

PRESIDENT'S AWARDS FOR RESEARCH 2017



Book of Abstracts

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Edited by Dr Kat Martindale and Dylan Dixon.

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Research should be a core function of architecture in practice with architects building on their research skills established at university.

Foreword

In their second year since their restructure, the RIBA President's Awards for Research continues to attract engaging research from around the world, debating important and timely issues. This year's submissions again come from across the globe with applicants ranging from established academics and practitioners to recent graduates and those still pursuing their education.

Collated here, as a record of submission and with the hope of encouraging further debate and collaboration, are the abstracts of the engaging and innovative research from the architectural community around the world. I am pleased to see that architects in practice continue to share their research with us, providing us with an insight into their work and collaborations with other architects and build environment professionals, as well as with universities. And it is exciting to read the range of research conducted in universities from Australia, to Brazil and the USA as well as those from the United Kingdom.

Ben Derbyshire,
RIBA President 2017-19

The RIBA Strategy 2016-2020 highlights the organisation's commitment to supporting collaboration, research and innovation across the architectural landscape. I believe that research should be a core function of architecture in practice with architects building on their research skills established at university, and look forward to building on those ambitions and supporting these Awards, and research more broadly, during the tenure of my Presidency.

My thanks go to all those who submitted and in particular to our esteemed colleagues in practice and academia who made up this year's judging panel, giving their time freely to read all of the work submitted this year. Without their service, experience of research in academia and practice, and across all four of the categories, the President's Awards for Research could not continue.

Contents

Annual Theme: Housing

14 SHORTLISTED

Toward Healthy Housing for the Displaced

Dr Dima Albadra, Prof David Coley & Dr Jason Hart, University of Bath, UK

15 SHORTLISTED

Housing as Housing: The SAAL Process and São Victor Brigade

Michael Cohen, Architecture Brigade, USA

16 SHORTLISTED

Learning from Increments: Towards a Sustainable Design Strategy for Housing

Dr Aliko-Myrto Perysinaki & Dr Joanne Hudson, Liverpool John Moores University, UK

17 Designing for Wellbeing in Environments for Later Life

Sarah Wigglesworth, Sarah Wigglesworth Architects, UK

Prof Malcolm Tait & Dr Sarah Barnes, University of Sheffield, UK

Dr Adam Park, BDP, UK

De Friederike Ziegler, University of the Highlands & Islands, Inverness, UK

18 The Dolls' House and the Enclave: A Miniature Toolkit

Dr Catharina de Haas, Catja de Haas – Architect, UK

19 Local Energy Mapping for Urban Retrofit

Prof Rajat Gupta & Matt Gregg, Oxford Brookes University, UK

Matt Wood & Sian Cooke, Bioregional, UK

Sam Thomas, Gabi Kaiser & Jane Durney, Cherwell District Council, UK

Fin Kelly, Future Cities Catapult, UK

20 Design to Include: An Alternative

Architectural Modus Operandi for Contemporary Chinese Rural Housing

Xiang Ren, Project X 21 & University of Sheffield, UK

21 Building 'New Town Utopia'

Megan Rourke, University of Cambridge, UK

22 100 Mile City

Peter Barber, Peter Barber Architects, UK

23 Long Term Performance Evaluation of a Zero Carbon Residential Development

Dr Michelle Ahga-Hossein & Mr Tassos

Kougionis, The Building Services Research and Information Association, UK

24 Social Housing: A Discography - A Soundtrack to Britain's Modernist Estates

Adam Hampton-Matthews, Newcastle University, UK

25 Towards a One-Minute Street-Based Neighbourhood: A Singapore Case Study

Prof Heng Chye Kiang, John Chye Fung, Im Sik Cho, Ivan Nasution &

Winnie Tan Jia Hui, National University of Singapore, Singapore

26 Investigation of Integrating the Transformable Design in the Inner Space Layout of The Local Apartment

Reem Yasir Hourani, University of Jordan, Jordan

Cities and Community

30 SHORTLISTED

London's Local Character and Density

Daniel Elsea, Jane Manning, George Garofalakis, Antony Rifkin & Geoff Noble, Allies and Morrison LLP

31 SHORTLISTED

Architecture for Politics: Designing Collectivity in Medellín's Library-Parks

Dr Caue Capille, Federal University of Rio de Janeiro, Brazil

32 SHORTLISTED

Sovereignty on Stilts, Drawing a Genealogy of Extra-Territorial Urbanization along the Mudflats of the Tropical Belt

Gabriel Muñoz Moreno, Harvard University Graduate School of Design, USA

Santiago Serna González, Harvard University, Chile

33 Community-Centred Heritage

Regeneration in India the Urbanscapes of Agra's Mughal Gardens

Dr Aylin Orbasi, Oxford Brookes University, UK

34 Good Life & Flower Tree Project

Antonio Capelao, London Metropolitan University, UK

35 The City-Zen 'Roadshow'

Dr Craig Martin, Delft University of Technology, Netherlands

Prof Greg Keeffe, Queen's University Belfast, UK
Leen Peeters, Th!nke, Belgium

Prof Andy van den Dobbelsteen & Siebe Broersma, Delft University of Technology, Netherlands

Riccardo Pulselli, University of Siena, Italy

Dr Han Vandevyvere, VITO Belgium, Belgium
Mats de Ronde, DNV-GL, Netherlands

36 Feeding Kathmandu: To What Extent can the Process of Farming, Embodied with Daily Urban Life, Help to Create and Articulate a Progressive Civic Order in Kathmandu?

Amara Roca Iglesias, London Metropolitan University, UK

37 Information Modelling in Digital Town Planning

Rosemarie Andrews, Bartlett School of Architecture UCL, UK

38 Planning the Territory-Less City

Athanasios Athanasopoulos, University of Cambridge & Grimshaw Architects, UK

39 Management Complexities for Global Heritage Cities

Dr Deniz Ikiz Kaya, Oxford Brookes University, UK

40 Alliances to Unlock Freedoms, the Case of La Balanza in Lima, Peru

Martin Mejia, Bartlett School of Architecture UCL, UK

41 Developing a Model for Sustainable Socio-Spatial Urban Transformation

Prof Yurdanur Yuksel, Prof Ahsen Ozsoy & Prof Gulcin Pulat Gokmen, Istanbul Technical University, Turkey

42 The Multi-Threading Processes of Chinese Street Vending and its Spatio-Temporary Meaning on Walkability

Ziwen Sun, Simon Bell & Iain Scott, University of Edinburgh, UK

43 Next Generation Design – a Community and Education Project to Design and Build a Pavilion

Laura Hannigan, Philip Isaac, Steven Kennedy, Daniel Bergsagel & Sinead Conneely, AKTII Ltd. & ScaleRule CIC, UK

Annabel Koeck, Grimshaw Architects & ScaleRule CIC, UK

Richard Winter, Grimshaw Architects, UK

44 The Uses and Usefulness of Participation

Eleanor Downs, Bartlett School of Architecture, UCL, UK

45 Sustainable Retrofit for Flooding Resilience

Jose Puchol-Salort, University of Westminster, UK

46 Chthonopolis

Nic Clear & Hyun Jun Park, University of Greenwich, UK

47 The Social Clinic: Integrating Public Space with Infrastructure in the Informal Settlement of Petare, Caracas, Venezuela

Sabine DeShazo, Wentworth Institute of Technology, USA

Design and Technical

50 SHORTLISTED

The Development of the Building Envelope Using Welsh-Grown Timber: A study Through Prototyping

Dr Steven Coombs, Welsh School of Architecture, Cardiff University, UK

51 SHORTLISTED

Emergency Talks: Designing for Team Communication in Hospital Emergency Departments

Lucio Naccarella, University of Melbourne, Australia

Associate Prof Bernice Redley, Deakin University Monash Health Partnership, Australia

Michaela Sheahan & Kieren Morgan, HASSELL, Australia

52 SHORTLISTED

Losing Myself: Spatial Perception and Architectural Design

Eimear Arthur & Niall McLaughlin, Niall McLaughlin Architects, UK
Yeoryia Manolopoulou, AY Architects

53 ATOPIA Research: A Case Study of Contrarian Architectural Practices and Transformative Technological Approaches to Sustainability and Humanitarian Challenges in East Africa.

Dr Saul Golden, Ulster University, UK

54 The Human Spectrum: 'Other' Physiologies in a Posthuman Era

Alan J Pottinger, University of Greenwich, UK

55 3D Graphic Statics Using Polyhedral Reciprocal Diagrams

Dr Masoud Akbarzadeh, University of Pennsylvania, USA

56 The influence of architects on the operational performance of low energy buildings

Afroditi Konidari, Welsh School Of Architecture, Cardiff University, UK

57 When a Building Consumes Electricity During the Day Matters More Than How Much it Consumes During the Year

John Kemp, John Kemp Associates Ltd, UK

History and Theory

60 SHORTLISTED

Ultra Modernism in Manchuria

Dr Edward Denison, Bartlett School of Architecture, UCL, UK
Guang Yu Ren, Independent Researcher, UK

61 SHORTLISTED

Architectural Models and the Professional Practice of the Architect, 1834-1916

Matthew Wells, Victoria & Albert Museum / Royal College of Art, UK

62 SHORTLISTED

Reinventing the Prison: the Redevelopment of HMP Holloway, 1968-1978

Miranda Critchley, Bartlett School of Architecture, UCL, UK

63 Writing Alexandra Palace: Plurivocity as a Method of Cultural Recovery of Buildings

Dr Rosa Ainley, Royal College of Art, UK

64 A Return on Investment Estimation Modelling for Istanbul: Where Does the Value Lie?

Omer Cavusoglu, Perkins+Will, UK

65 Approaches to Learning in Architectural Design - A Classification

Ashok Iyer, Welsh School of Architecture, Cardiff University, UK

66 Essential Characteristics of Paulista Brutalism

Raphael Selby, Newcastle University, UK

67 Wilton's Music Hall

Fiona Raley, University of York, UK

68 PRACTICEOPOLIS: Journeys in the Architectural Profession

Yasser Megahed, Newcastle University, UK

69 Heil Pritzker: The Digital Aftermath of Albert Speer's Hypothetical Pritzker Prize

Peter Edwards, University of Queensland, Australia

70 The Chorography of the Modern City

Dr Gabriela Garcia de Cortazar Galleguillos, Architectural Association, UK

71 In a Room with Francis Bacon: the Painter, his Studio, and the Photograph

Arielle Marshall, University of Sydney, Australia





Introduction

Two key components of the restructure of the RIBA President's Awards for Research last year were a blind review process for judging and publishing the work submitted to us. Judging the work blind, knowing not the practice, university or career stage of the author, was an attempt to level the playing field for all, allowing the best work in each category to rise to the top. This format allows for all submissions to be subject to a consistent judging criteria, making the process more transparent and easier for the judges; it may also go some way to explaining the increase in submissions from practice over the last year – with around 30% of the submissions being direct from practice or collaborative projects.

Again this year, work has arrived from around the world; from Australia to the USA, Chile to France, and from Brazil to Singapore. To add to this global diversity are the interesting collaborations between academics, architecture practices both in the UK and overseas, and industry partners located in India, Wales, Australia and Belgium.

Publishing the illustrated Book of Abstracts for the second year as part of the publications strategy for

the Awards, allows us to share with an audience wider than the judging pool and RIBA Research Team, an impressive diversity in interest and expertise. The Awards presents the RIBA with the opportunity to glimpse the work conducted in universities and practices around the world, and provides a platform to promote this and share these glimpses with the wider industry.

Thank you to all those who shared their work with us this year, providing an inspiring and fascinating array of topics, case studies and cross sections of our global community and the built form we inhabit. A huge thank you goes to our judges who, again, have spent their evenings, weekends and holidays reading, considering and debating this work. Finally, thanks also go to my colleagues at the RIBA, notably Dylan Dixon of the Research Team, for their support and work this year. Finally, and on behalf of the RIBA, I'd like to congratulate the authors of the twelve shortlisted papers. They are the first three submissions in each chapter, indicated as such. Those papers will be published in full in forthcoming publications.

Dr Kat Martindale,
Head of Research and Innovation,
RIBA



It was a privilege to be part of the process & part of the discussion ... a continual reminder of the breadth & depth of the subject... with international reach and significance.

Chair's Observations

Talk to a practising architects about what 'research' is and they will probably say it is an everyday activity, - a necessary part of the design process. But very rarely will they acknowledge the usefulness of documenting what they do in a rigorous manner that makes it a useful part of the vast body of knowledge that envelops the profession. Talk to architecture academics and they will often protest that their overstressed teaching load gets in the way of their research. The pretexts, often based around time and priority, result in the devaluation of one of the most valuable pillars of architectural thought. Chairing the judging panel for these awards reminds one of why in the not too distant past the threefold order of practice, research and teaching was regarded as a well-balanced professional career.

The assembled judges this year felt it was a privilege to be part of the process and part of the discussion. Yet again we received a very wide variety of subjects

to review. Some of us occasionally felt pushed beyond our intellectual comfort zone, but were more than supported by the specialist knowledge of our fellow jurors. For me the process is a continual reminder of the breadth and depth of the subject, of which many of us will only skim the surface.

This year, yet again, we had a range of history and theory papers, technical dissertations, and papers on urban design and community development, across a range of scale and density, historical and geographical boundaries. The specialist topic of 'housing' this year produced surprisingly few projects looking at our own national crisis, but yet again we were pleased to see the input of research into the problems of the developing world, proving yet again that the RIBA President's Medal for Research has both global reach and international significance.



Peter Clegg,
Senior Partner,
Feilden Clegg Bradley Studios
Chair of the President's Awards for Research 2017 Judging Panel

Peter Clegg established Feilden Clegg Bradley Studios with Richard Feilden in 1978. Regarded as a key pioneer in the field of environmental design, he has more than 30 years' experience in low energy architecture and is actively involved in research, design and education. His active involvement in education projects includes a new School of Engineering in Toronto and an Academy in Bangladesh. His work in this sector led him to become primary author of recently published Learning from Schools, which focuses on FCBStudios award-winning school building programme. He was made Royal Designer for Industry (RDI) in 2010.

2017 Judges



Hattie Hartman
Sustainability Editor,
The Architects' Journal

Hattie Hartman is an architect, planner and journalist. Raised in the US and trained at the Massachusetts Institute of Technology, she has been based in London since 1991. Hattie is sustainability editor at *The Architects' Journal*, a position she created in 2008 after joining the journal's editorial team in 2006. She is responsible for the AJ's dedicated coverage of sustainable design and maintains close relationships with leading practitioners in the UK and abroad. She frequently lectures on mainstreaming green design and various technical aspects of sustainability. In her role at the AJ, she judges the annual AJ100 Most Sustainable Practice award, which includes practice-based research.



Prof Chris Tweed
Head of School, Welsh School of
Architecture, Cardiff University

Christopher Tweed is Head of the Welsh School of Architecture. His research interests and experience span architecture, anthropology, philosophy and technology. The main focus of his research is on how people interact with the designed world and how that knowledge can inform human-centred design. This has been pursued in projects ranging from studies of assistive technologies for the older people to tools for assessing public perception of cultural heritage. Other funded research includes EPSRC supported studies of thermal comfort conditions in people's homes, how older people adapt to new low carbon heating technologies, and methods for assessing low carbon building performance. Recently completed collaborative studies include a study of the impact of energy retrofits on health and wellbeing in housing, and a Global Innovation Initiative funded study of green/blue infrastructure with the University of Florida and University of Indonesia.



Dr Kerstin Sailer
Reader in Social and Spatial
Networks, University College London

Kerstin Sailer is Reader in Social and Spatial Networks at the Bartlett School of Architecture, University College London. She investigates the impact of spatial design on people and social behaviours inside a range of buildings such as offices, laboratories, hospitals and schools. An architect by training, her research interests combine complex buildings, workplace environments and space usage with social networks, organisational theory and organisational behaviour. At the Bartlett she leads the module 'Buildings, Organisations, Networks' in the MSc 'Space Syntax: Architecture and Cities'. Kerstin has won several awards and scholarships for her research and has been invited to present her work at a variety of national and international conferences and events. She co-founded the think-tank brainybirdz to advance scientific thinking in workplace design.



Dr Elizabeth Darling

Reader in Architectural History,
Oxford Brookes University

Elizabeth Darling PhD is Reader in Architectural History at Oxford Brookes University. Her research focuses on 20th century British architectural history with a particular interest in inter-war modernism, social housing, and gender. She has published on the nature of authorship in the design process; the innovative practices of the inter-war voluntary housing sector; the housing consultant Elizabeth Denby; the relationship between citizenship and the reform of domestic space in inter-war Britain, and sexuality, domesticity and modernism in 1920s Cambridge. Her books include a revisionist study of British architectural modernism, *Re-forming Britain: Narratives of Modernity before Reconstruction*, (Routledge, 2007) and *Wells Coates* (C20 Society with English Heritage & RIBA Publishing, 2012). She is currently one of the project team for AA XX 100, which commemorates the centenary of women's admission to the Architectural Association, and is writing a study of the material and spatial cultures of broadcasting in inter-war England.



Zohra Chiheb

Architect, Levitt Bernstein

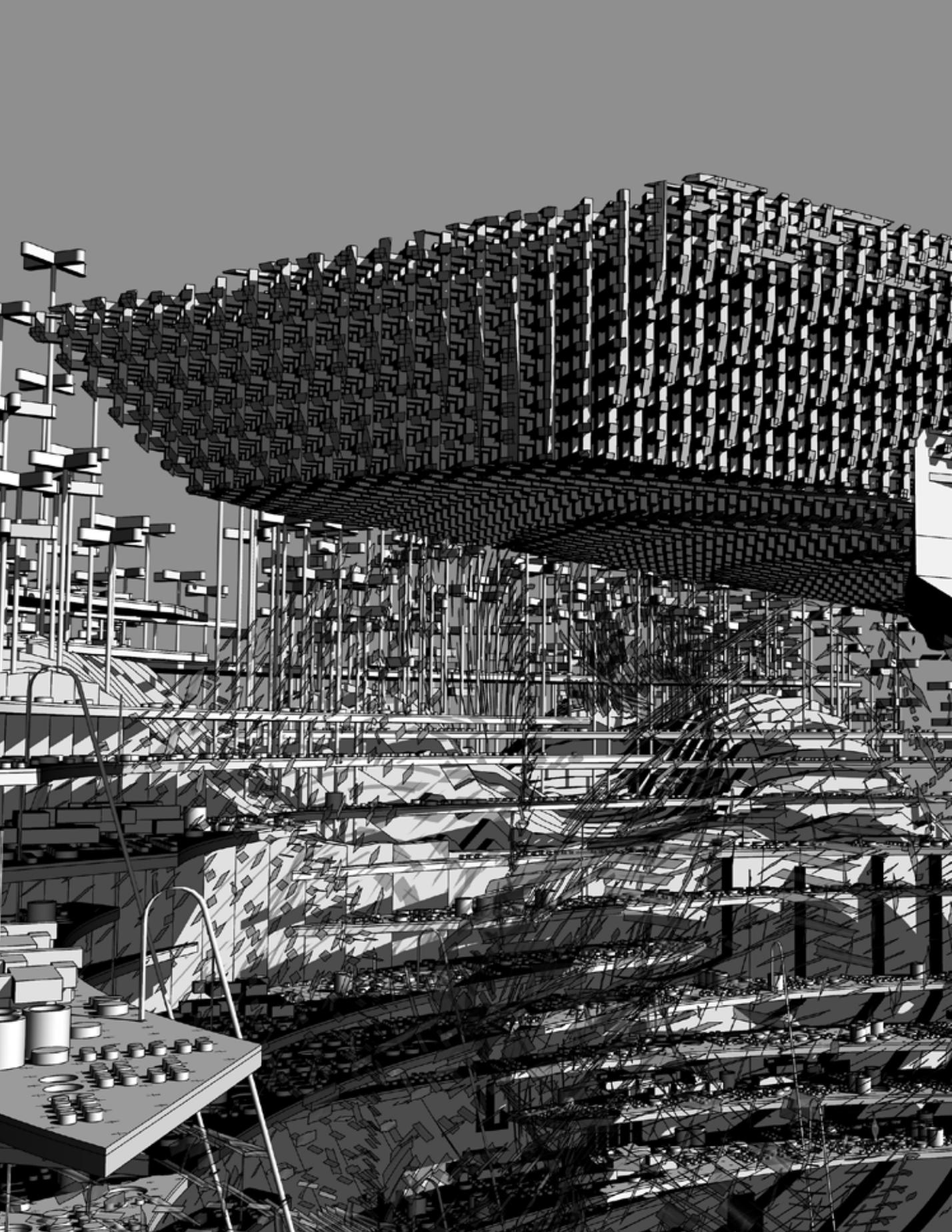
Zohra Chiheb is an architect at Levitt Bernstein. She leads a team designing and delivering large scale housing and mixed use developments, primarily for socially-focussed clients. Zohra is passionate about alternative development models and spends time researching, visiting and writing about community-led initiatives, including housing cooperatives, community land trusts and cohousing projects. She facilitates co-design sessions, helping residents think about the design of their future homes. In 2015, she formed the research collaborative *Appropriate Housing* with representatives from Cullinan Studio and Pollard Thomas Edwards. *Appropriate Housing* is involved in a number of research projects, including a longitudinal study looking at the Older Women's CoHousing scheme in Barnet, alongside researchers from LSE and the Open University. As a passionate advocate for equal access to quality education, Zohra has also been on the RIBA Education Committee for three years.

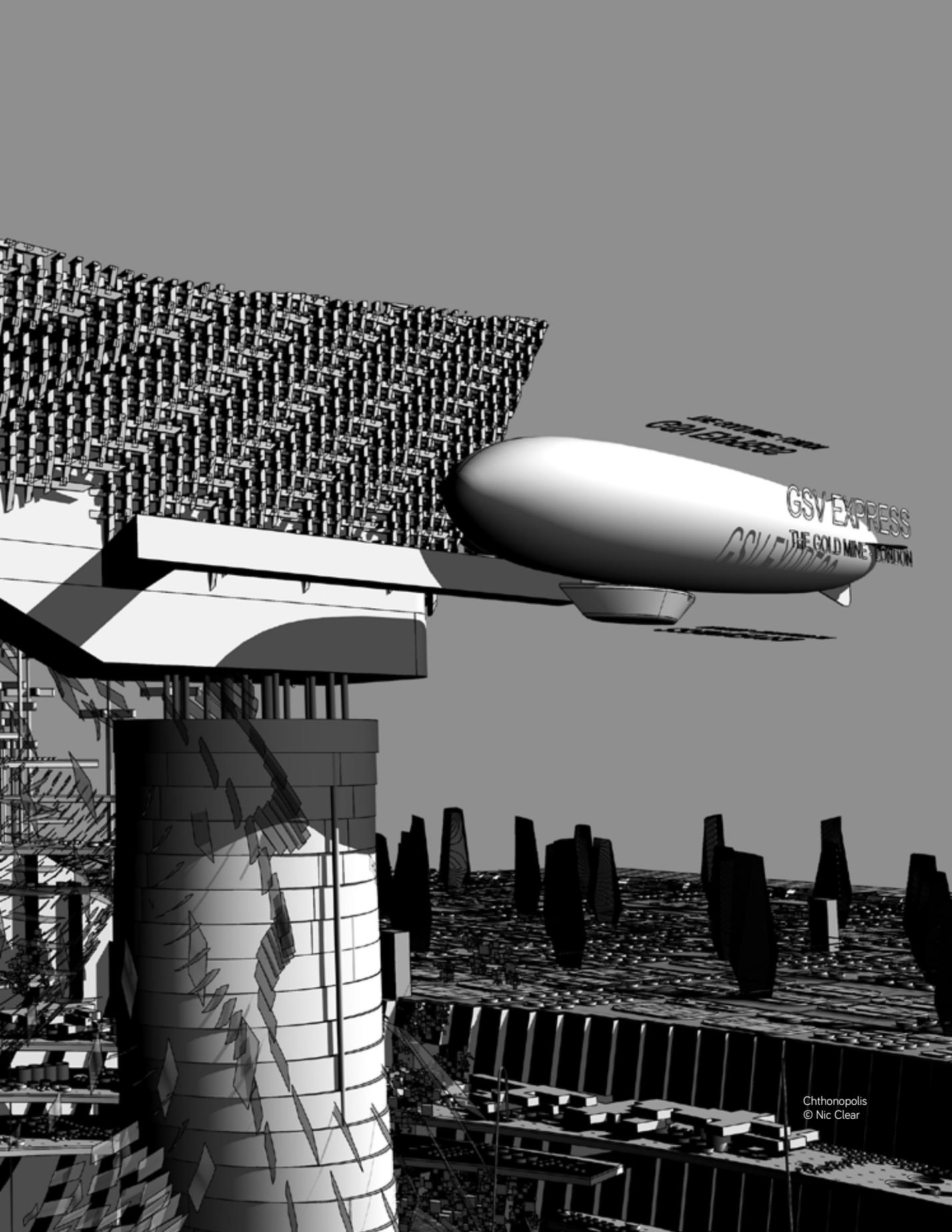


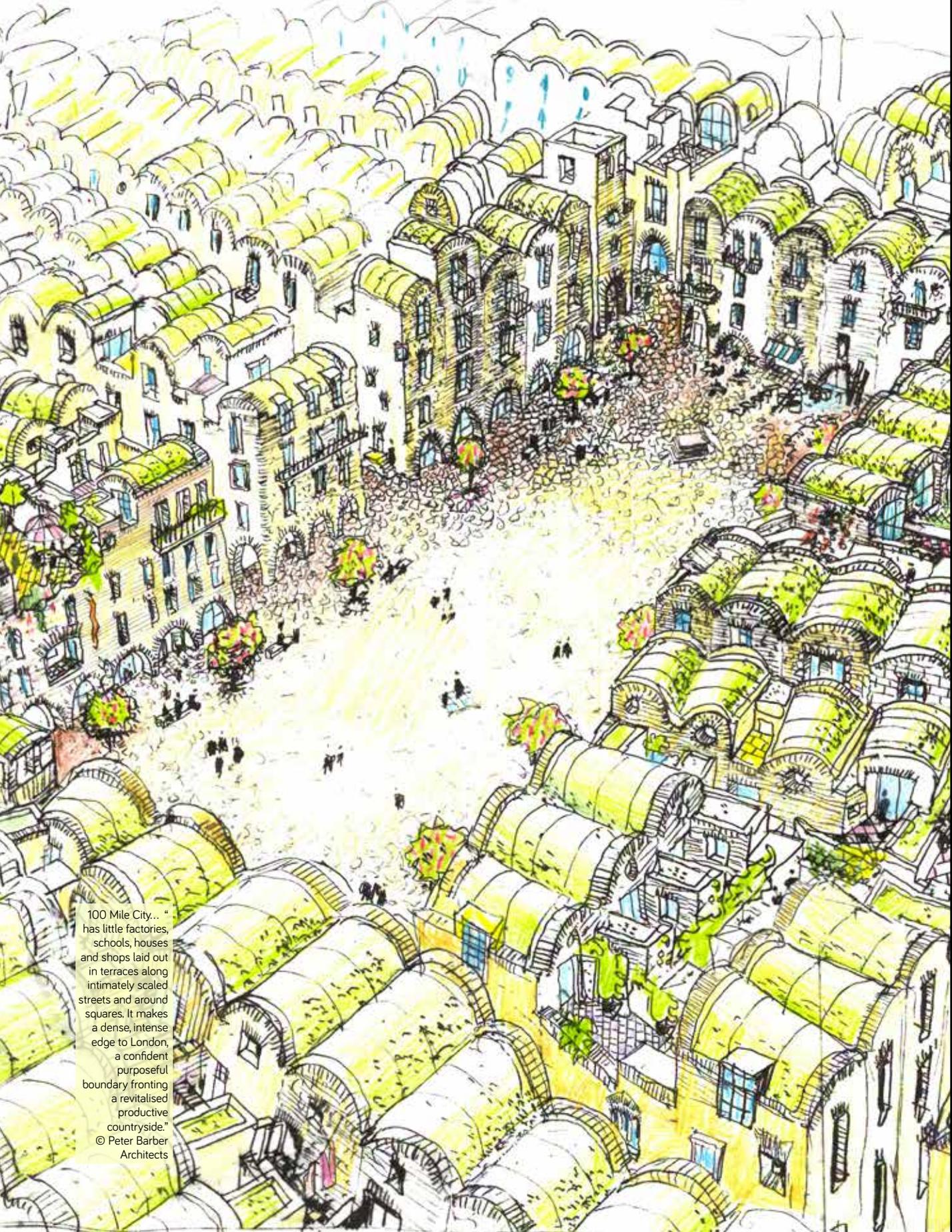
Dr Matthew Jones

Senior lecturer, University of the
West of England and Partner,
Coombs Jones Architects

Matthew is a Senior Lecturer at the University of the West of England, partner at Coombs Jones Architects and an Advocate in Practice for Design Commission for Wales. Matthew is involved in practice-led design research around themes of making places and communities. His design based PhD explored place specific approaches to the development of rural towns and he is leading the development of *Shape My Town*, a toolkit to help communities explore their place and plan its future. He is part of 'Hands On Bristol', a collaboration between the Department of Architecture at UWE and community groups in Bristol that connects students, academics and communities through live participatory projects and creative design processes







100 Mile City... "has little factories, schools, houses and shops laid out in terraces along intimately scaled streets and around squares. It makes a dense, intense edge to London, a confident purposeful boundary fronting a revitalised productive countryside."
© Peter Barber Architects

Annual Theme:

Housing

Submissions were invited from those involved in the broad spectrum of housing research. Work submitted came from across the globe, covering a wide range of investigations concerning the vulnerable, implications of design and historical and technical research. Submissions were invited to address, but not limited to:

- Ethical, innovative and sustainable solutions
- Impact on health, wellbeing and social fabric
- Design and build quality, liveable space, building performance evaluation and occupant feedback
- Impact of planning and development
- Universal or inclusive design

Toward Healthy Housing for the Displaced

Dr Dima Albadra, Prof David Coley & Dr Jason Hart, University of Bath, UK



Azraq Refugee
camp - Jordan
2017
© Scarlett Tiger
Coley

The population of people living in temporary settlements after disasters is in the millions and the average stay in these settlements exceeds a decade. This paper reviews the literature on the design of post-disaster relief shelters in order to: establish the state of the art, identify trends and describe the academic activity of the past forty years. The analysis demonstrates that the academic engagement in this topic is limited, with fewer than sixty publications in the past four decades. Displacement camps are often situated in countries with extreme climates. However, the issue of the thermal performance of shelters and

their impact on health is found to be further overlooked. In an attempt to rebalance this situation, thermal surveys were conducted in two refugee camps in Jordan. The study found that the refugees were very unsatisfied with the thermal conditions in their shelters, particularly in summer. Internal surface temperatures of 46°C were recorded in September and indoor CO₂ concentration levels of 2700ppm were measured in winter. In addition, this paper reported on the adaptation strategies used by refugees to cope with the heat and cold, and reported on their views on shelter design considerations and satisfaction.



Housing as Housing: The SAAL Process and São Victor Brigade

Michael Cohen, Architecture Brigade, USA

After the 1974 Carnation Revolution, which ended almost 50 years of Fascist rule in Portugal, the underserved working class population collectively organized and demonstrated an unprecedented display of popular power. In response to widespread demands for affordable and quality housing the nascent central government created The Local Ambulatory Support Service (SAAL). Envisioned as a process rather than an organization or policy, SAAL deployed small-scale brigades of architects and engineers to work directly with communities on the design of new housing. This participatory process, which was embedded in the realities of urban life, re-defined the discipline of architecture while preserving the technical expertise of the architect. SAAL projects defied the conventions of orthodox domestic space and were oriented to support a mode of dwelling defined by mutual solidarity and shared ownership.

Under the auspices of SAAL, the architectural process of production, formal output and user inhabitation were re-envisioned to serve non-hegemonic goals. Against the general tendency of architects to separate form and politics, this investigation aims to discern how the formal specificity of the SAAL housing projects index the collective aspirations of the Portuguese multitude. A close reading of architectural composition in correlation to the distinct political objectives of the urban movement is conducted using formal and textual analysis. The São Victor project, located in Porto and executed by the Brigade led by Álvaro Siza Vieira, provides a concrete subject for thorough graphic scrutiny. Ultimately, analytical drawings of São Victor reveal that acute architectural features were generated in response to the communally defined dwelling and civic needs of the working-class constituency.



SAAL S. Victor
Social Housing,
Porto, Portugal,
1974-1977.
Digital Image
© The Museum
of Modern Art/
Licensed by
SCALA/Art
Resource, NY

Learning from Increments: Towards a Sustainable Design Strategy for Housing

Dr Aliko-Myrto Perysinaki & Dr Joanne Hudson, Liverpool John Moores University, UK

The Grouping of Housing Typologies. Reinforced concrete frames could be grouped for units conceived as double puccas (permanent houses) or, more accordingly, columns, walls and associated infrastructure was shared, reducing costs.
© Urban Nouveau (Filipe Balestra and Sara Göransson)



Incremental housing refers to flexible housing prototypes or 'core' housing, designed to grow over time. As a response to changing family structures and economies, incremental housing is a user led, adaptable mechanism that allows occupiers the freedom to enlarge the size and ameliorate the quality of housing in response to the demographic and economic changes of the households' composition. The originality of this housing typology lies in the process rather than the final outcome. Incremental housing has been adopted in developing areas as a mechanism to deal with poverty and empowerment and to increase social capital. However, far from being a regional phenomenon, incremental construction transcends political boundaries and involves different cultures and societies, as well as economic and political systems. In view of the growing interest

in incremental housing as a proactive strategy to meet housing demand, this paper begins with a short presentation followed by a critical synthesis of previous incremental housing examples, from the 1980s to the present day, drawn from a variety of urban contexts. Illustrating the process(es) that led to their effective implementation, this paper questions how incremental practices can be used as a method to provide urban housing, encourage typological innovation, rethink the relationship between building and land provision and support appropriate city growth. To conclude, in the current context of evolving policy frameworks regarding the provision of affordable housing, this paper will open up debate concerning the potential of incremental housing as a sustainable design strategy in western contexts, in dealing with the growing 'housing crisis.

Designing for Wellbeing in Environments for Later Life

Sarah Wigglesworth, Sarah Wigglesworth Architects, UK

Prof Malcolm Tait & Dr Sarah Barnes, University of Sheffield, UK

Dr Adam Park, BDP, UK

De Friederike Ziegler, University of the Highlands & Islands, Inverness, UK

This research project set out to discover what design could contribute to making the built environment a better place for our ageing population. Design has been overlooked in calculating the benefits – both financial and in quality of life – to society. This research also responds to evidence that the majority of 'third-agers' (those still active and independent) thrive better when they stay in their own homes where they are much more likely to stay fit and healthy for longer. Mindful that design is wide-ranging in its scale and scope, the inter-disciplinary project involved academics from planning, architecture, public health and sociology, and it partnered with the local authority to gain insights into their concerns and working processes as well as their data. It was also participatory, involving groups of older participants working in very different areas of the city on developing designs for housing and the public realm.

The research encompassed developing techniques for co-design with our older participants; co-creating with older participants designs for housing and proposals for neighbourhood improvements; translating the WHO definition of an age-friendly city into spatial proposals; drawing up planning policy and housing need assessments that were fed into the council's Local Plan; developing interactive tools for understanding space standards for older people's housing; considering the role of Local Authorities and developers in enabling age-friendly development. The findings indicate that the supply and choice of downsizer homes is being stymied by a lack of innovation and a failure to deliver joined-up housing policy. A key priority is to expand delivery and choice of downsizing options that support the wellbeing, mobility and independence in mixed-age communities into the third and fourth age.



Street view
of courtyard
bungalow.
© DWELL,
University of
Sheffield, 2016

The Dolls' House and the Enclave: A Miniature Toolkit

Dr Catharina de Haas, Catja de Haas – Architect, UK

The research is an exploration of domesticity and the home in contemporary society through a visual and textual analysis of two (sets of) images from the 17th century that can be seen as a representation of the home: the dolls' house of Petronella Oortman, painted in 1710 by Jacob Appel, and The etching of Saint Jerome beside a Pollard Willow, 1648, by Rembrandt van Rijn. The dolls' house of Petronella Oortman, assembled between 1686 and 1711, was a collection of miniature objects displayed over nine boxes that were placed in a cabinet, creating a complete overview of the ideal home as it was developed in the seventeenth-century Netherlands. The rooms were: 1: The Linen Room and Maids' Rooms, 2: The Storage Loft, 3: The Children's Room, 4: The Grand Hall, 5: The Entrance Hall and the Small Office, 6: the Lying-in Room and Bed, 7: The Show Kitchen, 8: The Work Kitchen and

Storage Cellar, 9: The Tapestry Room and the Library. The etching of Saint Jerome beside a Pollard Willow, depicts Saint Jerome, one of the church fathers, seated next to a pollard willow. The architect Alison Smithson saw this as an 'allegory of the ideal home'; the result of a symbiotic relation between the Saint and his surroundings; an enclave. The two images, each other's polar opposite, represent two metaphors for an ideal home that still resonate: the home furnished according to specific ideas about society, run by a woman while physically removed from its surroundings. A man on his own, in nature, creating his home with objects in a dialectical relation to his surroundings. The result of the research, a miniature toolkit, consists of objects, stories and images based on the functions of the rooms in the dolls' house: creating a surreal 21st century dolls' house.



21st Century Dolls'
House
© C.J. de Haas,
photo: Karem
Ibrahim

Local Energy Mapping for Urban Retrofit

Prof Rajat Gupta & Matt Gregg, Oxford Brookes University, UK

Matt Wood & Sian Cooke, Bioregional, UK

Sam Thomas, Gabi Kaiser & Jane Durney, Cherwell District Council, UK

Fin Kelly, Future Cities Catapult, UK



Large-scale domestic energy retrofits need to be better targeted, more cost-effective and result in a higher uptake to alleviate fuel poverty and reduce energy use, given that UK has one of the oldest and least energy efficient housing stock in Europe, over two thirds of which will exist in 2050. To address this challenge, LEMUR - Local Energy Mapping for Urban Retrofit, a research project funded by Innovate UK, has developed and tested (in Bicester town) a new data-driven localised Geographical Information System (GIS) based approach using publicly available national and local datasets on housing and energy to plan mass retrofit by spatially targeting and modelling domestic low carbon measures across UK cities. The research used these 'open' datasets to first, spatially and rapidly identify an area for energy retrofit (high energy use and/or fuel poor), and then applied a bottom-up carbon mapping model (called DECoRuM) to identify dwellings where maximum and cost-effective energy savings would be made. Publicly available datasets

were spatially super-imposed for Bicester, which included Ordnance Survey and Address-point data (to identify dwelling characteristics), sub-national energy statistics (gas and electricity meter point data aggregated to lower layer super output area having 400-700 households) and Energy Performance Certificate data (EPC), to identify a neighbourhood (covering over 600 households) with high fuel poverty and energy use for deeper investigation. A community engagement campaign was led by the local authority to gather detailed household data to improve the predictions of the energy model. Detailed house-level energy assessment in the selected area showed that a package based approach comprising fabric and heating system upgrade and solar photovoltaics emerged as the most effective solution in reducing CO2 emissions. The spatial visualisation of the LEMUR results is found to be particularly helpful for local authorities and community groups in planning local energy action.

Design to Include: An Alternative Architectural Modus Operandi for Contemporary Chinese Rural Housing

Xiang Ren, Project X 21 & University of Sheffield, UK

Housing design is never neutral; it either separates or includes. Contemporary mainstream Chinese housing design separates more than to include the rural village, with a population of 900 million, at the nation's particular historical moment of rural urbanization. However, architecture has been marginalized not to be part of this complete picture and broader change. Barriers both from within and outside architecture still exist, which prevent further understanding the context and conceptualizing alternative architectural routes and modus operandi. It is within this context that this research sets out to search for an alternative form of architecture for understanding and transforming Chinese rural housing under current rapid urbanization. The paper starts from an attempt to embed a thicker interpretation of Chinese rural housing in some of the major debates in architecture; and it is the first attempt to place housing architectural design in rural China within a broader framework of bottom-up architecture.

The first part of this research will briefly interrogate the accumulated past and the present realities of Chinese rural villages from political, legislative, economic, cultural and social perspectives, to constitute an immediate operational context in all its complexity and contradictions in which architectural practice and practitioners on rural housing situated. The second part will explore and examine a highly-specific, up-to-dated case of rural housing project in a specific rural village, that is – Wen village housing redevelopment in China from 2012 to 2016, narrating an architectural modus operandi of hybridity, of engagement, and of social transformation. The paper argues that contemporary participative architects could still be relevant and effective in rapidly changing rural housing in China, and that very value of architecture could still be strongly demonstrated through this emerging possibility of architectural engagement in rural China with a population of 900 million.

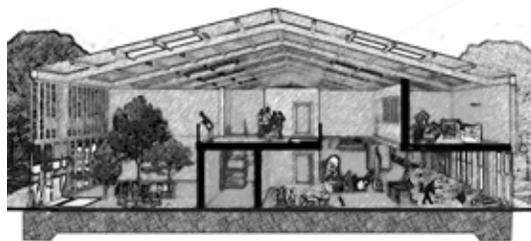
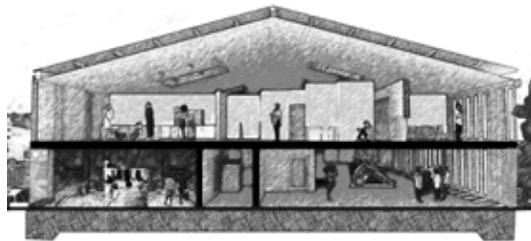
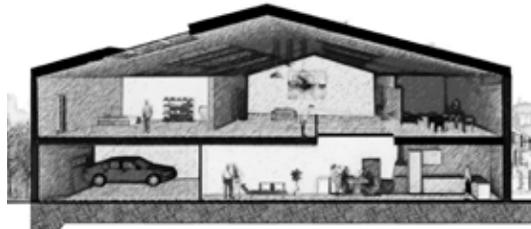
A new wind-rain bridge in concrete load-bearing wall, wooden roof and cladding is placed at the intersection between the new housing zone, the old village, and the waterways, which marks an entrance gateway and provides a communal focal point for the village.
© Xiang Ren



Building 'New Town Utopia'

Megan Rourke, University of Cambridge, UK

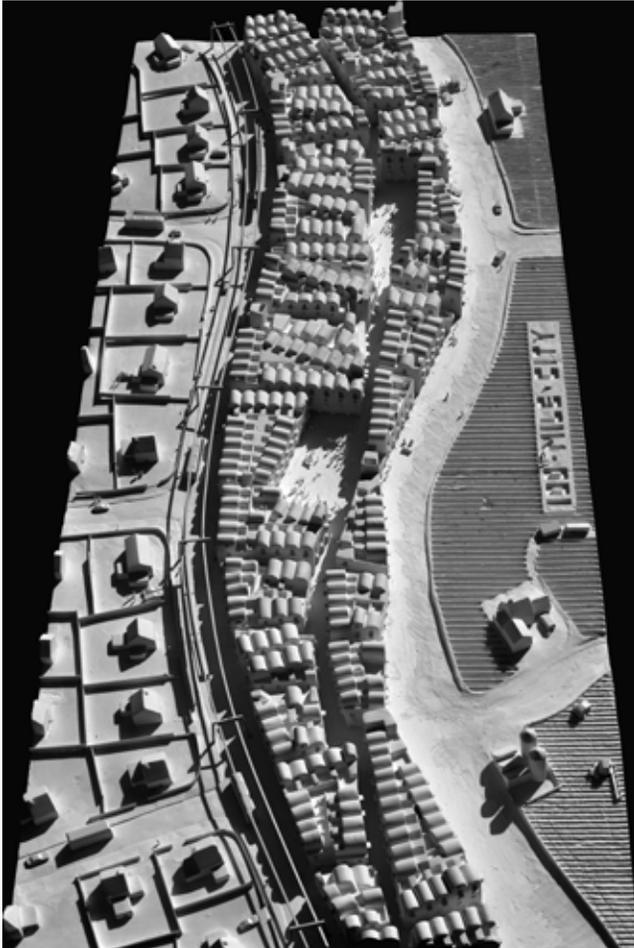
In January 2017, current Prime Minister, Theresa May, promised the introduction of 14 new garden villages and 3 new garden towns into the UK. These settlements aim and expect to create 'a series of new communities with green spaces, good transport links, and high quality affordable homes to help tackle the country's housing crisis'; a sentiment that echoes, if not mirrors, Lewis Silkin's original ideologies for 'New Towns'. In order to move forward, we must also look backwards; recognising and reconciling previous urban methods in a way that paves way for a radical new form of architecture that is inclusive of past, present, and future resident's desires. This research, using the case study of Basildon New Town, will propose an alternate approach to housing and lifestyle that aims to act as a catalyst for future development in the UK. Through an exploration of three modes of 'New Towns', 'Essex suburbia' and Basildon New Town, both presently and historically observed, the research discusses the current challenges for towns in the UK, uncovers specific nuances and ideologies, and suggests how these may be manifested into an architecture of difference. Concluding with a proposal formed from this research, it is speculated how a much more 'collective', 'community-led', 'self-built' architecture could, whilst not attempting to completely solve the existing problems, act as prototypical example for how all of the socio-political, historical, and economic issues could be brought together. In creating this architecture, it will be shown that we can engage with three distinct aspects of the place as found; the known - the immediate and previous desires of its residents, the unknown - the future desires of its residents - and the unexpected - desires that its residents, architects, and planners, could not possibly predict.



A potential architectural manifestation of a new 'community-led, self-built' housing typology © Megan Rourke

100 Mile City

Peter Barber, Peter Barber Architects, UK



“ Build a street based, linear city a hundred miles long, 200 metres wide and 4 storeys high. Wrap it round London. Give it little factories, schools, houses and shops laid out in terraces along intimately scaled streets and around squares. Make it a dense, intense edge to London, a confident purposeful boundary fronting a revitalised productive countryside. 100 Mile City is a linear Barceloneta, a circular Rome, a stretched Porto. Suburbia reprogrammed, hybridized, compressed. Catalytic urbanism en flique. Ride the Hundred Mile high speed orbital monorail, souped up sky fly Circle Line – the loose ends and frayed edges of London’s transport system, its isolated city edge train and bus termini instantly, meaningfully, usefully connected with circus ride technology (Bexley to Brentford in 40 minutes) super-functional, super-fast and super fun. And, in time, watch our city grow inwards, spreading like a wildfire through wasteful, anti-social, car choked suburbia. Eastwards from Richmond, west across the Newham Marshes, up from Eltham, across the hills of Greenwich and the empty green swards and golf courses of Enfield. Metro land consolidated, back filled, integrated and urbanised. London for 40 million people. A kind of inside-out plan Voisin..Ville Radieuse – Blighty style.

100 Mile City..
“ Build a street based, linear city a hundred miles long, 200 metres wide and 4 storeys high. Wrap it round London
© Peter Barber Architects

Long Term Performance Evaluation of a Zero Carbon Residential Development

Dr Michelle Ahga-Hossein & Mr Tassos Kougionis, The Building Services Research and Information Association, UK



Hanham Hall
Project
© BSRIA Ltd

The performance of a building is directly affected by its services, such as efficient heating and ventilation systems, thermal properties of the fabric and the occupants' behaviour. These elements have been studied, in isolation, in recent years. However, considerable variations in energy consumption are still observed between similar dwellings and between actual and design targets. To better understand to whether/to what extent incorporating energy efficiency measures in dwellings and providing feedback to the occupants can affect the operational performance of the buildings, a long-term building performance evaluation study was carried out on a new residential development in Bristol. The development consists of 185 new dwellings, comprising a range of house types and a mix of private and social housing. The study includes construction stage assessment, early occupation assessment, occupant engagement, energy and environmental monitoring and fabric testing. The dwellings, designed to comply with the zero carbon

homes definition, incorporate a number of features that are not conventional in the UK house design including such as mechanical ventilation with heat recovery systems, photovoltaics and solar shading systems. The results indicated that the occupants, overall, were satisfied with their dwellings and their indoor environment. However, setting the heating and ventilation control systems appeared to be challenging for a number of occupants. Indoor environmental data confirmed the dwellings, in general, were thermally comfortable. Total electricity consumption of the dwellings was, on average, 20% less than the SAP estimation. However, the gas consumption of the houses was about 40% more than the SAP estimation. In terms of water, the data indicated that the actual usage was slightly better than the performance target set. The findings of this study can help the regulatory bodies as well as the construction industry to identify to how the energy efficiency measures can affect the energy performance of dwellings

Social Housing: A Discography - A Soundtrack to Britain's Modernist Estates

Adam Hampton-Matthews, Newcastle University, UK

The aim of the research is to determine how social housing has been represented through the means of music as a popular culture platform since their rise to fame in the 1970s. Through a series of studies into the various genres that developed, the artists and their songs, videos and influences, the research objective is to demonstrate how these pieces have contributed to the overall perceptions of social housing estates and how they commented on the social and political issues of the time. To put it another way, did the music produced during these periods take advantage of the stigmas often associated with social housing estates to further enhance the musician's vision of a dystopia? a theme particularly prevalent in other popular culture platforms such as film. The research begins with a study of prolific dystopian-novelist J.G. Ballard who often situated his novels within a British urban context,

focusing specifically on the emerging genre of New Wave music which Ballard heavily influenced during the 1970s and early 80s, reflecting on how the artists began to comment on Ballard's dystopian vision and the realities of British housing and the social and political issues that arose. The subsequent chapters include a comprehensive study of the modernist housing that developed in Coventry and Sheffield. Over the years, the city's modernist housing has proved to be a powerful tool for creativity for some of Britain's most influential artists in the music industry. Taking a journey through these music 'scenes', the study aims to gain a better understanding of the relationship between the perceptions of Britain's modernist estates and the specific genres of Punk, New Wave, Ska, and Britpop that emerged from Ballard's writing and two of Britain's 'utopian' cities.



A Soundtrack to
Britain's Modernist
Estates
© Adam
Hampton-
Matthews

Towards a One-Minute Street-Based Neighbourhood: A Singapore Case Study

Prof Heng Chye Kiang, John Chye Fung, Im Sik Cho, Ivan Nasution & Winnie Tan Jia Hui, National University of Singapore, Singapore

In the context of land scarcity, population ageing and the emergence of disruptive innovations, planning a high-density residential neighbourhood faces issues and challenges more complex than ever before, resulting in the need to rethink the current model to be more flexible and adaptable to unforeseen future changes. This paper focuses on three interrelated thematic studies – namely, an age-friendly environment, a sharing and collaborative culture, and a car-lite environment – of a recently completed research project that investigates the planning of innovative typologies of future residential neighbourhood of close to 8000 dwelling units. Through a rigorous process including literature reviews, expert interviews, site observations, local and overseas case studies, design research and evaluation

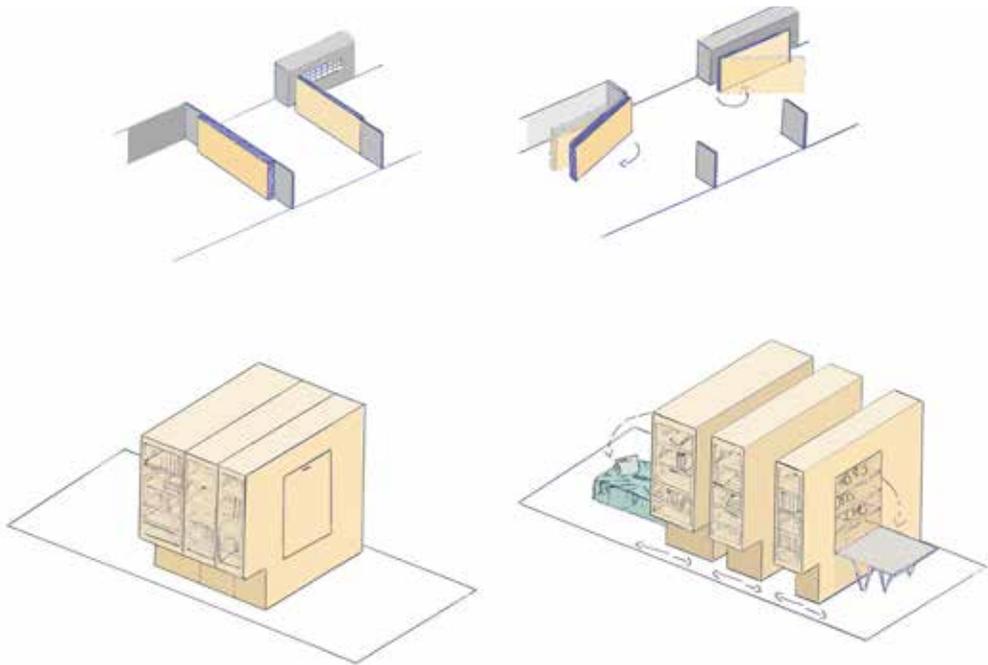
of the existing townships, this project culminated in the formulation of a design brief for future residential communities, a design framework to guide future housing projects, and a design proposal of a street-based residential neighbourhood typology. The research findings recommend the vision of a one-minute street-based township that addresses key planning and design strategies including designing a street-based residential neighbourhood with social, commercial and healthcare amenities within easy walking distance, providing more senior-friendly living arrangements, accessible coworking spaces, start-up units, mobility hubs, as well as personal and shared transport options. The design proposal also identifies strategies to render the residential neighbourhood flexible and adaptable to future needs.



A community node along the spine showing eldercare, childcare, coworking and amenities for daily needs.
© National University of Singapore, 2017

Investigation of Integrating the Transformable Design in the Inner Space Layout of The Local Apartment

Reem Yasir Hourani, University of Jordan, Jordan



Examples of the transformable design in the residential apartments: "the MJE house" (above), and "All I own house", designed by PKMN architects © Reem Hourani

The current research comes to figure out if it is possible to integrate movable interior partitions in the layout of the local apartment, as an efficient transformable design provides an extra/open space. The research aims to provide suitable spaces for living, where the residents can control these spaces according to their needs and activities. Through a descriptive approach, the research explored the theoretical aspect of the transformable design (such as the historical background). Then, the research discussed the design phase through conducting a survey included 80 residents of apartment buildings in a middle-income district in the city. According to the results, four main spaces were selected: the living room, guests room, the balcony, and bedrooms. Then, two already built apartments were selected, in order to respect the traditional layout of the local apartment that the residents used to know. At the same time, the approach discussed is applicable for

the unbuilt future apartments that have the same layout. For the selected apartments partitions are identified which define the needed spaces mentioned above. All the possible ways of movements of the rigid forms (volumes) are tested for the selected partitions. After the test of thirteen options for partitions' movements, a selection was made of the best movements that: provide the maximum possible area of the space, via the simplest way of movements where it is not required from the resident to move the partition in a complicated way to have the extra space. It concluded that it is possible to integrate the movable partitions in the local apartment, where the best efficient options of movements of partitions in the selected apartments are: the translation and folding, and the partial rotation about the corner's axis and translation. The translation provides an extra area of the space, while the folding and rotation create an open space.





Stilt settlement
during low
tide, seen from
automobile bridge.
© Gabriel Muñoz
Moreno &
Santiago Serna
Gonzalez

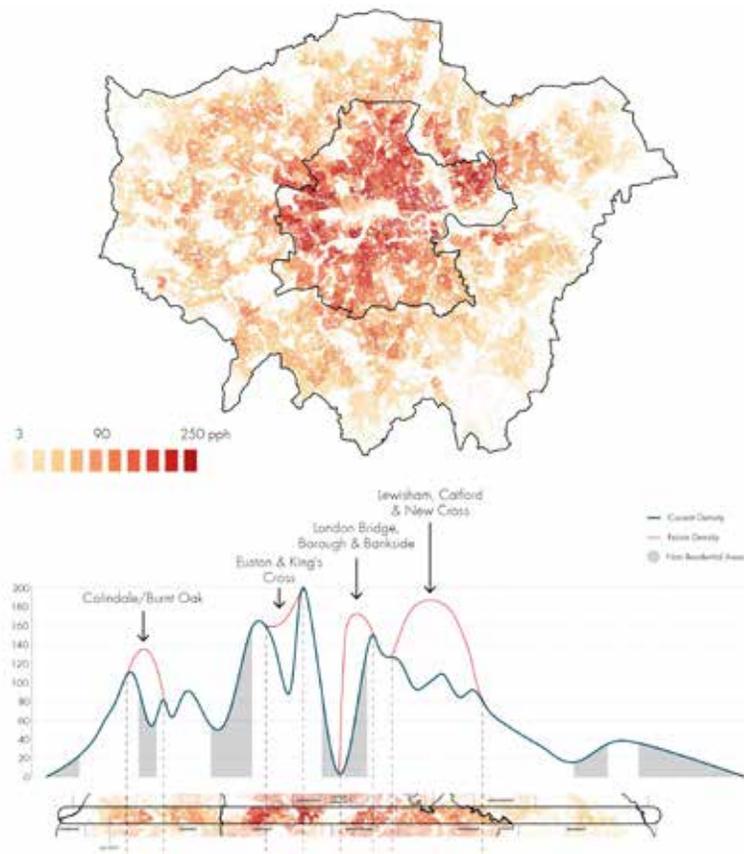
Cities and Community

Submissions were invited from those investigating the relationship between the built environment and the people who live in it. Distinct from the historical category below, submissions here were to focus on contemporary city and rural environs, their challenges and communities and could include, but were not limited to:

- The role of the architect and architecture in social, cultural and economic sustainability
- Analysis and contextual studies of architecture in the cityscape
- Tall buildings and impacts on cities and the community
- Community focused projects including pro bono work
- Community engagement in projects
- Health, wellbeing and sustainability in the city

London's Local Character and Density

Daniel Elsea, Jane Manning, George Garofalakis, Antony Rifkin & Geoff Noble, Allies and Morrison LLP



Density by residential land area (excluding non-residential land)
© Allies and Morrison

Understanding the underlying character of different parts of London is fundamental to setting out a strategy for future growth. This study has established a broad characterisation of Greater London as a proactive contribution to the debate around the residential density matrix and its application alongside a wider consideration of land uses. The character areas have been defined using a series of detailed information layers, including historic maps, historic and current land use, street structure, transport infrastructure, existing densities and heritage designations. This resulting map is set at a broad enough scale to be useful to strategic planning, but is supported by detailed information to allow for more area specific interrogation. Using Geographical Information System software, it has created one

of the most comprehensive mappings of London's local character to date. Transects through it reveal a highly textured and complex urban picture. As an analytical and visual tool, the map could inform policymakers and architects alike in developing more contextually appropriate masterplans. The research suggests there should be a departure from the current London Plan understanding of the city as having three broadly concentric types of character: central, urban and suburban. In its place, our report recommends there should be a much finer grain understanding of density in London. This character-based approach to future planning, building and development could help balance London's need to intensify new development without having to sacrifice its many unique characters and identities.

Architecture for Politics: Designing Collectivity in Medellín's Library-Parks

Dr Caue Capille, Federal University of Rio de Janeiro, Brazil

The Library-Parks of Medellín, Colombia, are pivotal in this city's project of 'urban and social upgrading'. They consist of a combination of cultural programmes and generous surrounding and indoor spaces for public use, built with the intention to produce a new sense of community and citizenship by means of architecture and its appropriation. This fact opens a series of questions regarding the instrumental use of architecture for strengthening political awareness and addressing social inequalities. This research looks at both the propaganda of social change brought by these buildings' mediatic monumentality, and at how public libraries frame social relationships through their architecture, thus materialising specific ideologies of politics and culture. Firstly, it describes these libraries' spatial layout and their spatial organisation of programme. Secondly, it shows how the libraries are used through detailed mapping of users' co-presence, which exposes patterns that are further associated with the spatial and programmatic arrangements.

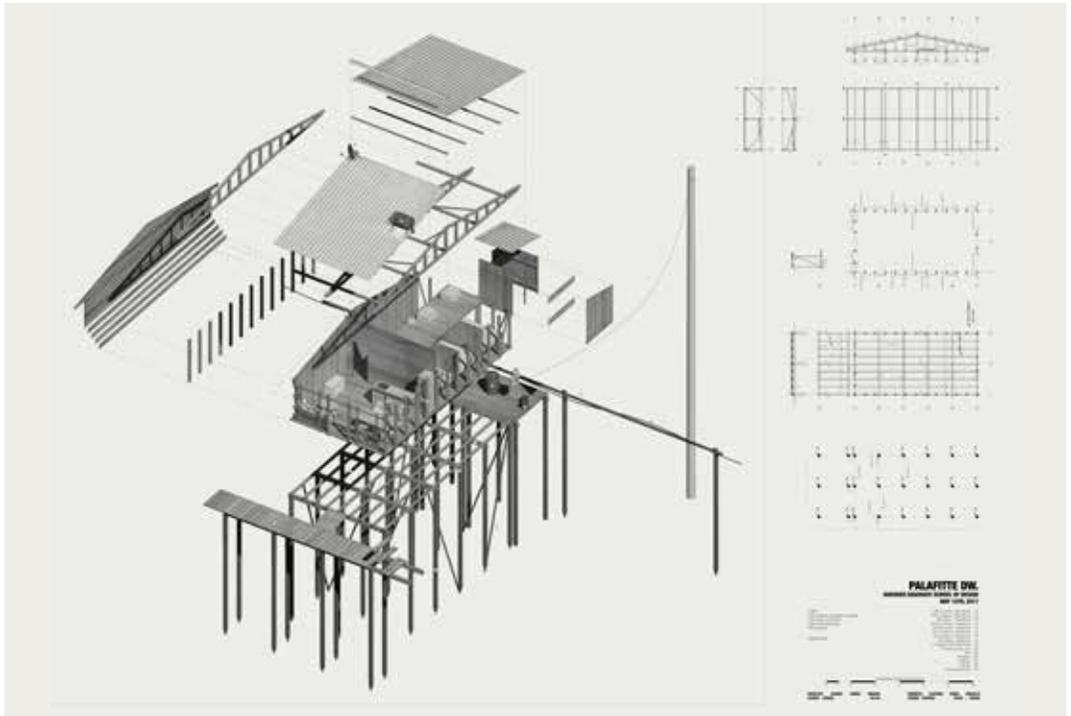
Based on these analyses, it formulates types of spatial cultures in public libraries and exposes the role of space in influencing the emergence and/or constraint of particular patterns of social awareness that the traditional notion of the programme cannot capture. Finally, it associates these types of spatial cultures with Medellín's political agenda of social change. It is found that depending on how public libraries control public use (spatially and programmatically), they can support the emergence of informal activities or work as educational institutions only. In addition, depending on how their educational role is manifested in space as spatial practices, they can serve as places that facilitate the exercise of institutional-bureaucratic power to normalise visitors' behaviours, or places that stimulate public participation and negotiation. The findings emphasise how public libraries work as accessible civic environments, promoting visitors' political and social awareness and potentially strengthening the collective engagement of the surrounding communities.



España Library-Park in Santo Domingo Savio neighbourhood serves as a monument for the rhetorics of social, political, cultural and urban change. © Alcaldía de Medellín

Sovereignty on Stilts, Drawing a Genealogy of Extra-Territorial Urbanization along the Mudflats of the Tropical Belt

Gabriel Muñoz Moreno, Harvard University Graduate School of Design, USA
Santiago Serna González, Harvard University, Chile



Palafitte: Exploded
 Axonometric and
 Construction
 Plans
 © Gabriel Muñoz
 Moreno &
 Santiago Serna
 Gonzalez

“Self-constructed cities... are the product of culturally driven individual and communal initiatives. [A]re a dynamic form of urbanization in constant transformation, rich in diverse socio-economic relationships and physical morphology and with a unique ability to adapt to local conditions.” — Gouverneur, David. *Planning and Design for Future Informal Settlements*. Oxon: Routledge, 2015. The emergence of cities is directly proportional to the resources available for them to sustain a certain population, labor being a necessary asset to do so. What if a resource flux of a region is vulnerable or scarce? Then, the quest for supplies happens in foreign territories, producing conflicts such as war, colonization, slavery, power imposition or native displacement, losing cultural knowledge, driving the meaning of urbanism and development toward an unquestionable understanding – Koolhaas’ Generic City: “The Generic City presents the final death of planning... Planning makes no difference whatsoever. Buildings may be placed well (a tower near a metro

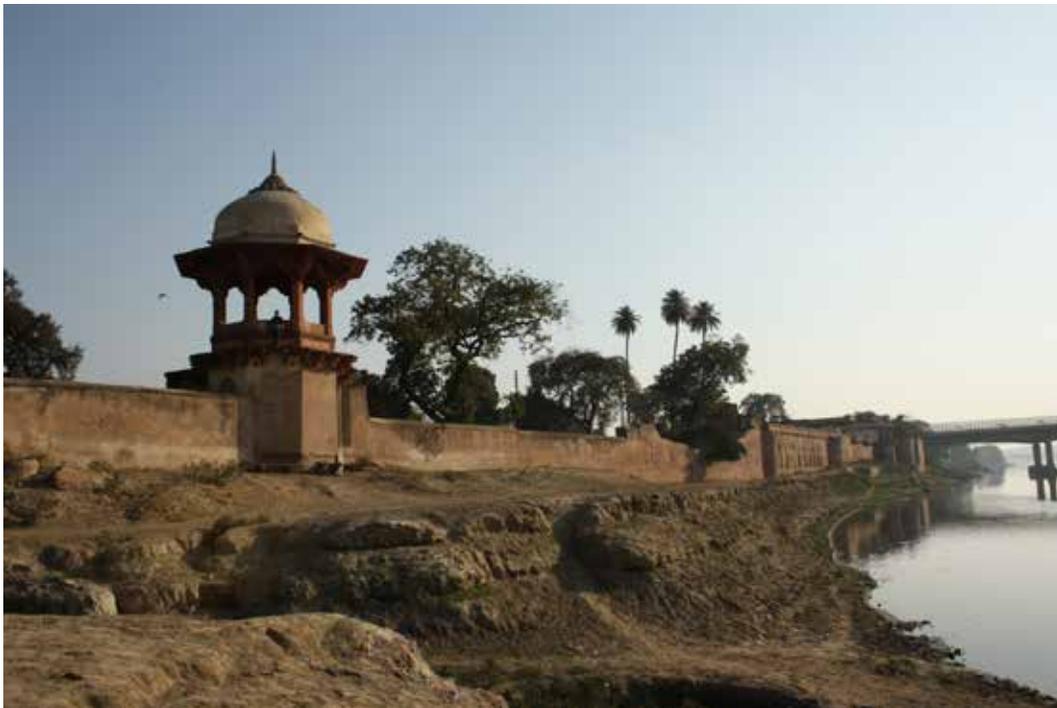
station) or badly (whole centers miles away from any road). They flourish/perish unpredictably.” Sovereignty on Stilts exemplifies this phenomenon by showing how the displacement of native communities in Latin-American Pacific coasts has occurred for centuries – from the Atlantic Slave Trade to the current commercial pressures. Coastal vernacular culture, rich in solutions for challenges of sustainability and resiliency, is hindered from reaching international acclaim by its poorly representation in the public media. To understand the native lifestyle, we visited the stilt neighborhoods of Buenaventura, Colombia, and Guayaquil, Ecuador. The state claims inhabited intertidal land by proposing commercial developments without cultural comprehension, imposing foreign lifestyles and economies, resulting in indirect slavery. To unveil the reality and value of these communities – prevalent across the tropical belt –, Sovereignty on Stilts questions the definition of poverty that western institutions, the United Nations and World Bank, offer nowadays.

Community-Centred Heritage Regeneration in India the Urbanscapes of Agra's Mughal Gardens

Dr Aylin Orbasli, Oxford Brookes University, UK

The focus of this research project is an informal settlement on Agra's river bank nestled into the remains of 17th century Mughal landscape gardens. In close proximity to Agra's tourist hub, yet significantly isolated from it, Jahanara Bagh is home to the close knit community of an informal settlement, small businesses and some ongoing landscape uses for a local nursery. Through a short collaborative research project including postgraduate students we set out to develop appropriate methodologies for and actively engage in 'community-centred heritage regeneration' around Jahanara Bagh. The project most specifically set out to bridge the often conflicting discourses and practices of heritage conservation and development practices. Through action research encompassing a live project, rapid urban assessment methodologies and a research-led approach, strategic plans and targeted small scale interventions were identified as possible solutions that could reconcile the need

for urban development and improved quality of life with the conservation of heritage. In this framework heritage evolves from being a recorded 'monument' to gaining an active narrative at the heart of a community and starts to inform choices and opportunities for development that are not overwhelmingly dictated by preconceived top down tourism expansion policies. The generation of projects as part of a research process enabled the recommendations to be tested with the local community, third sector organisations and relevant public authorities. This focus on a specific case study with a cycle of feedback loops enabled ideas to be debated and developed through an iterative process and a level of experimentation. The projects themselves thus became means for analysis and for testing willingness, interest and viability of approaches amongst local stakeholders. Consequently, some of the research impacts were also part of the project process.



Remnants of 17th century Mughal gardens continue to line the Agra waterfront
© Aylin Orbasli

Good Life & Flower Tree Project

Antonio Capelao, London Metropolitan University, UK

Flight path above
Shree Satya
Narayan - Etta
Bhatta Udyog
Brick Factory,
Imadol
© Antonio
Capelao



The Good Life and Flower Tree research project aims to discover if an architectural process can become a tool for generating self-confidence amongst primary school children in newly urbanized, socially and economically deprived communities where parents have little interest in their children's education. The research was initiated in September 2015-16 and is taking place in Imadol, in the Kathmandu Valley, Nepal. In my view only with education is possible to make informed choices in life. Therefore it is important to resolve the disinterest in education and find new ways to engage children with their educational development. As I come from an architectural background my investigation is design based - inviting primary school students to design the extension of their school to take in 100 students. I define my role in this process, as an architectural translator. My research is hands on and I travelled to Imadol twice in 2015-16 spending five

weeks each trip. I met members of the community, whilst living with a local family close to the school. I initiated official relations to understand building regulations, planning law and how to get the project built. From the workshops (clay-modeling, drawing, model-making, discussions and visit to the local botanical garden) I established a positive relationship with the students, the school headmaster and teachers who support the research. The workshops findings are that children engage creatively with the tasks; they think analytically and make design decisions to improve the quality of students' lives and take responsibility for their choices. This initial phase of the research made clear the students have strong design ideas about their school building and its spaces. I am currently interpreting their ideas into architecture to take the research to the next phase, the construction of the project (October 2017-18).

The City-Zen 'Roadshow'

Dr Craig Martin, Delft University of Technology, Netherlands

Prof Greg Keeffe, Queen's University Belfast, UK

Leen Peeters, Th!nke, Belgium

Prof Andy van den Dobbelsteen & Siebe Broersma, Delft University of Technology, Netherlands

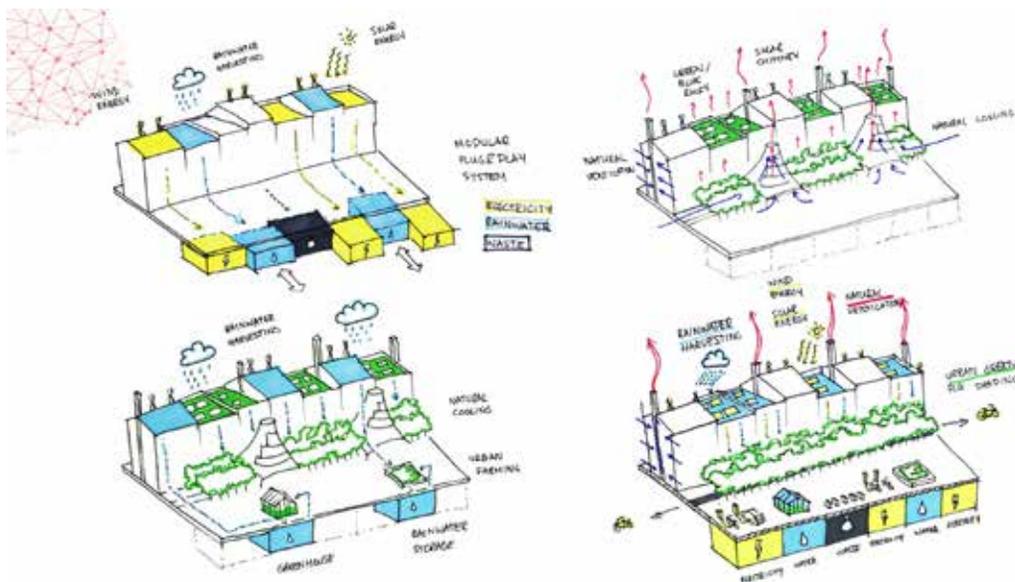
Riccardo Pulselli, University of Siena, Italy

Dr Han Vandevyvere, VITO Belgium, Belgium

Mats de Ronde, DNV-GL, Netherlands

Aims, Zero Energy Cities, Citizen Co-creation, Societal Impact. The project, a 5-day 'onsite' event model that places citizens at the heart of a process to develop designs, strategies, guidelines and realisation timelines at all scales of their built environment. 4 cities completed, 3-month preparation/city, 5 days onsite/city, All Citizens, 7 International sustainability experts and 6 Cities next. Impact, healthy lifestyles, environmental comfort, building efficiency, independence from fossil fuel uncertainty, citizen confidence that sustainability is for all who want it. Trust, citizen's need belief in the aim, objectives and solutions, no matter how radical or unfamiliar. The project method merges initiatives to open the door to city commitment, belief and empowerment. Ownership, the objective is that citizen's take possession of their future built environment without

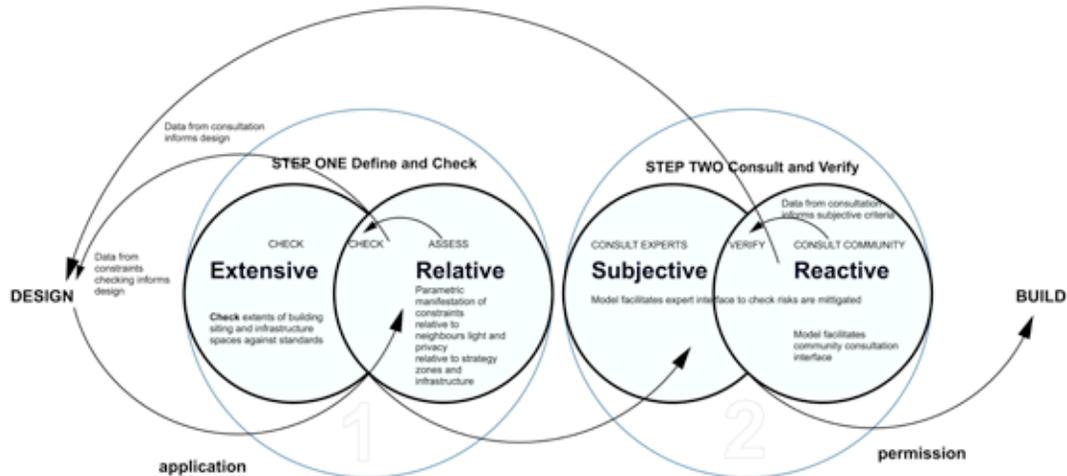
fear of hidden agendas, affiliations or political constraint. Homegrown, solutions stay with the people who created them. Glocal Disruption, global experts combine with local stakeholder energy, knowledge and close familiarity of context and lifestyle in order to disrupt and rock the status quo and reach zero energy. What do cities learn from the project? Use of graphical communication to get messages across. Sacrifice? No, its not about losing, its about what you gain, replacing it with something better for your children and community. Timetable-To-Suit, schedules to fit stakeholders, not the other way around. Individual Perspective, making sure activities relate to the people personally and their experiences individually, these can be expanded later to other scales. Inspire, encourage and support participants to take the lead of their sustainable 'City Vision' in the next step to realisation.



Mahón building and streetscape interventions of shade, energy and food production, water collection and waste recycling (Menorca Project). © Craig Lee Martin

Information Modelling in Digital Town Planning

Rosemarie Andrews, Bartlett School of Architecture UCL, UK



Decision Process for Digital Town Planning
© Rosemarie Andrews

This research explores the potential for a data evidenced digital planning system. Linked with the government strategy for Digitally Built Britain, using open data and GIS. A town planning process which interfaces with a BIM (building information model) workflow. The decision-making process and the way written policy and drawings are interpreted is examined referencing relevant theories. A distillation of policy is undertaken using case studies to extract the intention and components of policy relevant to the case studies. The criteria are then categorised identifying four sets within two categories; those which can be defined by algorithms, and those which require a human reaction. A two-stage system is proposed, referencing the Government's outline for BIM level 3 and the National Planning Policy Framework. The system firstly aids the design process, then public consultation. Software tools are identified to illustrating how achievable this process is. Relevant research and writing are discussed.

A cloud-based city model Local Plan with associated GIS data would aid the design process of the building until the first stage criteria are met. The proposal model could then be federated with the city model, facilitating a consultation process which uses social media and games type interfaces to engage community reaction. Benthamite principles could inform the analysis of community input, doing away with the need for planning committees and providing a more democratic and representative measure of the community's views and aspirations. A bottom up town planning process is possible with this strategy. The cumulative information from communities retained within the model will inform the local plan, communities and developers will see the evenness of the system and the potential of a neighbourhood. Local distinctiveness would evolve; with conservation being pursued where heritage is valued, innovation areas might also emerge where a positive response to innovative attracts more innovation.

Planning the Territory-Less City

Athanasios Athanasopoulos, University of Cambridge & Grimshaw Architects, UK

The debate on airport planning and design aligns with contemporary concerns regarding urban development, economic growth, and the impacts to the natural, social and built environments. It has been proven that the growth of transportation networks is essential to the city's evolutionary processes; especially so for the case of airports that have evolved rapidly during the last century, within a globalised context of mobility and economic, social and environmental transformations. Within this environment of overlapping or dispersed authority and momentum, airport cities emerge as new trade centres, transforming into a de facto city suburb, usually established faster than formal planning policies have the chance to recognise and respond to. Simultaneously, concerns about pollution and environmental and social instability and degradation also lead to scepticism about their qualities. By discussing about the city and its structure, as analysed by key researchers on urban

transformations, such as Kevin Lynch, this study aims to identify and map basic typological patterns, trying to understand what the airport city's role could be in a regional strategy for sustainable development. This is achieved by proposing a research methodology so far applied only on other urban forms, trying to engage into a more coherent discussion on airport-oriented development. In 1998 Robert Cervero noted that the most important challenge that cities face today is the need to develop a "workable nexus between mass transit services and urban settlement patterns". In the extent that air-transportation is transforming into the next generation of mass transit, as John Kasarda claims already by 2000, the questions that need to be answered are how these relations are already affecting, and will continue to affect the structure of the city, and which would the prospects of an airport-oriented development be, if this actually is a realistic proposal for the future of cities



Airport-oriented development interface model - A consolidated system that combines transport-oriented development and aviation integrated modelling strategies (combining the different models described by R. Cervero et al. (1998), T. G. Reynolds et al. (2007) and N. Stevens et al. (2010))
© Athanasios Athanasopoulos

Management Complexities for Global Heritage Cities

Dr Deniz Ikiz Kaya, Oxford Brookes University, UK



The map of global heritage cities
© Deniz Ikiz Kaya

This research focuses on the management complexity of historic urban landscapes inscribed on the UNESCO World Heritage List within the key cities of the global urban network, referred to as global heritage cities. It aims to understand and explain the complexities emerging from the limitations of the existing urban governance and legislative systems, the complex decision-making mechanisms involving a broad range of actors, and the impacts of the rapidly increasing economic and urban development pressures. This aim is achieved through the conceptualisation of the global heritage city notion within a framework that integrates the global urbanisation discourse to the field of urban heritage management. For this purpose, a multiple case study is employed where large-scale development projects threatening the integrity and

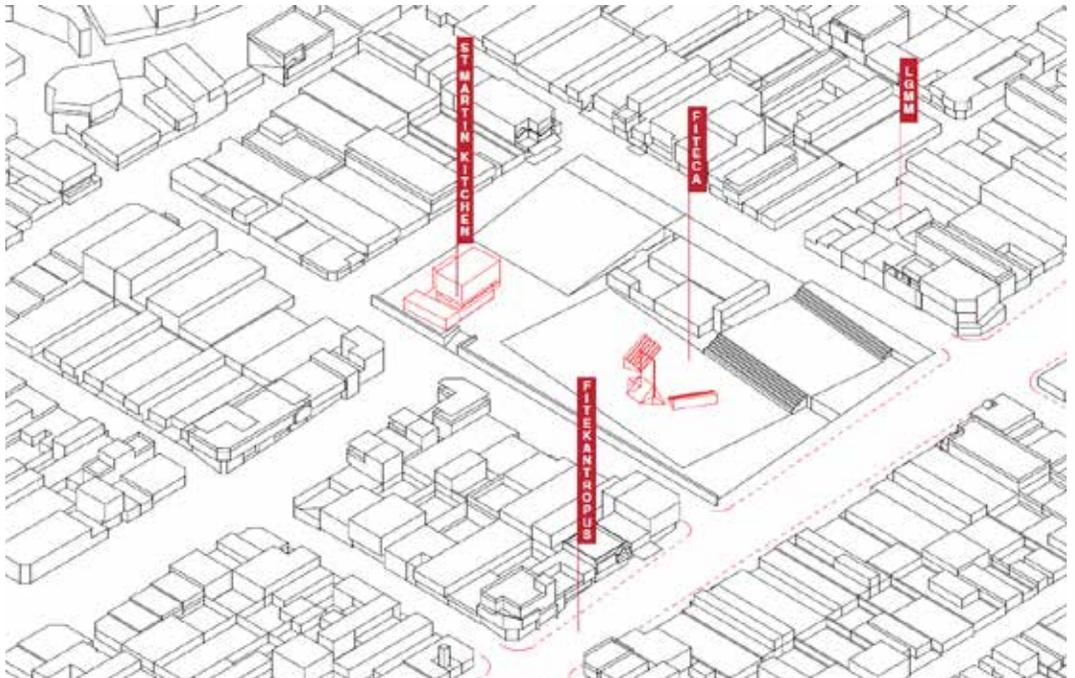
authenticity of the urban heritage sites inscribed on the World Heritage List within the global cities of Mexico City, Istanbul and Paris are analysed. The assessment of these cases leads to the identification and mapping of the factors contributing to the management complexities of global heritage cities, which further contributes to the better understanding of the exclusive status of global heritage cities and the future adoption of effective instruments convenient for worldwide practices. In this way, this research makes an original contribution to literature by elaborating an innovative conceptual framework that incorporates the size, scope and complexities of global cities to the heritage and governance discourses. It is also the first study where the management practices of the selected global heritage cities are examined.

Alliances to Unlock Freedoms, the Case of La Balanza in Lima, Peru

Martin Mejia, Bartlett School of Architecture UCL, UK

Participatory urban design has specific characteristics that locates it in the crossroads between the social and physical dimensions. Nowadays, different literature was built with the social analysis focused on the process of design and the physical analysis on its product. But when poor communities start building themselves they produce not just physical but social implications. It's this kind of transformation that cannot be measured independently in terms of process or product, but on both together. The Capability Approach provides a framework to build on questions around the capabilities of the people to build space. Understanding the production of the space through participation, implies an understanding of the physicality of the space and the social processes that make it happen. Different from the individual agency that each person can exercise, the collective agency in participation, appears not as a sum but as a

synergy of agencies looking towards collective assets. This research will focus in understand the way this collective agencies are formed and the qualities they develop in periods of time. It will also be introduced the term of Alliance as 'revolutionary coalitions' that happen for specific purposes during time lapses, generally in societies with strong socio-economical differences and using participatory processes to challenge the conventional ways for producing the city. Exploring both, the relationships of the Alliances and the conditions in which these take place through the lens of capability approach, the objective of this paper is to discover how are the interactions in the Alliances and how participation in the Capability Space can contribute to unlock people's freedoms. The case study is the barrio La Balanza in periurban Lima, where many cultural activities in participatory processes have been taken place since 1999.



Alliances in La Balanza
© Martin Mejia

Developing a Model for Sustainable Socio-Spatial Urban Transformation

Prof Yurdanur Yuksel, Prof Ahsen Ozsoy & Prof Gulcin Pulat Gokmen, Istanbul Technical University, Turkey



A View from
Kağıthane
Neighbourhood
© Ahsen Ozsoy

Research towards developing a sustainable model for urban transformation aims to explore at three scales, the urban transformation dynamics with respect to multi-actors' perspectives and conflicts of interests in the housing market; and selecting the most important actor; the dweller to comprehend his/her level of place attachment to their neighbourhoods. A case study from a Developing Country, with its largest and global city is selected; within the city a developing and fast changing zone from industrial and informal into international-information based, formal zone is picked up for the geographical focus of the research. The quality of the selected settlement is considered with respect to private, semi-private, semi-public and public space hierarchy. Analysis of urban pattern at three scales of settlement, neighbourhood and house, in parallel to the dwellers in community, neighbours and household respectively, is expected to become a useful tool a data base to serve for increasing the sustainability of the existing settlements in future.

Further examination of the physical, socio-cultural aspects of the settlement and community expands the limits of the research from mere visual study. The research has found out that a collaboration is possible between the popular, private and government sector when the non-governmental institutions can be created as linking agencies. Such a collaboration brings about the potentials of the community and the local agencies, and some core solution of conflicts between the actors in the private sector. As this takes a long process, the urban transformation can be achieved without gentrification. The community strength is gained through educating the families, especially the women towards the awareness of the issues of their neighbourhoods, as well as human potentials to combat those issues. The community strength when recognized by the local governmental bodies, through institutionalization will be supportive of their urban renewal activities, which they are responsible for.

The Multi-Threading Processes of Chinese Street Vending and its Spatio-Temporary Meaning on Walkability

Ziwen Sun, Simon Bell & Iain Scott, University of Edinburgh, UK

In light of the multiple benefits of walking (e.g. public health, social indifference, air pollution, and misdirected investment), improving walkability is becoming increasingly significant among architects, urban designers and public health researchers. In contemporary Chinese cities, street vendors are a common feature of many neighbourhoods, frequently occupying specific space where many people regularly walk. As such, the pervasive phenomenon of street vending appears to have a close association with the walkability of public spaces. However, street vendors, as undesirable populations sometimes, have always been part of informal business practices and are generally self-organised, which directly confronts the hegemonic power of the Chinese government in many ways. Due to street vending being produced by multiple forces (e.g. bottom-up spatio-tactics) of various ordinary lives (e.g. livelihoods of weak populations and demands of nearby residents), a desire for social harmony at a state level impels

local governments to seek alternatives that mitigate collective resistance. The spatio-temporary meaning of street vending (i.e. urban conflicts, multiple forces, demands of everyday life, local cultures and habits, as well as individualised, varied, adaptable and flexible tactics) elaborates why street vendors produce and/or trace a specific walkable space as a set of co-existent relations. The aim of this paper, therefore, is to unfold why street vending does emerge and which actors or associations retain the phenomenon. It proposes a space-population-force triangulation to redefine three characteristics of street vending (i.e. a transient public space, a particular pattern of governance and ambiguous order, and a space created by or for populations). Using actor-network theory as a conceptual tool and a novel methodology of selection-analysis-combination, this paper seeks to unfold additional knowledge to why walkability and how specific walkable spaces are produced in the Chinese context.



Map overlaying the integration of street network and the street vending distribution.
© Ziwen Sun

Next Generation Design – a Community and Education Project to Design and Build a Pavilion

Laura Hannigan, Philip Isaac, Steven Kennedy, Daniel Bergsagel & Sinead Conneely,
 AKTII Ltd. & ScaleRule CIC, UK
Annabel Koeck, Grimshaw Architects & ScaleRule CIC, UK
Richard Winter, Grimshaw Architects, UK



Completed pavilion and ribbons with messages from the public
 © Richard Winter

For something so influential on our everyday experiences, our built environment is designed by only a small subset of society, and with limited engagement from the rest of it. In the 1760s James Otis proclaimed “Taxation without representation is tyranny”. In the 2010s we proclaim that “A built environment without representation is tyranny”. Or if not tyrannical, then counter-productive: a diverse design industry will make for better balanced spaces, structures and societies. This research aimed to broaden the next generation of designers, by engaging with groups who are not traditionally drawn into architecture and engineering. A series of student workshops were held to teach the principles of engineering and architecture through the design process, aimed at GCSE students still in the process of choosing their A-level subjects and a potential career path. The brief: to design a pavilion of social interaction. Starting with seminars, conceptual design,

drawing, model making and presentations, each team completed the workshops by producing a final concept design and presenting their thoughts to a panel of industry, academia and media judges. A winning concept design was developed, fabricated and assembled for construction for the end of May. An increased number of students considered architecture or engineering as a career following the workshops and the constructed pavilion proved a success with the students, festival and public alike. To truly break down the barriers of entry to the profession from those of ethnic, minority and disadvantaged backgrounds requires much more work. However, this project demonstrates how through a simple grassroots project young people can start to gain an understanding of the built environment. In a few years will we think it was crazy that a small number of middle-class predominantly white men decided what World we should enjoy? Hopefully.

The Uses and Usefulness of Participation

Eleanor Downs, Bartlett School of Architecture, UCL, UK

This paper attempts to construct a new critical framework for understanding and engaging with participatory practice, drawing on a broad, interdisciplinary context. In the current context of public design, participatory practices are increasingly mandated by planning and therefore of public concern. This paper addresses this contemporary issue analysing the efficacy of the practice and proposing a means of evaluation. The research begins by covering the emergence of participatory practice in the UK over the last 50 years and the contemporary situation. This is followed by a review of critical theory from outside the field of architecture as a lack of critical discourse on the subject is found. The right to the city is posited as a new aim for socially engaged, participatory design practice, rather than participation being employed for its own sake. Taken from Henri Lefebvre, this phrase is shown to be of relevance in today's world contested

territory in the built environment. Further scholarship employed in widening the frame includes work from Markus Miessen, Claire Bishop, David Harvey and Doina Petrescu. A bigger picture is built up that brings into play ideas of pacification and appeasement, pseudo-participation and the aesthetics of participatory design. The conclusion of this study is a proposal for a new critical framework, to be used in the evaluation of participatory practice. An outline of the potential pitfalls is followed by a method for analysing the use of participation both before and after. This is proposed as a way of building understanding of participation, contributing to architectural discourse. In particular, I link the practice to wider issues of freedom, democracy and alternative visions for the future. In this way, designers are prompted to reconsider their acceptance of participatory design and their role in formulating successful future practice.



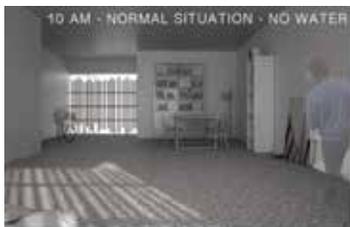
'Make This Place Yours', an invitation to participate in Hackney Wick
© Eleanor Downs

Sustainable Retrofit for Flooding Resilience

Jose Puchol-Salort, University of Westminster, UK

In recent years, the frequency and impact of flash floods in Mediterranean coastal towns has substantially increased and will continue to rise due to a combination of Climate Change and anthropogenic factors. In 2007, the Valencian town of El Verger in Spain was tragically affected by the Girona River floods, which in few hours severely damaged large portions of the urban tissue as well as destroyed entire buildings. However, despite the severe psychological, physical and economic loss that the population suffered, there are insufficient information and awareness on the risks of recurrence of this phenomenon and the threat that it represents for all the inhabitants in this urban area. But this is not an isolated case. Previous research studies based on this basin or similar ones have proposed to free the riverbed by demolishing buildings and creating more green areas. However, an architectural and environmental design approach to retrofit and

adapt the damaged housing in order to improve their resilience to extreme climatic events, has never been proposed. The aim of this research is to identify sustainable adaptation strategies for the design and construction of housing buildings affected by rapid floods. Two different case studies were taken into consideration as a basis for applicability of the retrofit strategies to all the existing buildings within the flood risk zone. The study demonstrated that a series of mitigative and adaptive strategies can be successfully applied not only to prevent water coming into the houses and increased permeability within and around the urban areas, but also to improve interior environmental conditions in order to maximise comfort and minimise heating and cooling energy demand. At the end, all these strategies will be extrapolated in order to explore similar cases and apply all the outcomes to similar river basins in the Valencian Community or abroad.



Flood resilience designs proposed for one of the case studies of this research, a terraced apartment building, with and without flash flood water.
© Pepe Puchol-Salort

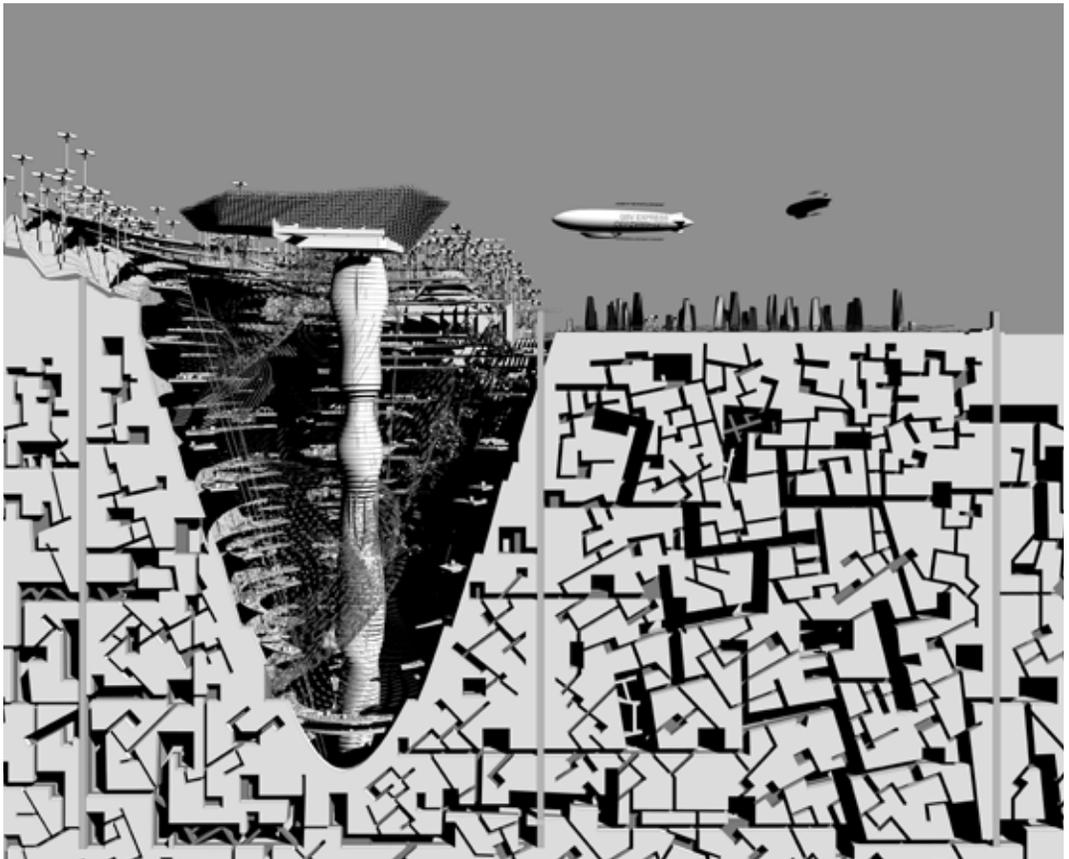
Chthonopolis

Nic Clear & Hyun Jun Park, University of Greenwich, UK

Chthonopolis is a speculative design project for a subterranean post-singularity city, located in the northern part of the Thames Estuary in the year 2163. The project attempts to imagine a utopian city based upon ludic principles. The Chthonopolis is built in an artificial crater 1km wide at the top and 1km deep, it is home to around three million people and created for the purpose of allowing access to a labyrinthine network of underground spaces that form a vast computational system. The Chthonopolis is a settlement predicated on the idea of using the city space as an augmented game space that is part of a mixed reality computational system where practising the space of the city and completing complex spatial problems feeds into an information network and allows the system to develop a variety of socially beneficial outcomes. The Chthonopolis project currently exists

in three forms: the principal output is a speculative architectural design proposal that currently includes drawings and a physical model and is being exhibited as part of the London Festival of Architecture.

The second part of the research takes the form of traditional architecture / science fiction scholarship, engaging with the relationship of architecture and science fiction particularly the utopian tradition. The final part of the research is a fictional text that helps embody the story within a traditional science-fiction narrative, a part of this text along with some of the drawings will be developed as part of another exhibition this Summer. Chthonopolis is an extension to an earlier speculative design research project, which was exhibited at Loncon 3, the 72nd World Science Fiction Convention in 2014 and was selected for the Royal Academy Summer Show in 2015.



Chthonopolis
Section -
sectional cut
showing interior
of central core and
detail of labyrinthine
© Nic Clear

The Social Clinic: Integrating Public Space with Infrastructure in the Informal Settlement of Petare, Caracas, Venezuela

Sabine DeShazo, Wentworth Institute of Technology, USA

People in the informal settlement of Petare Norte, Caracas, Venezuela have carved out lives and spaces for themselves and deserve the same basic rights and access to the same amenities as their counterparts in the neighboring formal city. In the process of designing a clinic, I came across key design methodologies and observations to aid designing in the informal settlement and key ideas to keep in mind in order to create community focused design that integrates public space into public infrastructure. The main problem in areas like this is access and careful design. Drag and drop interventions that do not take the complex social structure into account will

ultimately fail and not be welcomed by the people that it is trying to help. These areas have great need for medical care but it is not an accessible space due to the intense topography and lack of stable roadways and medical facilities are not spaces that deal well with the improvisational nature of building in informal settlements. Through careful and considered research, the clinics program was determined along with ways of representing the space in order to make the most functional space possible with public and social space integrated into the public infrastructure to create a cohesive community building that can provide healthcare to the city.



Section through the Social Clinic and Metrocable
© Sabine DeShazo



Hedracrete -
prefabricated,
concrete
polyhedral
structure
© Masoud
Akbarzadeh

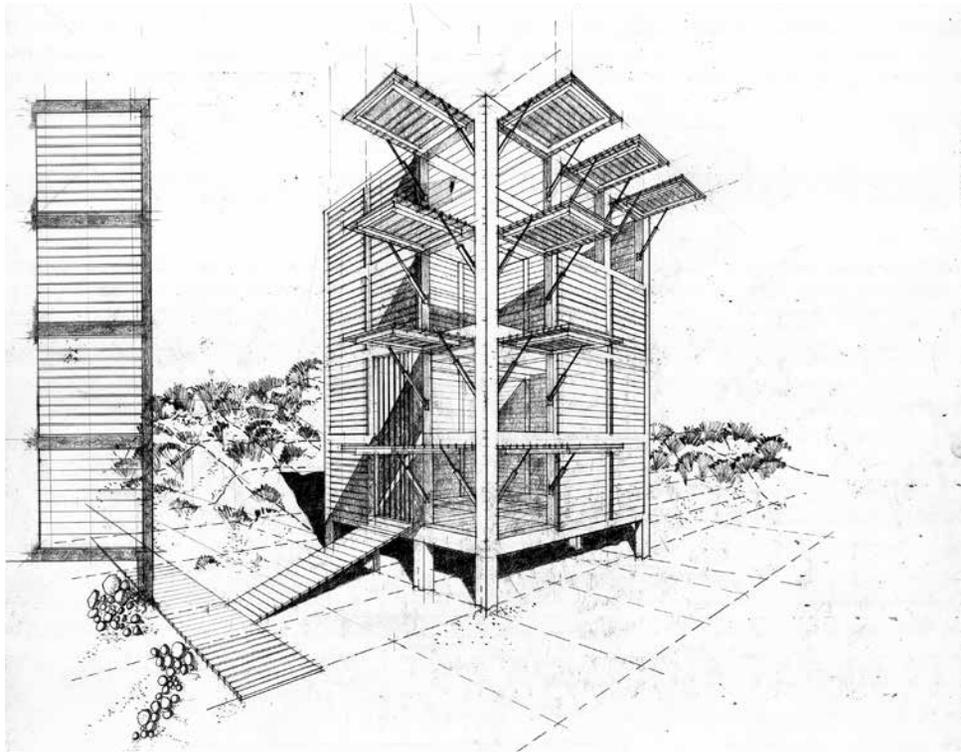
Design and Technical

Submissions were invited under either or both headings of Design and Technical. Research was to concern an investigation addressing the influence or impact of design, form and/or technology on the use, quality and/or performance of a space or building/s. Topics could be holistic or focus on a specific element, addressing, but not limited to:

- Materials, detailing and/or construction methods
- Design quality and/or project management
- Computational Design and BIM
- Spatial integration
- Sustainability, low carbon solutions and/or 'systems' performance

The Development of the Building Envelope Using Welsh-Grown Timber: A study Through Prototyping

Dr Steven Coombs, Welsh School of Architecture, Cardiff University, UK



Additive construction of Beach hut determined by 1200mm hardwood lengths and properties
 © Steven Coombs

This research explores the use of Welsh-grown timber in the building envelope, through the prototyping of a series of live design projects with a focus on species, technology and tectonic form. Projects are clustered under 4 headings identified as significant to the Welsh timber industry: hardwoods, engineered timber, timber board products and the complete timber envelope. The Welsh timber industry relies heavily on the importation of sawn wood, timber board products and innovative, engineered timber systems to meet an increasing demand to improve construction efficiency and environmental performance of the building envelope. Compared to Europe and regions such as the Vorarlberg, Austria, Wales is perceived as having an underdeveloped and underperforming timber construction industry with only 15% forest cover to supply a variety of timber sectors. This research analyses the properties of Welsh-grown soft and hardwoods, the technical and skill limitations and opportunities of the industry and highlights the impact of the use of timber on

the tectonic form of the building envelope. These evaluations inform the observations and reflections of 12 architectural prototype projects to demonstrate potential to exploit the Welsh-grown timber crop in the design and construction of the architectural building envelope. The research demonstrates that it is possible to use Welsh-grown timber for a variety of modular superstructure, cladding and external joinery systems. The findings identify limitations, such as a lack of research and development investment, from government and business, and a lack of knowledge and focused direction across the industry. However, the prototype projects show that the unique properties of timber, sustainably grown, managed and processed in Wales can be innovatively manufactured and assembled into prefabricated, components for the design and construction of the low-energy architectural building envelope. Furthermore, the properties, technology and skills available have informed an additive tectonic approach that is specific to Welsh-grown timber.



Emergency Talks: Designing for Team Communication in Hospital Emergency Departments

Lucio Naccarella, University of Melbourne, Australia

Associate Prof Bernice Redley, Deakin University Monash Health Partnership, Australia

Michaela Sheahan & Kieren Morgan, HASSELL, Australia



Citrix, Sydney, Australia
© Nicole England

The objective of this research was to identify spatial design factors that influence informal inter-professional team-based communication within hospital emergency departments (EDs). Effective team communication in EDs is critical for inter-professional collaborative care and prevention of serious errors due to miscommunication. Limited evidence exists about how informal communication in EDs is shaped by the physical workspace and how workplace design principles can improve the quality of ED team communication. Two health services with four hospital sites in Victoria, Australia participated. A multi-stage mixed methods approach used:

- 1) An anonymous online communication network survey (n=103) to collect data on patterns and locations of informal inter-professional team communication amongst ED staff;
- 2) Focus groups (n=37) and interviews (n=3) using photo elicitation to understand the perspectives of ED staff about how spatial design influences team

communication 30 validity testing of preliminary findings with executives at the participating sites

- 3) Validity testing of findings with managers and executives.

The data suggests that informal communication with peers and within discipline groups on non-specific areas of the ED were most common. Three key factors influence the extent to which ED workspaces are facilitating informal communication:

- 1) Staff perceptions of privacy;
- 2) Staff perceptions of safety, and
- 3) Staff perceptions of connectedness to ED activity.

Our research supports the proposition that ED physical environments influence informal team communication patterns. To facilitate effective team communication, ED workspace spatial designs need to provide visibility and connectedness; support and capture 'case talk'; enable privacy for 'comfort talk'; and optimise proximity without compromising safety.

Losing Myself: Spatial Perception and Architectural Design

Eimear Arthur & Niall McLaughlin, Niall McLaughlin Architects, UK
Yeoryia Manolopoulou, AY Architects

With 'Houses of Memory' – architectural mnemonics – the Ancient Romans recognised the link between an individual's spatial perception and their ability to organise and call upon memories, thoughts and experiences. For the architect, the nature of this relationship is of critical importance: if an ability to understand space can improve memory; how does impaired memory affect spatial cognition? Why, and how, are these connected; and how can architects better design spaces for people whose understanding of space is in decline? This research seeks to accumulate, interpret and disseminate information about the changes to spatial perception caused by dementia, and the implications for architectural design. A variety of written sources have been consulted, but the primary form of research has been a series of interviews with a variety of experts on the subject, particularly those who may not regularly engage in dialogue with architects – neuroscientists, psychologists, health

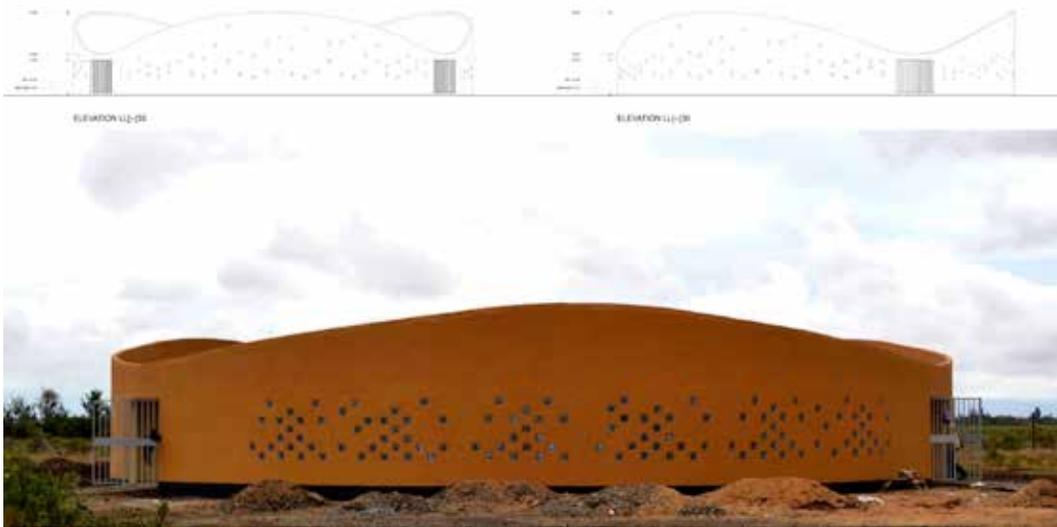
workers, philosophers, anthropologists, people with dementia and their families. To maximise the potential for engagement throughout at beyond the field of architecture, these conversations were recorded and uploaded to a website. The research finds a critical neurological link between memory and spatial perception, though many of the brain structures and functions behind this link are yet to be fully understood. There are lessons for architects in how we should conceptualise, design and represent space. Many of the foundational principles of good design generally – logical sequence of spaces, the provision of daylight, thorough consultation with the client – are critical to successful design for dementia. The findings highlight the importance of designing all public spaces with cognitive impairment in mind; the value of consultation and collaboration with disciplines outside of architecture; and the need to prioritise not just safety, but an engaged, enjoyable life for those in the latter stages of dementia.



Losing Myself
at La Biennale
Architettura 2016
© Nick Kane

ATOPIA Research: A Case Study of Contrarian Architectural Practices and Transformative Technological Approaches to Sustainability and Humanitarian Challenges in East Africa.

Dr Saul Golden, Ulster University, UK



Girls' rainwater harvesting dormitory at the Eto'o Academy and Endana Secondary School, Kenya; influencing gender equality with "the coolest building on campus."
© PITCHAfrica and ATOPIA Research

The philosopher Bourdieu defined agents' interest in what they do as a game wherein individuals learn to survive and operate within discipline-specific rules. He suggests agents can choose – with practical and political experience – whether to sustain their practice in support of or in opposition to their field's established norms. As part of wider research into critical practice and the changing architecture profession, this paper examines a contrarian and socially engaged approach to architecture espoused by US-UK architects Jane Harrison and David Turnbull through their not-for-profit organisation ATOPIA Research (AR). Having worked at heart of UK practice, Harrison and Turnbull set up AR in 2006 to focus on architectural and technological innovation in extreme and remote contexts. The paper focuses on the context, aspirations, and innovations in two AR projects for a school and residential sport complex in East Africa with important connections to, and lessons for, critical and innovative architectural practice worldwide. Through the lens of in-depth

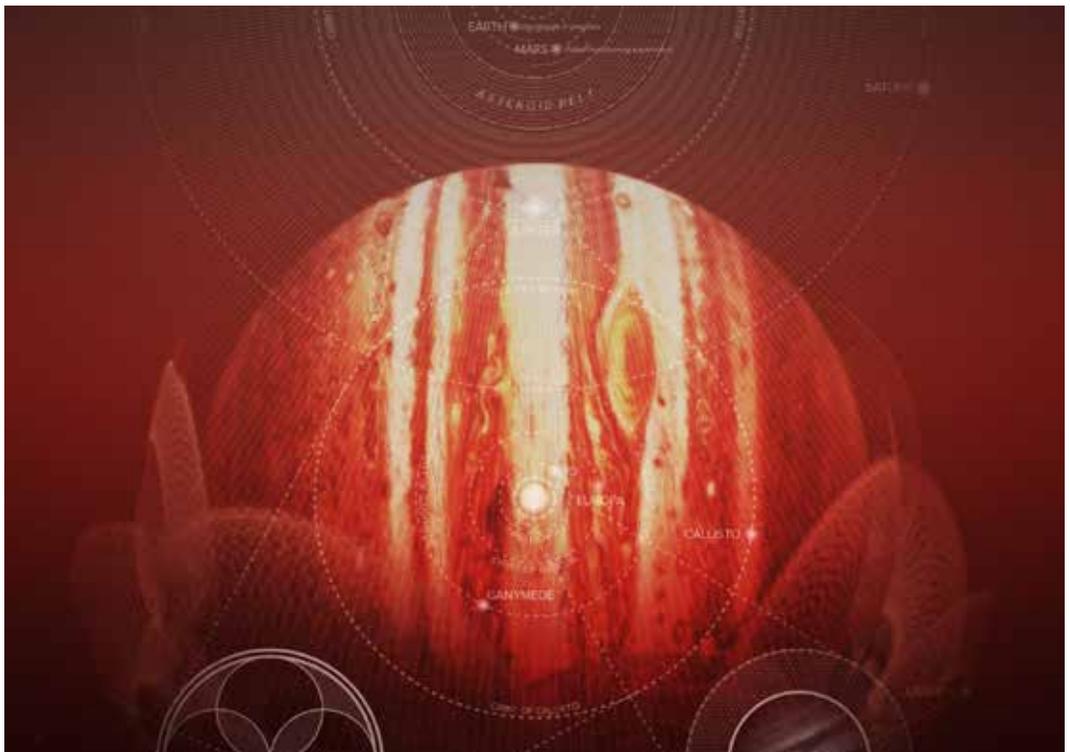
interviews with Harrison and Turnbull, along with primary and secondary data, the paper reveals new understandings for architects about three key themes: professional identity and personal responsibility, practice strategies and tactics, and motivations for critical versus more commercially driven practice. Harrison and Turnbull's professional trajectories, from high-profile and design-led offices to more experimental joint-working and teaching, belie what many consider architectural career norms. Through AR, they developed award-winning micro-practices and projects in Europe and Africa that the paper argues exemplify how creative spatial skills and technology can become transformative tools to affect social change and improve social interaction, as well as aspiring to high-quality building design and innovation. Their approach, illustrated through the project studies, also provides unique insights into driving professional and peer esteem toward achieving more critical project ambitions rather than form-driven measures of success in architecture.

The Human Spectrum: 'Other' Physiologies in a Posthuman Era

Alan J Pottinger, University of Greenwich, UK

While new and emerging 'NBIC' technologies (Nanotechnology, Biotechnology, Information Technology and Cognitive science) have been assessed for their likely impact on construction, and the potential development of new and speculative forms of architecture, the potential for these technologies to instigate the parallel development of 'future' humans – so-called 'posthumans' – is often overlooked. Any changes to human physical, cognitive and sensory capabilities have the potential to fundamentally change human ontology, while also impacting upon the way in which we design the built environment. Of the various forms of posthumanism – a collection of emerging philosophies that assess, among other things, the positive and negative impacts of human enhancement – the transhumanist model is notable, as it emphasises the use of technology to negate perceived defects and 'enhance' key aspects of the human condition, suggesting that humanity is in some way deficient or 'disabled', and needs to be 'cured'. The Human Spectrum critically evaluates

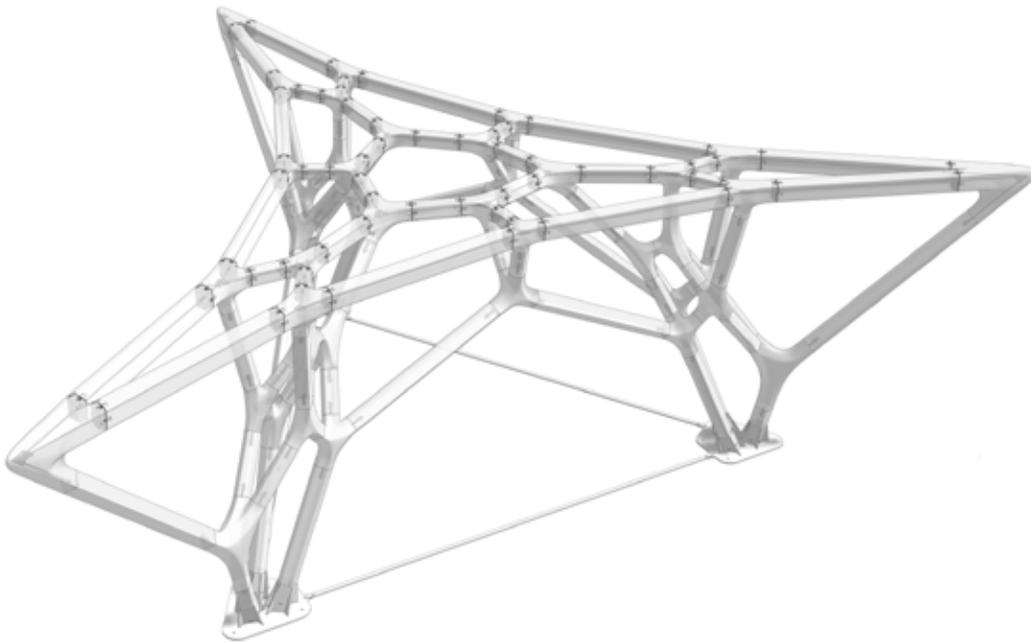
some of the main aims of transhumanism, and the representation of so-called 'enhanced humans'. It is presented in the form of a short science fiction story, and uses contemporary disability theory – most notably the social and medical models of disability – and descriptions of speculative 'posthuman' physiology to demonstrate that transhumanism is based upon a medical-model of disability that focuses solely on enhancing the body, thus overlooking the disabling influence of extrinsic factors, such as an inaccessible built environment. i.e. a social-model of disability. The project also demonstrates that disability is not exclusive to contemporary society, that the technological-posthuman condition will not necessarily be a better condition, and that 'compatible' posthuman physiologies are by no means guaranteed. Moreover, by demonstrating that a model of disability could persist into a supposedly technologically advanced and egalitarian 'posthuman-era', the narrative challenges contemporary attitudes towards disability and accessible-design.



Cover of 'The Human Spectrum: A Science Fiction Parable' © Alan J Pottinger

3D Graphic Statics Using Polyhedral Reciprocal Diagrams

Dr Masoud Akbarzadeh, University of Pennsylvania, USA



Axonometric view of the built structure using 3D graphic statics methods.
© Masoud Akbarzadeh

This research presents a novel method of structural design to find efficient structural forms in three dimensions using only geometric constructions instead of numerical or algebraic methods. This method is called 3D Graphical Statics using Polyhedral Reciprocal Diagrams and is based on a 150-year-old proposition by Rankine in *Philosophical Magazine*. It clarifies and develops the concept of 3D reciprocal diagrams originally proposed by Rankine, and uses this reciprocity as the basis to develop 3D graphic statics methods. This research provides methods to find global equilibrium for systems of forces in 3D and establishes step-by-step geometric procedures to

construct spatial funicular forms that are geometrically constrained to given boundary conditions and applied loads. Moreover, it describes the procedures to show the equilibrium of internal and external forces in the members of general polyhedral frames using force polyhedrons. Not only does this method make the structural form finding in 3D much more intuitive compared to other existing techniques, but it also opens a new horizon for designers to explore unconventional funicular structural forms in three dimensions. It, therefore, provides a new direction of research in the field of architectural technology, structural engineering, and digital fabrication.

The influence of architects on the operational performance of low energy buildings

Afroditi Konidari, Welsh School Of Architecture, Cardiff University, UK



The Hive,
Worcester Library
© Afroditi Konidari

This research investigated the role of the Architect in the operational performance of non-domestic buildings claiming to be low energy. The study used mixed research methods to understand and quantify the influence architects exercise on the operational performance of low energy buildings. The mixed research methods comprised literature based research and a comparative case study investigation of two well monitored buildings, one constructed before and one after energy efficiency became a focal point of building regulations and energy policy. The later building promoted its low energy design aspirations. The comparative case study investigation traced the energy flows in the selected case studies, examined the indoor environmental quality achieved and occupant-perceived satisfaction with the indoor environment. The study demonstrated the end use of energy in the selected case study buildings and quantified the influence of stakeholders on the

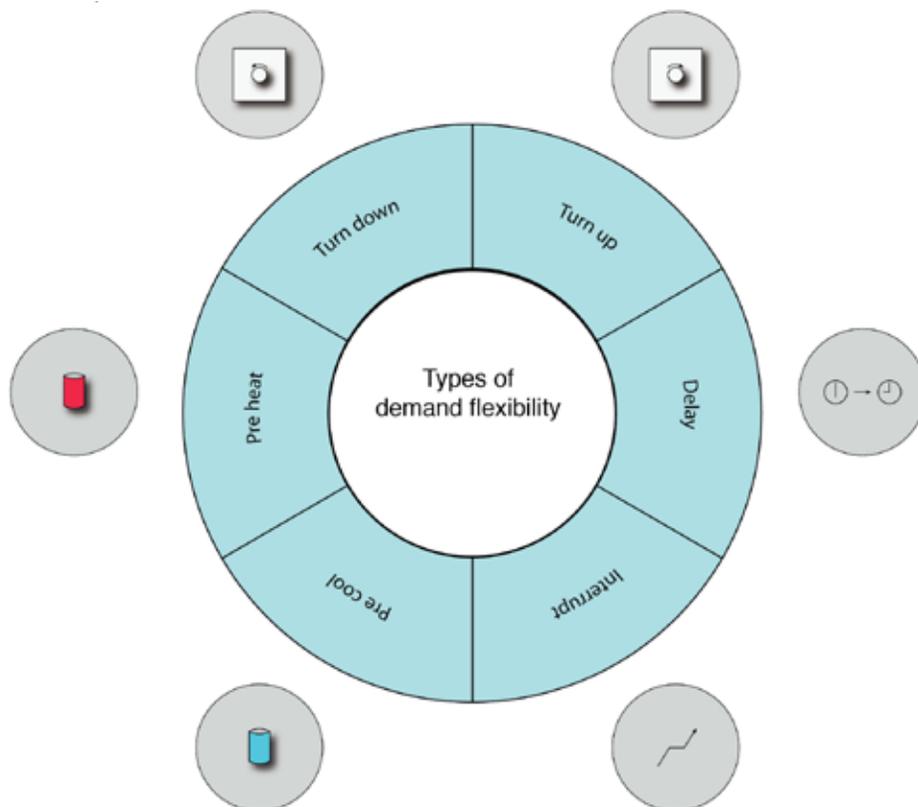
energy performance. This research concluded that the Architect is responsible for only a part of the operational performance of low energy buildings, as occupant behaviour and facility management influence a significant portion of the total energy consumption. The findings of this research suggested that the Architect could have influenced approximately between 23% and 28% of the total annual electricity use and nearly the total heat energy use in the recent low energy building studied. For the conventional existing building studied, these proportions became approximately 43% to 47% of the total annual electricity use and 94% to 97% of the annual heat energy use. The findings of this research provide a clear insight into which aspects of operational energy performance the discipline of architecture can influence in practice, and help the debate about how to achieve operationally low energy buildings fit for a low carbon future.

When a Building Consumes Electricity During the Day Matters More Than How Much it Consumes During the Year

John Kemp, John Kemp Associates Ltd, UK

As the transition to renewable based energy continues the mains grid starts to oscillate between periods of generating low-cost low-carbon electricity when it is sunny and windy and high-carbon and high-cost when it isn't. Storing as much as possible during the former periods and scaling back use during periods of the latter is critical to balancing generation supply with demand. In so doing consumers can play a critical role in ensuring electricity supply remains secure and that the lights stay on. Managing these increasing oscillations also has a significant bearing on minimising costs and CO₂ emissions. The House of Lords Select Committee on Economic Affairs has recently concluded: "We believe security of supply must be the predominant consideration in energy policy, as confirmed to us by the Secretary of State". In respect of electricity, security is about keeping the lights on

even when the generation mix includes intermittent renewables. It is the contention of this paper that the ability to go "off-grid" using demand flexibility (as distinct from on-site generation) for up to maybe four hours is, probably, already more valuable than pursuing energy efficiency. This paper proposes that the defining feature of a sustainable building should be how many hours it can go off-grid during periods of high-prices and/or high-carbon intensity whilst still meeting regulatory induced standards of comfort. It explores how a demand flexible design might differ from one focused on energy efficiency and decarbonisation. It illustrates the features of a demand flexible design and compares them with the types of energy solution used to meet the BREEAM sustainability code. It uses eight BREEAM buildings as a consolidated case study in comparing efficiency, decarbonisation and flexibility.



Types of demand flexibility, include anticipating, conserving and delaying electricity consumption
© John Kemp Associates Ltd.



Holloway
Prison, 1970.
Photographed by
John Donat
© RIBA
Collections

History and Theory

Submissions were invited from historians, theorists and practitioners whose work has relevance to the history and theory of the practice, culture and profession of architecture most broadly conceived.

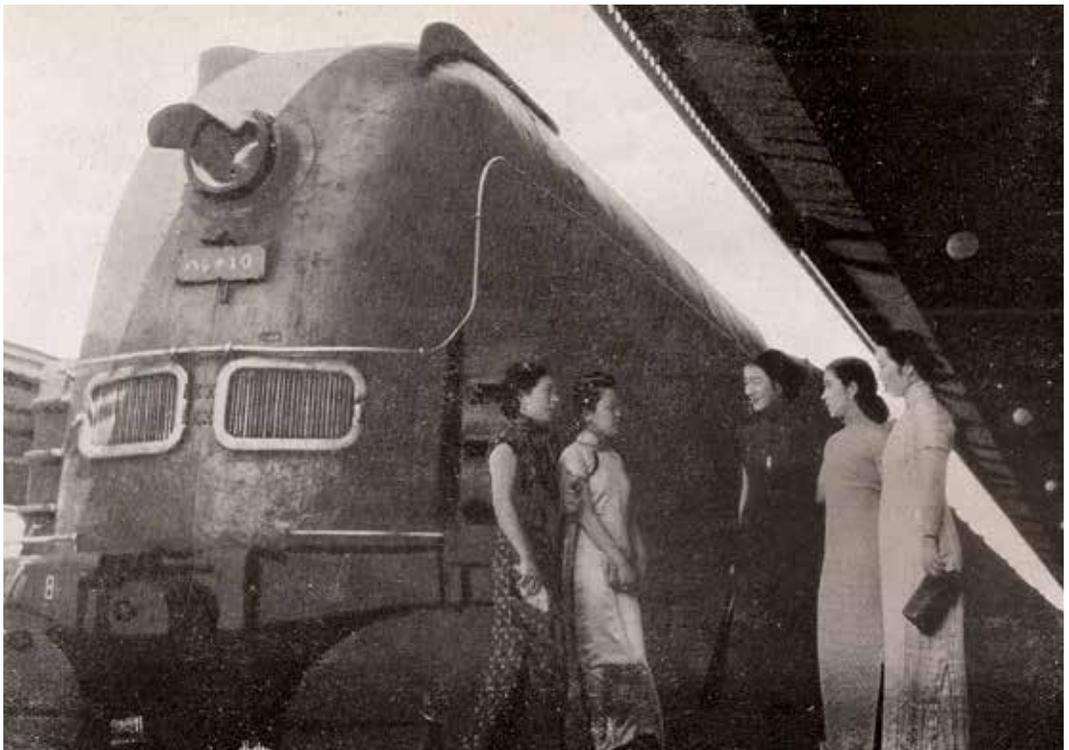
- Historical research of direct relevance to a project, e.g. conservation plans and reports
- Cultural studies relating to architecture, professionalism and the built environment
- Histories of construction, science and technology
- Historical and/or theoretical research on place, space and urban planning
- History and/or theory of practice and praxis, including professionalism, architectural education, procurement and non-design aspects of architectural practice

Ultra Modernism in Manchuria

Dr Edward Denison, Bartlett School of Architecture, UCL, UK
Guang Yu Ren, Independent Researcher, UK

History is a record of power. The twentieth century – modernism's century – was dominated by 'the west' and its 'official' history is a testament to this dominance of 'others'. Modernist history is a canon constructed by, for and of the west, with major consequences for architectural encounters with modernity outside the west, which are routinely overlooked or possess an assumed inferiority; a postulation asserted through inauthenticity, belatedness, diluteness and remoteness, geographically, intellectually, and even racially. Few sites demonstrate this historical and intellectual impartiality more explicitly than the north-eastern region of China formerly known as Manchuria before the Second World War, when Japan's attempts to build an empire throughout the 1930s prompted the construction of over one hundred towns and cities in a new state they named Manchukuo. Such was the speed and intensity of Manchukuo's encounter with modernity and its distinction from western precedents, the Japanese branded it ultra-modernism.

Ultra-Modernism in Manchukuo was ideologically ubiquitous and became manifest in urban planning, architecture, transportation, photography and film – all essential facets of modern metropolitan life in Manchukuo. Among the many new cities developed by the Japanese, the jewel in their imperial crown was the vast new capital of Hsinking ('New Capital'), the city's nomenclature echoing the ultra-modernity on which empire was built. Despite the scale, scope and consequences of Manchukuo's encounter with modernity, its experiences have yet to make a significant contribution to architectural knowledge globally. After more than a decade of research culminating in the recent publication of the first book to focus exclusively on architecture and modernity in Manchuria, this work not only fills a conspicuous gap in existing architectural knowledge and challenges the modernist canon, but also provides important context to the rising tensions in the region, the seeds of which were sown in Manchuria.



The Asia Express, the South Manchuria Railway's 'ultra-modern' high-speed train at Dalian's 'ultra-modern' railway station with 'ultra-modern Manchurian girls'. Source: Ultra-Modernism – Architecture and Modernity in Manchuria, Denison & Ren.



Architectural Models and the Professional Practice of the Architect, 1834–1916

Matthew Wells, Victoria & Albert Museum / Royal College of Art, UK



Façade of the
British Museum
Source: The
Builder (16
December 1843)
542

This research project has explored how architects thought about, made, commissioned, and used models during the nineteenth century. The attitude of architects towards models in the nineteenth century has been neglected in the study of architectural and building history. Instead historians have focused on other forms of architectural production including drawing, writing (lectures, treatises, histories, specifications), and building. Any analysis as there has been of model collections has concentrated on the history of acquisitions and the individuals involved. The circumstances of model production and the use of models by architects in education, design, and construction have been ignored. The methodological approach to the research combines object-based study with investigation of archival material held at the Victoria & Albert Museum, Royal Institute of

British Architects, National Archives, National Trust, and many local history centres. Other collections of primary material have been examined in order to broaden the number and types of model under examination. A wide variety of material from key public and private collections – combined with evidence from print culture within and without historic architectural communities – were studied in order to help develop a nuanced understanding of the role and use of the model in nineteenth-century society and its relationship to architectural culture. The research revises the assumptions, judgements, and attitudes of a previous generation of scholars to the use of models by architects in the nineteenth century. Similarly the project has revealed the previously unknown role played by architectural models in the design and construction of many significant buildings.

Reinventing the Prison: the Redevelopment of HMP Holloway, 1968-1978

Miranda Critchley, Bartlett School of Architecture, UCL, UK



Holloway
Prison, 1970.
Photographed by
John Donat
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Collections

This research aims to contextualise the redevelopment of Holloway Prison (1968 - 78). The intention is not to determine if or why the redevelopment failed: instead, it is to understand the ideas that were influential in the project and place them in relation to earlier and later thinking about prison architecture. Did the redevelopment of Holloway mark a fundamentally new turn in prison design? Was it an early enactment of later, radical ideas about prison policy? Or did it simply re-clothe ideas from the nineteenth century? The main method used was archival research. I compared archival sources with published accounts of the redevelopment to determine the extent to which the rhetoric surrounding the new institution's innovative philosophy was grounded in reality, and I traced the history of approaches to women's

imprisonment in the first half of the 20th century. In addition, I uncovered opposition to and criticism of the plans for the redevelopment, which suggested that its connection to radical politics was tenuous. This research finds that the Holloway Redevelopment was not a progressive, innovative step in prison design. Instead, it sought to retain many of the key elements of older prisons but to present them in a visually different way. The frontage was intended to be 'unobtrusive' and to 'give signs of normal life'; the aim was that the institution would not look like a prison. This mobilisation of a 'normal' aesthetic had a political impact: at a time when the wisdom of imprisoning women was being questioned, it helped to reassert the legitimacy of the principle of incarceration.

Writing Alexandra Palace: Plurivocity as a Method of Cultural Recovery of Buildings

Dr Rosa Ainley, Royal College of Art, UK

This research examines how writing can be used to retrieve what a building has lost, the layers of its cultural significance, through creative and critical consideration of past uses and current possibilities, to aid in its cultural recovery and contribute to future uses. It posits a new means of recovery through 'writing the building', and develops this method of architecture-writing for use in practice, education and research, and as a tool in regeneration processes. Alexandra Palace is the case study (1873; rebuilt 1875, 1988; redevelopment by FCB Studios 2014-8). Can a building exist and have its life extended in words through recapturing what it has lost? How can language articulate immaterial traces of uses, users and their memories to reinvigorate a building or redirect redevelopment? Plurivocity, an experimental approach to writing-as-methodology, developed as a means of responding to these questions and to the building's unique significance. The building is alive with voices; the polyvocal form mirrors this, capturing and

representing different opinions and experiences, in order to revitalise it. Historiographical writing generated by the architecture in turn inspires critical, thematic and character-led writing. Using material from archives, interviews and chance conversations, the writing strands respond to the building's various iterations. Interviewees include those involved professionally in the current redevelopment, along with volunteers and visitors, who are embedded into the category of the building's makers. Enabling users' experience to be documented helps to identify a building's unanticipated values, bringing greater understanding about the significance that particular communities claim for public spaces. This research and its outcome establish another strand of architecture-writing, its temporal index extended to include the future. It suggests and emulates the building's multiple and particular layers, creating and occupying a new cultural and historical space.



Great Hall,
Alexandra Palace
© Rosa Ainley

Approaches to Learning in Architectural Design - A Classification

Ashok Iyer, Welsh School of Architecture, Cardiff University, UK



Typical architectural design studio work environment, School - United States of America
© Ashok Iyer

Students' approaches to learning have been classified through their experiences in the design coursework within the larger context of architectural education. What are the learning approaches being adopted by students in architectural design and how design-theory introduced in first year design coursework has an impact on their approaches to learning in the subsequent years are key to this classification. This research reflects on why learning approaches evolve from the first to the final year of the architecture program. Approaches to learning have been well-understood in other disciplines including engineering, information technology, mathematics and sciences to name a few, but less-researched in architectural education. The current research endeavours to fill this gap. The students are introduced to various theoretical constructs as a part of their design coursework in the architecture curriculum. This research vehicle of the design theory-based model has been identified as a more appropriate way of classifying learning approaches instead of history, critical theory and

technology as architectural design coursework has played a central role in the studio-based program. The academic context has been reviewed through existing literature with a focus on learning approaches in architectural education, the design studio and the prevailing schools of thought with reference to the undergraduate curriculum. In addition, the research has focused on the identified learning approaches within other disciplines through the qualitative research methodology of phenomenography. This classification is a consolidation of the pilot study on students' learning comparing the first and fourth year of the architecture program that has derived six categories of learning approaches through phenomenography, representing a broader spectrum with reference to the recognized 'deep,' 'surface' and 'strategic' approaches to learning. The physical domain for this classification includes undergraduate architecture programs offered at four schools from an international perspective including the United States of America, United Kingdom and India.

Essential Characteristics of Paulista Brutalism

Raphael Selby, Newcastle University, UK



Façade of the Faculty of Architecture & Urbanism at the University of Sao Paulo (FAU-USP)
© Raphael Selby

The research work aims to discover the essence of Brazilian Brutalism through an analysis of essential characteristics of the buildings researched. The term Brutalism has been used to refer to a widespread selection of modern architecture from the 1950s to the 1980s. The study argues that Brutalism in Brazil, although similar in aesthetic to other Brutalisms around the world, is native to the country. A recent 'aestheticisation' of Brutalism has seen the popularity of these buildings grow on social media. However, there is little knowledge outside Brazil regarding the context of these buildings, their purpose in the urban fabric and how they are inhabited and experienced. The understanding of ethic as 'essence' - derived from the

word "ethos" - rather than implying a notion of morality, is concerned with the intrinsic nature and essential quality of a material or space. It is such meaning that determines the character of the building, resulting in more than just an aesthetic experience. Field work in Brazil, which included visiting the buildings and interviewing key academics and architects, was crucial in providing the data required for the analysis of the buildings and their architectural qualities. By observing, documenting, photographing and drawing the buildings first-hand an analysis of three 'essential characteristics' - ground plane, monumentality, and the relationship between light and material - argues for the essence of Brazilian Brutalism.

Wilton's Music Hall

Fiona Raley, University of York, UK

The focus of the study is Wilton's Music Hall in Tower Hamlets, London; listed Grade II*. It is considered to be the oldest surviving grand Victorian music hall in the world and (until recently) was last used for its original purpose in 1880. Subsequent uses followed and dereliction led to the threat of demolition in the 1960's as part of the slum clearances in the area. A public inquiry in 1964 resulted in the compulsory acquisition by the Greater London Council (GLC) in 1966. The campaign to save the building, led by John Betjeman, successfully prevented its demolition by intervening at the Public Inquiry. However, the fate of the building was not secure for another forty years, when successful funding was achieved, for its repair and refurbishment. It finally re-opened as a performance venue in

2015 following a renovation project by Tim Ronalds Architects. The reinstatement of the building to a long term viable use, has been undertaken with a pragmatic imperative; to repair and retain the palimpsest the building represents and to provide new interventions for a viable 21st century use, where, superficially, little appears to have changed. The philosophical approach and methodology for the conservation, referred to as 'arrested decay' to retain an 'as found' state, has been undertaken together with minimal contemporary interventions. The main aim of the dissertation was to research and analyse the key concepts, seek to establish what influenced the approach and whether this case study is a paradigm for conservation philosophy.



Auditorium from
back of balcony
2003
© Wilton's Music
Hall

PRACTICEOPOLIS: Journeys in the Architectural Profession

Yasser Megahed, Newcastle University, UK

The contemporary architectural profession displays an on-going struggle for economic and cultural capital between heterogeneous cultures of practice, which together comprise what can be described as a state of dynamic equilibrium. The contemporary profession is dominated by a technical-rational culture of practice. The term refers to commercially-driven practices that are often associated with the production of buildings by or for multinational corporations and tend to echo their values. This research interrogates the imperatives of this domination on the values of the architectural profession. It builds upon two strategies: firstly, mapping the alternative cultures of the present architectural profession; and secondly, identifying the dangers of the increasing closeness in values between the profession and other actors in the building industry. The research argues that these increasingly shared values threaten the unique worth of the architectural profession and the dynamic equilibrium which characterises it. By inventing Practiceopolis: an imaginary city of

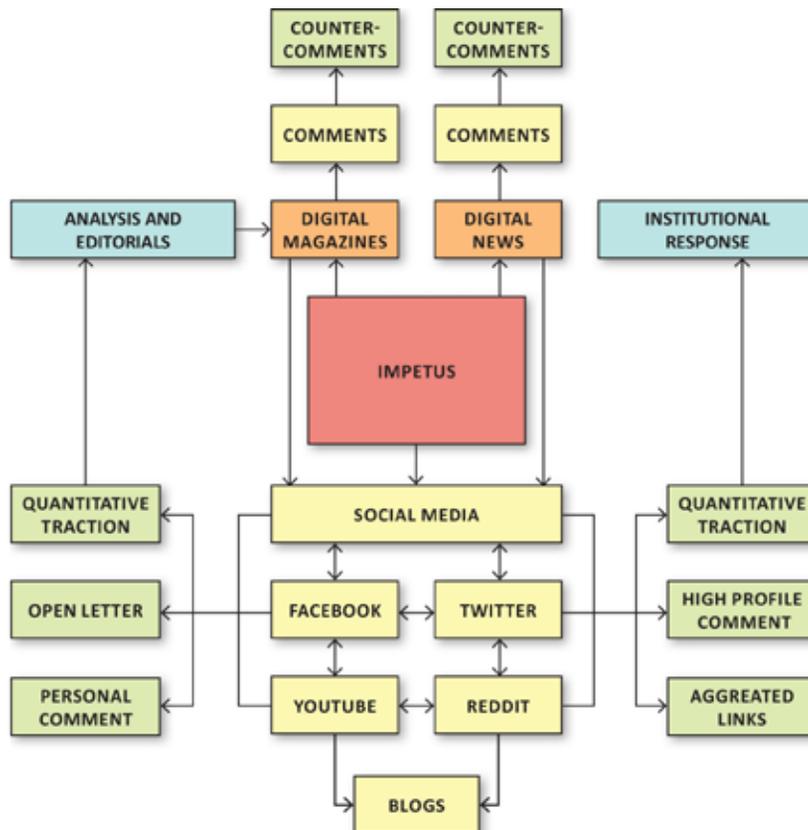
architectural practice, the research aims to investigate the nature of the profession and the particular values it contributes to the built environment. Practiceopolis is a city built on diagrammatic relations between different cultures of practice covering a wide spectrum of the contemporary profession. The city became envisaged through a sequence of five iterative narratives whose specific narrations set the foundation for the next. An initial diagram becomes a map, which becomes the plan for a speculative city. These narratives are accountable for mapping the contemporary profession by building the complex metaphor of Practiceopolis. They explore the inhabitation of Practiceopolis by narrating stories about the competition between prominent cultures of practice in the city's imaginary political scene represented through a graphic novel. The research ends with propositions regarding the particular values of the architectural profession, and highlights the necessity to explore how these values could be defined, communicated, and marketed.



A journey through
the Map Library
building
© Yasser
Megahed

Heil Pritzker: The Digital Aftermath of Albert Speer's Hypothetical Pritzker Prize

Peter Edwards, University of Queensland, Australia



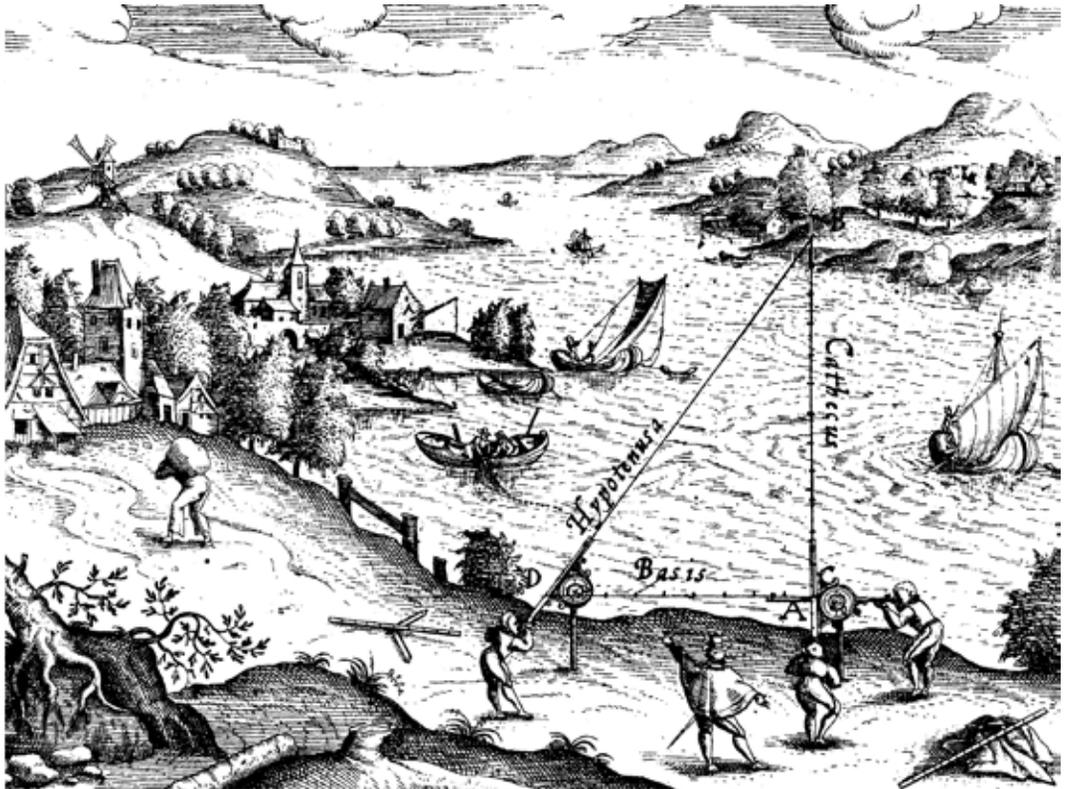
The pattern of distribution and amplification of controversy through online mediums.
© Peter Edwards

This research asks how controversy in the architectural community is disseminated and amplified in the digital age. The disruptive influence of digital mediums of the 21st Century has caused a widely-discussed shift in the agenda and pace of the traditional news cycle. Meanwhile, the rise of social media platforms has fundamentally altered news consumption methods and the relationship of opinion with journalism. The interplay of these realities with the architectural communities is explored through a simulation, best described as a sequence of websites mapping the life cycle of a fictional controversy. Written in 2016 and set in 2017, the research uses a farcical premise whereby Albert Speer wins the Pritzker Prize as an invented scandal on which to base a series of reports, comments and responses attributed to real people and publications, to demonstrate how the nature of controversy in

digital media could intersect with architectural discourse. The use of creative writing and fiction as a research methodology is a deliberate strategy to explore the fast-developing cultural sphere of online interconnectivity from a forward-facing position, rather than in retrospect. The simulation projects a set of assertions regarding the evolution of news controversies and proceeds to test them through imitation, implementing literary elements of satire, creative nonfiction and thought experiment. By adopting an immersive format, subtleties of online behaviours and the social effects of virtual connectivity can be considered from a different vantage to conventional studies. In this research, questions regarding the state of the Pritzker prize and the controversy surrounding Albert Speer are explored in service to an overarching demonstration of the digital news cycle.

The Chorography of the Modern City

Dr Gabriela Garcia de Cortazar Galleguillos, Architectural Association, UK



Measuring the width of a river by triangulation, Hulsius, 16th century

Until the nineteenth century, space was represented and produced through mathematically constructed drawings: plans and sections captured buildings and the scientific map recorded the territory. The development of technologies of transport brought crisis into this static and balanced world, as speed and displacement radically reconfigured the subject's orientation.

This research examines the maps, plans, guides and signs produced in Britain in the nineteenth and

twentieth century to accompany railway travelling, motoring, underground commuting and walking in the city, arguing that they indeed became chorographies of the modern metropolis. These modern chorographies not only exploited the possibilities of the graphic in order to deal with the complexities of space, time and movement, but they also prescribed a very specific knowledge, one that dictated a new way of being in space. In fact, they created a new set of spaces altogether.

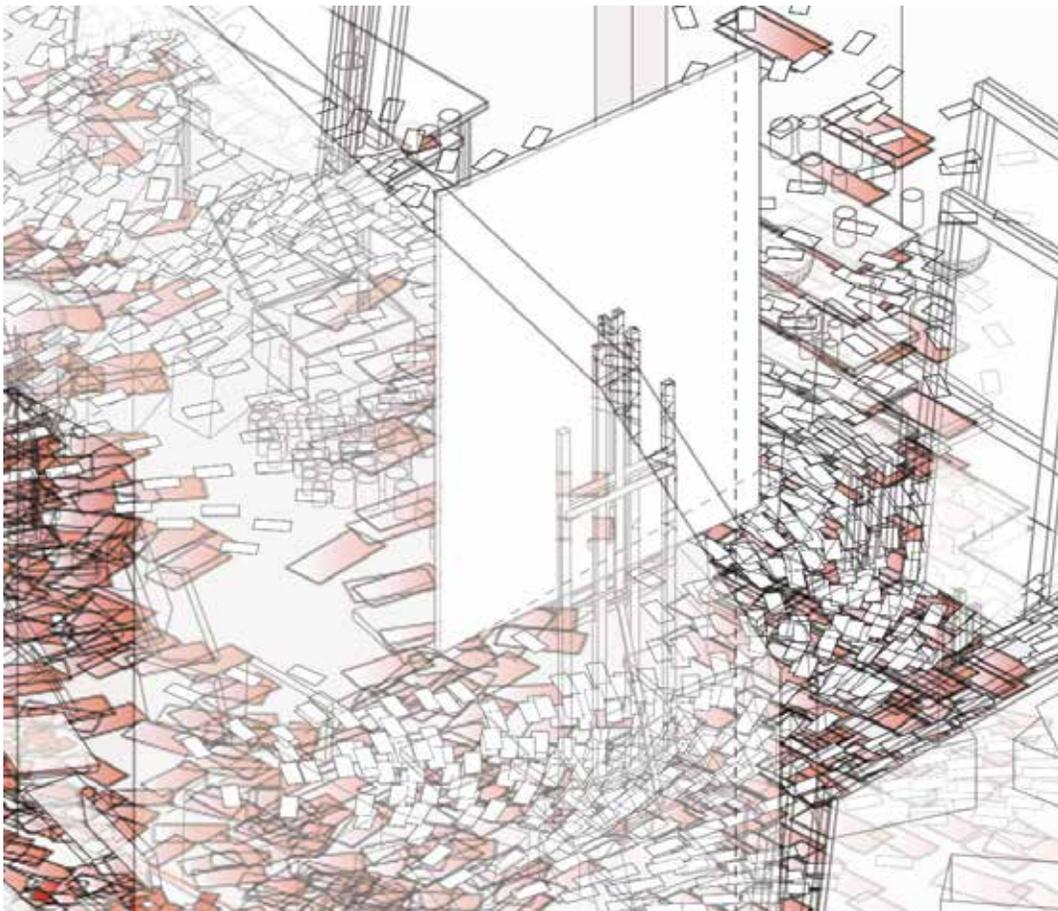
In a Room with Francis Bacon: the Painter, his Studio, and the Photograph

Arielle Marshall, University of Sydney, Australia

"I feel at home here in this chaos, because chaos suggests images to me." (Francis Bacon)

This article converges on a single room: Francis Bacon's studio at 7 Reece Mews, South Kensington. It fixates on the room that served as the British artist's primary workspace between 1961 and 1992. Reece Mews was a space like no other. It was utterly chaotic – and, utterly, abundant in photographs. Photography played a crucial though contested role in Bacon's studio practice. This article will investigate the tensions between the artist and his tools and trace the passages between photographs and painted portraits; within the room that Bacon realised these works. The studio itself will guide this investigation.

Encounters with photography will be generated via the room and its archived contents. Our enquiry draws upon the 1500 photographic documents recovered in the Reece Mews studio, now transplanted to the Hugh Lane Gallery in Dublin. It looks at a number of works painted from the 1960s – particularly of George Dyer and Henrietta Moraes. It turns to photographs of the models taken by John Deakin in preparation for these portraits. It considers the links between photographs and painting, in relation to the room they were realised. Encounters with David Sylvester, which took place in this room, provide key insight on Bacon's practice: Interviews with Francis Bacon (1975). Gilles Deleuze's reading of Bacon as per *The Logic of Sensation* (1981) is also considered in depth.



"Francis Bacon
Studio: Chaos"
© Arielle Marshall

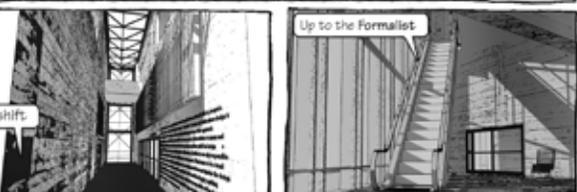
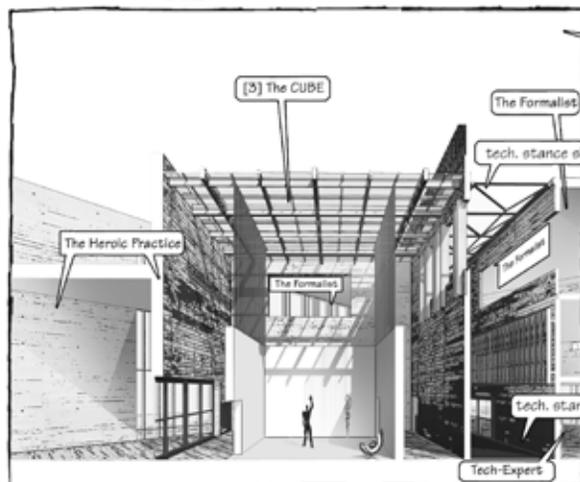
MAP LIBRARY JOURNEY



[1] Entrance: there are two entrances to the building; first the official entrance; a direct to the map of practice as the main event of the building; the informal entrance is the side entrance as the start point of the journey; the journey starts from the determinist stance of technology due to historical precedence and intellectual impact on all the other practices positively or negatively.



[2] The Heroic Practice: the journey starts with the Heroic practice leading to the Cube where canonical Buildings of the period are exhibited



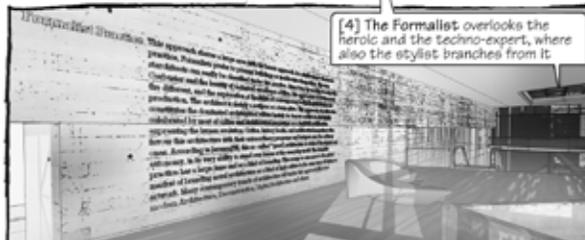
Up to the Formalist



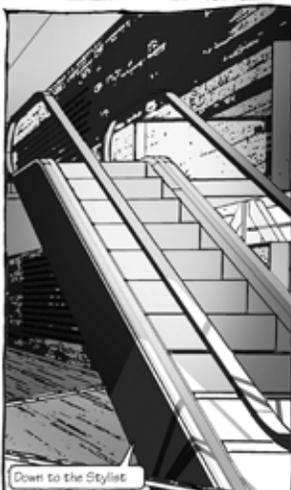
the next step after the heroic practice is to go up to the formalist. the formalist crosses the intersection between the determinist and instrumental stances of technology



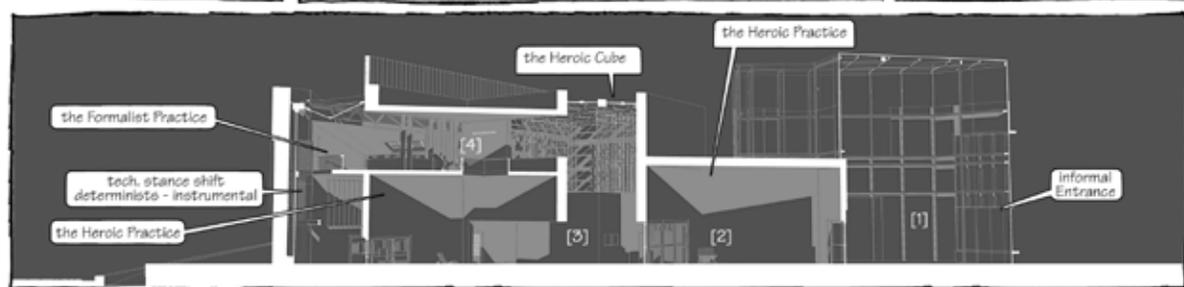
Tech. Stances; the changing points between stances is clearly expressed by change in shadow, light, tectonics and materials

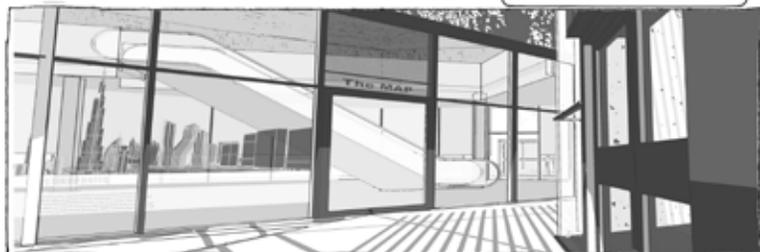
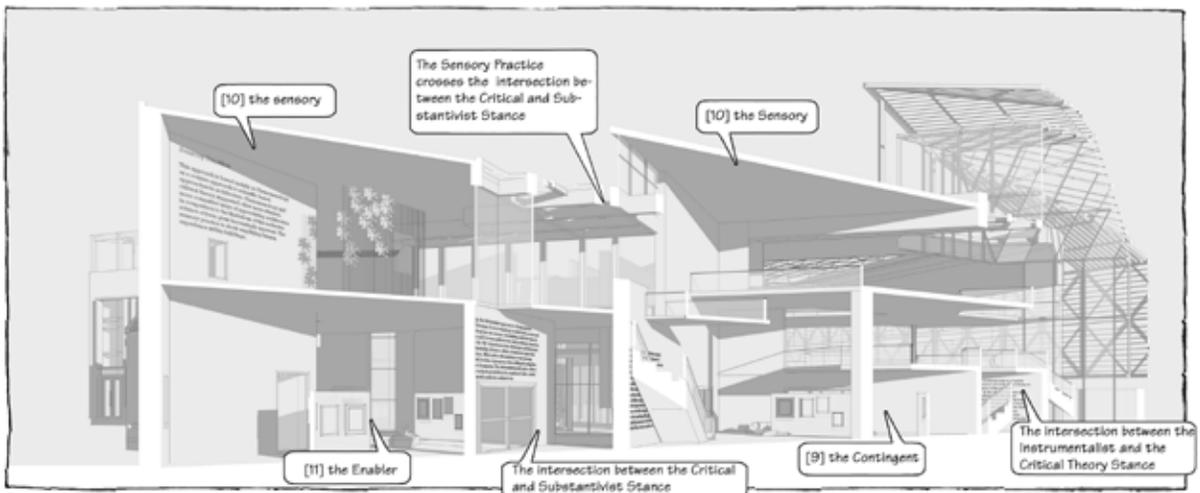
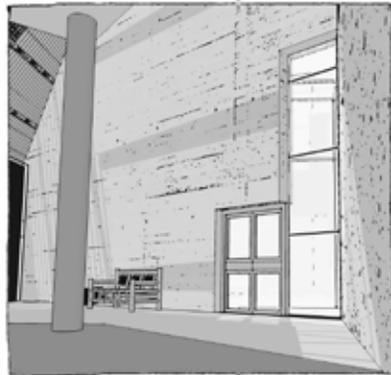
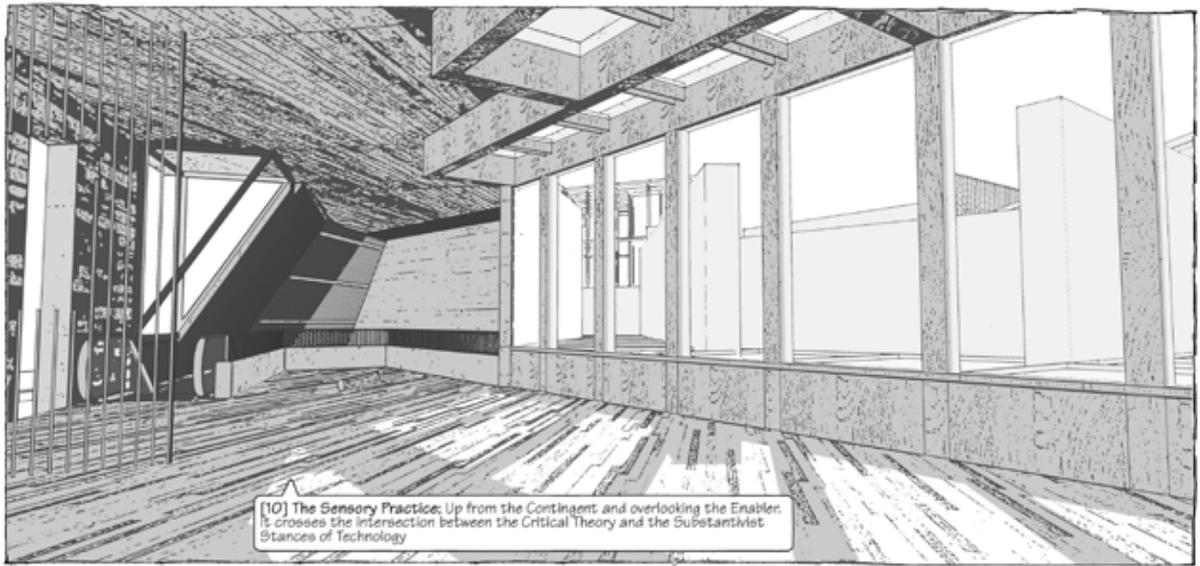


[4] The Formalist overlooks the heroic and the techno-expert, where also the stylist branches from it



Down to the Stylist





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