emerging research strands. Thank you for joining us in this exploration of the past, present and future.

François Penz
Head of the Department of Architecture, University of Cambridge
DAY I
Keynes Hall, King’s College, 13 December 2017

8.30- 8.50 Registration

9.00 - 9.10 Welcome and opening - François Penz

BACK TO THE FUTURE

9.10 - 9.40 Philip Steadman: The centre for Land Use and Built Form Studies and its Legacy
Chair: Ying Jin

9.40 - 10.00 Nick Bullock: Inventing Architectural Research in the mid-1960s

10.00 - 10.20 Dean Hawkes: Environment in the 60s: science, design and history

10.20 - 10.40 Marcial Echenique: Urban Systems Research: 50 years on

10.40 - 11.10 BREAK
Chair: James Campbell

11.10 - 11.30 Mike Barron & Raf Orlowski: The Development of Acoustic Scale Modelling and its Influence on Auditorium Design

11.30 - 11.50 Paul Richens: Architectural Computing at the Martin Centre

11.50 - 13.00 Panel Discussion with Antonello Alici, Brian Ford & Adam Sharr, Chaired by Emily So

13.00 - 14.00 LUNCH
Day 1

The Future Present

Chair: Dean Hawkes

14.00 - 14.20 Ken Yeang: The Ecological Basis for Designing the Built Environment


Chair: Marcial Echenique

14.40 - 15.00 John Ellis: The Legacy of the Martin Diagrams from Milton Keynes to California

15.00 - 15.20 Michael Batty: The Future is Bigger than the Past but is it any Better? Scaling Cities, Scaling Models

15.20 - 15.50 Break

15.50 - 16.20 Carlo Ratti: SENSEABLE CITIES [keynote]

16.20 - 17.00 Panel Discussion with Nick Baker & Richard Coyne Chaired by Wendy Pullan

18.45 - 19.30 Drinks Reception at Darwin College
All welcome

19.30 - 22.00 Dinner at Darwin College
9.00 - 9.20 Registration in the Gallery, Scroope Terrace

9.30 - 13.00 **Parallel Futures**

Six Parallel Sessions

1. **Cities: Conflict, Informality, Culture**
   *Led by Max Sternberg, Wendy Pullan & Felipe Hernández*
   *Boardroom, 1st Floor*

2. **Risk in the Built Environment**
   *Led by Emily So & Robin Spence*
   *Room 4A, opposite Scroope Terrace*

3. **Built Environment Design Education**
   *Led by Michael Ramage*
   *Lecture Room 1, Ground Floor*

4. **Environment**
   *Led by Minna Sunnika-Blank, Yeonsook Heo & Mary Ann Steane with Dean Hawkes*
   *Classroom, First Floor*

5. **Digital Studio**
   *Led by François Penz & Maureen Thomas*
   *HoD office, First Floor*

6. **Cities & Transport**
   *Led by Ying Jin with Marcial Echenique & Nick Bullock*
   *Room 4.15, Second Floor*

13.00 - 14.00 **Lunch**

Gallery, Scroope Terrace

Please help yourself to refreshments in the Gallery throughout the day
LOOKING AHEAD: THE NEXT 50 YEARS

Plenary - The six groups will present their findings
*Lecture Room 1, Ground Floor*

Chair: François Penz

14.00 - 14.20  1. Cities: Conflict, Informality, Culture

14.20 - 14.40  2. Risk in the Built Environment

14.40 - 15.00  3. Built Environment Design Education

15.00 - 15.20  4. Environment

15.20 - 15.40  5. Digital Studio

15.40 - 16.00  6. Cities & Transport

16.00 - 16.30  **BREAK**

16.30 - 18.00  **CONVERSATIONS**

16.30 - 17.00  Material Flows

Patrick Keiller with Ingrid Schröder

17.00 - 17.30  Architecture & Cities in the Global South & non-Western Contexts: Wendy Pullan, Andong Lu, and Felipe Hernández

17.30 - 18.00  The Role of Research in Architectural Practice

Peter Clegg [FCB] & Ben Derbyshire [RIBA]

18.00 - 18.15  Final Remarks

18.15 - 19.00  Discussion to continue at Drinks Reception
François Penz is Professor of Architecture and the Moving Image and a fellow of Darwin College. He directs the Digital Studio for Research in Design, Visualization and Communication. His current AHRC research project, ‘A cinematic musée imaginaire of spatial cultural differences’ (2017-2020), expands many of the ideas developed in his monograph ‘Cinematic Aided Design: an everyday life approach to architecture’ (2017), construing films of everyday life as a revelator of deep spatial cultural differences between the West and China & Japan. Since 2010 he has been the co-director of the Cambridge – Nanjing Research Centre on Architecture and Urbanism.

Philip Steadman is emeritus professor of Urban and Built Form Studies at the Bartlett School, University College London, and a Senior Research Associate at the UCL Energy Institute. His research interests include the geometry of buildings and cities, and their use of energy. With colleagues he is building a 3D model of the UK building stock, for use in energy analysis. His publications include The Geometry of Environment (with Lionel March, 1971), Architectural Morphology, (1983), Vermeer’s Camera, (2001), Why Are Most Buildings Rectangular?, (2017), Building Types and Built Forms, (2014). His study of The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts, 1979, was republished in 2008. He is currently working on Renaissance Fun: The Machines Behind the Scenes (2020?).

The centre for Land Use and Built Form Studies and its Legacy

This talk gives a panoramic overview of the work of the centre for Land Use and Built Form Studies at Cambridge from 1967 to 1974, with special emphasis on the activities of the centre’s director Lionel March. Three themes in the methods adopted in the research are emphasised: representation, simulation, and the enumeration of possibility. Some misconceptions about the centre, stirred up by recent histories, are disposed of. The purpose of all the centre’s work, as the Professor of Architecture Leslie Martin said, was to clarify the ‘ranges of choice’ open to designers. Land Use and Built Form Studies created ‘spectacles for a new kind of vision’ in architectural and urban research.
Ying Jin is a senior lecturer, Department of Architecture, University of Cambridge, on city planning, urban design, and urban modelling. He leads the Cities and Transport Group at the Martin Centre, and runs longstanding research programmes at the £22m EPSRC Cambridge Centre for Smart Infrastructure and Construction (2011-2021; as co-Investigator and subsequently a member of the Centre’s Executive Committee), and a new phase of the Cambridge Futures project funded by Cambridge Ahead and the Combined Mayoral Authority of Cambridgeshire and Peterborough (2016-2020; as Principal Investigator). He became the Director of the Martin Centre in October 2017.

Nick Bullock is the professor of Architectural and Planning History of the 20th Century at the University of Cambridge and also teaches at the Architectural Association in London. His current research explores the way in which architecture and urbanism reflect the modernisation of France in the 30 years after WWII.

Inventing Architectural Research, Contributions of the mid-1960s
This paper will seek to place the contribution made by the Martin Centre in the wider context of the rapid growth in the mid-1960s of architectural research in countries like Italy, Germany and France and the US. Architectural research in the 60s might take many forms but its growth was driven by the ambition, widely shared, to develop a research tradition proper to the subject itself, rather than borrowed from cognate fields.
Dean Hawkes is emeritus professor of Architectural Design at the Welsh School of Architecture, Cardiff University and an emeritus fellow of Darwin College, University of Cambridge. He was a founder member of the Martin Centre and was Director from 1979 to 1987. He has held visiting professorships at schools of architecture in Hong Kong, Singapore, Glasgow, Huddersfield and Leicester. His research is in the field of environmental design in architecture. His books include The Environmental Tradition (1996), The Environmental Imagination (2008) and Architecture and Climate (2012). His buildings, in partnership with Stephen Greenberg, have won four RIBA Architecture Awards. In 2010 he received the RIBA Annie Spink Award in recognition of his contribution to architectural education.

Environment in the 60s: science, design and history
The 1960s was an important decade for environmental studies in architecture. 1963 saw the publication of two significant books; R. G. Hopkinson’s Architectural Physics: Lighting and Victor Olgyay’s Design with Climate. In 1969 came Reyner Banham’s The Architecture of the Well-tempered Environment. It was against this background that the Martin Centre’s environmental work began. This paper will outline the early work in LUBFS on the development of the Cambridge Environmental Model (1969), one of the first comprehensive computer simulation models in the field, setting this in relation to these parallel developments. The conclusion will reflect on the legacy of that early work.

James W P Campbell, Reader in Architecture and Construction History and Seear Fellow in Architecture and History of Art at Queens’ College, Cambridge. He studied architecture at Trinity College, Cambridge and practised as an architect before returning to do a PhD in the Martin Centre on Sir Christopher Wren, the Royal Society and the development of structural carpentry. This led later to his book Building St Paul’s. His other books include The Library and Brick: a World History, both of which are available in 10 languages. He is a Fellow of the Society of Antiquaries.
Marcial Echenique OBE DArch ScD RTPI RIBA, is a fellow of Churchill College and professor emeritus of Land Use and Transport Studies and former Head of Architecture at the University of Cambridge. He was the director of the Martin Centre between 1973 and 1978. He is accredited, in particular, with early work on the integration of land use and transport planning. He has acted as a consultant to numerous government and local authorities and has directed major planning studies financed by international institutions such as The World Bank and The United Nations. He directed the influential study of Cambridge Futures (Royal Town Planning Institute award for planning innovation in 2000). In 2009 he was awarded an OBE for services to Urban and Regional Planning.

Urban Systems Research: 50 years on
The talk traces the original research work in modelling urban form and human behaviour within these forms which led to the development of one of the first integrated Land Use / Transport Models (LUTI) applied to the city of Reading (1969). Additional research into policy assessment was crucial to link the theory to practical planning of transport infrastructure and land allocation. The original work and subsequent work by many PhD students from the Martin Centre have been applied to practical planning in many cities and regions around the world. It concludes with an assessment of what has been achieved and what are the future challenges in the field.

Emily So is a chartered civil engineer and a senior lecturer at the Department of Architecture, fellow in Architecture at Magdalene College and the Director of the Cambridge University Centre for Risk in the Built Environment (CURBE). Formerly a senior geotechnical engineer at Arup and Mendenhall Fellow, U.S. Geological Survey, she specialises in casualty estimation in earthquake loss modelling and has been instrumental in establishing an international network on Disaster Casualties. She collaborates with the UK Earthquake Field Investigation Team (EEFIT) & Global Earthquake Model (GEM), and is on the GEM Science Board. She was the 2010 Shah Family Innovation Prize winner. Emily sits on the UK Scientific Advisory Group for Emergencies (SAGE), and was part of the design team that won World Building of the Year 2017, World Architecture Festival.
**D**ay 1

**Raf Orlowski** Following a PhD in acoustics, Raf joined Mike Barron at the Martin Centre to work on the development of acoustic scale modelling for the design of large spaces, especially auditoria and industrial buildings. He later took up an appointment as a lecturer in acoustics at the University of Salford, teaching room acoustics and noise control whilst continuing research in auditorium acoustics. After twenty years in academe, Raf moved into practice and helped set up an acoustics office in Cambridge for Arup where he worked on a range of projects from opera houses to railway stations. Most recently he formed his own acoustics team at Ramboll and continues to work on performing arts projects.

**The Development of Acoustic Scale Modelling and its Influence on Auditorium Design.** Acoustic scale modelling came to Cambridge due to acoustician Peter Parkin from the Building Research Establishment looking for ways to improve the success of acoustic design of auditoria and Bill Howell, Professor of Architecture, Cambridge. Two models at 1:8 scale were introduced: the Barbican Concert Hall and the Olivier Theatre, National Theatre, London. However a scale of 1:8 has disadvantages of size, cost and risk. This led to the development of testing at 1:50 scale, which has since been used for many concert halls, opera houses etc. The modelling techniques were further developed to include other building types such as factories and these were adopted by Arup in the design of projects. Computer modelling has been a competitor since 1968, but it has the disadvantage that it does not treat sound as a wave. Software techniques have gradually improved, leaving scale modelling now being applied to prestige auditoria and spaces with complicated physical details.

**Mike Barron** MioA, gained his PhD at the Institute of Sound and Vibration Research, University of Southampton, looking at the virtues of early lateral reflections for music listening. After a two-year period of consultancy in London, he joined the Martin Centre on an acoustic scale modelling project. Initially a scale factor of 1:8 was used, but the benefits of smaller scales, particularly 1:50, soon became evident for assisting acoustic design. The model work led to an Acoustic Survey of British Auditoria including concert halls and drama theatres, run from Cambridge, and hence the book Auditorium Acoustics and Architectural Design.
Paul Richens  A pioneer of the use of computers in architecture, Paul Richens studied architecture at King’s before joining ARC Ltd (spin-off from LUBFS) in 1970 to develop the first operational BIM software for hospitals (OXSYS), and from 1978 the successful GDS system for geometrical drawing of all sorts. He came back to the Martin Centre in 1989, and was director from 1992-2002, with a team working on software for geometrical design and architectural communication. He moved to a chair in Architectural Computing at Bath 2005, working on computer realisations of architectural history and cultural landscapes. He retired in 2015, and is currently working on virtual reconstructions of Alexander Pope’s garden in Twickenham, and Beckford’s Fonthill Abbey in Wiltshire.

Architectural Computing at the Martin Centre
Architectural Computing got seriously underway in 1969, thanks to the Atlas computers, Harold Wilson’s “white heat of technology” speech, and a massive public building program. LUBFS put up £50 a head to form ARC Ltd, to exploit their growing expertise. The company started by applying ideas from the Universities project to the layout of huge District General Hospitals; I was engaged to work on production documentation for system-built hospitals around Oxford, which led to the first operational BIM. In 1989 I joined the Martin Centre to establish a CADLAB with funding from the industry, Microsoft & Informatix. This was the time when computer graphics was escaping from the military/aerospace context towards the creative sector. We started applying similar highly interactive graphic techniques to architectural issues. Interesting projects emerged & two products were licensed for commercial development: Piranesi & Fastview, now owned by Autodesk.
Day 1

Brian Ford is an architect & environmental design consultant, & Emeritus Professor at the University of Nottingham and Director of Natural Cooling Ltd. He was formerly Professor of Bioclimatic Architecture, Department of Architecture & Built Environment, University of Nottingham, where he served both as Head of School and Head of the Architecture & Urbanism Research Group. He was in private practice for over 25 years, including Peake Short & Partners & Short Ford Associates, and has worked as an architect and consultant on projects in Europe, USA, India, Australia and China. His research has focused on energy efficient buildings.

Since 1996, Brian has initiated a series of multi-partner EU funded research projects. He has served as a member of the UK Government’s Zero Carbon Task Force for Schools, a member of the UK RIBA Research & Innovation Group, is on the Editorial Board of Architectural Research Quarterly (CUP), an advisor to Building Green Futures (Bologna), and was a Board member and Vice-President of the International PLEA organisation. He has acted as an advisor to the Chilean Energy Efficiency Agency, and to the Brazilian Ministry for Environment, and is currently an adviser and contributor to the School of Sustainability set up by the architect Mario Cucinella in Bologna, Italy.

Antonello Alici, Master of Architecture, University of Florence, PhD, is chair of History of Architecture at Università Politecnica delle Marche, Ancona. As a Visiting Scholar at the Martin Centre during 2016/17, his research concentrated on the relations of Leslie Martin and Colin St John Wilson with Italian architects. His main research interests focus on 19th and 20th century architecture in Italy and the Nordic countries, and on Architectural Heritage and Conservation. He is a member of the National Committee for the quality of landscape of the Ministry of Culture. He has taught at Aalto University, Helsinki, at the Royal Institute of Technology, Stockholm, at Silpakorn University, Bangkok. He is the founder and programme director of the Ancona summer school ‘The Culture of the City’, which focuses on the post-earthquake strategies for reconstruction in the Marche region.
Adam Sharr is professor of Architecture and Head of the School of Architecture, Planning and Landscape at Newcastle University. He is Editor-in-Chief of arq: Architectural Research Quarterly (Cambridge University Press), Series Editor of Thinkers for Architects (Routledge) and Principal of Adam Sharr Architects. He is the author or editor of six books on architecture, most recently Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat, just reprinted in paperback by Routledge and commended in the RIBA Presidents’ Awards for Research. He has recently submitted Modern Architecture: A Very Short Introduction to Oxford University Press.

Ken Yeang, AA Dipl, PhD (Cantab), Hon. D.Lit. (Sheffield), RIBA, FAIA (Hon.) Yeang trained at the Architectural Association School and received his doctorate from Cambridge University on ‘ecological design and planning’. Key buildings include National Library (Singapore), Mesiniaga Tower (Malaysia), Spire Edge Tower (India), Genome Building (Hong Kong), Great Ormond Street Children’s Hospital Extension (UK). He is principal of Hamzah & Yeang (Malaysia). He received the Malaysian Institute of Architects Gold Medal, Malaysia Government’s Merdeka Award, Architectural Society of China Liangsicheng Award and others. He has been a Council Member RIBA. He holds the Distinguished Plym Professor (Illinois University).

The Ecological Basis for Designing the Built Environment.
The paper presents the theoretical basis for ecological design, in an approach that is based on the science of ecology. The ‘ecosystem’ concept being ecology’s model of nature is adopted to provide the physical and systemic basis for the designing and remaking of the built environment. The proposition is that for our existing built environment to become non-del-eterious and integral with the natural systems in the biosphere, it needs to become ecosystem-like and be designed and remade as ‘constructed ecosystems’ that emulate and replicate the attributes of ecosystems. The paper presents how these principles can be interpreted in built form by designed and built examples.
Susannah Hagan is professor of Architecture at the University of Westminster, and founder director of R_E_D (Research into Environment + Design), a research consultancy in ecological urbanism. She trained in architecture at Columbia University, New York and the Architectural Association, and was until recently head of architectural research at the Royal College of Art. She has published extensively, drawing together architectural history and theory, design practice and environmental practice in books such as Taking Shape: a new contract between architecture and nature (2001), Digitalia: architecture and the environmental, the digital and the avant-garde (2008), and Ecological Urbanism: the nature of the city (2015).

The Environmental Tradition refers to a still-too-secret history of the seamless integration of environmental design with architectural design. It was a body of empirical knowledge passed down over centuries that enabled builders and users to make the most of what was available to achieve comfort and maintain health in buildings and cities. There is another, less desirable, environmental tradition, however; one that coincides more or less with environmental design becoming environmental engineering in the 1960s. As a science, it became a separate practice from those of ‘immeasurable’ architectural and urban design. Decades later, even in the face of accelerated climate change, this separation still dominates, in research as in design. Using four snapshots of environmental research, this paper explores its present and its necessary future.

Richard Coyne researches and teaches in digital technologies and design. He is an architect and has served as head of the Department of Architecture and head of the multidisciplinary School of Arts, Culture and Environment at the University of Edinburgh. His research and writing draws on a broad interdisciplinary framework for examining the relationship between technology, design, space, and contemporary cultural theories. His most recent book is Mood and Mobility, Navigating the Emotional Spaces of Digital Social Networks with MIT Press. His next book Network Nature: The Place of Nature in the Digital Age is due out in 2018 with Bloomsbury Academic.
John Ellis worked with Richard MacCormac in the 1970s on residential projects in Milton Keynes and Warrington New Towns before moving to the Bay Area. He will show how these design ideas evolved and how his own practice in California has continued this tradition with high density low-rise urbanism. John Ellis is an Anglo-Californian architect and urban designer, who grew up in London, trained at Cambridge and has lived and worked in the Bay Area since 1977. He teaches at UC Berkeley and was the inaugural Marshall Professor of Sustainable Urban Design at Cambridge in 2012. He is a partner with the San Francisco firm Mithun/Solomon.

The Legacy of the Martin Diagrams from Milton Keynes to California
The diagrams prepared by Sir Leslie Martin and Lionel March demonstrating how high density residential development could be achieved in low rise form were the basis for much of the work done by Sir Richard MacCormac in his earlier career with the London Borough of Merton and subsequently in the MacCormac Jamieson Prichard (MJP) practice. They challenged the current orthodoxy of the time which maintained that free-standing high-rise tower blocks were the only way to achieve higher densities. Richard MacCormac transformed these diagrams into built form and showed how traditional perimeter block patterns not only achieved the desired densities but maintained a continuous urban fabric of streets and blocks, the essential elements of good urbanism.

Nick Baker originally qualified as a physicist but has spent most of his professional life working in building science and architecture. He joined the Department of Architecture at Cambridge in 1985 as a lecturer and became Director of the Martin Centre from 1991 to 1993. His main research topics were energy modelling, daylight, natural ventilation and thermal comfort, subjects upon which he has published papers and books. Recently his interest in thermal comfort has extended to wider aspects of human responses to buildings. He was a technical expert for the EU project REVIVAL, concerned with the refurbishment and re-use of large non-domestic buildings, and authored the Handbook of Sustainable Refurbishment. He is currently working on a book on Healthy Housing.
Michael Batty is Bartlett Professor of Planning at University College London where he is Chair of the Centre for Advanced Spatial Analysis (CASA). He has worked on computer models of cities and their visualization since the 1970s and the work of his Centre CASA is heavily concentrated on the development of urban analytics, big data and smart cities. His blogs www.complexcity.info cover the science underpinning the technology of cities and his posts and lectures on big data and smart cities are at www.spatialcomplexity.info. His most recent book is The New Science of Cities (MIT Press, Cambridge, MA). Prior to his current position, he was Professor of City Planning and Dean at the University of Wales at Cardiff and then Director of the National Center for Geographic Information and Analysis at the State University of New York at Buffalo. In 2016 he was awarded the Gold Medal of the Royal Town Planning Institute.

The Future is Bigger than the Past but is it any Better? Scaling Cities, Scaling Models

Nearly 50 years ago, many of us began to talk about new ways of representing and simulating spatial geometries as theories that could be articulated as rudimentary computer models from which we might be able to make conditional predictions about the future. What most of us did not anticipate was that those very computers would be miniaturized to the point where half a century on they are being fast embedded in the very built environment we are concerned with simulating. I will sketch this history, demonstrating some of the models that we now have which do enable us to say significant things about how complex our world has become and how we have a better handle on understanding the relationships between the system and its wider environment.
Carlo Ratti an architect and engineer by training, professor Ratti teaches at MIT, where he directs the Senseable City Laboratory, and is a founding partner of the international design and innovation office Carlo Ratti Associati. A leading voice in the debate on new technologies’ impact on urban life, his work has been exhibited in several venues worldwide, including the Venice Biennale, New York’s MoMA, London’s Science Museum, and Barcelona’s Design Museum. Two of his projects – the Digital Water Pavilion and the Copenhagen Wheel – were hailed by Time Magazine as ‘Best Inventions of the Year’.

SENSEABLE CITIES [keynote]

Wendy Pullan is Professor of Architecture and Urban Studies at the University of Cambridge and Director of the Centre for Urban Conflicts Research. She was Director of the Martin Centre (2010-14) and Head of Department (2014-17). Professor Pullan has published widely on European and Middle Eastern architecture and cities, examining the processes of urban heritage, conflict and change, both historical and contemporary. Her recent publications include: Locating Urban Conflicts (2013), The Struggle for Jerusalem’s Holy Places (2013) and Architecture and Pilgrimage 1000-1500 (2013). She is a Fellow of Clare College, Cambridge. Further details: www.urbanconflicts.arct.cam.ac.uk.
Maximilian Sternberg is University Lecturer in Architecture and Fellow of Pembroke College at Cambridge University. His publications include Cistercian architecture and Medieval Society (Brill, 2013), The Struggle for Jerusalem’s Holy Places (Routledge, 2013) and Phenomenologies of the City: Studies in the History and Philosophy of Architecture (Ashgate, 2015).

Felipe Hernández is an architect and Co-Director of the M.Phil. in Architecture and Urban Studies. Felipe has published extensively on Latin America and other areas in the Developing World, including Africa and South East Asia. He is Chair of Cities South of Cancer (CSC), an interdisciplinary Research Group whose members work on a wide variety of urban issues in Colombia, Mexico, Argentina, Bangladesh, and Indonesia. Felipe is the author of Bhabha for Architects (Routledge 2010) and Beyond Modernist Masters: Contemporary Architecture in Latin America (Birkhauser 2009). He is also co-editor of Rethinking the Informal City: Critical Perspectives from Latin America (Berghahn 2009) as well as Transculturation: Cities, Spaces and Architectures in Latin America (Rodopi 2005). He is currently co-editing a second volume on Latin American informal settlements for Cambridge Scholars Publishing.
Robin Spence is a Structural Engineer and Emeritus Professor of Architectural Engineering in the Department of Architecture at Cambridge University. After five years of structural design practice with Ove Arup and Partners he spent two years teaching at the University of Zambia, followed by two years as Research Officer for the Intermediate Technology Development Group, researching small-scale building materials technology in Africa and India. After obtaining his Ph.D he was a teaching officer with the Cambridge University Architecture Department from 1975 to 2008, and a Director and Joint Director of the Martin Centre 1985-1990. In 1987 he and several colleagues founded the consultancy group Cambridge Architectural Research Ltd (www.carltd.com) of which he was Chairman 1989-2001, and continues to be a Director. He was President (2002-2006) of the European Association for Earthquake Engineering.

Michael Ramage leads the Centre for Natural Material Innovation at Cambridge University, and is an architectural engineer and Senior Lecturer in the Department of Architecture, a fellow of Sidney Sussex College, and a founding partner of Light Earth Designs. He studied architecture at MIT, and worked for Conzett Bronzini Gartmann in Switzerland prior to teaching at Cambridge. His current research is focused on developing low-energy structural materials and systems in masonry, better housing in the developing world and improved engineered timber and bamboo through natural material innovation. He teaches, researches and designs buildings, and receives research funding from the Leverhulme Trust, the Engineering and Physical Sciences Research Council, the Royal Society, the British Academy, and industry.
Minna Sunikka-Blank is a registered architect and a Senior Lecturer at the Department of Architecture, University of Cambridge. Her research focuses on thermal retrofit policies and energy use behaviour, including quantitative impact assessment of policy instruments such as the German Energy Saving Regulations (EnEV), the Energy Performance Certificates (EPC) of the Energy Performance of Buildings Directive (EPBD), the gap between estimated and actual energy use (the prebound effect) and gendered energy use. Her current projects are looking at energy innovations in low income housing in India and South Africa and female participation in designing domestic energy in India’s slum rehabilita-

Yeonsook Heo specialises in building performance modelling and simulation, with expertise in uncertainty quantification and risk assessment. Her current research in Cambridge focuses on developing models and methods for enhancing current practices in predicting and assessing building performance at different scales, including in-depth energy analysis of individual buildings for continuous energy management and urban-scale energy analysis for policy support. Prior to her appointment as University Lecturer in the Department of Architecture at the University of Cambridge, she worked as a postdoctoral fellow in the Decision and Information Sciences Division at the Argonne National Laboratory, and received her PhD in Building Technology from the Georgia Institute of Technology in Atlanta, USA.
Mary Ann Steane is an architect by training and a senior lecturer at the University of Cambridge. Her research on the use of natural light in architecture considers the factors affecting perception of the visual environment in order to examine the pivotal narratives architects construct about light. This concern is allied to an interest in how architects learn to interpret their surroundings, acquiring understanding through embodied as well as abstract knowledge. Having established a fruitful, decade-long dialogue with teachers at the Valparaíso School, she has collaborated with them on research addressing these topics that considers the implications for architectural education looking forwards.

Maureen Thomas is a Senior Research Associate of DIGIS (Digital Studio for research in design, visualisation and communication) in the Department of Architecture, University of Cambridge, where she focuses on the spatial organisation of narrative, screen space and interactivity (https://www.arct.cam.ac.uk/people/maureen-thomas). Former Professor of Narrativity, Cinematurgy & Interactivity at the Norwegian National Film School and Head of Screen Studies, National Film & Television School UK, she is a screenwriter, dramatist, story-architect and director who has carried out practice-oriented research as Senior Creative Research Fellow, Narrativity Studio, University of Malmö; Visiting Artist, Media Lab, Aalto University, Helsinki and Senior Research Fellow, Churchill College, Cambridge.
**Patrick Keiller** studied architecture at UCL and fine art at the Royal College of Art. Since the early 1990s, he has completed a series of feature-length films in which images of the built environment and landscape are the basis for critiques of England’s economy and culture, the most recent of which was expanded as The Robinson Institute, an exhibition at Tate Britain in 2012. An essay collection The View from the Train was published in 2013. He is currently the Sir Arthur Marshall Visiting Professor of Urban Design in the Department of Architecture, University of Cambridge.

**Ingrid Schröder** has taught in Cambridge since 2001 and served as a lecturer on American Urban Theory, and Design Tutor here, at the Architectural Association and ETH Zurich. She has been directing the MPhil in Architecture and Urban Design at the University of Cambridge since 2011. She is the co-author of African Modernism (2014), which documents the architecture of the independence movements in Ghana, Senegal, Côte d’Ivoire, Zambia and Kenya. Her current research examines the 18th Century plan for Washington, D.C. in relation to the current discourse on American Landscape urbanism.

**Andong Lu** is Guest Professor at Dessau Institute of Architecture, Anhalt University of Applied Sciences and a Newton Trust Fellow at Department of Architecture, University of Cambridge and Research Fellow of Wolfson College, University of Cambridge. His research interests include narrative organisation of space, cinematic aided research, garden studies, and contemporary Chinese urbanism. He has written widely on the subjects of city, cinema and garden in peer-reviewed journals and has guest-edited Cinematic Architecture and co-edited with François Penz Urban Cinematics (Intellect Books, 2011). Andong also works as a freelance consultant on architectural and landscape design, and a filmmaker of urban documentaries.
Peter Clegg established Feilden Clegg Bradley Studios with Richard Feilden in 1978. Regarded as a pioneer in environmental design, he has 40 years’ experience in low energy architecture and is active in research, design and education. He has led projects at Yorkshire Sculpture Park, London’s Southbank Centre, Brighton Dome and the Leventis Gallery in Cyprus. His involvement in schools and higher education projects includes a new School of Engineering in Toronto and an Academy in Bangladesh. He is Chair of the RIBA research awards and the SWDRP, holds a professorship at Bath University, chaired the RIBA Awards Panel 2013/14, and was made Royal Designer for Industry (RDI) in 2010.

Ben Derbyshire is Chair of HTA Design LLP, a design consultancy to the home building industry, practising ‘creative collaboration’ in a range of professional and other disciplines. A member of the practice since 1976 and a co-owner since 1986, Ben became a main board director when the practice incorporated in 2000 and was appointed Managing Director in 2005. Ben became Managing Partner in 2013 when HTA Architects Limited became HTA Design LLP and then Chair in 2016. He has built up broad-ranging expertise through involvement in much of HTA’s work in regeneration, masterplanning, housing and mixed use design. Ben has worked on many complex large-scale schemes undertaken by the practice over the years. As well as acting as HTA’s Chair, Ben is responsible for the practice’s internal Design Review process and leads the Marketing effort. Ben was elected and became President of the RIBA in September 2017.
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6 Chaucer Road: the home of the Martin Centre between 1975 and 2008