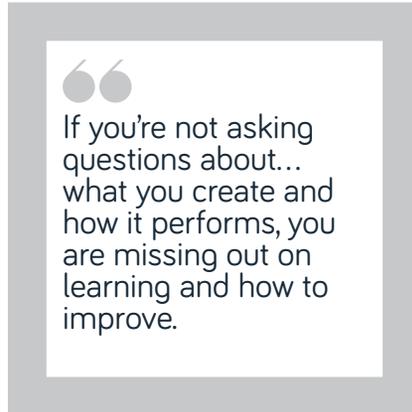


PRESIDENT'S AWARDS FOR RESEARCH 2019



Book of Abstracts

RIBA 
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Foreword

Researching and creating research-based knowledge requires us to be enquiring, methodical, systematic, rigorous and creative, all essential aspects of being effective and efficient, seeking out responsible innovation and managing risk.

The Book of Abstracts provides a unique opportunity to share a snap-shot of some of the questions being asked and the knowledge being created within our discipline. While the scope of entries is broad, it is reassuring to see that this year they continue to focus on issues that are highly pertinent to our profession today.

Such breadth makes for a daunting task for our judging panel and I would like to offer them my gratitude, firstly for their generosity in committing to this demanding task and secondly for their dedication in seeing it through to the end; without such generosity toward the betterment of architecture these awards would not be possible.

This year's annual theme was 'Building in Quality', chosen to support the work of the RIBA's collaborative 'Quality Tracker' project. Across the entry categories it is possible to read about the history of building regulation, their development towards energy efficiency and BIM, how project tools might adapt to changing pressures, improving construction quality and the implications of a failed building control system.

Alan Jones,
RIBA President 2019-21

Climate change and sustainability are regular features in the awards for research and offer equally broad reading from building with cork, housing in Lagos and community engagement in Bangladesh to our moral responsibility for the environmental and social impact of the buildings we design.

When looking at historical research, our reading of it can help inform our understanding of where we are today and what the future might hold. Reading about past Empire and architecture, I wonder, should we not be questioning the open and hidden systems of power and influence that drive society today and what are the consequences if we continue with the status-quo? Our profession is in a state of flux and the need for change has perhaps never been greater and the RIBA is committed to facilitating that change. The new Plan of Work will provide a greater focus on sustainable development across the stages and the recent launch of the RIBA's 2030 Challenge encourages practices to incorporate sustainable design across their work.

If you are not asking questions about how you identify and solve problems, what you create and how it performs, you are missing out on learning and how to improve. This is possibly the best argument for adopting building performance management and post-occupancy evaluation. It is the logic for why forward-thinking practices already have; they are learning from their practice to improve their future activities and it is helping them win new business

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Chair's Observations

Research outputs submitted for the RIBA President's Awards for Research in 2019 demonstrate the wide scope of architectural research, nationally and internationally – from the overarching themes of sustainable development supported by the built environment which is planned, designed, built and used with a full awareness of the limits to the planet's resources, its fragile biodiversity and rising levels of greenhouse gases, to themes concerned with creating places and spaces that are responsive to the needs of vulnerable people (due to ageing, poor health or poverty) and the socio-political, economic or environmental disruptions which affect whole communities in cities and rural areas. Those research themes elucidated the context in which the professional responsibility of architects and urban planners is highlighted and exposed to public scrutiny in a similar way that corporate responsibility is sought in relation to the environmental and socio-economic impacts of business activities.

The pathways for understanding that context have led to research engagement with occupants of buildings, users of public spaces, providers of services, and communities, or to in-depth investigations of the socio-political and historical background of global investment

practices and obscure local decision-making, which have had negative impacts and still threaten the quality of life of the wider population, as well as that of the built and natural environment in some places. The findings of research in building materials and technologies provide insights which will inform new building designs, while socio-political and historical research draws attention to the anomalies in urban policies or their application, which have to be rectified to enable transparent and responsible approaches to and decision-making for the development of sustainable built environments. To understand the present context or to challenge the adopted theories of architecture and perceptions of architectural practices, some researchers looked back to the past to discover how governance practices influenced building design or to find new evidence of architects' practices.

The above reflections on the research outputs show that the judging panel had a rewarding task. It would not have been possible without the research accomplishments of the academics and practitioners from across the world who submitted their research to the RIBA President's Awards for Research in 2019. Their research endeavours are an inspiration for researchers who submit their research outputs in 2020.

Prof Branka Dimitrijević,

Professor of Architecture, University of Strathclyde
Chair of the President's Awards for Research 2019 Judging Panel

2019 Judges



Chair: **Prof Branka Dimitrijevic**
Professor of Architecture, Dept of Architecture, University of Strathclyde

Branka is Professor of Architecture & Director of Research & Knowledge Exchange at the University of Strathclyde. She has taught & published research on history of architecture, evaluation & reuse of architectural & urban heritage, & sustainable design & urban planning. Branka is a member of the Editorial Board on the Journal of Cultural Heritage Management & Sustainable Development, Intl. Journal of Architectural Research, Sustainability of Culture & Heritage, Urban & Regional Planning, & Arhitektura i Urbanizam, & a referee for 17 other international journals. She has assessed research applications submitted to EUREKA: Eurostars; Danish Agency for Science, Technology & Innovation; Cyprus Research Promotion Foundation; Ministry of Sciences, Serbia; Small Business Research Initiative (SBRI), Cardiff City Council, & Innovate UK, & research outputs submitted to the Italian Evaluation of Research Quality Exercise. Branka was a member of Scottish Construction Forum (2009-12), the Boards of Scottish Sustainable Development Forum (2010-13) & Architecture+Design Scotland (2010-14) & the 2020 Climate Group Scotland (2012-14).



Dr Edward Denison
Associate Professor of Architectural History, Bartlett School of Architecture, UCL

Edward is Associate Professor of Architectural History and Director of the MA Architecture and Historic Urban Environments at the Bartlett. His research challenges the western-centricity of architectural historiography and modernism. He has worked on a variety of research and heritage projects in different global contexts, including Asia, Africa and Europe. In 2016 and 2017, he won the RIBA President's Medal for Research for his work on the UNESCO World Heritage Nomination of Asmara, the modernist capital of Eritrea, and for his work on Ultra-Modernism in Manchuria respectively. Publications include Architecture and the Landscape of Modernity in China before 1949 (Routledge, 2017); Ultra-Modernism – Architecture and Modernity in Manchuria (HKUP, 2017); Luke Him Sau, Architect: China's Missing Modern (Wiley, 2014); The Life of the British Home (Wiley, 2012); McMorran & Whitby (RIBA, 2009); Modernism in China (Wiley, 2008); Building Shanghai (Wiley, 2006); and Asmara – Africa's Secret Modernist City (Merrell, 2003).



Dr Marylis Ramos
Director, PRP, London

Marylis is a Director with PRP's Development Consultancy, leading the Energy and Environmental team. She has been actively involved in a number of high-profile projects, including technical and leadership roles on Chobham Manor in Queen Elizabeth Olympic Park, the High Path Regeneration Masterplan in Merton, and most recently, the Clapham Park Masterplan. Her research projects include the Zero Carbon Compendium for the Zero Carbon Hub, The Business Case for Green Buildings for the World Green Building Council, the Optimising Thermal Efficiency in Existing Housing research project for the Energy Technologies Institute, the Red Lodge Climate Change Adaptation Study for JRF, and investigating integrated city design as part of the Innovate UK-funded THETTIS. She was the chair of the metrics workstream for the UKGBC's Health and Wellbeing in Homes report and is currently part of a team providing economic and analytical support to the MHCLG on various aspects of building-related policy. Her current focus also includes design for health & wellbeing and addressing the performance gap between designed and as-built building performance.



Prof Christine Wall
Professor of Architectural History University of Westminster

Christine is a founder and Co-Director of the Centre for Research into the Production of the Built Environment at the University of Westminster. Over twenty years of grant-funded research and publications have enabled her to establish a distinctive, multidisciplinary method using oral histories, together with documentary and visual research, to reveal 'history from below' and 'hidden histories' of the built environment. She has published widely on architecture and the construction industry in the twentieth century, including the role of women as designers and builders, and recently led the Leverhulme Trust funded oral history project, Constructing Post-War Britain: building workers' stories 1950-1970. She is a Trustee of the Construction History Society, Co-Editor of the Construction History Journal and a member of the Editorial Board of the Oral History Journal. Publications include; An architecture of parts: architects, building workers and industrialisation in Britain 1940-1970. Routledge, 2013 and 'Constructing Architectural Concrete in 1960s London' in Speaking of Buildings: oral history in architectural research, eds. Gosseye et.al. Princeton, 2019



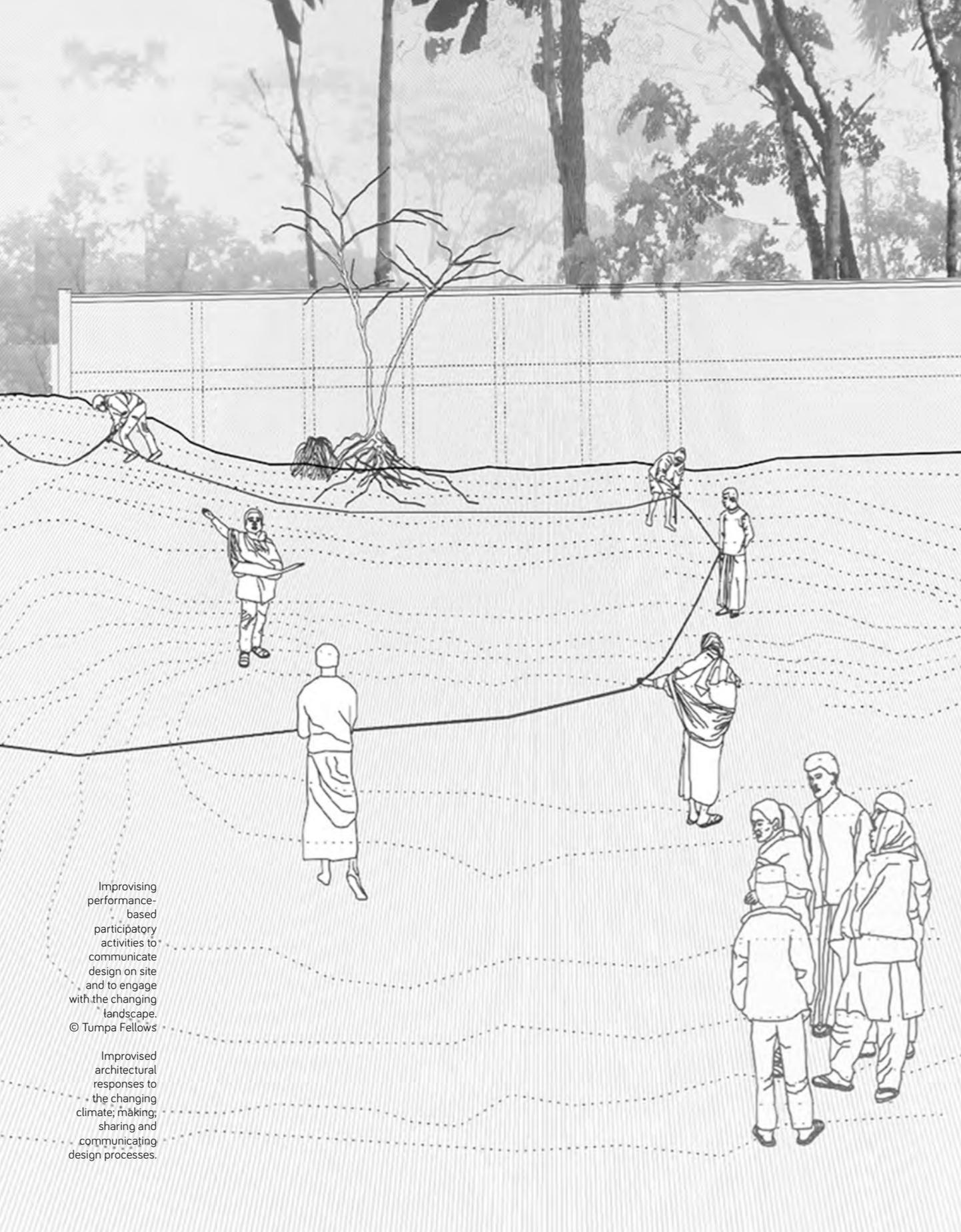
Prof Rajat Gupta
Professor of Sustainable Architecture and Climate Change, Oxford Brookes University

Rajat is Director of the Oxford Institute for Sustainable Development & Low Carbon Building Research Group at Oxford Brookes. His research interests lie in evaluating building performance from a socio-technical perspective, local energy mapping, smart energy systems & scaling up energy retrofits. Rajat has won over £12 million in research grants & has been academic lead on major interdisciplinary research projects concerning low carbon communities (ESRC/EPSC, EVALOC), smart storage of solar electricity (Innovate UK ERIC) & investigating the link between indoor environment & workplace productivity (EPSC/Innovate UK WLP+). Rajat is currently PI for £1.5m UK-India EPSC-DST project on residential energy reduction in India, Co-I for EnergyREV Consortium on Smart Local Energy Systems & lead academic in the Innovate UK, £13.8m SLES demonstrator - Local Energy Oxfordshire. Rajat has published widely on the future direction of energy demand research & evaluation of innovative retrofit programmes. He is a member of EPSC & ESRC peer review colleges.



Dr Nikoletta Karastathi
Napper Architects, Newcastle

Nikoletta is a practicing architect at Napper architects, worked at Klab Architects and also has been teaching in Newcastle University and the University of Edinburgh. She has studied architecture in Newcastle University and holds an MA in Design and Emergence. Her interests lay across the disciplines of architecture, textiles and material science. Currently she is developing her research at the Bartlett through the Advanced Architectural Research course, where she explores material programmability in textile structures. Working in practice and alongside doing research Nikoletta strongly supports the benefits of research in practice. As such, through her elected post as the chair of NE RIBA Research and Innovation Forum seeks to promote the benefits of research for architectural offices and also encourage links with the NE universities and the local practices. She has established a large network of people expressing interest, and through lectures, workshops and symposiums aims to generate more formal routes of collaboration.



Improving performance-based participatory activities to communicate design on site and to engage with the changing landscape.
© Tumpa Fellows

Improvised architectural responses to the changing climate; making, sharing and communicating design processes.

Annual Theme:

Building In Quality

The Awards welcome work from around the globe that investigates methods of improving and managing quality control as well as new design and building techniques which improve the construction process and the built environment. Submissions may be broad in scope covering all levels and stages of the profession or focus on specific issues. This may include, but is not limited to:

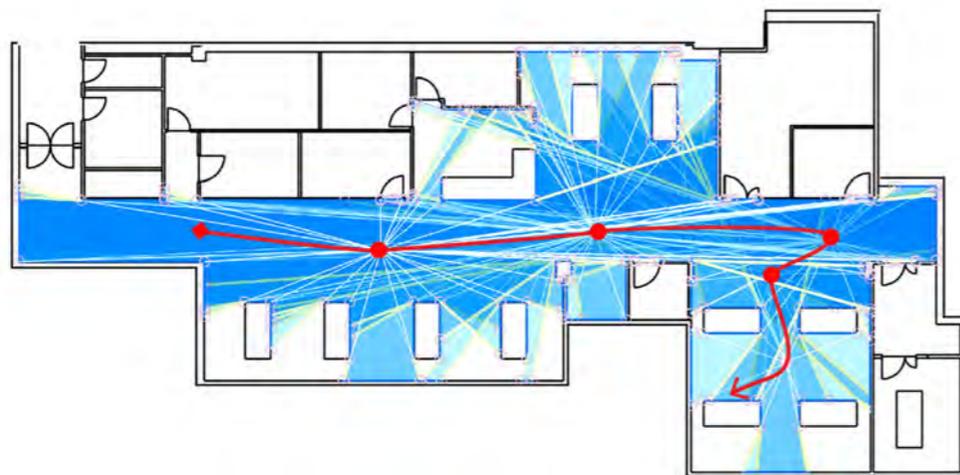
- Tracking and managing quality throughout the building process, including control/influence over material and design specification, procurement and build quality
- Transparency and chain of custody, client relationships and value engineering
- Role of technology – BIM, virtual reality, artificial intelligence and manufacturing methods
- Employee and occupant health and safety, quality of life, enhancing community and architects and social value
- Issues of education, skills and employee development and new technology
- Subcontracting/direct labour and quality assurance

Providing Care Quality by Design: A New Measure to Assess Hospital Ward Layouts

Rosica Pachilova & Dr Kerstin Sailer, University College London, UK

Which hospital ward layout works best? In the past, one response to this question has been to design layouts that minimise walking distances of healthcare workers and increase their time spent with patients. However, new research suggests that good face-to-face communication between doctors and nurses crucially impacts the health and safety of patients. Taking this into account, this research proposes a new single measure called Spaces for Communication Index (SCI). It assesses communication opportunities arising from the layout, and shows that a high index is associated with the provision of good healthcare. Six NHS wards were first studied in depth, collecting detailed information about movement and communication patterns of healthcare workers. On this basis the index was developed. Then 31 NHS wards were selected based on their quality of care rating – these were used to test the index. Each ward was analysed with a method called Space Syntax, which investigated the size of visual fields of

healthcare workers on everyday movement paths through the ward. Large viewsheds provide good visibility and awareness of the environment and thus accrue more communication opportunities by virtue of the layout. Statistical analysis was used to test if the index can predict care quality. Other factors such as distances between key areas, number of patient beds or ward size were tested, too. Results showed that the higher the index, the better the quality of care. The other factors were not related to healthcare quality. In terms of design, these results highlight the importance of the openness of spaces that healthcare workers traverse to get from one key area to another. This research contributes to the development of an objective method that designers can use to compare different nursing unit designs and anticipate the care quality that would be provided to patients.



Isovist Paths

© Rosica Pachilova

Improvised architectural responses to the changing climate; making, sharing and communicating design processes.

Tumpa Husna Yasmin Fellows, Mannan Foundation Trust & University of Westminster, UK

This paper reviews a community focused project in a remote village in Bangladesh, the Rajapur Community Building for Women's Literacy and Healthcare or the Rajapur Centre. Exploring the role of a UK-based architect (myself), through an environmental lens, in the context of social, cultural and economic sustainability. This live practice-based research provides an opportunity to understand, explicate and share these largely unspoken, undocumented and often very local methods and networks of knowledge, that exist and are practiced by the communities living in rural Bangladesh, who are addressing the already damaged climate and its rapid changes. The research is a reflection of the experience of practicing architecture through end-user participation and the co-designing of the project the Rajapur Centre. One of the most significant consequences of this method of practising architecture is that this enabled the identification and communication of the kinds of existing methods of adaptation and architectural practices that address the issues of responding to the

rapid changing climate of the riparian characteristics of Bangladesh. The collection of information took the process of community workshops, through interviews, meetings, performance-based activities, transforming to drawing, making and building with the communities of the Rajapur village. The research highlights the experimental practices that enables the participants to initiate improvised methods of local, specific, tactic immediately disappearing knowledge. These methods of participation aim to challenge and to expand the narrow range of possibilities that currently characterize approaches to the subject of architecture through participation. More specifically, investigates the process of drawing out local skills that facilitates an inclusive team, giving voice to all community members (including the skills and support from men, women and children), that empowers the community. This research aims to demonstrate the value of co-design and collective design intelligence through local craft in addressing the challenges of the changing climate.



The Rajapur Community Building for Women's Literacy and Healthcare: The Rajapur Centre completed and being used by the community.

© Tumpa Husna Yasmin Fellows



Building in Quality of Life: Designs Revisions for Retirement-Living

Dr Sam Clark, Newcastle University, UK



Resident focus group within shared lounge at Avon Chalet, Bristol, with old-style team station in background.

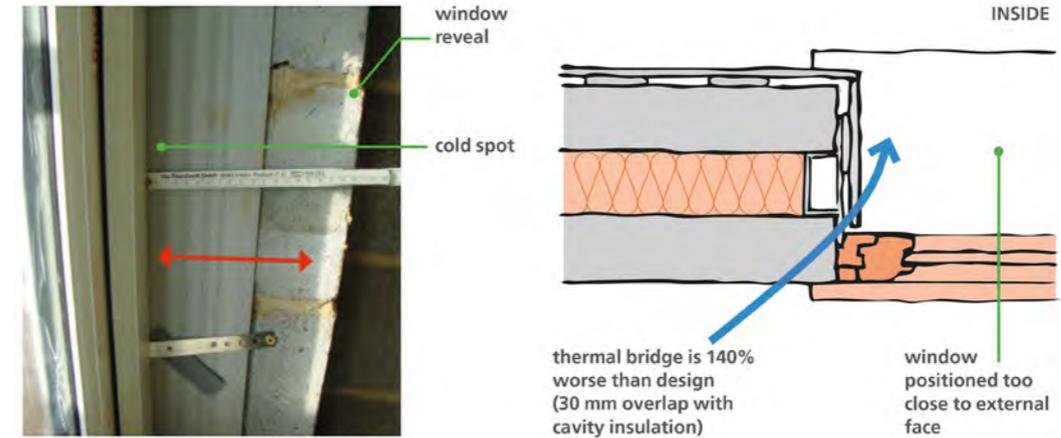
© Sam Clark

The underlying research context is the major societal challenge of housing a 'super-aged' UK population and meeting the needs and aspirations of 'active third-agers'. The research project foregrounds designerly modes of inquiry, resulting in design-relevant feedback for those involved in the production of retirement-living environments. Aspects of the research were commissioned by an industry sponsor, as part of a bespoke studentship arrangement, involving a close, yet critical collaboration in the spirit of a Knowledge Transfer Partnership. A significant part of the contracted research comprised post-occupancy evaluation, which was paralleled by a commercial 'product review' programme. The research involved short residencies at retirement developments; staying overnight in the guest suite and engaging in the social life of the shared lounge. Formal research methods included participant observation, interviews, photographic surveys and behavioural mapping, as well as practice-led design.

This paper explores characterisations of the resident owner who has bought into a retirement development; each attempt to distil a diverse group of people into a single identity that is easily imaged and used as a touchstone by developers and designers. The research reflects the positions of multiple residents met in the field, with respondents contributing to an understanding of variable definitions of 'home' and motives for moving, as well as providing candid feedback on the retirement-living lifestyle in which they are invested. Design analysis and proposition are used to further capture and test research findings, shining a light on a product that is said to assure a quality of life and sustained independence for older people. The research examines the design quality of shared lounges at the centre of retirement developments, as well as the interiors of private apartments, namely kitchens and bath/shower-rooms. Several potential design revisions are identified, and new design patterns explored, including some that were adopted within recent buildings.

Improving the construction quality and performance of new homes in the UK

Tom Dollard, Pollard Thomas Edwards, UK



Window detail - an example of the performance gap

© Tom Dollard

Since 2013, the author has been undertaking collaborative research into the performance gap between design predictions and the as-built performance of new homes. Previous research has examined the nature and causes of this gap, and this work aims to provide evidence-based solutions to this gap in building fabric performance. The overall aim of the work is to produce an illustrated guide to delivering energy efficient homes that demonstrate how the construction industry can improve the performance of new homes. This work uses a mixed method approach to collect original data from 6 housing projects that used 5 different construction types. Design and construction site review was carried out using a bespoke construction tracker developed for this research. The study collects data from semi-structured interviews of professional and construction stakeholders working on the case studies. Thematic analysis of the interview and site tracker data produced a set of industry recommendations to improve performance. Site construction data was

analysed with thermal modelling software to produce a psi-value, temperature factor and heat flux graph for 35 key details across 5 construction types. Each construction type was reviewed and benchmarked against the default Part L values in SAP (BRE, 2014) and a comparison of thermal performance was made. Findings demonstrate significant advantages and disadvantages of each construction type and challenge the industry perception that offsite construction achieves better performance. Findings demonstrate a correlation between Passivhaus certification and improved performance. Improved performance can be delivered by all the construction types if comprehensive detailing, installation and site inspection processes are in place. The paper makes recommendations for designers, contractors and clients on how to improve the design and construction process. Wide scale improvement will need improved enforcement of standards on site, the introduction of post completion testing and a culture that requires homes to perform.

Building In Quality to the RIBA Plan of Work for Society

Paul Priest, Royal College of Art, UK

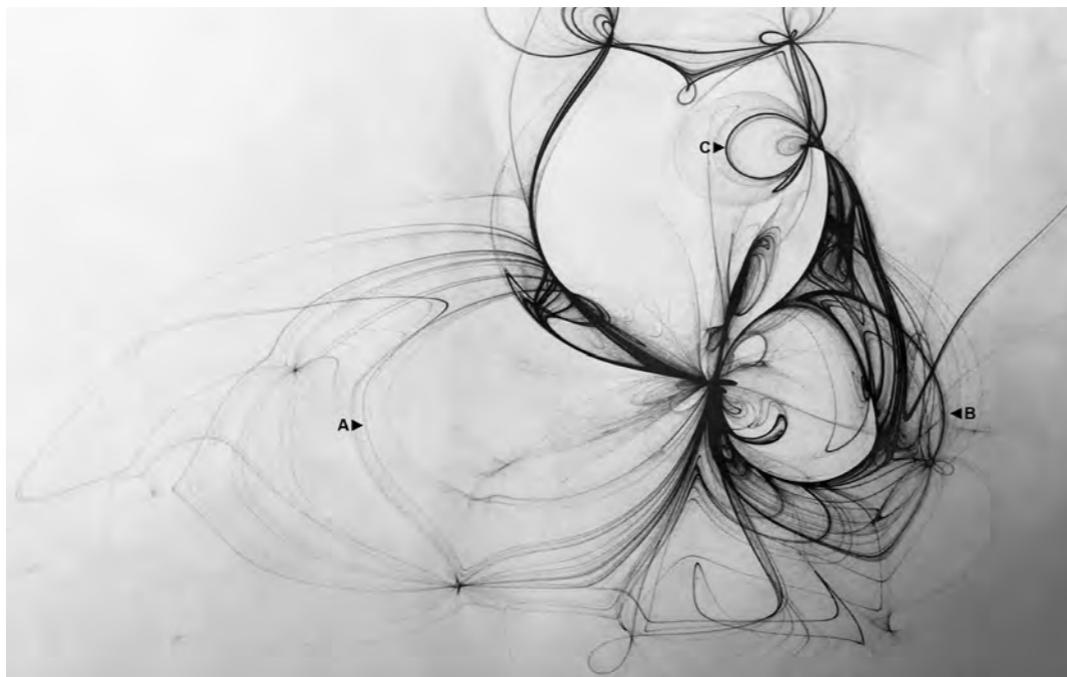
The UK has a world-renowned architectural pedigree and has an enviable reputation for quality as the leading exporter of architecture in Europe. However, recent tragic events, such as Grenfell, have raised questions of the UK construction industry's standards and processes. Institutions have responded with an abundance of regulatory code and quality infrastructures to conflate corporate governance strategies. I ask whether this approach is fit for purpose and how we might imagine an alternative future.

Continued political uncertainty has reinforced the importance of maintaining reputation by ensuring quality through institutional forms and practices. For more than 42,000 worldwide RIBA members, recent changes in global trade dynamics will lead to reappraisal of service compatibility and professional mobility. Therefore, management strategies using

globally recognized quality infrastructures are increasingly valuable in ensuring the highest possible standards and protecting trade.

What if we were to imagine an alternative form of practice, futureproofed to remain competitive in the global marketplace? What would be the critical factors in designing architectural labour for the fourth industrial revolution, and what might this new model look like?

Primary research findings include the demonstration of interrelational distance between architects and their clients historically as well as a snapshot of architectural practice. The research then explores new models of creative labour in architectural practice and prototypes 5 speculative devices aligned with the RIBA Plan of Work to improve quality of the built environment for society.



Anonymous
Project A -
Analysis of Value
Dataflows through
Visual Simulation
A. Indicates low
conformity with
broad value range
(social criteria)
B. Indicates
medium
conformity
with limited
value range
(environmental
criteria)
C. Indicates
strong conformity
with narrow value
range (financial
criteria)

© Paul Priest

Wall Ties, Weep Holes, Cavity Barriers and the Dog that Did not Bark in the Night: Design Coordination and the Challenge of Culture Change

Matthew Cousins, Sense Studio, UK



When design and construction are separated by contract, oversight of quality control and independent scrutiny are jeopardised. External wall cavity from a recent housing project reveals multiple defects, including non-fire rated materials & discontinuous components.

© Matthew Cousins

In the increasingly complex and diverse regulatory system, architects are facing greater risks and challenges. The focus of a new robust building safety framework will bring widespread change across the construction industry. Dame Judith Hackitt has challenged the construction industry for “culture change” and set out six broad areas for change, prioritising life safety over the entire lifetime of a building, including proper enforcement of regulations, improving levels of competence within the industry and ensuring that regulation and guidance is outcomes based.

Culture change and the prioritising of life safety will have considerable implications for architects. This paper looks at inspection duties, the increasing use

of contractor-led procurement methods and the ways that culture change can be implemented. This paper argues that in addition to regulatory flaws, the reduction of the scope of the services of an architect on site has led to the loss of quality on construction projects. This has led to defective omissions and incorrectly installed wall ties, cavity barriers and weep holes. This has had a significant implication in the diminution of life safety and building safety in buildings. The paper concludes by highlighting that culture change for architects must come from understanding and utilising construction contracts. Inspection duties by architects must be recognised and reflected sufficiently in the appointment document and the construction contract.

Landscape Designing Process Reverse Reading: Exploratory Design Research on J&L Gibbons studio

Claudia Mezzapesa, University of Florence, Italy



Angel Building: an interesting collaboration with the architects in bringing out innovations during the initial design stages

© Claudia Mezzapesa

In the broader discussion on the relationship between design and research, the ongoing debate in landscape architecture highlights the necessity to deepen the design process investigating it on the common ground of theory and practice.

At the light of these considerations, the main question addressed by the study is: 'how does the design process work in landscape architecture?'

Several studies examine the design process, however, learning from the process when it's already completed is a challenging practice.

The research arises from this knowledge gap and aims to link research and practice by testing an experimental approach for reading backward the design process path: the Reverse Reading.

The methodological framework is under the Design Research umbrella opened to the cross-fertilization between the reflective practice of the Design Anthropology and the theory-practice approach of the Practice-Led Research.

Since the research investigates the design process

with an empirical approach, it has been necessary to experiment it on a professional practice: J&L Gibbons landscape architects based in London.

The 'Research in Residence' has been an extraordinary occasion to collect the useful data of ten projects selected and to drive the study with real ethnographic involvement.

Each project has been thoroughly narrated in a Design Tale and outlined in a synthetic Design Map that summarizes the stages as defined by the RIBA Plan of Work 2013, which in turn became a pivotal research tool.

The findings highlight how this application could link research and practice enhancing the quality of the design outcome, allowing landscape architects to reflect on the path of their professional activity.

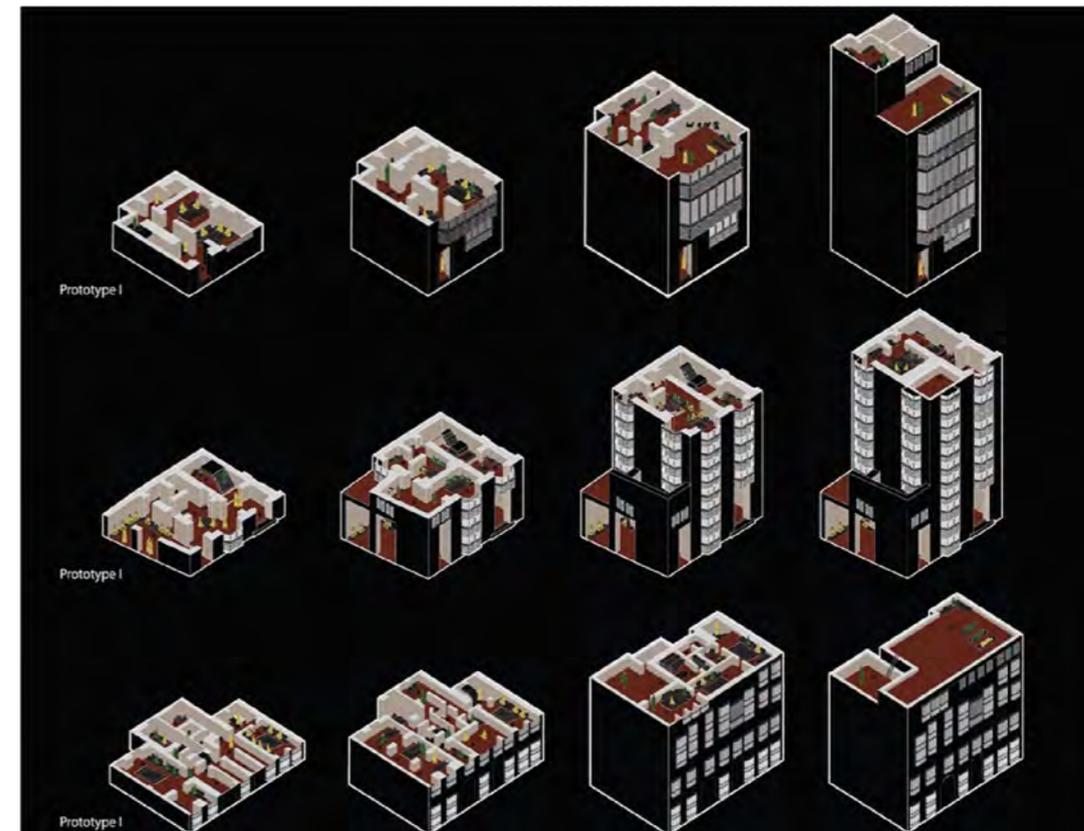
Applying this research-practice approach to similar studies could furthermore enhance the discipline itself imagining scenarios in which theory, practice and critique foster mutual dialogue and nurture culture and technique in landscape architecture.

Vernacular Typologies as Forms of Modular Housing

Razan Hamed Alzayed, Kuwait University, Kuwait

It is by looking at the past as an inspiration for the future where survival tactics of traditions and customs are maintained. An inherent culture is lost when it is busy appropriating, and being appropriated by, other cultures. Thus, in order to sustain the diversity of cultural constructions that complete the unified harmony of the global history, it is thus necessary that distinct vernacular clarification and sustainability is frequently implemented within conflicting movements of the modernist mentality. Therefore, critical regionalism in its inherent concept is postmodernist in nature by combating core modernist ideals of internationalizing form and renouncing them from any cultural value pertaining to it. The significance of redefining, questioning, and proposing alternatives to such homogenizing modernist impositions, lies

especially on matters that transcend the notion of mere identity vernacularly, but also contemporarily reintroducing that into the new and ever-developing modernist world. It sets the stepping stone for the architectural posterity in the constant need of identity reestablishment, and if necessary, reinforcement, in the attempt to negate preconceived notions, and to clarify the misunderstandings on mistaken ideas of identity. Because in the 21st century context of globalization, accessible information, and cultural interspersion, the impulse of bringing forth semi-individualistic identities in the global culture of the collective is necessary in notions of tolerance, acceptance, and embracing ethnic differences. Thus, resulting in individual rather than international pride, with international understanding and coexisting acceptance.



Reconstruction and gentrification of local vernacular Meccan houses prior to 1950s urban renovation.

© Razan Alzayed & Zainab Alhashemi

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

Atmosphere
Depiction

© Prashansa
Sachdeva

Architectural
Language for
Cultural Exchange

The Gulf in Bosnia and Herzegovina: An (Un)Intentional Consequence of Peace

Dr Mirna Pedalo, Goldsmiths, University of London, UK



Sarajevo Waves
Development,
April 2018

© Mirna Pedalo

Through the analysis of the surge in the real-estate development in post-1990s-war period in Bosnia and Herzegovina this research project aims to map the ways in which the country has been striving to position itself in relation to the movements of global capital. The project primarily scrutinises the Dayton Peace Agreement in its role as a state-building mechanism; a distinct and crucial element that sets this phenomenon apart from its global counterparts. In order to tackle and unpack the complexity of this condition a blend of different methodologies has been chosen.

Operating within a specific ethno-religious context, underlined by the structural violence deeply embedded in its very core, the Dayton Peace Agreement helped produce a new milieu conducive to the flow of global capital. This project focuses on the influx of capital from the Gulf States, which has challenged the pre-existing binary relationship between the Dayton Peace Agreement and ethno-religious identities. The new milieu resulting from this intense encounter has

allowed for corruption and underhanded practices, such as deregulation of planning policies or land grabbing, to thrive and has endorsed the use of religion as an investment bait. The investigation of the condition on the ground in relation to what has been promised versus what is (subsequently) allowed as per urban planning regulations, was carried out through the production of maps. The conflation of different types of data transformed into a visual output has been a key mechanism driving this practice-led research project.

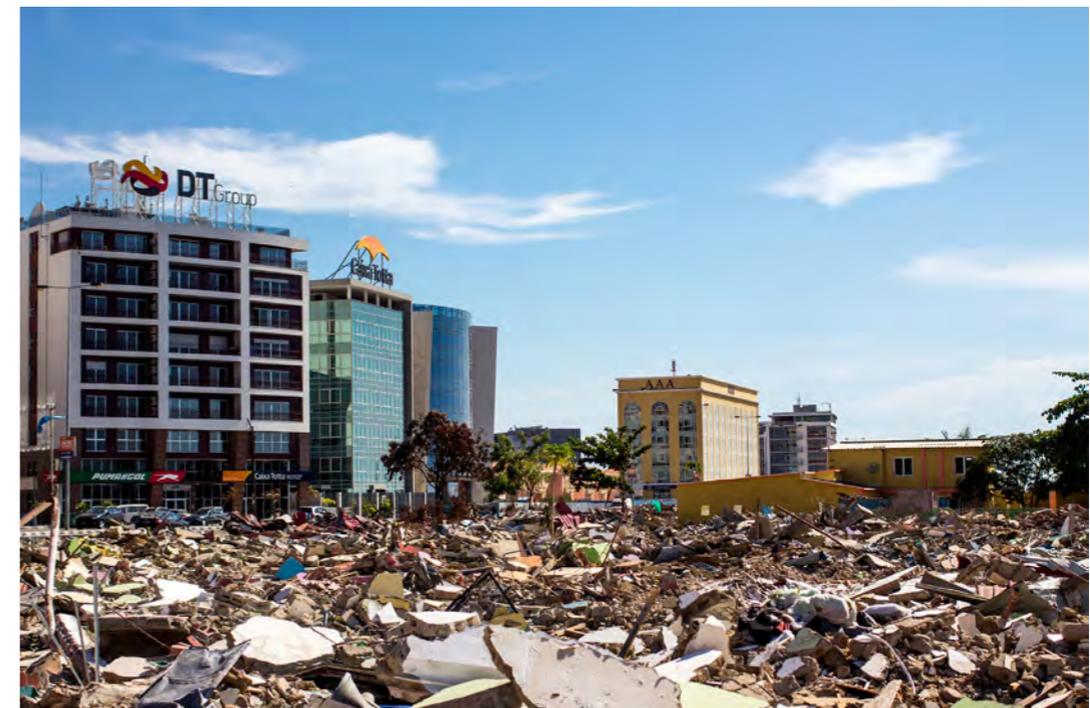
The new triangular relationship, established between this state-building mechanism, financial flows and ethno-religious identities, has produced a new spatial and territorial order in Bosnia and Herzegovina. While turning the Dayton Peace Agreement into a de facto instrument of finance, this process is at the same time rearranging the existing social and demographic landscapes of the country.

Investigating Urban Conflict and Reciprocity Between Chicala and Luanda, Angola

Dr Paulo Moreira, London Metropolitan University, UK

At the heart of this research is an investigation of the reciprocal relationship between the city of Luanda, capital of Angola, and one of its central informal neighbourhoods, Chicala. The particular geographical location of Chicala, along with its integrity and specific development, made the neighbourhood vulnerable to colonial invasions, and more recently to aggressive urbanism and large-scale masterplans. In the context of Luanda's current neoliberal trajectory of urban regeneration following a protracted civil war (1975-2002), Chicala is undergoing a process of demolition and replacement by high-standard real estate developments. The research began shortly before plans for the complete erasure of the neighbourhood were implemented and local authorities forcefully displaced its inhabitants to remote settlements with unsuitable living conditions. The research aims to write Luanda's urban history afresh by forging a place for the neighbourhood of Chicala and its wider context in the city's urban

order. Documentation of the characteristics of a neighbourhood on the brink of disappearing required a collaborative methodological approach, and a reflection of how architects can operate in such complex urban settings. The thesis aims to go beyond a mere exploration of informal architectural order; rather, it is a contribution to understanding Luanda, and to understanding postcolonial cities in general in all their depth. The research uncovers a set of relationships between the neighbourhood and the city, emphasizing the 'hybrid' nature of Chicala as part of a larger context, both in architectural and urban terms. At a time when thinking on postcolonial cities is moving towards seeking to accept and understand informal neighbourhoods, rather than to ignore or eradicate them, this research presents a thorough experiment on the ground which contributes to the development of new collaborative approaches to the subject in the architectural field.



Part of Chicala
demolished, with a
new masterplan in
the background

© Nadia Righelè



Between, below, behind: An ontology of small urban spaces in Hong Kong

Ivan Valin, Xiaoxuan Lu, Susanne Trumpf, The University of Hong Hong



The Kotewall Road Rest Garden doubles as a memorial and is designed to hide slope reinforcement works at the site of a devastating landslide in 1972

© Ivan Valin

Hong Kong, with some of the most valuable land in the world, is planned and built-out to shockingly high densities. But between the towering complexes and along the steep hillsides, a different urban form emerges: small parks called Sitting-out Areas are miniature interventions in an otherwise monumental Hong Kong and reflect another narrative for the city. Referred to as 三角屎坑 ('saam kok see hang') literally 'three-cornered shit pit', most Sitting-out Areas feature little more than, eponymously, a place to sit. In their abundance, they are an exercise in repetition: government planners have opted for expediency of implementation and maintenance through the reproduction of boilerplate assemblies and standardized details. More than 500 Sitting-out Areas and Rest Gardens form the smallest features in the city's network of public open space. Hard-to-find and overlooked, their ubiquity gives them an outsized impact and suggests a latent potential to operate as a landscape network.

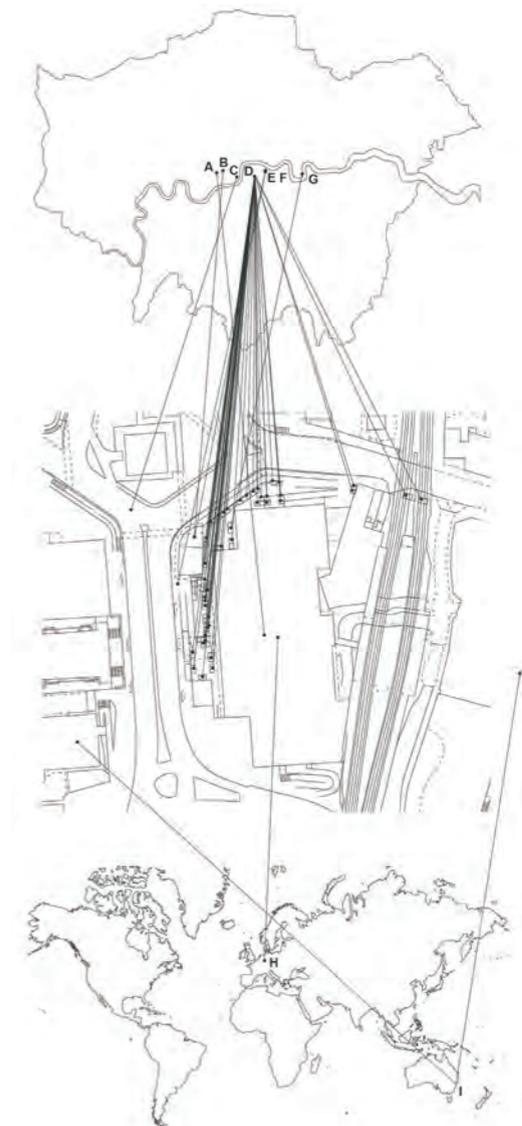
This research posits a critical exploration of these undervalued open spaces, offering a comprehensive survey of their forms and impact on public life, community, and ecology. Focusing on the dense urban areas of Kowloon and Hong Kong Island, 105 sites were thoroughly documented. Provisional typological categories synthesize the broader analysis and explain the strategic approaches taken toward context and program. The work anticipates ways in which these spaces might be leveraged for tactical improvements to the public realm. Original drawings and models were produced to disseminate the results in a series of public exhibitions and conference presentations, while the complete work is being compiled in a forthcoming monograph. The research on small open space contributes to a larger debate on the form, function, distribution, and accessibility of public space in high-density urban settings and seeks opportunities by which design planning might counteract the general erosion of public-ness in the contemporary city.

From masterplans to daily actions: London public spaces as designed, reconfigured and used

Dr Ed Wall, London School of Economics & University of Greenwich, UK

I investigate three London sites – Elephant and Castle Market, Paddington Basin and Trafalgar Square – where public spaces have been subject to contrasting masterplanned developments, management operations and daily uses. Focusing on the timeframes of the masterplans I explore a range of accounts of public spaces to reveal how differing economic opportunities, scheduled events and everyday activities are afforded, negotiated or reduced as these locations are transformed. I employ observation, interviews, document surveys and visual analysis to understand competing ambitions for engaging with public spaces, from conflicts between urban planners and low-cost businesses, to negotiations between international property developers and local governments. I show how this combination of methods has enabled me to frame concepts of public spaces: planned and managed as spatial forms; photographed as, and designed, with visual images; and, occupied and used through social interactions.

The research into these physical and social geographies of masterplanning intersects scales of public spaces: from men playing checkers on makeshift tables in Elephant and Castle Market to the application of planning policies at Paddington Basin and engagement with global competition between cities through the remaking of Trafalgar Square. I analyse how uncertainty caused by large-scale spatial strategies, the realisation of visual priorities and unbalanced relations between private interests and public organisations compromise the public nature of space. I demonstrate that, as these sites are spatially reconfigured, rules are rewritten to control access and use. I explore how, as planners, landowners and architects facilitate and produce public spaces as architectural forms and pictorial settings, they employ new regulations that further undermine lived and used public spaces. I conclude by reflecting on the spatial and regulatory terms imposed on public spaces to propose a design code for more inclusive opportunities and transparent relations in the future making of public spaces in London.



Public space activities, operations and developments at Elephant and Castle - and the wider geographies of headquarters where decisions are made.

© Ed Wall

- A) Delancey** Developer for Elephant and Castle Shopping Centre redevelopment, Headquarters: Berkeley Square, London
- B) Transport for London** Headquarters: Victoria Street, London
- C) Department for Transport** Headquarters: Horseferry Road, London
- D) Vendors (various) at Elephant and Castle** Market traders at Elephant and Castle Market and street vendors, Headquarters: Elephant and Castle, London
- E) Southwark Council** Development partner for Elephant and Castle and planning authority for Southwark, Headquarters: Tooley Street, London

- F) Greater London Authority** Designation of Opportunity Areas through London Plan, Headquarters: The Queens Walk, London
- G) Urban Space Management** Owners, operators and managers of Elephant and Castle Market, Headquarters: Trinity Buoy Wharf, London
- H) APG Asset Manager/Pension Provider** Investor in Elephant and Castle Shopping Centre redevelopment, Headquarters: Heerlen, Netherlands
- I) Lend Lease PLC** Development partner for Elephant and Castle, Regeneration and developer for Heygate and Leisure Centre Headquarters: Sydney, Australia

The Potteries and Surrounding Areas: Understanding and Appreciating the Region

Mr Ingal Maxwell & Mr Barry Bridgwood, Council on Training in Architectural Conservation, UK



Five of the six restored hovel ovens at the Gladstone Pottery Museum, Longton.

© Ingal Maxwell

The Potteries and Surrounding Areas: Understanding and Appreciating the Region aims to assist interested readers gain a fuller appreciation of the Area. The researched study constructs this through illustrated short statements and Information Boxes. Five sets of Topic Questions are supported by an Annex of suggested answers. Readers are invited to consider benefiting from the study by deliberating on the undernoted issues which informed the contents:

- What is it about the local environment that has a bearing on how its heritage is perceived and valued?
- How has the area developed and changed over time?
- What has created the most significant impacts on the area?
- Where is it possible find out more to illustrate what has happened?
- How might the changes affect the long-term future?
- Where might relevant advice and know-how be found to help protect the heritage?
- How might local interest groups assist?

Traversing Sustainable Architecture: between discourse and practice

Elizabeth Donovan, Aarhus School of Architecture, Denmark

Concepts of 'sustainability' have increasingly informed architectural discourse since the environmental movement of the 1960s, yet practices of construction have proved resistant to change. As Hunter Lovins describes, the construction industry is "dynamically conservative – it works real hard to stay in the same place." This quote resonates with the premise of this research: ample information, knowledge and technologies exist; so why is integration of sustainable architecture into practice so slow? This research investigates sustainable architecture discourse and practice, identifying the key themes which act as barriers between these two paradigms, followed by analysis to develop understanding as to how they interrelate, and are positioned within the field of research.

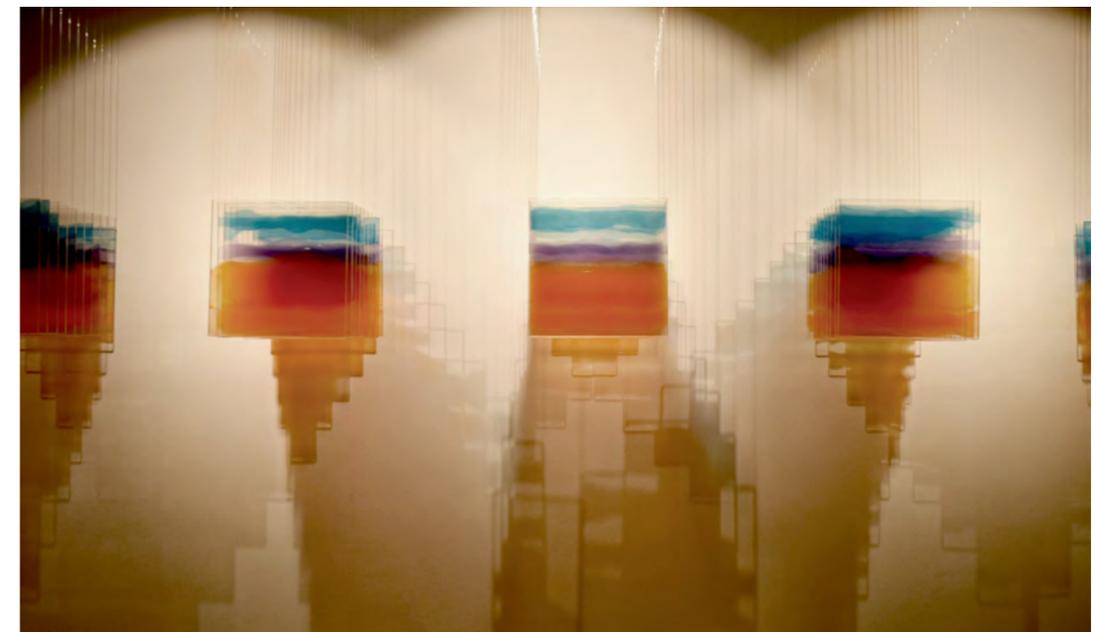
The methodological approach for this research uniquely brings together bricolage and grounded theory. This approach employs six interrelated qualitative and quantitative studies to construct five key themes using information collected from a variety of primary and secondary sources. Based on the 'grounded-bricolage' approach, methods include: diagramming and mapping of recent history, a

questionnaire and series of semi-structured interviews with leading experts in sustainable architecture, architectural website content analysis, qualitative periodical content analysis and visual content analysis. The six studies have been designed responsively in overlapping iterations as new insights emerged to contribute to a cohesive body of research.

This dissertation's original contribution to knowledge is an articulated understanding of the relationship between sustainable architecture discourse and practice, specifically identifying the five key barriers:

- Definitions, terminology and language
- 'Greenwashing' and techno-centrism
- Information, knowledge and communication
- Approaches, perspectives and attitudes
- Visual language and identity

Analysis of these themes explores their connections, content and potential to better bridge the gap between discourse and practice. The findings offer insight into how we discuss, practice, learn, communicate, approach and perceive sustainable architecture; prompting a re-thinking of traditional understandings of discourse and practice within the field.



One Hundred Years: an artist representation of 100 years of sustainable architecture history.

© Elizabeth Donovan

Understanding low carbon housing retrofit within a wider nexus of practices

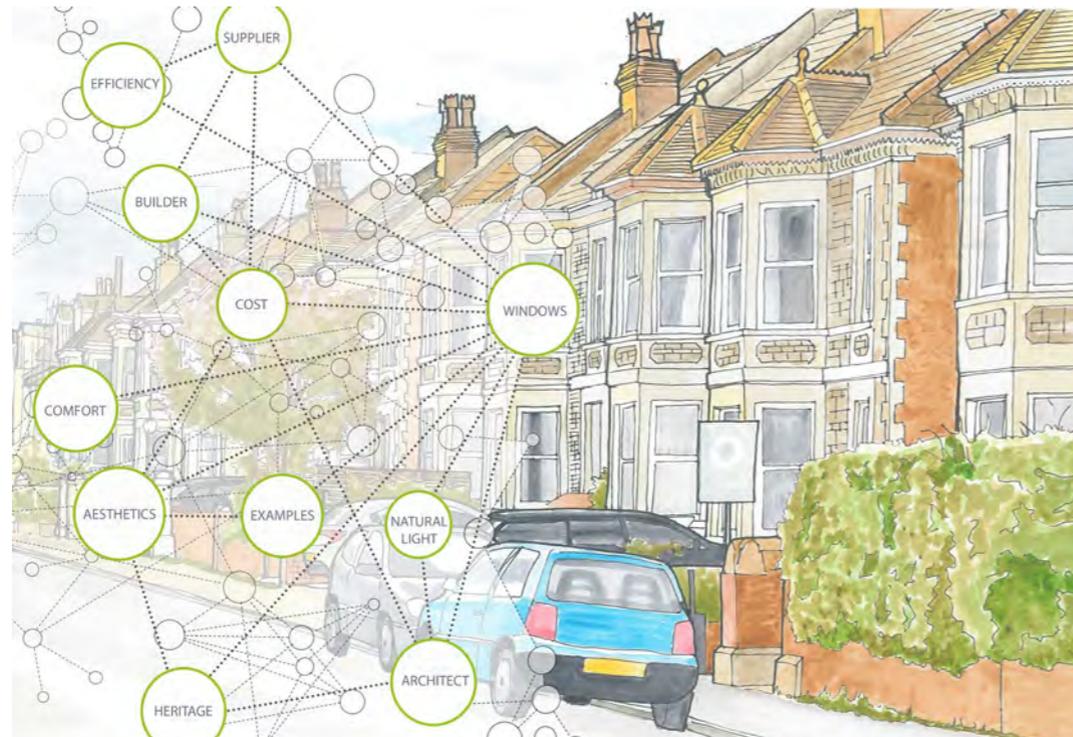
Dr Tara Hipwood, Northumbria University, UK

Reducing CO₂ emissions from housing, owner-occupier housing in particular, will make a significant contribution to addressing climate change. However, there are concerns that practice theory studies on this subject fail to adequately conceptualise 'large' phenomena such as retrofit, in their attempt to replace the isolated notion of a 'house', with that of a 'home' within its social context. This challenge is shared by architecture more generally, which if it is to remain relevant to current debates on contemporary concerns such as climate change, must engage with the invisible and unpredictable social processes on which architecture is contingent. In response to these challenges this research examines home improvements as part of a wider nexus of practices that make up social life.

Drawing on 31 in-depth interviews and walk-through tours with owner-occupiers, this research examines why, and how some home improvements incorporated low carbon retrofit measures, while others did not. The relationships between components of practice, both within and between practices are examined to identify

how they connect to the wider nexus of practices that extends beyond the home. Particular attention is given to: how home improvement practices are connected to the wider nexus of practices; how understanding these connections can facilitate an increased adoption of low carbon retrofit measures; and the implications of these findings for the changing role of the architect.

The findings demonstrate how understanding connections between practices can reveal indirect relationships between low carbon retrofit measures and apparently unrelated practices, as well as illustrating that professional competences supporting low carbon retrofit measures are poorly connected to the wider nexus. These findings have implications for policy seeking to encourage higher levels of low carbon retrofit, as well as for the role of architects' and their ability to recognise opportunities to maximise the environmental benefits of owner-occupier home improvement projects.



The nexus of practices extending out from the home

© Tara Hipwood

Architectural Language for Cultural Exchange

Prashansa Sachdeva, Cardiff University, UK

Migration has become a universal paradox. With people moving to different parts of the world in search of better education, jobs and lives, cities are becoming a heterogeneous mix of cultures, societies and characters. Many escape war zones and surpass the trauma of losing livelihoods and identities, in hopes of finding a new home. This phenomenon is prominent in present day Europe, which faces political clashes and economic disputes, flaring insurgency against migrants, raising apprehensions over the absence of shared opportunities where newcomers can exchange stories, festivities and represent identities truly and freely. Although various fields such as social sciences, urban anthropology and planning have unravelled techniques for a more knitted society, the discipline of architecture has meagre knowledge over spatial translations to promote intercultural integration and sustain the memory of home.

This paper investigates the equation of architecture with cultural exchange and shall highlight spatial articulations which supports interaction by forming an innovative contemporary language of intercultural

nodes. These are public spaces amalgamated with built manifestations, hosting carefully planned points with atmospheres which would evoke feelings of comfort and freedom, leading to positive encounters and establishing a sense of belonging in an otherwise alien city.

Sensitivity is required while planning to offer flexible atmospheres with gradient of most protective and intimate spaces for vulnerable groups, to public and open, offering numerous opportunities for communities and individuals.

This investigation is conducted by the method of design-based research at Palermo, a major receiving port of migrants to Europe, which attempts to create spatial mediators with the help of grass-route agencies, people's collaboration and the City Council's support. It shall enable constant testing and provide consistent results which would help bind the knowledge gap between spatial characteristics and intercultural exchange, thresholds and porosity, and improve notions of tolerance and humane associations.



Mock Intercultural Center : Less planned and limited spaces of encounter.

© Prashansa Sachdeva

Bridging Property Lines: a new look at an old devil

Claude Saint-Arroman, Leeds Civic Trust, UK



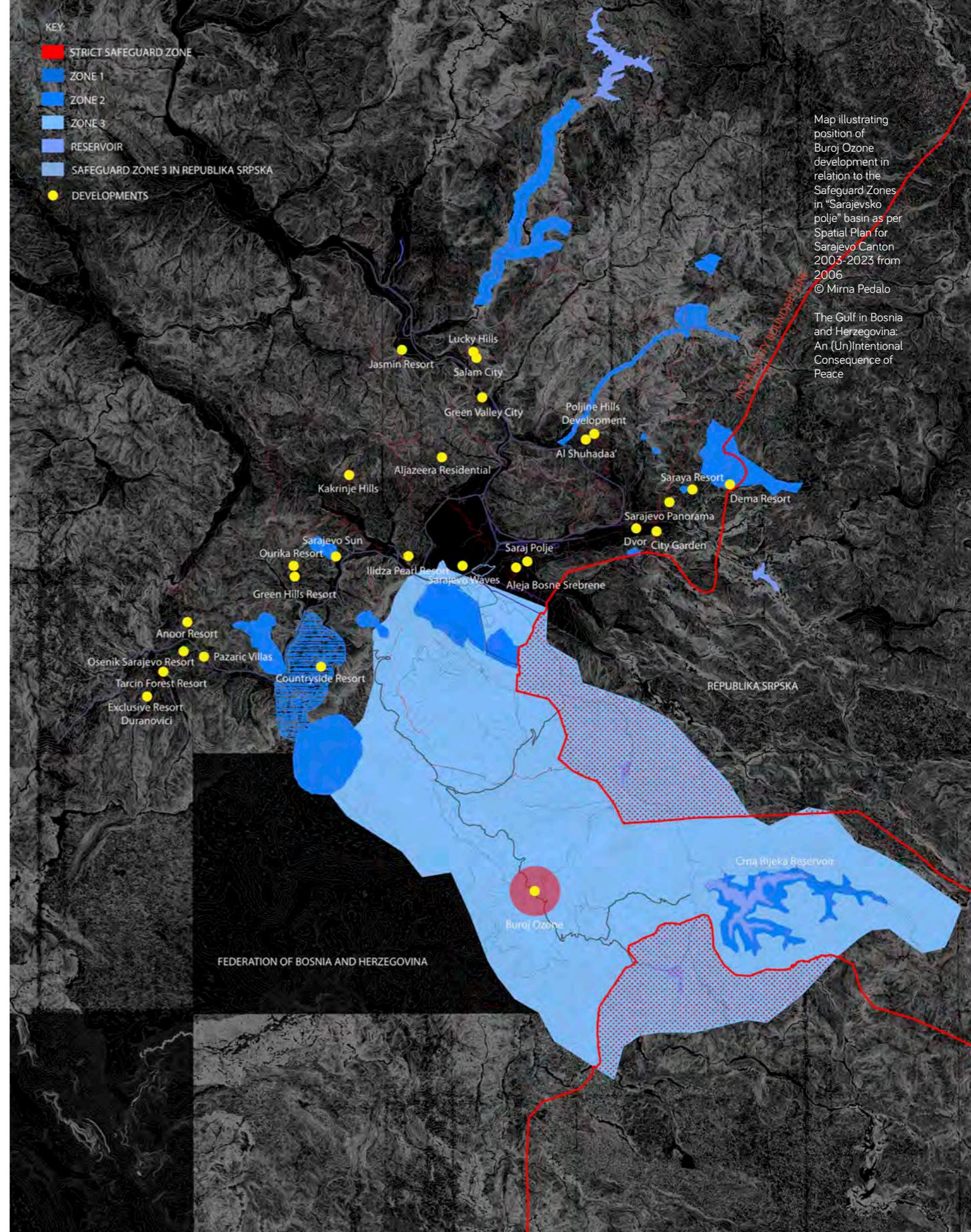
Otley Road Gate House, a typical example of gatehouse to former Victorian estate, now standing a-contextually at arterial crossroad once marking out property lines.

© Claude Saint-Arroman

Up until recently, boundaries were discussed more prominently in architectural theory (see Robin Evans or Jonathan Hill for instance) than in practice. This year's London Festival of Architecture 2019 brings the subject to the fore, and reveals the multitude of dimensions that the terminology can cover, many of which are more political and psychological than tangible in the city's fabric. I myself carried out my PhD research on the subject of residential boundary configurations in high density housing (2017), and I have continued to research architectural boundaries on the basis of my thesis. This proposed that our understanding of boundaries can be very binary and that a revised paradigm could unlock limit and enclosure to provide a more negotiable regulatory zone between sides.

Over the past six months, I have researched the history of Leeds' Victorian gatehouses, often sited along the main arteries of today's road networks that mostly follow the boundary lines of the estates once

regulated by these lodges. Concurrently, I joined the Leeds Civic Trust Planning Committee, which examines key planning applications in an advisory capacity for Leeds City Council. Committee members combine their individual expertise from a range of practitioners in the construction industries, represented by architects, planners, developers, financiers and legal professionals, and complemented with other specialist interests such as transport or conservation. My contributions to our analysis of planning applications have been placing focus on sustainability through boundaries, borders and edges, but I also discovered the extent to which the 'system' still treats property boundaries as objects of enclosure that exclude context. This essay compares my findings about land distribution in Victorian Leeds with findings about the effects of enclosure paradigms on the design of current development projects, encapsulated here in a series of adjacent proposals East of Leeds' city centre.



Map illustrating position of Buroj Ozone development in relation to the Safeguard Zones in "Sarajevsko polje" basin as per Spatial Plan for Sarajevo Canton 2003-2023 from 2006 © Mirna Pedalo

The Gulf in Bosnia and Herzegovina: An (Un)Intentional Consequence of Peace

Design and Technical



Submissions were invited under the headings of Design and/or Technical. Research was to concern 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 concentrate on the 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

BIM view
of platform
environment
© Antony Davis

BIM Opportunities
and Pitfalls for
future Transport
and Infrastructure
Projects within
a legal context
(Crossrail -
setting the BIM
standard?)

Cork Construction Kit

Oliver Wilton, University College London, UK
Matthew Barnett Howland, CSK Architects, UK



The Cork Cabin prototype building around 6 months after construction, standing next to the Cork Casket

© Matthew Barnett Howland and Oliver Wilton

This article reports on research progress to develop a radically simple new form of solid, dry-jointed bio-renewable construction, made of expanded cork blocks and engineered timber. The aim is to develop a viable construction system with outstanding whole life performance using plant-based materials, that can help to sustain biodiverse landscapes, to create buildings with exceptionally low whole life carbon emissions. This system uses building blocks made of cork forestry waste, that interlock for quick and easy assembly, creating buildings that are low energy to inhabit and simple to disassemble at end of building life for re-use. This system presents the opportunity to investigate an architectural language of cork stereotomy which is new and at the same time familiar, being a progressive reimagining of historic dry-stone construction. This research is architect-led and multidisciplinary, having been undertaken in three steps by a team of practitioners and academics over five years from 2014 to 2019. Step one is curiosity-driven research, initial hypothesising and making

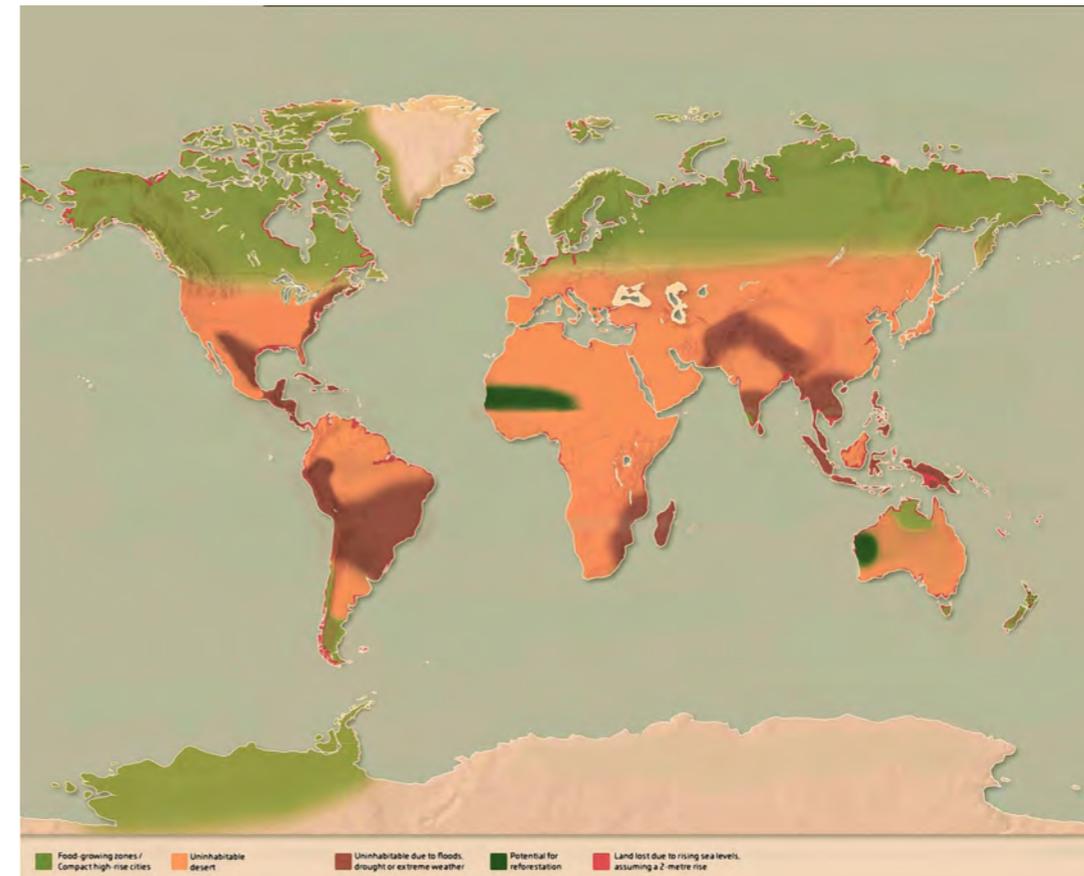
the Cork Casket. Step two involves in-depth design hypotheses, scaled constructional models, extensive prototyping, and testing relating to structure, fire and weathertightness. An innovative robotic cork milling method is developed. The Cork Cabin is fabricated, assembled, and monitored. Lessons are learned, the hypothesis evolves, and the system design is established. Step three is the design, creation and inhabitation of the Cork House, the first house of its type, permanent, replicable and designed to fully meet local building codes. Its corbelled profile knits into its site, with sheltering interiors offering a rich sensory living environment. Post occupancy evaluation commences. The research to date confirms the potential for such simple new forms of off-site plant-based construction to help address some intractable construction industry challenges. It has implications relating to whole life environmental sustainability performance and to construction complexity, quality and productivity.

Defornocere

Prof David Coley, University of Bath, UK

The public's view of climate change has shifted in the last year. As little has changed in the climate science in the last twenty years, this shift must have other, non-scientific, causes and hence represents a clear epistemological shift. In the UK, buildings represent the largest source of carbon emissions, and these emissions present the greatest challenge to architecture. Although government and others have made various attempts for decades to reduce energy use in buildings, the success has been modest. These attempts have been based around possibly stale sounding logical arguments backed by non-emotive quantitative analysis. Given that the energy use of the national stock has not fallen dramatically, it would seem this is an unsuccessful approach. Here we advocate a different narrative that embraces the public's epistemological shift, and suggest: (i) as we

are aware of the impact climate change is having on the natural environment and on those in the poorest nations, and (ii) given that we know how to, and have successfully built low energy buildings, our failure to make this the norm might be viewed as a near deliberate stance, where our aesthetics has overruled morality. We hence suggest a new way of scrutinising buildings, or elements of buildings. This is based on viewing buildings, or components, that unnecessarily exacerbate climate change as simply ugly. This moves the narrative from an unsuccessful quantitative one based on kWh and kgCO₂, to an aesthetic one. To do this, we introduce a new term, defornocere, meaning ugly through harm, and suggest this form one element of a new, inclusive, way of looking at the harm buildings do that includes, but also goes beyond, the issue of climate change.



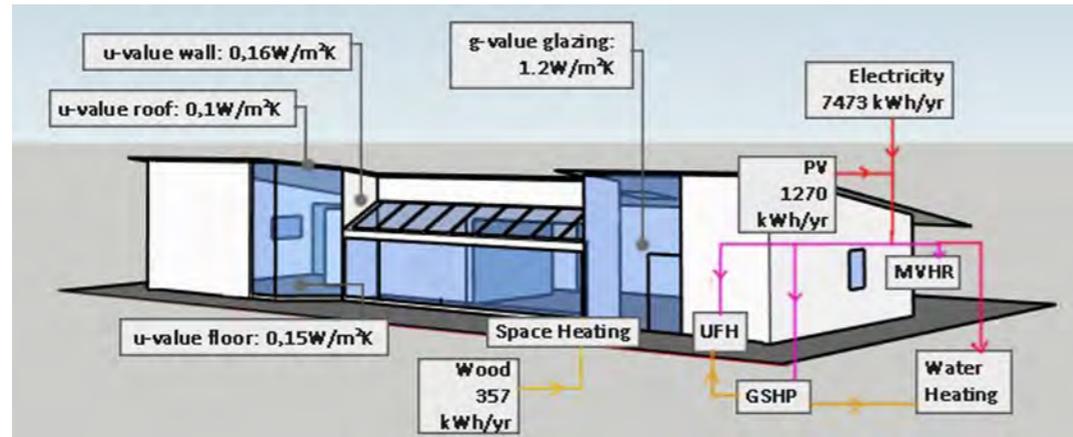
Future predictions of habitat loss due to changing climate. New Scientist Feb, 2009

© Ricardo Codinhoto



Energy Performance Gaps in Residences in the UK- An analysis of the variables that create energy gaps and their impact.

Amrutha Kishor, Allan Joyce Architects / University of Nottingham, UK



Data compiled for one of the seven houses studied

© Amrutha Kishor

Today, with the rising global warming and depletion of resources every industry is moving toward sustainability and energy efficiency. As part of this movement, it is nowadays obligatory for architects to play their part by creating energy predictions for their designs. But in a lot of cases, these predictions do not reflect the real quantities of energy in newly built buildings when operating. These can be described as 'Energy Performance Gaps'. This study aims to determine the underlying reasons for these gaps.

Seven houses designed by the architecture practice in the UK from 1998 until 2019 were considered for this study. The data from the residents' energy bills were cross-referenced with the predictions made with the software SefairaPro and from energy reports. Results indicated that the predictions did not match the actual energy usage.

An account of how energy was used in these seven houses was made by means of personal interviews. The main factors considered in the study were

occupancy patterns, heating systems and usage, lighting profile and usage, and appliances' profile and usage.

The study found that the main reasons for the creation of energy gaps were the discrepancies in occupant usage and patterns of energy consumption that are predicted as opposed to the actual ones.

This study is particularly useful for energy-conscious architectural firms to fine-tune the approach to designing houses and analysing their energy performance. As the findings reveal that energy usage in homes varies based on the way residents use the space, it helps deduce the most efficient technological combinations. This information can be used to set guidelines for future policies and regulations related to energy consumption in homes.

This study can also be used by the developers of simulation software to understand how architects use their product and drive improvements in its future versions.

E-planning: an opportunity for Place and Building Information Modelling (P.B.I.M)?

Dr Stefan Kruczkowski, Urban Design Doctor Limited, UK

Improving the urban design quality of new suburban residential developments has been a topic of research focus for 20 years. Despite the inherent issues with the dispersed, low density and single use nature of suburban development, it remains an accepted form of development within the English planning system.

Shortcomings in the design quality of suburban development, the emergence of digital technology, the role of architects, communities and other stakeholders in place shaping - with particular reference to B.I.M. and the recommendations of the Farrell Review - are creating fantastic opportunities for built environment professionals to create a more design- and place-orientated planning system.

Following the global credit crisis of 2008, political attention has remained on increasing house building rates but steadily swayed towards design quality. With funding across central and local government significantly reduced, the resources to challenge poor design are limited. Pressure on local planning

authorities to deliver more and better homes and places to live is increasing alongside expectations that the planning system embraces new technologies - is it enough to digitise the current planning systems?

The research is part of a wider study based upon one local authority's efforts to improve residential design quality over a ten-year period. Empirical evidence gathered across the country across the public and private challenges the dominant theory that local regulatory control is the principal means by which local authorities can secure well designed developments. Practitioners have helped shape a new collaborative approach to design and planning. A more creative and effective form of design regulation is proposed through the application of emerging smart phone and mobile based technologies. Having synergies with B.I.M. a new model of planning is proposed that better connects the planning system with product development processes and land acquisition: Place and Building Information Modelling (P.B.I.M).



Building boxes, not places: the dire state of our suburbs. Nottinghamshire

© S. Kruczkowski

Theory and Precedent in the Design of Sustainable Environments: Manchester and Glasgow Schools of Art

Dr Ranald Lawrence, Sheffield School of Architecture, UK
Prof Dean Hawkes, University of Cambridge, UK



Glasgow School of Art
 © Ranald Lawrence

The design of a modern building, not least a building that seeks to achieve the greatest efficiency in its environmental design, is substantially a matter of quantification and computation. Design objectives, whether with regard to environmental performance in the specification of the thermal, luminous or acoustic standards, or in the prediction of environmental impact, energy consumption, and emissions, are stated numerically and are assessed at the design stage, often using sophisticated calculation methods such as computer simulation models.

In all aspects of architectural design the origin of the initial design idea, the point of departure, is of fundamental importance. However the analytical tools of building science offer little, if any, guidance in making this crucial decision. The answer must be sought elsewhere. Precedent, reference to previous examples of a building type, plays a fundamental role in the production of new designs.

This paper analyses the results of post-occupancy evaluations investigating the environmental performance of two recently completed designs for schools of art, at Manchester by Feilden Clegg Bradley Studios and at Glasgow by Steven Holl, in which the architects adopt significantly different positions with respect to precedent. Both prioritise questions of sustainability, but, in their architectural conception and realisation, they could hardly be more different.

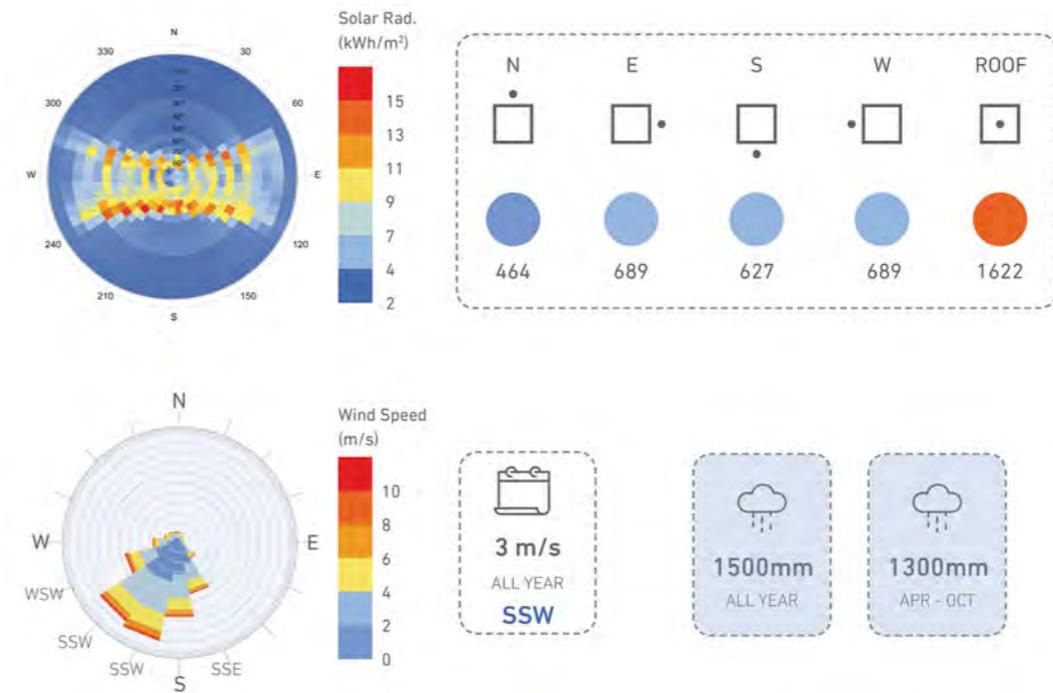
The paper also compares the new buildings to their nearby 19th century precedents. At Manchester a building designed by G. T. Redmayne was constructed between 1878 and 1881. The Glasgow School of Art, designed by Charles Rennie Mackintosh, was built in two stages between 1897 and 1910 and is regarded as one of the most important buildings of its period. Environmental design was a key factor in the design of both buildings, with a particular emphasis on daylighting. In addition each incorporated mechanical environmental systems that were advanced at that time.

Low-Income Housing for Lagos, Nigeria: An Affordable, Livable and Environmentally Sustainable Framework

Balint Bakos, Architectural Association, UK

African, Asian and Latin American cities will absorb 95% of the 2.5 bn new urban population before 2050. Providing these people with adequate shelter in an environmentally sustainable manner will be crucial both in relation to global warming and human development. Research identified that most of the urban population growth happens in cities with tropical savannah (Aw) climate, one of the reasons why Lagos was chosen as the context of the research. Despite the fact that the majority of the city's current population lives in informal settlements on less than 1£ per day, there is practically no housing option for the low-income social group. The research aims to understand how holistic design approach, informed by environmental analysis may contribute to a scalable framework for affordable, liveable and environmentally sustainable low-income housing in Lagos. During the fieldwork, a

number of previously built low-income housing estates were studied via occupant interviews, measurements and observations. Fieldwork data, literature review and climate analysis informed a complex design criteria for new low-income housing. Measurement data and environmental simulations were used to "dissect" and "refurbish" a well-known housing estate in Lagos and understand how thermal comfort can be maximized by climate responsive design. Finally, a step-by-step design process is carried out, modelling the design of a new low-income housing estate. A sequence of core architectural design decisions are strategically combined with environmental analysis to inform design towards comfort and carbon neutrality. Proposals are evaluated against the previously defined design criteria to prove the affordability, livability and sustainability of the design.



Solar radiation, air movement and rainfall data for Lagos, Nigeria

© Baliant Bakos

BIM Opportunities and Pitfalls for future Transport and Infrastructure Projects within a legal context (Crossrail - setting the BIM standard?)

Antony Davis, Kings College London, UK

When asked, employers, consultants, contractors and specialist subcontractors all have different responses to what Building Information Modelling (BIM) is and how BIM related design liabilities should be reflected within contracts. This demonstrates the bespoke nature of building and how challenging but essential it is to bring legal clarity to the definition of BIM roles and management processes within projects.

This work provides a better understanding of the potential risks and increased responsibilities due to the impact of BIM for the members of design and construction teams with focus on the architectural role within projects. It will start by analysing design liability as baseline criteria in common law, in tort and in statute and then move on to discussing how BIM creates variations to these baseline criteria before looking at these variations through the prism of the Crossrail project.

It will focus on the legal liabilities that stem from the usage of BIM in the development of the Crossrail station designs and construction between the different parties to the building contracts and professional service agreements and explore the new management and contractual relationships along with liabilities that BIM brings with it and the implications that follow in future transport and infra-structure projects. Design development and construction using BIM on Crossrail projects (i.e. BIM produced by Crossrail line-wide contractors, Framework Design Consultants, Tier 1 contractors and their consultants and the Tier 2 / subcontractors - particularly within the platform environments) has been critically examined with the caselaw and statutes surrounding this area. The final part of the dissertation will draw conclusions from the themes raised by the research and suggest future best practice methods for transport and infrastructure projects.



View of platform environment

© Antony Davis

Sustainable Housing for desert and semi-desert climates

Anthony Junior Alcarraz Ordoñez, National University of Engineering, Lima, Peru



Sustainable housing

© Anthony Junior Alcarraz Ordoñez

Objectives: To propose a sustainable housing that resists the climatic conditions where the intense heat does not allow reaching the adequate comfort to the inhabitants. Based on three technological concepts:

- 1) The wind tower, its objective is to inject fresh air into the interior of the house through openings oriented to the direction of the wind.
- 2) Solar chimney: its objective is to suck the indoor air that was heated due to human activity and solar radiation.
- 3) Silver ant of the Sahara: based on the nature of this animal we propose a cover that rejects the solar incidence.

Thus, there would be a cycle of natural ventilation and an adequate temperature that allows the comfort desired by the inhabitants of these hot areas. The direction of the investigation starts with the analysis of the silver ant, managing to understand the

physical and optical properties that make it unique in relation to the rejection of heat. On the other hand, both the wind tower and solar chimney are already studied technologies, what is proposed is to combine them to obtain a better result. A prototype was made of the type of coverage of the current housing and another of the housing with the coverage based on the silver ant of the Sahara. Both were measured with a hand-held digital thermometer, which measures the surface temperature of both prototypes and the data showed that the new coverage system rejects solar incidence more than the current one. This means that the temperature of the interior of the house protected with the new cover is below the temperature that the inhabitants currently support. With this first conclusion, we reach the adequate comfort they need to have a decent quality of life that all human beings deserve.

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

Wessex 'through the camera's eye', Hermann Lea and Lea's camera
© Hermann Lea, Toucan Press

The Wessex Project: Thomas Hardy Architect

Reproduced by permission of Dr Gregory Stevens Cox, owner of the copyright of the literary and photographic works of the late Hermann Lea

Papered Spaces: Clerical Practices, Materialities and Spatial Cultures of Provincial Governance in Bengal, Colonial India, 1820s-1860s

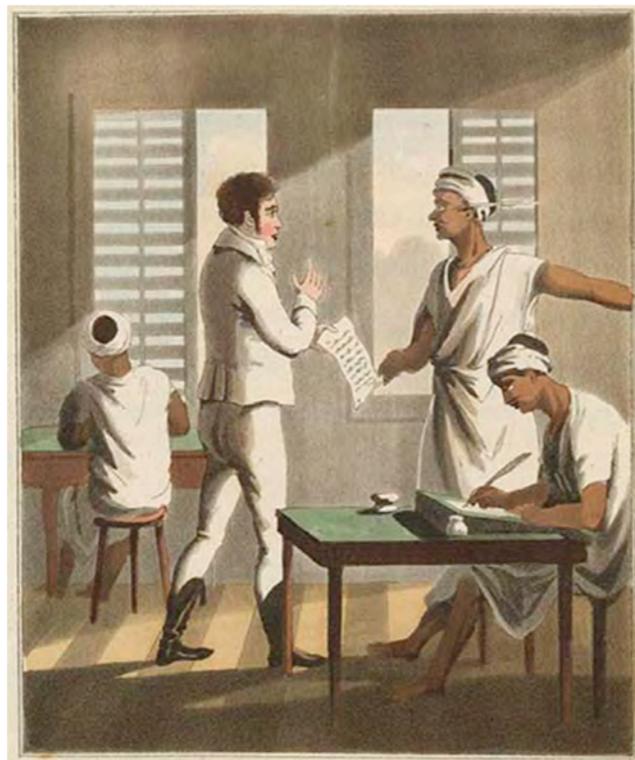
Dr Tania Sengupta, University College London, UK

British colonial governance in India was based on global technologies of writing produced by European mercantile colonialism and equally fundamentally, as analysed by Christopher Bayly, on the extraction of Mughal administrative knowledge embodied within a Persianette Indian clerical class, its materialisation into official forms such as paper documents, and further, on what Bhavani Raman has called a scribal-clerical 'habitus'. A paper-centred culture of bureaucratic practices was also the hallmark of the early-nineteenth century colonial government in Bengal that Jon Wilson calls one of the earliest modern states in the world.

This research focuses on the architecture, spaces and material culture associated with colonial paper-bureaucracy in Bengal. It argues that the paper-based and writing-oriented habitus of colonial administration also mandated a chain of related materialities and spatialities – from paper records to specific types of furniture, spaces and architectures of colonial governance. Focusing on the colonial cutcherry

[office] complex that formed the nerve-centre of zilla sadar [provincial administrative] towns of Bengal, I look here at the roles, spatial relationships and design developments of such 'papered spaces' as record rooms and clerical offices. The work demonstrates how paper became a key agent of colonial governance, not merely in itself, but also through the expanding spheres of its logic, which permeated in a profound manner the material-spatial culture and 'lifeworld' of the cutcherry. I also reflect on how paper-practices of colonial governance had to necessarily work in conjunction with other more immaterial and mobile circuits of colonial knowledge and information spread over the town and country, as also how such paper-governance was fed, for example, by paper and printing industries.

For the research, I combined extensive on-ground documentations of the material fabric of the buildings with archival research in India and the UK looking at governmental papers, period literature and art.



A European officer and Indian clerks at a cutcherry, nineteenth century

Drawn by Charles D'Oyly, Plate III, from D'Oyly, The European in India: From a Collection of Drawings by Charles D'Oyly, Esq. (1813, hand colour on aquatint)

© British Library Board (V 10573, Plate III)

The Wessex Project: Thomas Hardy Architect

Prof Kester Rattenbury, University of Westminster, UK



Ridgeway, near Dorchester

© Dorset County Museum

Cultural links between architecture and literature are manifold, and often alluded to in passing by architects and writers, yet there has been no in-depth systematic enquiry into this important subject. Now, as a result of two decades of research that combines architectural and literary criticism, this book provides a groundbreaking 'reading' of Thomas Hardy's work – the renowned novelist and poet having trained and worked previously as an architect.

Thomas Hardy's architectural works have long been seen as a confusing mixed bag, wildly at odds with his famous novels and poems. Yet despite more than 150 years of literary and biographical research, this is the first time his work has been studied in detail by an architectural writer.

This project therefore examines his surviving buildings, maps, experimental drawings, photographs and stage set designs (neither previously recognised as 'by' Hardy) and conservation campaigns – and reinterprets these in context of his novels, plays, poems and

factual writings – whose architectural cultures it also explores. It reconstructs his part-real, part-dream world that he called 'Wessex' as a conscious, experimental and polemical 'copyright' architectural project, foreshadowing experimental works of the twentieth century.

The Wessex Project: Thomas Hardy Architect has been acclaimed by Hardy scholars as 'a totally new approach to Thomas Hardy' and 'a must read for anyone with an interest in Hardy... like a second post-mortem, where the Home Office pathologist transforms a muddle of non-sequiturs into a coherent narrative'.

The book further argues that Hardy never gave up architecture, remaining a potent, deliberate and influential critic through his huge fictional outreach. It shows that he was an active experimenter in drawings, photography and set design, and argues that his fictional writings, integrated with 'real' conservation work, formed a deliberate campaign which still greatly shapes the conservation culture of England.

Hans Hollein: Postmodernism Culturally Reconsidered

Dr Eva Branscome, University College London, UK



The 1979 opening of the Österreichisches Verkehrsbüro on the Operringhof in Vienna: Hans Hollein can be seen on the far right of this Postmodern performative travel agency

© Nachlass Hans Hollein

With the re-examination of Postmodernism now widespread in many countries around the world, this research offers an innovative and expansive investigation of Austria's artistic and architectural scene from the 1950s to 1980s. Specifically, it focuses upon the Viennese artist/architect, Hans Hollein, the 1985 Pritzker Prize-winner and widely regarded as the foremost post-war Austrian architect, yet now largely overlooked.

The background to this study sits squarely within the context of Austrian re-education initiatives by Allied forces, especially the USA. Austria's proximity to the 'Iron Curtain' and occupation by four foreign powers created a heightened sense of Cold War tension. In an Austrian cultural scene still steeped in Catholicism, American cultural influences like Abstract Expressionism and Action Painting were transformed in remarkably original ways. One such outcome, Viennese Aktionism, directly affected architectural thinking through its shock-tactic 'performance environments'. In Vienna, the circles of radical artists and architects were not distinct, with Hollein's famous statement that 'Everything is Architecture'

symptomatic of this creative intermixing.

Mixing discourse analysis, archival research and oral interviews, this study shows that Hollein's diverse contribution across architecture, art, writing, exhibition design and publishing necessitates a more complex and nuanced account of architectural Postmodernism than that offered by figures like Charles Jencks or Heinrich Klotz. Hollein's outputs are viewed not as individual projects that architectural critics could appropriate for their own agendas, but as examples of Austria's efforts to redress its Nazi past and establish a post-war cultural identity.

While Hollein's concern with the obsolescence of architecture and its replacement by mass media corresponded with Postmodernism generally, in other respects his ideas were rooted in the violent and self-destructive practices of the Austrian avant-garde and its attitudes towards politics/religion/sex/ technology/ infrastructure/advertising. If these broader cultural aspects are included within the Postmodernist canon, then our understanding of the phenomenon requires substantial revision.

Spaces of Transcultural Resistance: Alterity in the Design Practices of Lina Bo Bardi and Alison and Peter Smithson

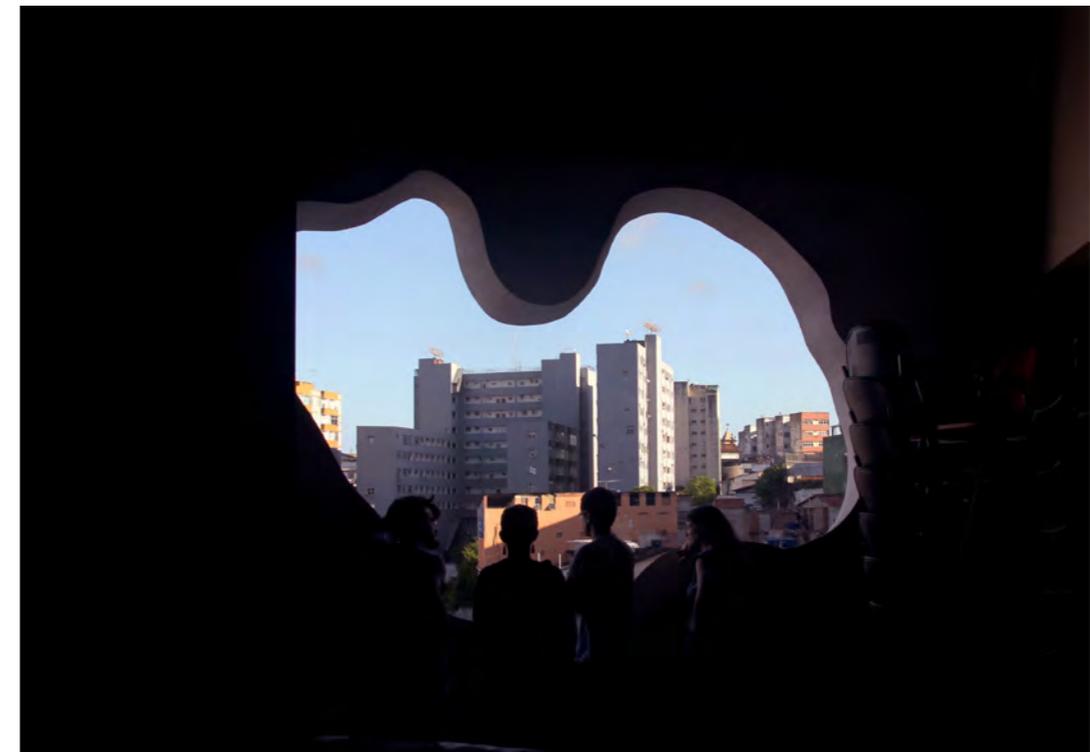
Dr Jane Hall, Assemble, UK

This core of the research is a thesis investigating alterity in the architectural design of the modernist architects Lina Bo Bardi in Brazil and Alison and Peter Smithson in the UK at a pivotal moment during their early careers in the 1950s. While there has been much focus on the localized nature of their individual practices, the thesis aims to understand how their parallel engagement with multi-scalar networks expanded their spatial reach in global terms. This is important because the transcultural narrative in the contemporary literature suggests both architects as archetypal models for resistance against the current hegemony of the professionalization of architecture as a global phenomenon, despite the significance of geographic location to the production of their work.

Transatlantic cultural institutions founded in the immediate postwar period give context to this study, with the Museu de Arte de São Paulo (MASP) and the Institute for Contemporary Arts (ICA) representing the intersection of global politics with emerging

forms of economic and cultural modernity. Through archival analysis, the research investigates Bo Bardi and the Smithsons' involvement with these respective institutions to uncover the inherent contradictions in their characterization as marginal historical figures, given their centrality to such new sites of power.

Within the context of emerging scholarship that asserts ever-expanding definitions of alternative practice in architecture, the thesis argues for the expansion of this discourse to encompass the co-constitution of political solidarity and consciousness as part of the professional identity of the transnational architect. By accounting for the historical development and conceptual significance of the work of both architects, this study contributes new insights into the history of alternative practice, posing a challenge to canonical historiographies to reveal the dialectic between globally significant institutions, which it is shown shaped the multiple modernities defining of modern architecture in both countries.



One of Lina Bo Bardi's windows, built at the Teatro Gregorio de Mattos in Salvador, Bahia Brazil

© Jane Hall

Jian: A Socio-spatial Framework of Chinese Rural Habitation

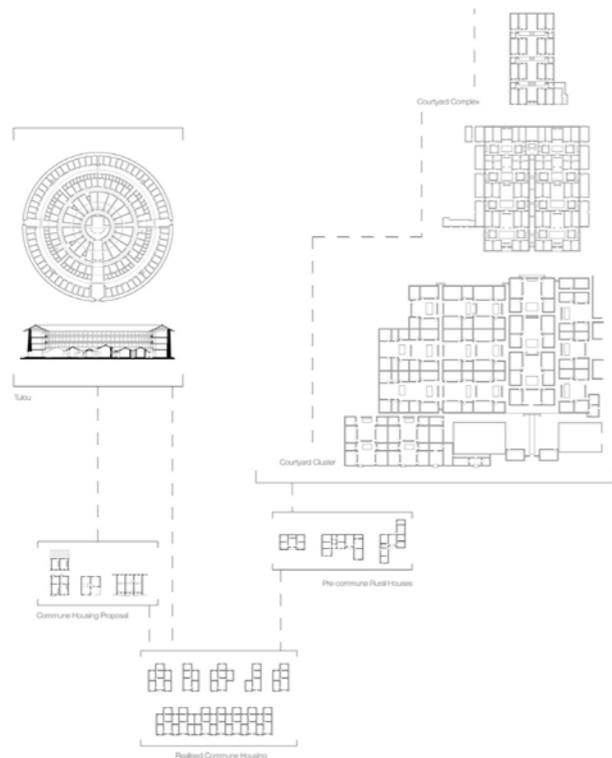
Dr Jingru Cheng, School of Architecture, Royal College of Art, UK

Against the backdrop of China's on-going rural regeneration, revisiting historical practices in rural dwellings seeks to confront the prevailing regeneration strategy and mentality, which are primarily devised for urbanisation. The modern architectural discourse rooted in industrialisation and urbanisation leaves architects ill-equipped - both in terms of skillset and mindset - to address rural issues.

The focus of the research is to identify the continued agency in the genealogy of rural dwelling models: the traditional courtyard house, the tulou and the people's commune housing. The interdisciplinary lens is central to the research. Through this lens, a close reading of domestic space is synthesised with the examination of the idea of family and household management and their economic and political contexts. This approach identified the reciprocal forces between the spatial and the social, the relationship between which can be understood as a conceptual socio-spatial diagram. The agency of this socio-spatial diagram discloses the way

in which inhabitants organise their lives through the everyday use of space, that is, the shared knowledge of rural habitation.

The idea of jian is that of an in-between state in space and time, the instrumentality of which transcends the courtyard house model from which it originates. What the jian provides is a socio-spatial framework without functional predetermination, inviting imprints of different daily practices through habitation. The idea of jian is subjected to neither collective nor family traditions and thus arguably accommodating both. The theoretical framing of the continued agency of the three-jian principle constructs an operative tool for spatial practices in the rural. Ultimately, the conceptualisation of 'rural' as a specific social, political and cultural construct, on the one hand, challenges urbanisation canons to see rural regeneration as a socio-cultural process and, on the other, extends architectural discourse on the rural through the device of socio-spatial diagrams.



The genealogy of Chinese rural dwelling models

© Jingru Cheng

Journey to Italy: Christian's Norberg-Schulz's journeys explored through the essay form in film and writing

Dr Anna Ulrikke Andersen, Harvard University, USA



Journey from Italy, still from film, Andersen, 2017, HDV

© Anna Ulrikke Andersen

This article looks at the role of the journey in the life and work of the architectural theorist Christian Norberg-Schulz adopting practice-led methods of essay writing and essay filmmaking. Framed through the field of mobility studies and film theory, I use his appearance on film as a point of departure, and ask how the journey and the experience of the relationship between places affected his theory of genius loci and notion of place.

Considered as one of the most important architectural thinkers of the 60s and 70s, research focusing on Norberg-Schulz's development of phenomenology into the field of architecture and his concept of place is rich. Yet, the journeys between the many places that forms the case studies in Norberg-Schulz's publications, has received little attention. My research has discovered a film about the theorist's life and work, titled *Livet finner sted* (1992), which depicts the theorist undertaking a

journey as its opening scene, and locates the window of a train as the site where his thinking took place. Considered in the context of Giuliana Bruno's *Atlas of Emotion* (2002), her use of the word haptic, and a cultural history of people travelling as a tool for thinking, I reconsider Norberg-Schulz.

Through archival research, oral history and an analysis of the film *Livet finner sted* (1992), this article draws attention to a series to date unexplored journeys made by the theorist. His life and work is reframed using the method of the essay form in film and writing, as my submission consist both of the film *Journey to Italy* (2016) and the essay "By the Window of a Train". As the article travels across time, space, academic and creative fields, I open up for a critical discussion of Norberg-Schulz's work in an open-ended, essayistic way.

Incorporating Self-management: Architectural Production in New Belgrade

Dr Tijana Stevanovic, University for the Creative Arts & University College London, UK



Construction phase of residential blocks 61-64 in New Belgrade using the 'IMS-Zeželj' industrialised building system

Source: Blokovi 61-64 na Novom Beogradu, prva faza izgradnje (Beograd: Gradjevinsko Preduzeće RAD, 1977)
By courtesy of GP RAD

This research is the first comprehensive study that situates the Yugoslav architects' everyday practice in relation to industrialised building processes and the praxis of self-managed socialism. Focusing on the development of New Belgrade in conjunction with the expansion of flexible structural systems and the reform of architectural education, this research posits socialist Yugoslavia's self-management principle (1949-1989) as a potent cultural paradigm that conditioned relations between architects, the building industry, and the user. Despite its influence being frequently dismissed by Yugoslav architects, the research argues that the ceaselessly debated purview of self-management (through the three federal constitutions of 1953, 1963 and 1974) strongly influenced the organisation of architectural techniques. It does so by interpreting a range of sources – technical documents (plans, standards, regulations, building contracts), educational literature, professional press, oral history – that elucidate the transformation of the everyday realm of the work of architects and common processes rather

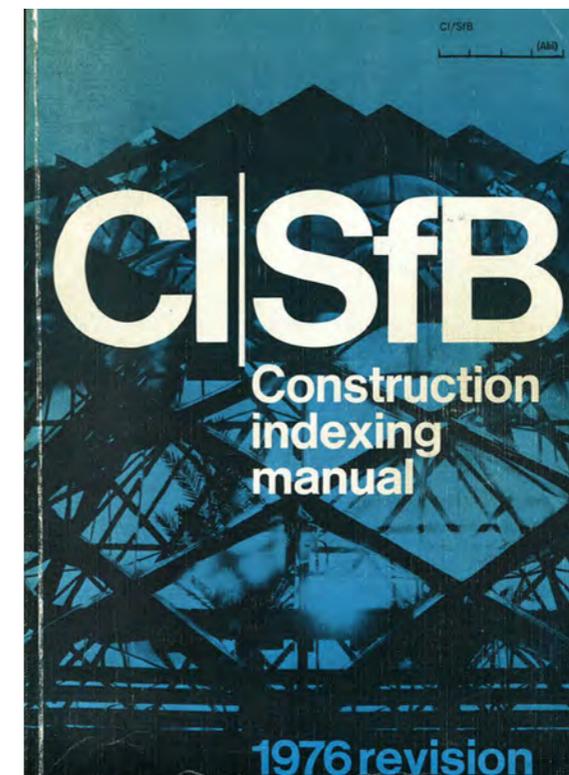
than the products of individual design emphasised by other recent studies of Yugoslav architecture. By articulating three critical mediations used to reflect on the conjunction of self-management and architectural production: i) social property; ii) individual vs. collective; and iii) the notion of architect as worker, the study tracks how they shaped the broader field of architectural culture. It demonstrates how emergent notions deemed merely technical—such as 'open prefabrication' or 'expanded circulation'—reinforced architects' detachment from the material building process. It argues that changes in the architectural education reflected ambitions that the emergent architect needed to acquire her working material from a wide range of sources: from global standards to local building industry. The project contributes to research into the socio-political dimension of building technology in architecture, but also problematises how reducing self-management's collective capacity to individual self-discipline intensifies the atomisation of responsibilities in architecture.

The epistemology of CI/SfB: Categorising architectural knowledge in 1960s Britain

Prof Adam Sharr, Newcastle University, UK

The librarian Melvil Dewey – inventor of the famous Dewey Decimal system – knew that library systems categorise knowledge, and that they therefore propose an epistemology. This paper reviews the values of an architectural library system adopted in the UK in the 1960s named – unglamorously – CI/SfB. It recognises and interprets the ideas of architecture, culture, and knowledge which that library system proposed. CI/SfB might seem like an especially nerdy topic for a research paper. However, from this historical distance, it can be understood as a microcosm of a set of broader professional priorities from the time it was formulated. Its categorisations emphasised building types, building elements, the working of materials, structure, services, and technical performance over the conventional priorities of architectural criticism, journalism, history or theory. It can be understood as part of a wider contemporary culture of taxonomy and typology, interpreting buildings as assemblages of forms, elements and materials that could be analysed to identify universal mechanisms for modernist

composition. CI/SfB thus provides a direct account of the idea of architectural knowledge proposed in certain quarters of the British profession at that time, and remains a notable object of study. This paper outlines the history of CI/SfB, reviews its classifications, and accounts for its values. It finds an example of what the architecture of CI/SfB could have looked like in Leslie Martin and Patrick Hodgkinson's 1962 design for London's Foundling Estate, as discussed in Martin's 1972 essay 'The Grid as Generator'. While CI/SfB may have slipped from view, the architectural epistemology it described remains pervasively present in today's construction industry. Building Information Modelling, for example, and building regulations that systematise environmental performance, are arguably only the latest manifestations of the 1960s values represented by CI/SfB. Yet its faith in collaborative endeavour – trusting technical progress to make things better – remains appealing.



Cover of the 1976 edition of the CI/SfB referencing manual, published by the RIBA

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Enhancing social value in architectural design: A case study of sport and cultural mega events

Laura Alexandra Brown, Northumbria University, UK

Architecture is constantly evolving and responding to changing climactic, cultural, social, political and functional dynamics. Throughout history, some buildings have outlasted civilisations, evolved and been adapted for new uses beyond their original purpose, whilst others have failed to adapt to new circumstances or developments, and become obsolete over time. An exacerbated example of this is observed in sport and cultural mega event host cities, where the compressed period of construction, short-lived primary function, and often unknown longstanding tenant, pose a major challenge in securing positive legacy and long-term use. Exploring concepts of architectural legacy through the lens of the Summer Olympic Games, the largest and most prestigious global sport and cultural mega event, this research seeks to examine the characteristics of architectural design that support positive long-term legacy and function in buildings. The study integrated archival and in-situ research, rigorously applying a framework to assess aspects

of architectural design, and its urban contextual dimensions, in European Summer Olympic host cities. The contribution of the research is twofold. Through the exploration of unfolding legacy and proto-legacy developments in European Summer Olympic Games host cities, the study theorises architectural legacy in the context of the Games, exploring indicators of the physical manifestation of legacy. The paper identifies systems and structures that support or do not support legacy in this context, and explores emergent themes in the context of wider architectural legacy debates, viewing the Games as a fast-track version of change to principal function. The originality of this research lies in the horizontal comparative analysis of architecture and infrastructure in the mega event context. The significance of the research is in the advancement of architectural design theory as an instrument to augment the social value of architecture through design, promoting social and cultural sustainability, and benefitting cities and communities.



View of the track and field at Stadio Olimpico, Rome, in 2017

© Laura Alexandra Brown

The Production of Heritage

Alan Chandler, University of East London/Arts Lettres Techniques Ltd, UK
Michela Pace, IUAV Venice, Italy



Brick Bricolage – the genius of vernacular

© Alan Chandler and Michela Pace

Who produces the definition of heritage?
 How is it produced?
 Having produced heritage, who does it belong to?

Heritage is defined and produced legally through international charters, codes of practice and protection frameworks under national and international law; technically through accredited training in material performance and technique; educationally via specialist programmes transferring knowledge from technical and legal agencies to interested parties – an exclusive circle.

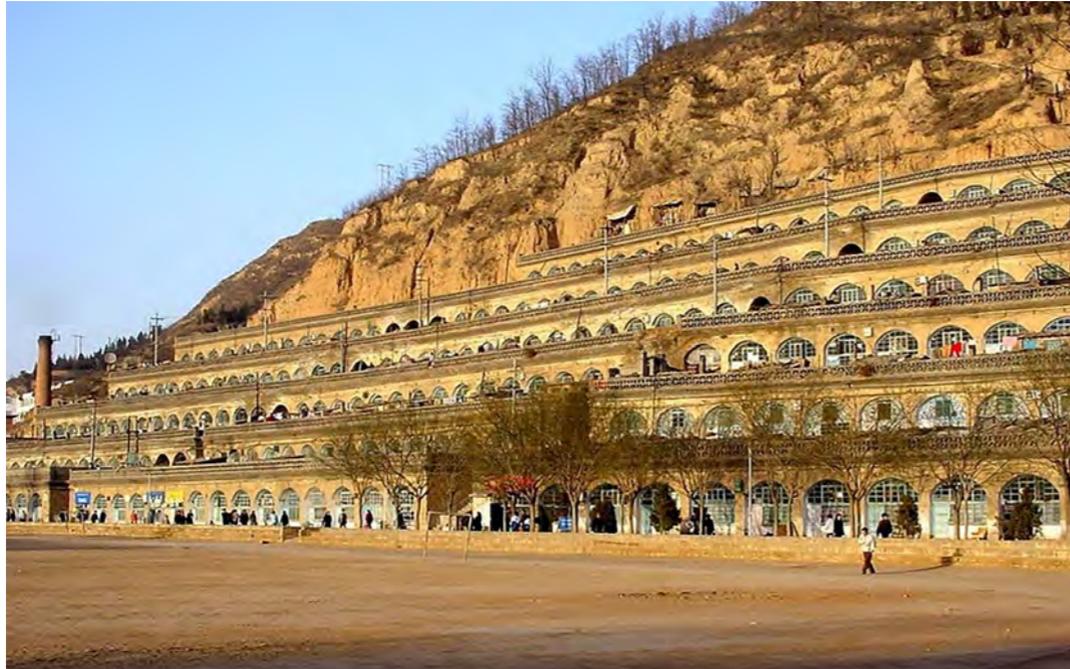
What is not defined is how social responsibility in building conservation is enabled, or how conservation decisions are actively informed by community engagement. The production of heritage is not a neutral process. Professionalization currently separates significance from use. The advanced understanding and connoisseurship of heritage value (both culturally and financially) by professionals and their clients creates,

in its mildest form, a lack of community engagement in what ought to be a collective history, at worst acting as a mechanism to enable gentrification and allow profit-led 'regeneration' to co-opt heritage in the name of collective identity.

Morris and Ruskin philosophically underpin a critical review of the frameworks that scaffold current practice and identify intrinsic gaps around the social and cultural aspects of heritage. We question the framing of conservation objectives with a technocratic perspective, we question how professionals evaluate social significance, and we articulate 'tactics for getting out of the heritage trap' that includes public engagement to generate an understanding of cultural significance, not merely publicize the final result. Learning from art, archaeology and landscape practice, architectural conservation can become adept at change management by being equipped with the skills to identify the kind of change that is appropriate not only for the historic fabric, but for the people who inherit it.

The Application and Value of Regional Culture in Campus Construction in the Underdeveloped Areas of Northwest China

Prof Weimin Zhuang, Hongjun Tang, Kuang Li & Dr Xichen Wang,
Architectural Design & Research Institute of Tsinghua University Co., China



Setback Cave Dwellings in the Old Campus of Yan'an University, Yan'an, China

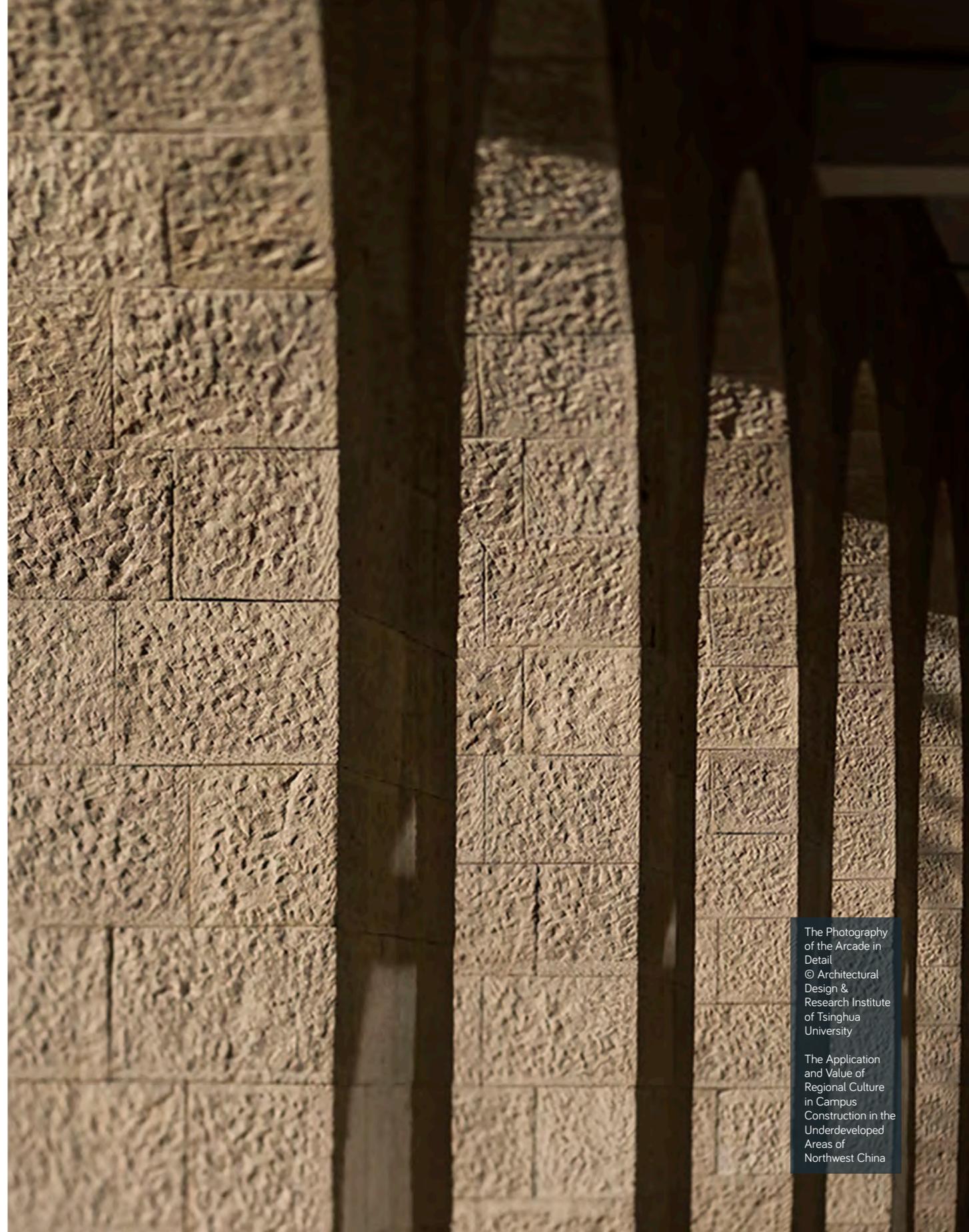
© Yan'an University

By digging the cultural elements of the loess plateau and establishing a regional cultural awareness system, this paper uses the campus planning of Yan'an University and as an example to explore the application and value of regional culture in campus construction. Guiding designing practices with regional architectural theories, it explains and illustrates the cultural characteristics during campus planning and, based on the regional features and cultural atmosphere of the new campus of Yan'an University, tries to deepen the teachers', students' and Yan'an residents' identity with the loess plateau culture. In the end, the paper, by combining theories with practices, arrives at an economical, efficient and operable design paradigm.

Studies show that loess culture is a regional sub-culture based on the farming tradition of the Han group while integrating the cultural factors and features of the nomads, carrying a long and profound history and regional characteristics. The cave

dwellings are a typical illustration of this culture in architecture, embodying the architectural concept of adapting to nature and the philosophy of harmonious coexistence between man and nature. We can extract typical local cultural elements and use them in campus buildings to create a campus representative of local culture. In this way, we not only pay respect to local ecology and environment, but also foster the students' cultural identity and a quality campus culture through campus buildings with distinct local characteristics. The actual campus design takes into account local conditions and uses local materials and approaches, which not only ensures the implementation of the design concept, but also significantly cuts the construction cost, setting an example of college campus planning and construction for less-developed areas in northwest China.

By applying regional culture to architecture, we can strengthen the cultural identity of local residents and create economic values for the architecture projects.



The Photography of the Arcade in Detail
© Architectural Design & Research Institute of Tsinghua University

The Application and Value of Regional Culture in Campus Construction in the Underdeveloped Areas of Northwest China



Research Matters

The RIBA Research Matters conference is an event designed to provide early career stage researchers with an opportunity to present their work and ideas in an informal setting alongside their peers and established researchers.

The event adopts the rigour of an academic conference, with papers presented in a constructive but supportive atmosphere.

This year's conference was held in Nottingham, co-hosted by the Department of Architecture and Built Environment at the University of Nottingham and the School of Architecture, Design and the Built Environment at Nottingham Trent University.

The following abstracts are a selection from some of the post-graduate candidates who presented at the conference.

Civilians escaping
old Mosul

© Herve
Jakubowicz

Reversing Erasure:
Re-narrating the
Destruction of
Mosul's Historic
Centre

Unpacking the Supermarket: Methods to visualise systems behind space

Emma Campbell, Prof Greg Keeffe, Prof Gary Boyd, Queens University Belfast, UK

Unpacking Bacon: Slaughterscape

© Emma Campbell



Facing an emergency, we tend to interrogate the root of the problem, strategize ways out and rationalize better ways of working in the future. In today's climate emergency, our consumption habits are a major cause of the problem, with food, in particular, being an impactful, yet necessary consumable. At the global scale, food supply chains face the growing challenges of changing climates, unpredictable weather patterns, political unrest and natural resource depletion. While in the UK, as surplus food availability leads to a third of all food going to landfill, upwards of four million people per year rely on foodbanks.

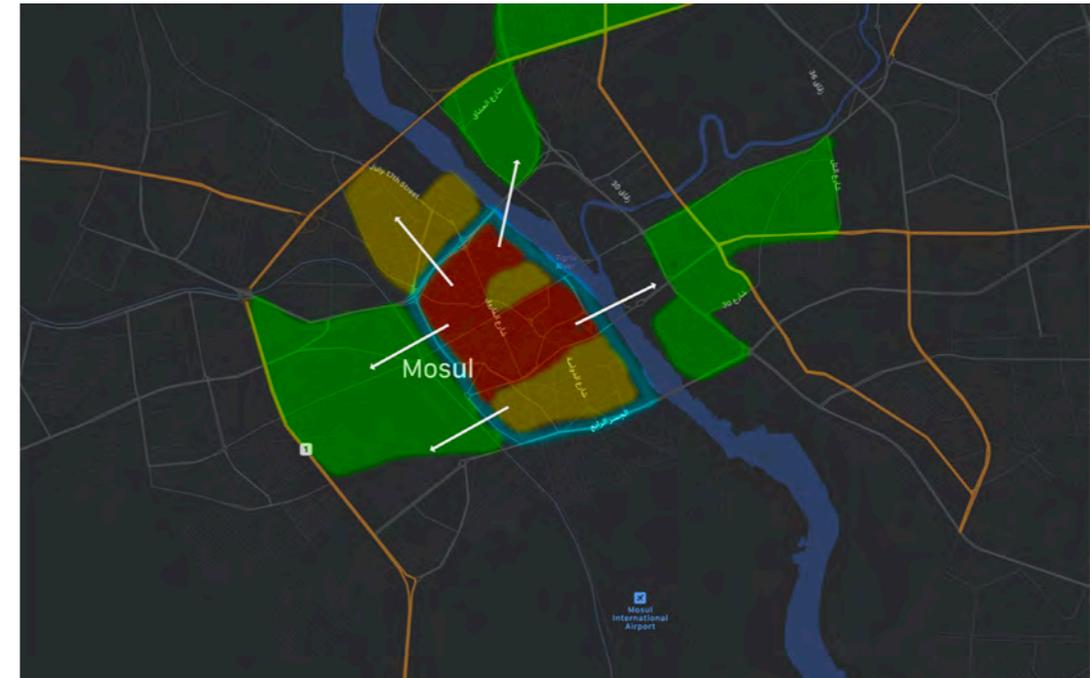
As a nation, we have become increasingly aware of our food's environmental impact and this has shaped our key shopping space, the supermarket. Trends for veganism have translated to more meat-free ready meals while the War on Plastic has sparked zero-waste shopping trials. A dominant interface between consumers and the food they buy, supermarkets also shape our shopping habits as well as the practices of their suppliers. A generic and easily read space, they are designed with convenience in mind, but the simplicity of the space hides the complexity of its supply chains which move large volumes of food faster and further, in search of all-year seasonality on the shelves. Yes, supermarket shopping is convenient, but since the only interface with the system of our foods production, processing and movement is its plastic packaging, we are left to wonder, at what cost?

As an everyday space, the supermarket appears banal on the surface, but scratching that surface reveals how it and its supply chains has been incrementally shaped to move food seamlessly from farm to fork. By setting up techniques to peel away and visualise the layers of complex systems we can understand why a space is formed a certain way. We can see how the space nests in a system and critique the wider impact of both. Visualising both system and space, then allows designers to imagine better futures, knowing that if they implement just small changes in a space, they can anticipate cascading effects in the whole system.

This research explores how we can visualize the supermarket, not just as a space, but as a node in an environmentally impactful network. The research asks how we can unpack a physical space sitting within a wider, more complex and invisible system. It applies a new two-step methodology based on systems thinking to first unpack and visualize, then re-imagine the supermarket and its supply chains. Through a process of measuring, mapping and drawing, the thesis is formed of three projects. The first project chronologically unpacks the supermarket as a space of convenience, the second visualises a number of linear supermarket supply chains for a sample basket of goods. Finally, through propositional thinking, the third project re-imagines future supermarket spaces and supply systems which are less impactful, localized and circular in nature.

Reversing Erasure: Re-narrating the Destruction of Mosul's Historic Centre

Yousif Al-Daffaie, Nottingham Trent University, UK



Immigration patterns from Mosul's Old town to the edges of Mosul

© Yousif Al-Daffaie

During periods of conflict, cities experience destruction on the micro and macro scale, from heritage to infrastructure, including landmarks and private dwellings. This paper will present and document a timeline and analysis of the destruction taking place in Mosul's old town between 2014 and 2017, and the aftermath from 2017 to 2019, and discuss the impact of the destruction on heritage, culture, and identity. The investigation of the timeline will question the shift in urban spaces, houses and heritage sites, to eventually establish a visual map detailing the places of destruction.

The paper underlines the destruction within the old city of Mosul as a baseline for understanding the fate of the city; the potential for reconstruction, its obstacles, and the effect of the potential shift in its identity in the cultural image of Iraq in general. Whilst reconstruction projects are taking place in Mosul's old town, the progress is slow, and the projects appear not to be directed towards providing the much-needed shelter and accommodation for the town's internally displaced peoples (IOP's).

The visual map will set a baseline for comprehending the systematic targeting and destruction of particular spaces, as well as providing potential methodologies for future reconstruction proposals. On the one hand, affected spaces reflect on the aesthetic and function of the urban and architectural entity in Mosul's old town, on the other hand, they may catalyze a *de facto* change in identity, and scar traditions built through the accumulation of a politicized daily life within the alternation of generations.

Factors that come in play in shifting the identity of Mosul's old town is explored in the political, physical and historical fields; The systematic targeting of historic cities damages more than mere physical structures, it affects identity of traditions, historic layers, and immaterial heritage. These layers are weaved within the social and urban fabric in Mosul, and the systematic attacks are explored in relation to a bigger-scale scheme of a *de facto* change in the Mosul Identity.

Machine Vision and Algorithmic Creativity

Gosia Starzynska, Royal College of Art, UK



Castles In The Sky With Diamonds by Google Inc. CC BY 4.0

“Perception and creativity are very intimately connected. Any creature, any being that is able to do perceptual acts is also able to create.”
 Aguera y Arcas, principal scientist at Google, 2016, *How computers are learning to be creative*.

This paper seeks to explore if pattern recognition should be considered a creative, rather than a scientific activity. With a growing number of industries deploying machine learning to tackle Big Data (Paggio, 2017), machine vision became a contemporary visual condition where vision is no longer optical (Pasquinelli, 2015). This current development led to a growing interest in the use of the algorithms within various creative industries. From fine art to architectural projects, the premise of those works is considered in the context of a long tradition of the euro-centric gaze. To do so, this paper uses historical analysis of perspective and the ocular tradition of representation to confront the contemporary developments of Convolutional Neural Networks (CNN). Building on the work of data philosophers like Matteo Pasquinelli, Katherine Hayles and Luciana Parisi, this

paper works through a set of cases from Google DeepMind division, to a recent Christie’s auction of a Portrait of Edmund de Belamy, an AI-generated painting by a creative group Obvious. With creative practitioners exploring machine learning in their practice, their processes are interrogated and machine vision is positioned as an emerging semiotic system rather than as a tool. Finally, the paper lays out the first stages of a CNN for determining architectural style working with data scraped from the RIBApx archives and Pinterest to address whether the role of the algorithm can be considered as an expressive medium rather than a statistical aid. The project is used to illustrate and highlight the user-generated bias and interrogates the curatorial role of an artist in the process of constructing a data-set. Modern-day perception extends beyond human experience. The paper aims to contribute to the contemporary debate on human-machine collaboration in the creative process which recently has sparked questions about authorship, creativity, and labour.

How could immersive technology and virtual reality provide new opportunities in design research?

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Digital innovation is transforming the way that design teams within architecture, urban design, and related disciplines are working and approaching design. In addition to automation and parametric design approaches becoming more popular, the use of immersive technology is also being used to support consultation and design review.

However, there is less emphasis on the use of immersive technologies for design research, particularly around the fields of user experience and interactions with their surroundings. Virtual Reality (VR) has the potential to provide new methods to study the complex relationships of different spatial and environmental attributes, as the capabilities of VR allow us to easily redefine and change variables that are difficult to control in live environments, such as the amount of space or type of view. As the capability and functionality of computing power, immersive technology and gamification progress, can VR provide a successful research environment?

In 2017 Atkins worked with University of Bath and Bath Spa University on a series of studies which examined psychological responses to different physical aspects of working environments, such as social density, spatial density and type of view, using VR to test different variations.

Research into these attributes of the physical environment can be challenging, as there several interdependent factors at play, which are often difficult to isolate in traditional observational studies, or

expensive to build large scale lab-based experiments.

The studies used a variety of psychology-based methods to test perceptions and experience of space in virtual reality, including:

- established surveys assessing perceived work quality, personal space, crowdedness and socialness
- Visual Spatial Perspective Taking (VSPT) tasks which test spatial perception, or the ability to create a mental map of space

An additional study was then developed (which is ongoing), with an aim to better understand the relationship between physical and spatial attributes and tasks that people undertake, conducted through scenario-based tasks in virtual reality.

Understanding the connection between the built environment and our psychological responses is an important aspect of designing successful places, and there has been a renewed focus in recent years on satisfaction, wellbeing and productivity related impacts of the built environment.

Looking forward, the results of these studies are being used to inform our understanding of how measures of success in design are defined; how satisfaction, wellbeing and productivity relate to different spatial and environmental attributes; and how we can use immersive technologies for more meaningful engagement with the people who live, work and play in the buildings we design.

Humanitarian Architecture and the Creation of Schools for Disadvantaged Communities in China: Bridge School, Fujian Province

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Children playing on the playground of Bridge School with a typical earthen building in the background

© Hang Du

In the past few decades there has been increasing global concern for people in developing countries who are suffering from disasters, diseases, poverty, etc. As a result, many charitable organizations, architects, universities and others have become involved in humanitarian projects to help alleviate these social problems by utilizing architectural design skills. Humanitarian architecture provides solutions in response

to natural- and man-made societal or environmental problems and its scope can be broadly classified into two categories: 'post-disaster' and 'socio-economic community development' projects. Significantly, in recent years there have been also increasing concerns about the roles and responsibilities of architects and the appropriateness of humanitarian architecture. Humanitarian architecture has been undertaken in China, however, for cultural reasons this has not been under the 'humanitarian' banner. Indeed, the term 'humanitarian architecture' is not recognized by the Chinese architectural community and similar descriptions tend to refer to "architects involved in the humanitarian field" or "an architect with a humanitarian spirit".

In last ten years, due to frequent natural disasters in China, many 'humanitarian' projects have been developed to respond 'post-disaster reconstruction'. As a result, and similar to the global picture, research into

post-disaster humanitarian architecture has increased significantly, however, research into 'non-disaster relief' projects focused on socio-economic development is rare. This research therefore focuses upon humanitarian school projects for under-developed communities. The rapidly developing economy in China has resulted in the gap between rich and poor becoming wider particularly in relation to the standard of education and school facilities between urban and rural areas. This situation has particularly affected migrant workers, who are the products of the unique urban-rural system in China. They move to cities for employment opportunities leaving their rural 'left-behind children' in their hometowns or villages. To examine the phenomenon in more detail, this paper focuses on the Bridge School project designed by Li Xiaodong Atelier, which was constructed in 2009 in the village of Xiashi, Fujian, China. This Aga Khan Award winning project is a typical example of a school constructed for disadvantaged communities that provides both physical and spiritual functions to the local community. This analysis will examine the delivery mechanisms for the project, issues and challenges in the process, and the impact on the local community through a number of interviews with key participants in the design, delivery, and use of the school including the project manager, parents, and local residents.

The Transience of Urban Areas in Space and Time: A Search for the Heart of Berlin

Nick Haynes, University of Nottingham, UK



View of the James-Simon-Galerie from the Schloßbrücke

© Nicholas Haynes

Museum Island in Berlin is identified as a world-leading center of academic and research excellence, that for nearly 200 years has built on its royal decree as 'a sanctuary of the arts and sciences,' and included in 1999 its listing as a UNESCO World Heritage Site. July 2019 has witnessed the unveiling of the sixth building of this collective— David Chipperfield's James-Simon-Galerie. The building shares the same constitution as its neighbors: an independent form, but where a deeper relationship with its satellites exists. The omission discharges much of the 1999 Museum Island masterplan, formulated as the museums adapt to cater for five-million visitors annually. This presents a series of opportunities and challenges for the estate. Linking the museums via the 'Archaeological Promenade' conclusively rearranges the experience for the majority of visitors. This modification will comprise the biggest typological alteration in the collective's development.

This presentation aims to locate this transformation within the existing typological framework of Museum Island as just one fragment in space and time that comprises Berlin's volatile core. By contrasting this against three vignettes in history: the 1830s; the 1880s; and the GDR-years, a myriad of interrelationships between the realms of architecture, urbanism and

societal structure are unearthed. Forensically unpicking this "highly sensitized" and "hallowed" ground illustrates how this terrain shifts with new stimulus and innovations. In combination with a literature review and first-hand interviews with the architects, this presentation contributes to a wider discussion about cultural buildings' role as components capable of propelling and redefining urban areas. It illustrates that while these buildings catalyse the urban area, the reducibility of the city to clearly separated parts is questionable, when a study area is subjected to continuous vying stimuli. Instead, the intrinsic relationship between site and building is complex, where competing forces lead to ambiguous and overlapping territories. This process frames the debate to what degree our relationship with architecture is internalised. This presentation illustrates that the relative autonomy of the discipline is pivotal for architecture to be able to relate contextually with other spheres of discourse. The constitution of this apparently paradoxical statement accommodates Kantian morality and the continuity of built form as important stems of innovation within typological generation. Both expedite a general progression of the type over time, to allow architectural discourse to shift its position over discursive terrain, whilst respecting its own sovereignty.



Dolphin Estate,
Lagos

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Low-Income
Housing for
Lagos, Nigeria: An
Affordable, Livable
and Environmentally
Sustainable
Framework

