

PRESIDENT'S AWARDS FOR RESEARCH 2018



## Book of Abstracts

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## Foreword

It's not often that researchers in any field, let alone one as diverse as Architecture, are given the opportunity to reflect on the diversity of work across the discipline and look beyond their own specialisation. The President's Awards for Research and the Book of Abstracts do just that; offering an overview of just some of the invaluable work going on outside our day to day practice.

I am always struck, as are our judges, by the breadth of the research landscape and it is heartening to see a notable thread of human-centred enquiry, with submissions addressing conflict zones, homelessness, prison rehabilitation, social housing and minority groups from across the globe and within the UK.

I am happy to report that half of all the submissions came from female entrants and we continue to attract cross-disciplinary work involving academics from various subjects, practitioners, other built environment professionals and local and national authorities.

It also gives me great pleasure to see that the practice submissions this year have really grown in strength. The value of research in Practice, of course, goes far beyond these awards; more and more practices are

recognising how research adds value to their product and enhances their reputation and we are keen to develop that at RIBA through the new post of Vice President for Research.

This year's annual theme was a deliberate choice to support the work of the RIBA's Ethics and Sustainable Development Commission and the submissions have provided the opportunity to consider more broadly the challenges that face not only the profession and the construction industry, but also those facing wider society and the people living in the buildings and communities we build.

I would like to thank all those who submitted their work into the awards and my congratulations go to all those who have been shortlisted and to the eventual winners of the categories and the Medal.

Finally, I would like to acknowledge the dedication and generosity of all the judges who give so much of their time freely, to read and assess the submissions and without whom the awards would simply not be possible.

**Ben Derbyshire,**  
RIBA President 2017-19

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## Introduction

The last two years have seen the most successful President's Awards for Research in its history. Following a major review in 2016, the number of entries increased by over 50% compared to previous years. Furthermore, the introduction of a consistent entry format facilitated the publishing of material from the Awards for the first time. Two new publications were conceived – this, the Book of Abstracts, as well as the Knowledge and Research in Practice book. Additionally, the Journal of Architecture agreed to publish the winning submissions. Statistics from the Journal show that the winning articles have attracted significant interest with over 6000 downloads last year. The winning papers also feature in the RIBA Journal (RIBAJ), which further increases exposure of the research and its reach into practices across the country.

It is encouraging to see around 20% of entries continuing to come from across the globe. This year we have added countries such as Pakistan, New Zealand, Sri Lanka and Germany to our list of international entrants.

This year's annual theme is Ethics and Sustainable Development and was chosen to support the work of the RIBA's commission by the same name. With a strong and re-occurring theme of humanitarian and environmental research over the years of the President's Awards for Research, this category shares a degree of overlap with the others, particularly 'Cities and Community' and re-enforces the message that ethical and sustainable endeavours must be inclusive,

accessible and affordable for all if they are to have genuine impact.

The Awards not only promote and recognise the best of research in the field of architecture, they also provide an opportunity for entrants to re-evaluate their work. Successful submissions set the work in context, making no assumption about the knowledge of the audience and explain clearly how the research was conducted and why it is important. It is worth bearing in mind that the Award judges are carefully selected from across the spectrum of architectural research in both practice and academia and that each member of the panel reads all abstracts and research statements.

Guidelines on the structure and marking criteria for submissions are also provided - entrants observing these do put themselves at an advantage, not least because it makes a judge's life easier!

The RIBA is extremely grateful to all those who submitted their work to the President's Awards for Research. Regardless of the success, each submission contributes to our understanding of the research landscape and our efforts to showcase the relevance and importance of architectural research and, not least to provoke questions and debate. Likewise, the President's Awards for Research would be impossible without the extraordinary generosity and enthusiasm of the judges and to them we are greatly indebted.

**Dylan Dixon,**  
Research Projects Manager  
RIBA



Equally notable was...  
how many [entries] were  
people-centred...  
working with  
communities to  
encourage young  
people to engage with  
the built environment...

## Chair's Observations

The range of work that the judges panel assessed this year is testament to the vibrancy and diversity of architectural research in the UK and overseas. It showed us how architects at every stage of their careers - in training, in practice, in academia - continue to see a spirit of inquiry and interrogation as core to the nature of the discipline and to its progress.

As this collection of abstracts show, submissions considered issues relating to heritage, housing and the contemporary rural environment, investigated how new materials and design technologies could conserve materials or create a new language of architecture, or explored how the sustainability agenda might generate a new ethics of practice. The quality of the work was notable, as was its global reach: certainly many of the submissions focused on architecture in the UK, continental Europe and north America, but there was a strong presence from scholars working on the global south, and on the constantly shifting built environment of a modernising China.

Equally notable was that however diverse the submissions were, how many were concerned to conduct research that was people-centred: be that seeking to work with communities to encourage young people to engage with the built environment, for example, or which explored how an architecture 'from below' might offer lessons for a more inclusive architectural practice. A corollary of this was how many submissions demonstrated an insistence on the role architects should play in serving society, whether through an intelligent and empathetic approach to prison design or by using research to make the case for a renewed programme of social housing, affordable for all.

It was a privilege for us to take on the role of judges and to be reminded of the breadth and depth of the subject and to be witness to the future paths it could take. The scope of the work was also evidence of the reach and international significance of the RIBA President's Medal for Research.

### **Dr Elizabeth Darling,**

Reader in Architectural History, Oxford Brookes University  
Chair of the President's Awards for Research 2018 Judging Panel

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

## 2018 Judges



**Prof Ruth Morrow**  
 Professor of Architecture,  
*Queen's University Belfast*

Ruth is Professor of Architecture and Director of Research Impact in the School of the Natural and Built Environment, Queen's University Belfast. Her research covers both social activism in post-conflict spaces and material development. In the former she works collaboratively with students of architecture, artists and community activists; funded from sources including Arts funding, and Dept of Communities. In the latter, the work comes from a 15yr long collaboration with a Textile Designer resulting in patents and commercialization within a spin-out company: Tactility Factory That collaboration continues through recent Research Council funding alongside new international, cross disciplinary projects tackling repurposing materials and elements within the context of the circular economy, funded by US, Ireland, Northern Ireland Research Council and Dept of Economy funding. Both areas of Ruth's research are underpinned by a strong ethical and feminist stance, made explicit in her writing around the work and its impact on Architectural Practice.



**Xavier de Kestelier**  
 Head of Design Technology &  
 Innovation,  
 Hassell Studio, London

Xavier was educated in Belgium and the UK and holds an BArch and MSc in Architectural Engineering from the University of Ghent and an MSc Urban Design from The Bartlett School of Architecture. Xavier is the Head of Design Technology and Innovation at Hassell Studio where he leads design technology across all disciplines and regions. He previously co-headed the Specialist Modelling Group at Foster+Partners, where his team specialised in computational design and digital fabrication. He has initiated and overseen several funded research projects. He specialised in the field of large scale 3D printing and worked with NASA and the European Space Agency on 3D printed Moon and Mars habitats. He is also director of Smartgeometry which is a not for profit organisation that organises a yearly international conference and workshop around digital design and fabrication. Xavier has held academic positions at the University of Ghent, Syracuse University and The Bartlett School of Architecture (UCL)



**Ian Wroot**  
 Reader in Architecture  
 Head of Architecture, Liverpool John  
 Moores University

Ian is the Architecture and Urban Design Programmes Leader at Liverpool John Moores University. He has research interests in cognitive bias, judgment heuristics, and the validity of commonly used design quality indicators. This has previously explored the enhancement of processes and practices in the briefing, conceptual design and post occupancy evaluation stages of building design through the role of Clients Design Advisor on a number of secondary and higher education buildings. In recent years his research and practice has focused on housing procurement and in particular the exploration of offsite and self-build manufacture technologies. He has taught in Austria, Slovenia, Malaysia and Turkey and with collaborative partners from Sweden, Germany, Holland, Hungary, Portugal, Belgium and Greece. He is currently an External Examiner at Nottingham University, a Visiting Panels Chair for the RIBA, an Independent Examiner for the Architects Registration Board and past President of the Liverpool Architectural Society and Chair of the Merseyside Branch of the RIBA.



**Dr Cristina Cerulli**  
Reader in Architecture, Sheffield  
Hallam University

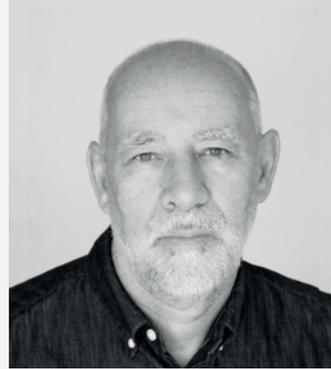
Cerulli Cerulli is a Reader in Community-led Architecture and Urban Design at Sheffield Hallam University and a founding director of social enterprise architecture practice Studio Polpo. Cristina's work is underpinned by a strong commitment to facilitate a shift towards more just and equitable practices in the city, challenging the normative culture of the architectural profession and education. Cristina's approach to research is intrinsically collaborative, trans-disciplinary and co-operative.

Much of her recent academic and practice based research is around community led housing development models, shared models of living and 'alternative' and creative forms of management and procurement. This includes work around user led housing and collective custom build as well as design and consultancy work around co-housing, community land trusts and collective models of funding such as community shares and civic crowdfunding.



**Chris Stewart,**  
Director, Collective Architecture,  
Glasgow

Following international success in Edinburgh and Berlin, Chris Stewart Architects were formed in 1997 to pursue the themes of participation and sustainability in architecture. Chris Stewart Architects for ten years were recognised with national and international awards. In 2007 Chris transferred company ownership from himself to an employee owned trust which together with work colleagues formed Collective Architecture. Their work has been widely published and exhibited in Glasgow, Brussels, Helsinki, London, Barcelona, Budapest, Chicago and at the Venice Biennale. Chris is a RIAS Sustainability Accredited Architect and Assessor, previous Chair / current Director of the Scottish Ecological Design Association, Chair of the Deconstruction Group and Convenor of the GIA Sustainability Committee. He leads a design unit at Strathclyde University, is an external examiner at the University of Edinburgh and has lectured at a number of Schools of Architecture including Yale, Aberdeen, Lille and the Mackintosh School of Architecture where he graduated.



**Mark Lumley**  
Associate Director  
Architype

Mark joined Architype in 2006 and became Associate Director in 2011 with specific responsibility for projects in the Hereford office. The first project Mark worked on was a co-joined special school with a mainstream primary called The Willows in Wolverhampton. With this building he developed methods of working with the different groups to deliver a building that addressed the needs of a variety of disabilities providing an inspiring and healthy environment for the school occupants. From this point Mark's role expanded to oversee the portfolio of education projects, which included the delivery of the first Passivhaus schools in the UK (Oak Meadow and Bushbury Schools in Wolverhampton) which led to the commission of Wilkinson Primary in Wolverhampton, completed in January 2014, a further progression on the Passivhaus route. More recently Mark has been directing a critical part Architype's research programme relating to on-going post occupancy evaluation of the Wolverhampton schools estate and other projects.



**A Machine  
For Playing In:  
Exploring the  
videogame as  
a medium for  
architectural  
agency**  
Learning from  
Los Santos:  
Cartographic  
drawing that  
exposes systems  
underpinning Los  
Santos in Grand  
Theft Auto V  
© Luke Pearson





Reflect Critically  
and Act  
Fearlessly: A  
Survey of Ethical  
Codes, Guidance  
and Access in  
Built Environment  
Practice



The acquisition  
and display of  
a section of  
the soon-to-be  
demolished Robin  
Hood Gardens in  
Poplar by the V&A  
has raised ethical  
questions

© Edward Denison

Annual Theme:

# Ethics & Sustainable Development

**The Awards welcomes work from around the globe that addresses Ethics and/or Sustainable Development, in the realm of education, theory or practice, and that offers new insight into significance, processes, outcomes and consequences. This may include, but is not limited to:**

- Historical analysis of the development and impact of ethics and/or sustainable development
- Educational or practice initiatives and/or adaptations
- Research addressing ethical aspects of labour, design, engagement, finance or life-cycle
- Innovative architectural solutions involving material, resource or transportation, procurement, design strategies, construction methods, technological development and/or social inclusion

# Redesigning Prison - the Architecture and Ethics of Rehabilitation

**Matter Architecture**, London, UK

Since 2011, Matter Architecture has been undertaking research-based activity to improve the environment of prisons for the people and communities they serve. Spanning two major projects concluding in 2017, the work has developed an evidence-base and practical proposals for design measures to support health and wellbeing, reduce reoffending and make the state assets of land and buildings more effective in delivering outcomes.

Previous work in this area has tended to propose alternative architectural models to the status quo, often informed by exemplary case studies from around the world. Matter's approach has been to engage proactively in existing practices for the commissioning, design, management and operation of the prison estate in the UK with the goal of influencing these to improve outcomes.

Prisons sit within the wider regime of Justice in the UK and as such the organisational and operational context is key to the delivery of change in commissioning and

design. A multidisciplinary, collaborative approach has been pursued, via small groups of experts to ensure the work is properly informed. Extensive stakeholder and user engagement has been central to the research, including with prison officers, management and staff, as well as prisoners. A digitally distributed survey on the psychological impact of prison architecture was completed by 305 men in custody at HMP Berwyn and is believed to be the first of its kind in the UK.

The work has significantly contributed to the prison reform agenda, though the architectural outcomes are yet to be realised. The paper argues that for true reform to be effective and sustainable, a reappraisal of the ethics of justice that reconsiders the status of people on custodial sentences is necessary. The current circumstances make such a public debate timely and capable of precipitating the proposed changes.



## Reflect Critically and Act Fearlessly: A Survey of Ethical Codes, Guidance and Access in Built Environment Practice

Dr David Roberts, Bartlett School of Architecture UCL, UK



U.S.—Mexico  
 Border Wall  
 Prototype  
 Construction.  
 U.S. Customs and  
 Border Protection,  
 2017

This paper sets out for the first time a comprehensive study of the ethical dimensions of the built environment professions. Its constructive critique is principally oriented to professional bodies for architecture, analysing the codes of conduct and practical guidance of the ARB and RIBA against sixty-four other UK and international built environment professions ranging across construction, design, energy, engineering, heritage, planning, project management, surveying, sustainability and transport. While standards of integrity, objectivity, competence and confidentiality are commonplace, some professional bodies choose to elevate conduct beyond this base level. They set principles of individual responsibility and collective aspiration on key issues facing the profession, provide tools for practitioners to stimulate ethical reasoning and make ethical judgements with confidence, debate these issues openly and share this information publicly. In doing so, they demonstrate the potential for resources to support practitioners in raising ethical standards of the profession, thus exposing the inadequacy of the ethical

position of architecture bodies in particular.

This survey leads to a set of recommendations that have been shared with the ARB and RIBA as they undertake widespread reappraisals. To address ecological, social and built challenges, codes of conduct should empower practitioners to reflect critically and act fearlessly. To identify, analyse and respond effectively to the specific ethical dilemmas raised by their work, professional bodies should provide free guidance tools to practitioners. To involve the public and contribute to informed public debate, professional bodies should strive to remove all barriers to discussions and resources.

These recommendations urge architecture bodies to take an active role in expanding ethical awareness, facilitating ethical reasoning and celebrating ethical action. They have been described as ‘ground-breaking... raising many issues which will challenge ARB and the professions’ and ‘invaluable to both the work of the [RIBA] Ethics and Sustainable Development Commission and the Conduct Review’.

## Reducing the conflict between energy retrofit and heritage character

**Reyyan S. Okutan, Prof David Coley, Manuel Herrera Fernandez, Tristan Kershaw,**  
University of Bath, UK

Buildings represent the largest single source of greenhouse gas emissions from the developed world, and climate change probably the greatest threat to humanity. This places a considerable ethical weight upon the shoulders of all those involved in sustainable development. Although the design of new zero-energy buildings is possible, the bulk of buildings are pre-existing and form the backdrop to urban and rural lives. The visual change implied by deep energy retrofit of such buildings is therefore controversial, and possibly based on an orthogonal view of sustainability, yet, unless some way is found to retrofit these buildings, it is unlikely we can reduce emissions quickly enough to avoid permanent harm to the biosphere. The most controversial will be the retrofit of buildings of historic importance—and hence these provide an ideal test bed for research into a solution. In this work, we introduce

a novel socio-mathematical method to eliminate the orthogonality. Firstly, we suggest that the public need to be part of the solution. Secondly, we present a new way of garnering views about the acceptability of retrofit measures. Thirdly, the public's ranking of the acceptability of the measures with respect to heritage impact is compared to a ranking of the energy saving given by the measures. It is found that measures that present greater energy savings are not de facto more intrusive, and that there is the potential for a constructive dialogue between those inspired by a conservation agenda and those targeting carbon savings. Finally, by using a Pareto Front approach, a new theory is developed of how to identify measures that are sensible in the eyes of both parties. This new four-stage process will be of use to those attempting to resolve such conflicts or set national guidance.



Retrofitting  
historic buildings  
can prove  
controversial  
Historical  
Buildings, Royal  
Crescent, Bath,  
1956  
© Edwin Smith /  
RIBA Collections

## Sustainable change: legislation, technology, ethics and emotions

Dr Paola Sassi, Oxford Brookes University, UK



Designing considering human psychology. Accessible natural environments to protect the nature reserve. Solarcity, Austria  
© Paola Sassi

The potential for irreversible climate change and mass species extinction is urgently calling for solutions that are effective in making sustainable lifestyles mainstream. A literature review relating to the history of sustainability, theory and practice; fiscal and legislative instruments for change towards a sustainable built environment; professional and evolutionary ethics; and evolutionary and behavioural psychology aimed to identify, consider and speculate on effective mechanism of change. Past generations have formulated social and environmental aims and values appropriate to their temporal context and expanded the scope of ethical concern to embrace all humans and other species and the planet. Despite this more inclusive ethics, the values held by the majority of individuals today mean that only a minority have voluntarily adopted sustainable lifestyles and legislative instruments continue to be necessary to turn sustainability concern into mainstream action. However, current change is still too slow and a paradigm shift is required to develop effective change mechanisms,

and it is proposed that these should draw on the most fundamental characteristics of human nature as understood from the perspective of evolutionary psychology, and consider from first principles the technical and socio-economic solutions currently available. Built environment examples that represent what might result from such an approach exist, and these developments provide an arguably higher quality of life as well as more sustainable lifestyle for their inhabitants. Built environment professionals have the knowledge and skills to create sustainable environments and have the potential to have a significant positive impact. They also need to gain an understanding of the psychological underpinning of human well-being to create sustainable built environment solutions that, so to speak, sell themselves; and practice today within an ethical system in relation to sustainability which is yet to be defined that denounces inaction as well approving positive actions.

## Individuals cultivating edible plants on buildings in England

**Dr Mina Samangoeei**, Oxford Brookes University & MEB Design Ltd, UK

Food production is a key component of sustainable urban environments, given the resilience of the supply and disposal of food are major concerns in cities worldwide. Due to the lack of land in dense urban areas, people have explored possibilities for food production on and inside buildings, where plant and building technology have been the main focus. At present there is a lack of understanding about the users of such technology and how they relate to systems for cultivating edible plants on buildings. This work attempts to fill this gap in understanding, examining a primary research question: "What affects individuals to cultivate edible plants on buildings in England?"

This research utilises a two-phase sequential mixed method. In phase 1, a questionnaire was formed to test hypotheses based on the Behaviour Change Wheel (BCW), behaviour theory. In phase 2, semi-structured interviews were undertaken in order to further explore the findings of phase 1. Primary data were collected

from 65 participants who completed surveys in phase 1 of the research, and in phase 2 from 30 interviewees who have varying levels of experience of cultivating edible plants and/or cultivating edible plants on buildings.

Findings identified 41 parameters, offering a comprehensive framework for understanding what affects users to cultivate edible plants on buildings. They highlight that the following are important; cognitive capacity available to implement and maintain the system, knowledge of how and why to cultivate edible plants on buildings, motivation to cultivate, the outcomes obtained from undertaking the behaviour and the individual's community.

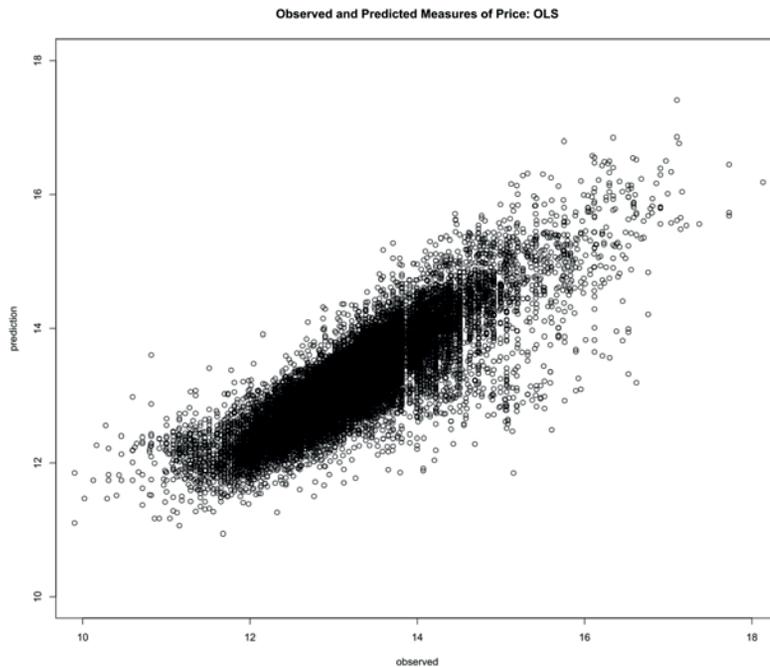
The findings of this research can be used, by built environment professionals and other stakeholders, in the design development and implementation of technologies for cultivating edible plants on buildings, where the relevant parameters can be established and assessed on a case-by-case basis for the target users.



Marrows in a raised bed, Oxford  
© Mina Samangoeei

# Exploring Applications of Ethics to Practice in Sustainable Development of the Built Environment

Dr Aidan Parkinson, Arup, UK



Comparison between observed and predicted measures of 25,233 dwelling prices using ordinary least squared regression  
© Arup

This paper discusses the application of ethics to cases of decisions affecting sustainable development of the built environment. Classical utilitarianism has been identified as a supporting goal for judging how contributions promote sustained levels of happiness in society. This perspective has been applied to four case study investigations where there is potential to automate decision-making processes. A hedonic pricing method was applied to a study of UK dwelling asking prices to infer the value of amenities offered at property sites. This process established a robust tool for price estimation and the defining characteristics of 14 principal components. The results of principal component regression demonstrated how social demographics, energy related activities and indicators of population density in combination together prove to be useful indicators of dwelling asking prices.

A integrated monitoring platform to visualise direct comparisons between continuous streams of physical environmental qualities and user perceptions from buildings in real-time has been developed to make

comparisons to challenge predictions of comfort. Lessons have been learned from mitigation activity to reduce greenhouse gas emissions in central London. Cost-effective interventions are found challenging where land value is relatively high, requiring further centralisation.

An investigation has been made to develop an adaptive test to describe personal heuristics in decision-making. An adaptive test developed measures five dimensions of decision-making and allows comparison to a person's self-reported state of personal well-being.

These case studies highlight the importance of understanding social and behavioural needs in context to facilitate effective management of buildings. Efforts to train machines in this understanding have yielded learning which appears sensitive. In light of this we have recognised that "black-box" automation of such decisions shouldn't be blindly accepted, even when apparently valid. Such insight requires human understandable explanation to engage society in a wider supporting discussion.

## Designing for Health

Sumita Singha, Ecologic Architects, UK



Oslo University  
Hospital, main  
'street' (architect:  
Medplan AS  
Arkitekter)  
© Sumita Singha

This paper describes the effect of introducing sensory modalities in healthcare design using research undertaken with patients, architects, artists, estates and facility managers, and doctors working in private practice and the NHS. Today, buildings meant for healing have become sterile spaces deprived of sensory stimulation based on the theory that people are machine like creatures, brought in to be diagnosed, processed and then released. This factory like environment serves to actually hinder the process of healing. Moreover, changing demographics where patient numbers have increased, medical conditions have become more complex while funding decreased have made hospital designs even more simplistic. Since being set up in 1948, the NHS has changed beyond recognition, particularly after the Langley reforms of 2012-13 and the rise of private sector healthcare provision. In healthcare design, the element of delight is practically invisible as it bows down to 'firmness', i.e. robustness, and financial aspects. In the NHS, design is not given priority in an

environment where 'saving money' and lives are seen to be first priorities. Hospital, hotel, hostel and hospice come from a common Latin root, 'Hospes' meaning guest or host. Thus, the softer aspects of comfort, generosity, human warmth and service as well as more technical and hard aspects such as efficiency, diagnosis, punctuality and rationality should be part of hospital design. Our brains have the capacity to structurally change through a set of processes called neuroplasticity, creating the relationship between healing, well-being and the external environment. Understanding how our brain adapts and changes due to the impetus from the physical environment will lead to buildings that are empathetic to the cognitive and wellbeing needs of patients. The emerging digitalization of healthcare and the use of robotics and AI, mean that the soft touch- from human touch and words, from connection with nature through open green spaces and light from windows will become even more important as part of the healing process.

# Do The Right Thing: the Ethics of Environmental Performances in Architecture

Dr Claudia Dutson, Royal College of Art, UK

This research examines the trope of performance in discourses of sustainability in architecture, within a context where the environmental performance of an occupied building is failing to meet its designed expectations.

Bringing J.L. Austin's speech-act theory together with a theatrical method of 'actioning', I propose performativity as both a practical method, and theoretical position, to investigate the entanglement of environmental performances with high-performance management processes in architecture. The method has been used to interrogate the constitutive effects of management on the occupant, the institution of processes in the RIBA Plan of Work, and finally the ethics of the architect.

Building on Lucy Suchman's query 'who is doing what to whom?'<sup>(1)</sup> I address the occupants of workplaces at a moment of convergence between smart technology with architecture, where agency is given over to autonomous environmental systems to 'do things right,'<sup>(2)</sup> and work environments that are embedded in performative-linguistic company cultures that urge

their occupants to 'do the right thing.'<sup>(3)</sup>

Taking Isabelle Stengers' ethical inquiry 'what are we busy doing?'<sup>(4)</sup> I track the framing of the RIBA Work Stages within the language of the Toyota Production System: as a problem that can be resolved through incremental changes and 'continuous improvement'. I highlight critical omissions that undermine such an approach, and conclude with an urgent appeal for an ethical 'paying attention' to the consequences of performing sustainable architecture.

(1) Lucy Suchman, 'Located Accountabilities in Technology Production', *Scandinavian Journal of Information Systems*, 14.2 (2002), 91-105.

(2) Peter Drucker defined efficiency as 'doing things right' and effectiveness as 'doing the right things.'

(3) 'Do the right thing' replaced Google's 'Don't be evil' motto in 2015.

(4) Isabelle Stengers, 'The Cosmopolitical Proposal', *Making Things Public: Atmospheres of Democracy*, Bruno Latour and Peter Weibel (eds) (Boston, MA: MIT Press, 2005), pp. 994-1003



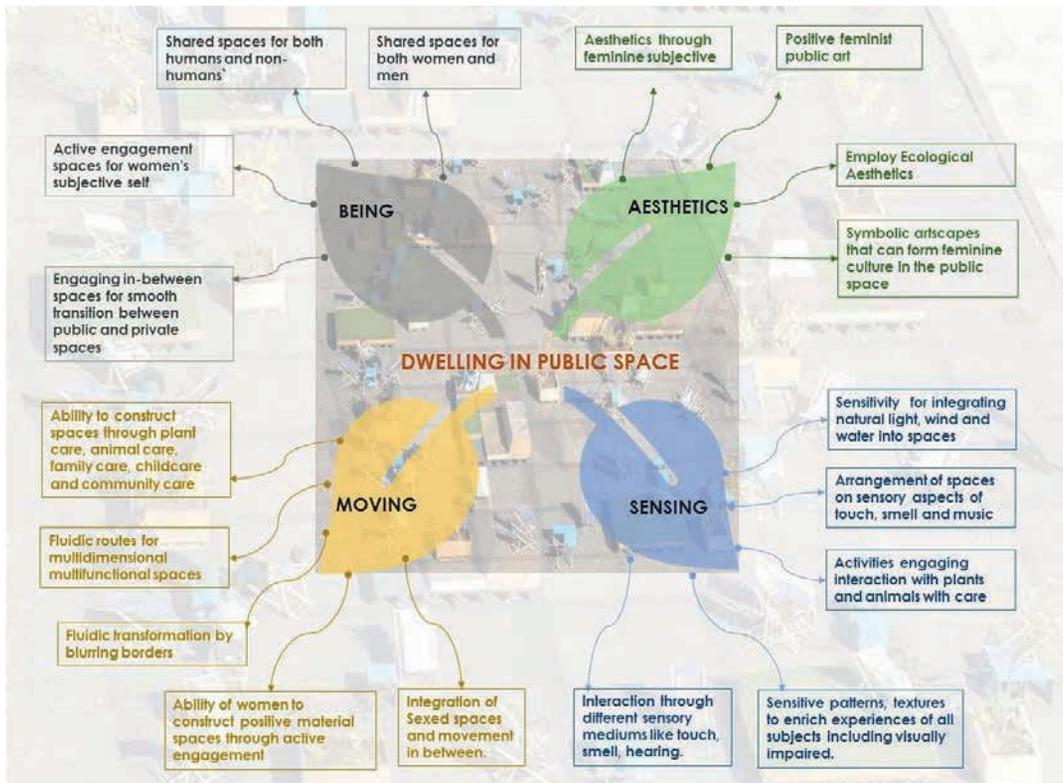
Thermal  
Performance  
Triptych  
© Claudia Dutson

# Architecture of care in the urban public space: A philosophical inquiry in 'Ethics of care' to inform the nature of the urban public space

**Rucha Vivek Newalkar, Iowa State University, USA**

In the broader discussion of urban environmental sustainability, there has been a pronounced dualism and an implicit hierarchy of value when looking at the city-ecology paradigm. This corresponds to the political-social, human- nature and especially subject-object divides within the perspectives on the sustainability of urban public spaces. I associate this divide and the subsequent domination of pedagogies that lack feminist approaches in analyzing qualitative aspects like experience, well-being, and equity. Do public spaces belong to women and nature? Do women belong to public spaces? If they really do, can it change the nature of the public space? This research adopts a critical eco-feminist perspective, to expand its concepts in relation to urban public spaces to build a holistic definition of urban environmental sustainability. I seek a philosophical inquiry into the ethics of care to shape my argument on the spatial nature of the public spaces using contemporary feminist philosophy and environmental

ethics to critically investigate various aspects that determine the relationship between women and the urban public space. I investigate the public spaces through the spatiotemporal and gendered lens by considering scholarly literature on the nature of the urban public space. I draw theoretical threads from most importantly, Luce Irigaray's perspectives on an ethics of sexuate difference and feminine subjectivity to investigate the feminine aspects of the use of public space. Finally, I develop the concept of the ethic of care, differently, for better addressing the issue of gender equity, environmental sustainability to impact women's political, emotional and relational well-being within the public space. In conclusion, this research advocates 'care' as a central value, to shape the spatial nature of the urban public space and an approach to achieve socio-ecological sustainability and well-being in urban public spaces.



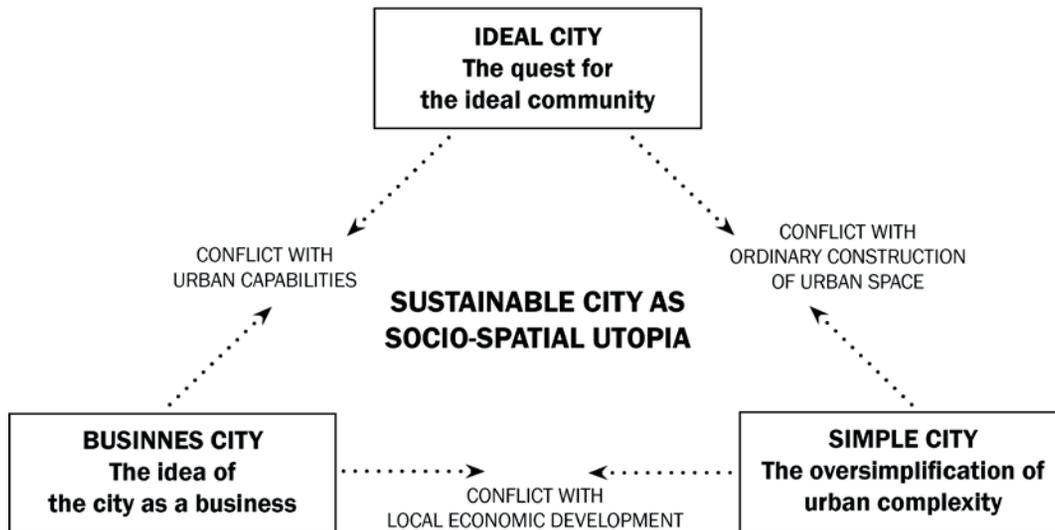
Aspects of dwelling in Public Space  
© Vivek Newalkar, 2017

# The Three Pitfalls of Sustainable City: A Conceptual Framework for Evaluating the Theory-Practice Gap

Dr Valeria Saiu, University of Cagliari, Italy

Over the last three decades the environmental, economic and social crisis and the challenges and possibilities offered by new technologies have become the drivers of plans and projects for sustainable cities. In the face of a wide experimentation, the aim of this paper is to answer the question: what progress is implemented by the goal of sustainable city? To this end, I hold it is important point at the watershed between the declared intended goals of the projects realized to date and the results on the ground. To analyze this discrepancy, I have identified a common theory-practice gap in the form of the three pitfalls of sustainable city, which bring about economic and

ethical conflicts and risks creating socio-spatial utopias. The three pitfalls are: (1) the idea of the city as a business; (2) the oversimplification of urban complexity; (3) the quest for the ideal community. This conceptual framework has two purposes. First, it helps to systematize the existing literature on the sustainable city project, focusing on few selected issues. Second, it offers a project evaluation framework, useful both for the management of resources and for the planning of urban space. To pinpoint these pitfalls in projects for sustainable cities could allow us to adopt a holistic approach to the city project and practice.



The three pitfalls of sustainable city project and their associated conflicts, in the middle point of the triangle is located the elusive ideal of sustainable city.  
© Valeria Saiu



CIAM 6 Cities Re-  
Imagined  
CIAM 6 cities  
re-enacted,  
Bridgwater Arts  
Centre 2017  
© Charlie Granger

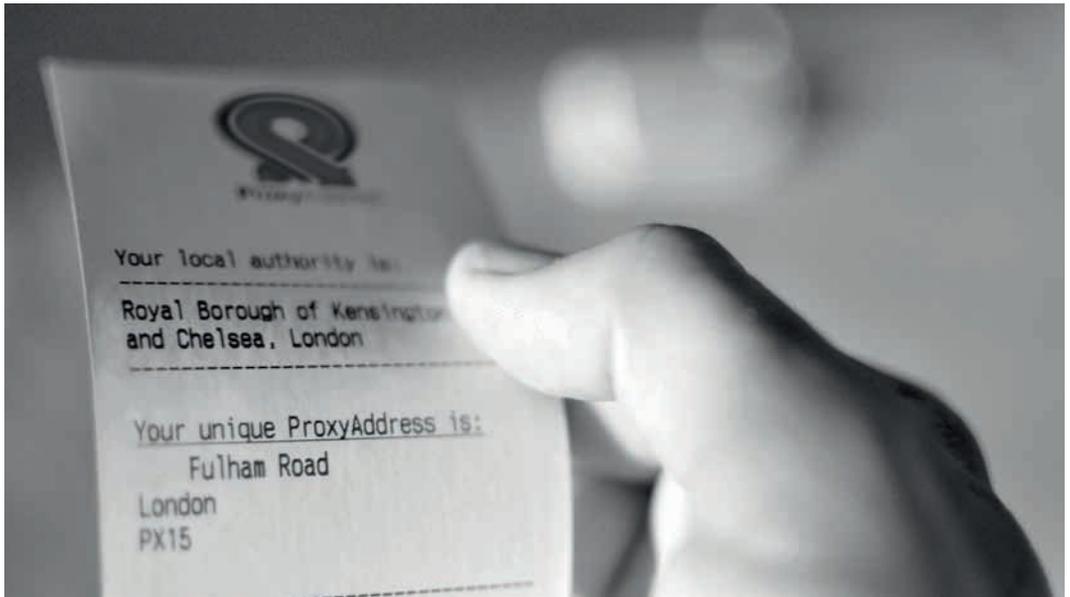
# Cities and Community

**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

## ProxyAddress: Using Location Data to Reconnect Those Facing Homelessness with Support Services

Chris Hildrey, Hildrey Studio, London, UK



The initial ProxyAddress receipt provided to service users at the first council meeting.  
© Hildrey Studio

With a shortage of public-sector housing, funding, and resource, the architectural profession stands uniquely placed to use its understanding of the built environment to help ensure those who live in it are not marginalised by it. However, housing remains central to the hardships of those most in need with the leading cause of the UK's growing homelessness problem being the end of an assured shorthold tenancy. All too often this milestone represents a watershed moment, introducing additional and unnecessary barriers that prevent early recovery. This can lead to a downward spiral into entrenchment and the development or exacerbation of serious issues relating to mental health or substance abuse. The ultimate goal of any intervention into homelessness is to help an individual make the journey back to independence and into mainstream society. But, with insufficient affordable housing being built and the architect's role itself being increasingly marginalised in the decision-making process, how can the profession apply its strategic knowledge and analytical skills to

make our cities more inclusive?

The ProxyAddress project set out to tackle this issue through research and real-world application. Following an eight-month period of historical research and collaboration with various stakeholders - including those experiencing homelessness, front line support workers, national homeless charities, policy makers, academics, members of parliament, credit reference agencies, financial regulators, local authorities, and the Royal Mail - the programme created a system to use the address data of long-term empty properties to serve as a consistent 'proxy' addresses to be used throughout these periods of instability. Linking existing information and systems, this mediating database provides access to vital support services otherwise lost, including: access to bank accounts, identification, benefits, a library card, and the avoidance of stigma while seeking employment.

The ProxyAddress system is now moving towards live trials with Lewisham Council in London.

## Architects at the time of war

**Dr Ammar Azzouz, Arup, UK**

The urban nature of the Syrian conflict has caused heavy physical damage to cities and displaced half of the population. From those displaced, there are 6.5 million people internally displaced within Syria, occasionally for several times.

The Syrian refugee crisis has attracted significant attention by media, researchers and policymakers, yet responses to crises inside Syria were not equally considered. This research addresses this gap and contributes to the knowledge of cities at war. It aims to understand the roles of architects at the time of war, and focuses particularly on the possible ways to support them in their struggle to save their cities and protect their heritage. To do so, interviews and a workshop were undertaken remotely from London with architects living in Homs, Syria (the city of the author).

Despite the mass destruction and the monumental displacement, architects in Syria are showing incredible levels of resilience: there are academics

teaching urban reconstruction courses at universities, there are local charities supporting communities to rehabilitate their partially damaged houses, and there are young architects gathering together to rethink the architects' role at the time of war. Individually and collectively, these initiatives have shown the resilience of communities at the time of extreme crises, and the hopes to bring what is left of the country together. From the workshop organised with 25 architects in Homs, several creative ideas have been raised to that help to empower and support architects in conflict zones remotely e.g. providing online training courses, creating a digital library in Arabic on cities at war, and establishing collaborative research projects with academics outside Syria. It is hoped that this research will influence academics, professionals and policy-makers to create practical projects to support architects in their struggle to survive, to sustain lives and envision a future.



Destruction of homes in Homs (2018)  
© Zaher Abdelmawla

## Opaque Architectures: Urban Sites of Refuge in Cape Town (1990 - present)

Dr Huda Tayob, Bartlett School of Architecture UCL, UK



A shop in Som City, a Somali Mall  
© Huda Tayob

This study focuses on the urban spatial practices of refugee markets in Cape Town, South Africa, from 1990-present. It argues that mixed-use refugee markets are central sites for informal trade, accommodation and vital services: despite appearing highly localized, they are characterized by inventive spatial practices and host to trans-national refugee-led networks of care. Yet, as the spaces of a marginalized population, they are largely overlooked in spatial discourses and therefore rendered opaque. Their opacity is further exacerbated by their contested siting, where in South Africa, this includes high levels of urban violence, a racialized landscape and an unwelcoming city context.

This paper focuses on the spatial practices of two refugee markets in Cape Town, Som City and Bellstat Junction, along with their connections to other sites on the continent and globe, including Nairobi, Dubai and Minneapolis. It shows how the architectural mechanism of the generic office block is adapted to negotiate home-making, publicness and diasporic

identity. The theoretical framework of subaltern studies literature enables an analysis of these spaces beyond a topographical reading as sites of deprivation, and instead points to the complexity of the spatial and material processes which underpin them. Taking up Gayatri Spivak's text, "Can the subaltern speak?" this project develops a considered and ethical practice of studying contested sites more generally. This is done by combining ethnographic and architectural hand-drawing research techniques to reflectively question the research, its approach and impact. This is complemented by newspaper and city-legal archival research. Overall, the research questions the centrality of the refugee camp in studies of refuge, and offers a critical and conceptual reading of architectural informality. At the core, is the imperative that in order to build more equal, sustainable and hospitable cities, is the need to recognize and understand informal networks of refugee and informal transnational support.



## Care and Rebellion: The Dissolved Household in Contemporary Rural China

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

China's 245 million floating population has resulted in a missing middle generation in contemporary rural families. Through fieldwork and case studies of self-built rural family houses, the research identifies a fundamental change in the idea of family and domesticity, and terms this phenomenon the 'dissolved household'. The elastic relationship in household managements manifests a flexible, spatially stretched form of labour division and collaboration between genders, generations and households. The idea of domestic space is thus an elastic form of association. It is in essence a network of mutual help and immediate care at both domestic and neighbourhood levels, a set of non-market relations essential to people's livelihood. In a contemporary context where market relations are forcefully extending themselves to every corner of social space, this vital link to the extended family, immediate neighbourhood and village community demonstrated by the dissolved household is almost a form of rebellion, starting from the home. However, on the government side, the urban nuclear

family flat is widely applied in proposals for model villages to radically reconstruct rural dwellings. Against this backdrop, the research calls for integrating the socio-spatial transformation of contemporary rural families into a larger economic and political debate, in order to transcend the conceptual limitations of the current rural discourse and to rethink rural development as a socio-cultural process. In this regard, this research contributes to an urgent discussion between local governments, residents and architects or planners.

Given that a self-organised support system underpinned by associational relationships in rural society embodies a rooted cultural unity in China, rurality defined as an elastic form of association transcends the simple divide between urban and rural development by providing a distinct form of living arrangement and social organisation. In this sense, rurality is ultimately about how people organise themselves and associate with others.



The Yard in Liu Brothers' Family House, Shigushan Village, 2016  
© Jingru Cheng

## Vital Neighbourhoods: Lessons from international housing renewal

Publica, London, UK

Kalkebreite co-operative housing project, Zürich, a case study in Vital Neighbourhoods.

The large public square is designed to be used flexibly, with moveable chairs & tables; several playgrounds, planting & a small water fountain invite activity into the site.

© Volker Schopp  
Müller Sigrüst  
Architekten



The UK's housing challenges have dominated national debates on built environment policy in recent years. The urgency to address the housing shortage and boost density is particularly felt in London, where a combination of population growth, changing household composition, insufficient supply of land and greater mortgage availability is driving up demand and reducing affordability. Housing renewal is a critical element of the intensification and densification of cities.

The study investigates what can be learned from successful projects elsewhere and translated for application in the UK. The findings and recommendations for this study were informed by an extensive literature review, case study analysis of precedents across eleven countries, and in-depth site surveys of and interviews on five projects in Bordeaux and Zürich.

The study proposes seven key recommendations for those considering or commencing housing renewal projects. Of particular importance are the first three

recommendations, which propose: the first task of any such project should be to develop a clear understanding of the site, its community and networks as well as its physical and spatial conditions; efforts to identify and meet the needs of existing residents should be undertaken before any new homes and residents are introduced; and existing residents should be engaged in the project processes as early as possible to help develop a sense of ownership and involvement.

Vital Neighbourhoods: Lessons from international housing renewal will be built upon and applied in practice in the future as part of a wider research programme. The study was launched at London's City Hall, introduced by James Murray, Deputy Mayor for Housing, with keynote speeches from Anne Lacaton and Frédéric Druot. It has been published now to engender debate about delivering more homes on limited land, in a way that will create genuine vital neighbourhoods in London and other cities.

## Urban Cool - addressing heat, health and habitat in the Anthropocene

**Prof Douglas Kelbaugh Stewart**, Taubman College of Architecture and Urban Planning, University of Michigan, USA

The scope and thesis of the paper and its underlying research are multi-faceted, as well as simultaneously complex and simple. The bottom line is that cities are arguably humanity's last, best hope to address its two greatest challenges - climate change and overpopulation. Cities combat climate change in two very different ways. The first is reducing energy/carbon/ecological footprints per capita in developed countries. The second is by dampening urban population growth in developing countries. The paper includes the environmental benefits in developed countries and the population benefits in developing countries, filling a conspicuous void in the international dialogue on climate change.

A central assertion that urban heat islands (UHIs) can help humanity fight climate change (CC): their palpably higher temperatures are already plaguing many cities; UHIs and CC have common antidotes; UHIs present a 10-year challenge, rather than the less-defined, more remote 100-year challenge of CC;

and because urban heat islands can be addressed quickly in manageable steps—such as planting trees and painting roofs white - they give quicker feedback, and provide a more concrete and proactive sense of progress. While CC receives a great deal of media coverage, UHIs tend to be downplayed, even overlooked by designers, planners, government officials and policy makers, NGOs, non-profits, and elected leaders. The paper explains why it is timely for people to live in cities, and the fortuitous benefits of addressing UHIs and CC simultaneously. It connects four major dots in new ways and presents them for the first time as the environmental, population, thermal and poverty paradoxes of the city. A major focus is the functional connection of these four paradoxes, as well as the four antidotes to UHIs, along with the insights gleaned by the author over four decades of designing, researching and writing about sustainable and energy-efficient architecture and urbanism.



**Trees, the multi-taskers:**

- beautify, give biophilic presence
- provide cool shade
- retain soil/prevent erosion
- detain and retain storm water
- sequester CO<sub>2</sub>
- produce oxygen
- filter particulate pollution
- cool by evapo-transpiration
- provide bird/animal habitat
- produce flowers, fruit, fragrance
- absorb sound
- reduce crime
- increase real estate values
- offer tree-climbing for children
- provide planting and maintenance jobs
- humanize the scale of big spaces
- provide wood for construction and fuel
- soothe the psyche

Street trees are stalwart foot soldiers in cooling and beautifying the city. Coupled with cool roofs and pavements, trees can reduce a city's ambient air temperatures by 4° - 9°F (2.2 - 5°C) during summer months.  
© Douglas Kelbaugh Stewart

## Transforming towns: A place specific, design-led approach to the future of rural settlements

**Dr Matthew Jones**, Architecture and the Built Environment, University of the West England, UK

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This study is motivated by a desire to understand how architects can contribute to the future of sustainable and distinctive rural towns. With one fifth of the population of Europe living in towns of under 50,000 people, there is an urgent need to consider how we engage with these sensitive and often fragile contexts to ensure their resilience and sustainability.

Historically, towns had a compact urban nature, a clear hierarchy of public spaces, a close relationship with the landscape and a slow, gradual cycle of development and re-development. However, over the last century the compact nature of historic towns has been rejected in favour of low density, car-centred peripheral development. The character and sense of place at the heart of the popularity of rural towns as places to live and work is under threat.

In response, the study explores an alternative, place-specific approach to the future of rural towns. Through

a series of exploratory research-by-design projects in towns on the border of England and Wales, a layered mapping process combining readings of place and statistics is developed which reveals areas of fragile, neglected or weak town fabric. A design framework founded on an in-depth reading of place is developed which seeks to reinforce and strengthen settlements through precise and measured architectural intervention. The approach recognises the virtues and possibilities of inherited urban fabric; consolidates and densifies existing patterns of development; and re-connects town centres to their suburbs and hinterlands. The study argues that the future evolution of rural towns should be as much spatial as it is economic, social and political. It identifies a positive and expanded role for architects in enhancing the experience of living, working and playing in 21st century rural towns.



Raven Lane: A design for housing infilling a gap in Ludlow's historic townscape.  
© Matthew Jones

## CIAM 6 Cities Re-Imagined

**Juliet Bidgood & Kate Burrough,** Juliet Bidgood A+U, UK

When eighty world leading architects, writers and urbanists met in Bridgwater, Somerset in 1947 to explore how they could; 'work for the creation of a physical environment that will satisfy man's emotional and material needs and stimulate his spiritual growth'.

CIAM 6 Cities Re-imagined was an action research programme devised to celebrate the 70th anniversary of the sixth Congrès International d'Architecture Moderne (CIAM6) that took place at Bridgwater Arts Centre in 1947. CIAM 6 had been planned for New York but was instead held 'in rustication - away from the distractions of the great city'. Known as the restoration Congrès it set the agenda for the post war CIAM discourse that was to end with the formation of Team 10.

The research programme sought to open up this international design legacy to the culture of the town and capture its value in the present. Whilst the town is undergoing significant social and physical change as host to the largest construction project in Europe, the research set out to generate interaction between the town and the design discourse that flowed through CIAM 6. In spring 2017 a series of schools and community workshops were held in parallel with archival research. Observations from the archives were taken into these events that in turn generated content for the exhibition and conference in the autumn. In so doing the programme set out develop the role of the Bridgwater Arts Centre and to test new modes of research and engagement with young people and communities.



CIAM6 cities  
re-enacted,  
Bridgwater Arts  
Centre 2017  
© Charlie Granger

## How is the Shrine Abdullah Shah Ghazi and its surroundings transformed by the Neoliberal Urban Redevelopment?

**Ushna Raees**, Indus Valley School Of Art and Architecture, Karachi, Pakistan

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An Iconic disaster:  
Entrance of the  
Shrine framing the  
62 storey high rise  
building instead of  
framing the Shrine  
itself  
© Ushna Raees

Urban Redevelopment in Karachi, Pakistan has been majorly dominated by a Neoliberal Ideology and hence, Karachi is losing its identity and heritage because most of the businessmen and builders are developing the city in the name of development for their own self-interest. The most prominent example of Neoliberal Urban Redevelopment that we see in Karachi today is the construction of a 62 story high rise building of Bahria Icon Tower right next to the Shrine of Abdullah Shah Ghazi which dates back to the 9th century. This research seeks to address the issues caused by the morphological evolution of the shrine after the construction of Bahria Icon Tower. It also aims to focus on how the construction of Bahria Icon tower is undermining the culture and identity of the shrine and how it makes the Shrine invisible in the area and inaccessible for the people by changing its entire morphology.

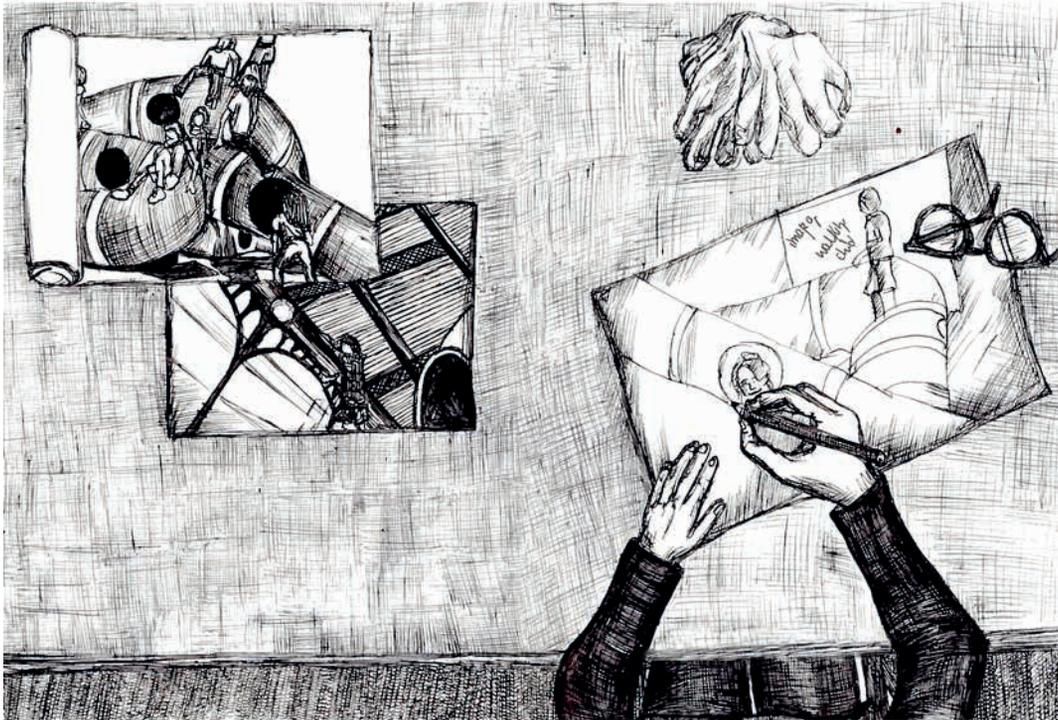
The cultural and morphological evolution of the shrine of Abdullah Shah Ghazi after the construction of Bahria Icon Tower has also sparked a debate within the architecture community because one of the most historically and culturally significant landmarks of the city is on the verge of losing its importance. The question here arises that how to preserve the shrine and restore its lost identity that has been widely ignored for the past two centuries. The Shrine of Abdullah Shah Ghazi is a 9th century shrine and hence the availability to reconstruct entirely what the 'original' shrine was like is impossible due to the insufficient information available about the shrine. However, this research attempts to learn about the shrine from the available information through primary and secondary sources and seeks to assemble it and provide as much information about the shrine as possible, hoping it to fill the research gap.

## Situating childhood play; Reading The Playground Project through a Situated, Varifocal Lens

Jessica Bonehill, University of Edinburgh, UK

Where does childhood dwell? Is it in the playground? Or perhaps, in imaginary landscapes? Or the minds of watchful parents? Or within academic theory? Childhood in its entirety is unknowable, continually evolving across many locations. Each space is complicit in this construction, providing the locations of numerous limited, site-specific, partial views which together create childhood. Originally writing on the unknowability of the city, Bruno Latour expressed this phenomenon through his development of a concept he titled: 'the Oligopticon,' which he outlined in his work: *Paris Ville Invisible*. This text described his term, and, through a case study exploring Paris, demonstrated its application as a methodology to examine the urban condition. The Oligopticon presents itself as a whole, but instead is a merely a window; eternally partial. This research will explore the overlapping Oligopticons which co-produce narrative(s) of childhood. Specifically, it will take one

constructing space of childhood as a microcosm to explore the macrocosm — yet another partial view. This space will be the travelling art exhibition: *The Playground Project*, as it was exhibited at the BALTIC Centre for Contemporary Art. It exhibits a specific location of childhood — the playground, through a series of playground objects, brought into the context of the gallery where children are encouraged to play surrounded by images of 20th-century playgrounds. In this exhibition childhood play becomes the subject of exhibition and observation. The exhibition curates many situations of seeing bound to their context and embodied by a character with a distinct role in the production of childhood, be that child, parent, or architect. Through these lenses, this research will explore the located construction of childhood. In its own way constructing a new oligopticon to explore the matter as it reframes other locations to create a new situation of looking.



The Architect  
designing future  
play-spaces  
© Jessica Bonehill



Non-orthogonal  
Light Timber  
Frame Design  
X-Frame  
© Gerard Finch

# 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

## Viability of 'house as power station' concept in a North European climate

**Laura Davila Ponce de Leon, Justin Bere & Alex Whitcroft**, Bere:Architects, London  
**Alexandre Pecourt & Clément Castel**, Energelio, France  
**Graham Taylor**, Darke & Taylor, UK



Lark Rise, SE  
 elevation  
 © Peter Cook

Our research objective is to test the concept of 'house as power station'. Our hypothesis is that housing can generate an excess of energy for at least 9 months of the year, use at least 90% less winter energy, avoid drawing peak load energy from the grid (peak load being the main determinant of total power station capacity) and be a balancing element on the grid. If our hypothesis is proved correct, it raises the question whether money allocated for constructing power stations may instead be more productively spent on improving buildings? If implemented at scale, it might be cheaper to reduce energy demand per kWh in housing than increase supply by new power stations. Zero carbon power export to the grid would be a bonus. Our method analyses detailed energy data from one of the UK's most advanced houses, built to minimise all-year energy demand, maximise

energy production and optimise energy storage. Cost is a consideration in the prototype house, but: (1) Our main aim is proof of concept. As with any prototype, costs will come down if the solutions go into mass production. (2) Large sums of money are being applied to new power stations, such as £27 billion to Hinkley Point C. We should compare the cost per kWh saved by advanced construction with the cost per kWh of new power generation. Our findings are, in the words of a grid expert and advisor to BEIS "game-changing". The prototype building was found to have 98% less demand per m<sup>2</sup> from the grid (for all energy uses including heating and power sockets) than a standard UK building, it was found to draw from the grid only 2% of an ordinary house while exporting 10 times as much energy to the national grid as it imports each year.



## Non-orthogonal Light Timber Frame Design

Gerard Finch, Victoria University of Wellington, New Zealand



X-Frame X7  
Prototype  
Installation  
© Gerard Finch

Orthogonal structural timber framing is the predominant method for building low density residential buildings in a large proportion of developed countries. Today this framing system is highly refined to be economically advantageous – making use of low-value and widely available materials. However, this construction product largely ignores the emerging ‘Circular Economy’ (CE) sustainability agenda. At the end of a buildings life, and when deconstruction is attempted, most materials integrated into an orthogonal frame are irreversibly damaged. Furthermore, deconstruction is time consuming and yields very few valuable materials. Thus, this research questions the suitability of conventional framing

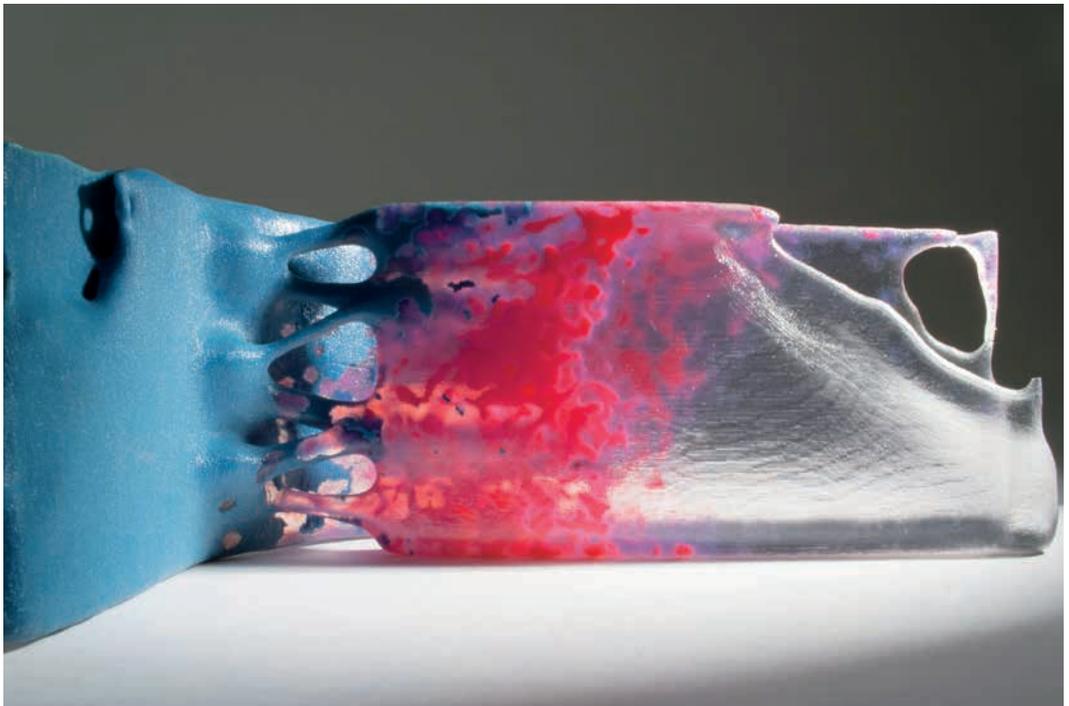
methods to achieve true life-cycle sustainability and suggests a series of radical non-orthogonal solutions in response. These solutions are centered around maximizing the recovery of all materials attached to (and located in) the structural frame at the end of a buildings life. Non-orthogonal frames are the superior solution as they are generally inherently resistant to lateral loads and can be dynamically modulated to fit within many different building conditions. The research uses computer-aided fabrication technology to integrate jointing and assembly conditions in the non-orthogonal timber frame geometry that substantially speeds up end-of-life deconstruction.

## Computational Blends: The Epistemology of Designing with Functionally Graded Materials

Dr Kostas Grigoriadis, Architectural Association, UK

Considering recent advances in material science, the research proposes a novel method of designing with a type of material that is known as multi-, or functionally-graded (FGM). FGM consist of sub-materials continuously fused together in a gradient manner in one volume, without the use of mechanical connections. A criticism posed of the scant methods for designing with FGM in the computer is that they do not consider material behaviour when attributing sub-materiality. What is effectively proposed as a counter technique is to use computational fluid dynamics (CFD) simulations to emulate the fusion of materials based on their physical properties. The main objective in effect, is to formulate an epistemological framework corresponding to the use of CFD in multi-material design. This method is targeted to the area where glass and aluminium frame connect in a unitised curtain wall panel. The component-based make-up of this facade system is associated with problems such as environmentally hazardous

production processes, and post-installation failures. A component-less, continuous FGM connection would eliminate these issues. The research identifies appropriate materials that can be mixed to generate the part, describes the form of the digital container that sub-material blending can take place within, analyses existing FGM manufacturing techniques and structural loading on the panel to assign the affecting forces in the simulation environment, and sets out criteria for terminating the simulation. This is followed by bespoke computational workflows to visualise the resulting FGM connection, as well as to 3D-print it in a multi-material. The findings identify the shortfalls of material simulation use in design, the limitations of visualising a partially transparent multi-material, and the problems with its direct fabrication. The resulting original contribution of the research is a mutable process model created in commercial 3D software that can be used in a standard laptop computer to design with FGM.



Close up interior view of the fabricated multi-material interface  
© Kostas Grigoriadis

## A Machine For Playing In: Exploring the videogame as a medium for architectural agency

Dr Luke Pearson, The Bartlett School of Architecture, UCL, UK



The London Developers Toolkit: concept image of game shown with generated 'glossy renderings' and built fragments.  
 © Luke Pearson

Millions regularly dive into the virtual worlds of videogames, exploring fictional spaces through controllers and screens. They occupy environments structured by both rules and fiction, 'half-real' conditions according to Danish games theorist Jesper Juul. Yet scholarship into the connections between game spaces and architectural design is relatively limited. This research explores the reciprocal relationship between architecture and videogame worlds by first establishing how videogame spaces work as architectural constructions. I then examine how games may act as media of architectural representation, identifying the unique properties in their structure that both references and extends prior media forms. This research utilises three main approaches. Firstly, I use traditional architectural tools of analysis such as drawings, models, cartographic studies and critical writing to understand how game spaces function. This produces two projects, one using cheat codes to 'prise apart' games to analyse their spatial construction, and one comparing the fictional

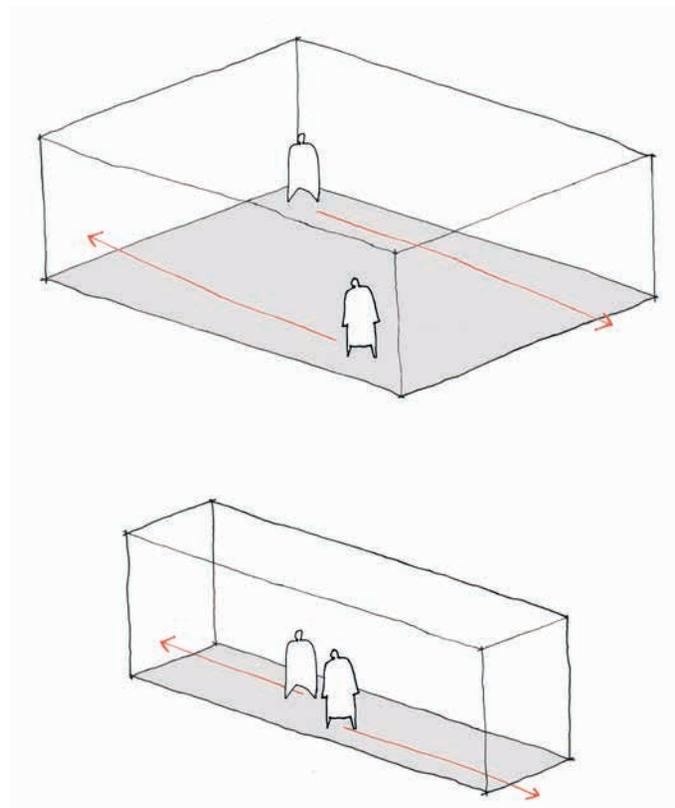
city of Los Santos, underpinning Grand Theft Auto V, to Los Angeles upon which it is based. My second approach is to develop videogames myself and explore how their aesthetic form communicates architecture differently from other design media. I focus on the London Developers Toolkit, a satirical game I designed based around luxury developments in London, which communicates architectural messages to the player through being played. The third approach in the paper discusses applying game principles into design projects for architecture with ostensibly real sites and programmes. I focus on a project, Tokyo Backup City, developing an urban design proposal through analysis of Japanese arcades, questioning how game technologies might be used to create playful public realms. This research constitutes an original designed exploration of the potential game technologies offer architecture, suggesting they can engage wide new audiences with the discipline and offer radical new ways to represent or even realise architectural projects.

## Social Behaviour in Corridors: The case for better circulation space in schools

**Eilish Barry**, Department of Civil Engineering & Architecture, University of Bath, UK

Bullying is a common form of anti-social behaviour, experienced by 67% of secondary school students. A recent study showed that most antisocial behaviour, including bullying and vandalism, occurs within school corridors. Despite the knowledge that poorly designed circulation space can exacerbate antisocial behaviour, it would appear that in many school projects the corridor has become an insignificant element of the building. This has been further encouraged in the latest Baseline Design Guidelines (BB103) by the inclusion of the minimum corridor width, which opens up the opportunity for circulation spaces to be completed to the smallest recommended size. Currently, there is no research that explores the impact of these reduced corridor sizes, therefore this study explores the role of circulation spaces in promoting antisocial behaviour in schools. Three schools designed according to different design guidelines, resulting in different corridor widths and

design, were chosen for this study. Semi-structured interviews with students were used to elicit genuine opinions of the corridor space from the users of each school, and these were analysed using thematic analysis. The results confirm that corridor space which encourages ownership by a group, such as unsupervised ends of corridors, are locations for antisocial behaviour. Narrow corridors without dead-ends in a Superblock building typology prevents ownership of space, which can reduce the opportunity for antisocial behaviour. However, the lack of space in the corridor for socialisation also prevents learning and creates disliked spaces by the students. To help future school design, a design checklist for circulation space and a Theory of Corridors to establish the importance of the corridor space within a building are proposed. Opportunities for further research using the techniques employed in this paper are also discussed.



The narrow physical space of a corridor offers the potential to become a place of unexpected encounters, for sharing of ideas and become an informal learning space.  
© Eilish Barry

## Meeting the challenge of climate change - Cross-laminated timber and residential development in the UK

**Anthony Thistleton-Smith, Andrew Waugh, Jane Collier & Rebecca Sawcer**, Waugh Thistleton Architects Ltd., UK  
**Dr Kat Martindale**, Architecture + Urbanism Research Office, UK



Dalston Works,  
 Waugh Thistleton  
 Architects Ltd  
 © Daniel Shearing

Developments in engineered timber, and specifically the emergence of cross-laminated timber (CLT) over the last two decades, offer a viable alternative to concrete and steel construction for high density, medium rise buildings. Timber for CLT is sourced from sustainably managed forests and, factoring in manufacturing and transport emissions, has net negative embedded energy. This is in contrast to concrete and steel, which have significant environmental impacts through extraction and manufacture and high levels of embodied energy. While governments and industry in much of the developed world have promoted the adoption of CLT, as a method of meeting carbon reduction targets and promoting forestry and their timber industry, there has been little central government support in the UK with a relatively small, fragmented timber sector. Despite this, the country leads the world in the adoption of the technology with over 500 completed buildings over

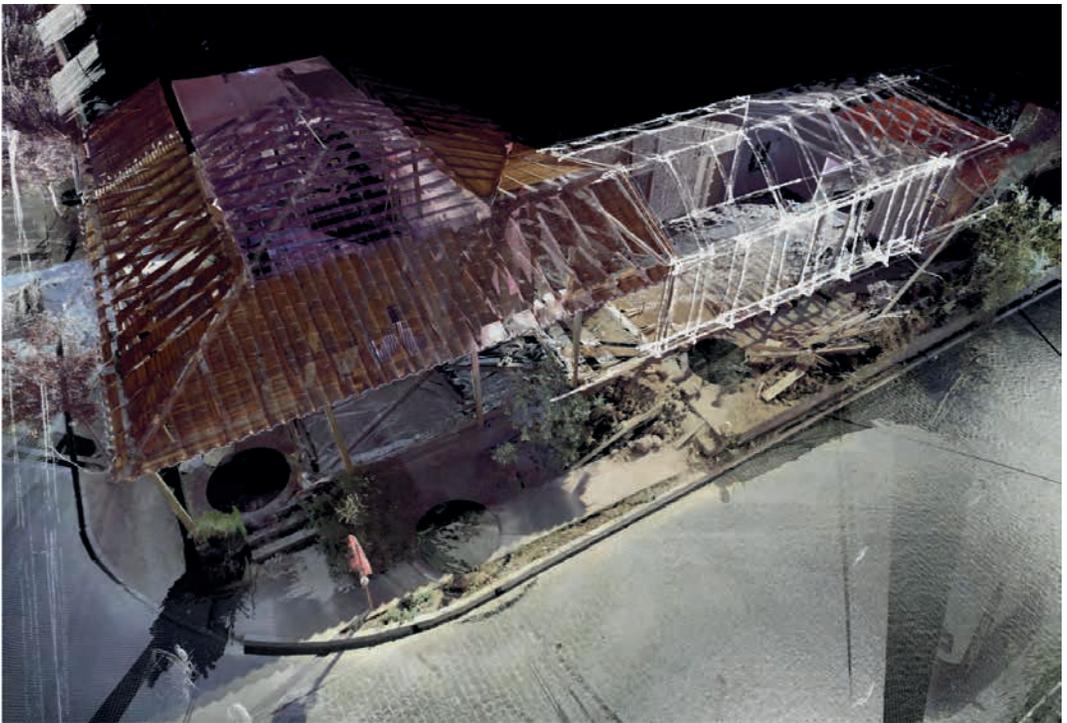
the past 20 years and in 2017, the UK imported 18% of global CLT production, with a year on year growth in volume of 100-120%. To date, there has not been any audit of the estate of CLT buildings. This research, part of a broader study, reviews a selection of residential CLT buildings and discusses the patterns of use and implementation, how the use of CLT is impacting on delivery, and identifies potential opportunities and benefits for the UK timber industry and measures that would support the emerging industry and boost wider use. The paper demonstrates that a substantial saving in CO<sub>2</sub> emissions can be achieved through building housing in timber, and offers a template to legislators to promote policies that encourage and support the use of CLT across all sectors of construction, and argues that support for innovation and development could offer benefits for the climate, the UK economy, the countryside and housing delivery.

## Recording for re-reconstruction: 3D laser scanning for the analysis and intervention of heritage areas affected by earthquakes

**Dr Bernadette Devilat**, The Bartlett School of Architecture, UCL, UK

This paper argues that the use of 3D-laser-scanning as an accurate record can challenge the way current reconstruction processes after earthquakes in Chile are carried out by providing a comprehensive measurable information as a contextual input for design. When natural disasters occur in a particular region on a regular basis — for example earthquakes — quick reconstruction processes are necessary to recover the dwelling space for the affected families. The pressure this generates has led to a superficial understanding of heritage. Frequently the solution offered is to replace the affected house by one that 'looks like' the previous one, not considering its previous sustainability and human occupation. In addition, the replacement of structures and the repetition of similar designs are strategies employed to cope with the high number of dwellings involved. In this context, the repair of what is possible is difficult to implement across a whole village, mainly due to how time-consuming damage surveys

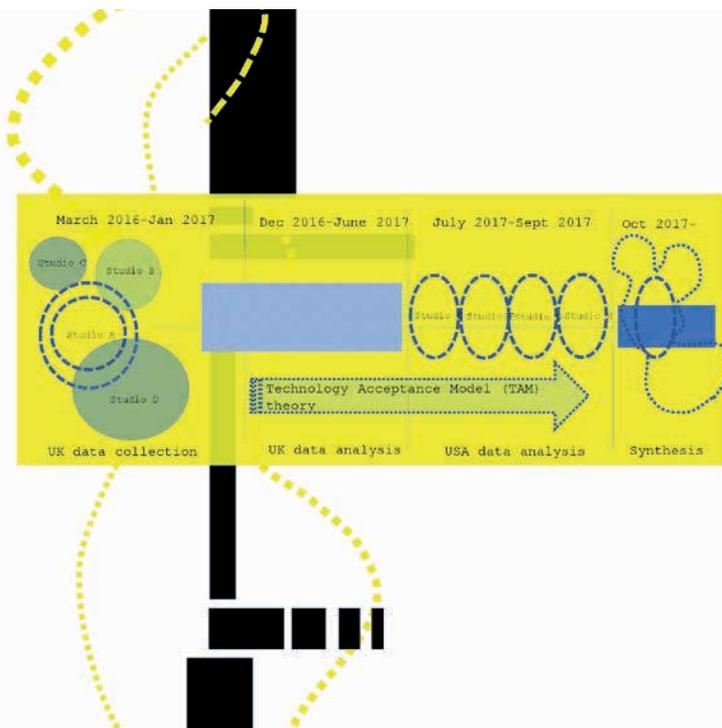
are. This paper aims to offer an alternative approach for re-construction within the heritage area of Lolol, Chile, based on the application of 3D laser scanning. Housing in Lolol has undergone many reconstructions in its history due to being located in a region of high seismic activity. Especially relevant in historical areas, 3D-laser-scanning provides a way to speed up post-earthquake assessments and designs without affecting a site's specificity — an important concern regarding the authenticity of the intervention. By using 3D-laser-scanning as an analysis and design methodology, this paper explores the possibility of tailored strategies — designed for each house — that will facilitate the village-wide repair of structures rather than their replacement in short period. The measurable three-dimensional information of the sites allows inserting elements that would fit perfectly on the partial remains, and can also serve to engage with inhabitants in the process.



Retrofit and complementary strategies for a partially 3D-laser-scanned dwelling in Lolol.  
© Bernadette Devilat

## Energy modelled realities - UK and USA Architects' design practice

Dr Sonja Oliveira, Elena Marco, Prof Bill Gething, Architecture and the Built Environment, University of the West England, UK



Energy Modelled Realities: Illustration of research design approach. © Sonja Oliveira

This study examines the effects of early stage design energy performance modelling tools on architects' design practice. Energy performance analysis in design has traditionally been the domain of the building services engineer with emphasis placed on verifying established building simulation models at late stages in design. Recently, however, with advances in digital design media, leading architectural firms are acquiring in-house design simulation for energy modelling. Improvements in energy performance are recognised to have a large impact on national energy savings (Zero Carbon Hub 2014) with increasing research focused on addressing the issue via tool improvements and computational methods. Understanding the social and organizational processes that lead to early building design conceptualisation carried out by architects, that have inherent effects on energy use prediction and enable its simulation are poorly studied and overlooked. The analysis draws on Technology Acceptance Model (TAM) theory utilising semi structured interviews and focus group sessions with 72 participants across 9

large UK and USA international architecture firms. Preliminary findings indicate differing organizational, team and project approaches with emphasis placed on legitimating client interests, hierarchical structures as well as perceived established design assumptions across the firms. The implications of the findings are threefold. First, the analysis provides an innovative approach and analysis drawing on social science methods of how early stage design energy modelling is considered socially and organizationally in architecture design practice in the UK and USA. Second, the study provides an understanding of how architects negotiate meaning on energy in design through firm, project and personal interests and motivations. There are implications for higher education particularly regarding architecture design studio learning and teaching, that has been viewed in research as lacking in energy performance integration. There are also implications for energy policy development in the context of the built environment particularly concerning building performance.

## Toolkit for Sustainable Urban Development, Plugins for CDP // Collaborative Design Platform

**Ata Chokhachian, Dr Gerhard Schubert, Ivan Bratoev, Cécile Bonnet, Prof Frank Petzold and Prof Thomas Auer, Technical University of Munich, Germany**

The integration of energy and indoor comfort aspects in the early stages of urban planning is essential to design livable and environmental friendly neighborhoods and avoid expensive compensation measures in later building design. Incorrect decisions in early stages of design could end up with more insulation layers, complex air conditioning systems and increased energy demand during the building operation.

Due to the complexity, scale and variety of metrics, it could be challenging to have systematic and holistic overview on performance indicators in urban planning. However it is necessary for each design proposal to consider indoor comfort, energy demand, daylight availability and energy supply options in early stages of planning where most of them have close relation with urban form. Thanks to the computers, all of the mentioned metrics could be simulated, however most of the designers tend not to use computer models but physical one in early design stages where it is not

feasible to do simulations.

Collaborative design platform (CDP) is an interactive tool where the designer can use physical model to run real-time simulations just by placing them on the surface of table including data from specific location and context with existing buildings. The current paper is about development of environmental plugins for CDP. These plugins enables the user to simulate district heat networks, geothermal potential, solar potential, indoor daylight availability and thermal comfort. The platform assists the user to test different urban design alternatives just by placing blocks of buildings and moving them on the table screen to get feedbacks instantaneously. CDP can be beneficial for designers and urban planners to inform design decisions and discuss them collaboratively with stakeholder and city planners. It can also be used for educational purposes to demonstrate consequences of single design decisions on environmental performance and living qualities of cities.



The union  
between tangible  
tools of the  
architect and the  
digital applica-  
tions of the  
computer scientist.  
© Chairs of  
Architectural  
Informatics  
and of Building  
Technology  
and Climate  
Responsive  
Design/TUM

## AORGANIC: Architectural fields of exploration towards the end of the society

Simon Rosa Perez, Architectural Association, UK



Architectural fields of exploration towards the end of the society  
© Simon Rosa Perez

Humanity and technology are intensely related and have always evolved together; their interwoven existence can only be explained one through the other. In the digital age, biotechnology, artificial intelligence, digital fabrication, augmented intelligence and nanotechnology re-establish a new socio-cultural scenario that lead us to reconsider our relationship with the natural world and the machine. The result of this exchange, is a hybridized culture that rethinks the basis of a new ontology where philosophical and anthropological conceptions trespass an anthropocentric reasoning and collaborates with nature in a cohesive techno-social civilization. Within this context, the distinctions between organic and inorganic or artificial and natural acquaintances are not relevant and a new aorganic logic emerge to transgress the limits of the preconceived knowledge of materiality and moves beyond typification. Architecture transcends its physicality and becomes a natural element; a new

specie built by humans that is part of a symbiotic ecosystem, complementing and enriching the natural environment.

This paper speculates with an aorganic society and an architecture that plays a fundamental role in this techno-social cohesion as a cultural mechanism that interlinks forgotten ecosystems, urban scenarios and the latent physicality of the virtual world. It has the challenge to lead the progressive annihilation of the current city; as it has become a farming exploitation system and a social condenser of data where social hierarchies and social status privileges are intensified and digitally monitored by corporative control systems. Thanks to a process of transformative social stages of dissociation and conceptual reassembly; a new architectural scenario merge as part of this intense relationship between human, technology and nature. An aorganic culture that welcome new species, dismiss social strata and transform the physical realm within a new evolutive order of co-existence.

## Navigating real and virtual complex museums

Dr Athina Lazaridou, The Bartlett School of Architecture, UCL, UK

Virtual Reality navigational model of the Ashmolean Museum. Design generated through the incorporation of mixed techniques: 3D modelling, 3D scanning, game design tools and geometry optimisation processes.  
© Athina Lazaridou



A key issue in the architectural design of atria museums is the variety of ways users can interact with the three-dimensional layout of space to create emergent patterns of spatial navigation. This issue is addressed with real time observations, space syntax, and virtual reality environments, providing a specific rigour in the spatial analysis of the layouts and exploration patterns. The intention is to evolve an overview of these three-dimensional spatial and navigational aspects that contribute to a better understanding of the architectural design of museums. Until recently, most studies on spatial navigation and cognition explored the relationship between space and wayfinding rather than free human exploration. In addition, they investigated two-dimensional spatial properties, effectively by-passing the effect of the third dimension on how people move inside buildings. Two European atria museums were chosen as case studies: the Ashmolean Museum in Oxford and the Museum of Scotland in Edinburgh. The analysis begins from the apparent similarities

among the museums, creating a suitable background for exploring critical differences regarding their spatial layout and visiting patterns. These results are then used to create systematic variations in the virtual reality (VR) experiment, conducted at the Ashmolean Museum, examining correspondences between users' experiences in the real and in virtual environments. Significant analogies are demonstrated between real and virtual behaviour with the findings showing how the museums' design impacts significantly on visitors' navigational processes. Although the atria in the buildings are used as compositional devices structuring relationships between exhibition spaces and the three dimensional organisation of buildings, there are significant differences in terms of how this relationship is structured and the differing impacts produced on navigation patterns and gaze directions. The present study ultimately leads to a deeper understanding of architectural design regarding three-dimensional museums, and its implications for users' social and cognitive processes.



**Recording for Re-reconstruction**  
A house in Lolol damaged by the 2010 earthquake. Rendered from 3D laser scan  
© Bernadette Devilat



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Designing  
for Heritage:  
Contemporary  
Visitor Centres  
The Cutty Sark  
ship and its visitor  
centre  
© Ruth Dalton

# 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.**

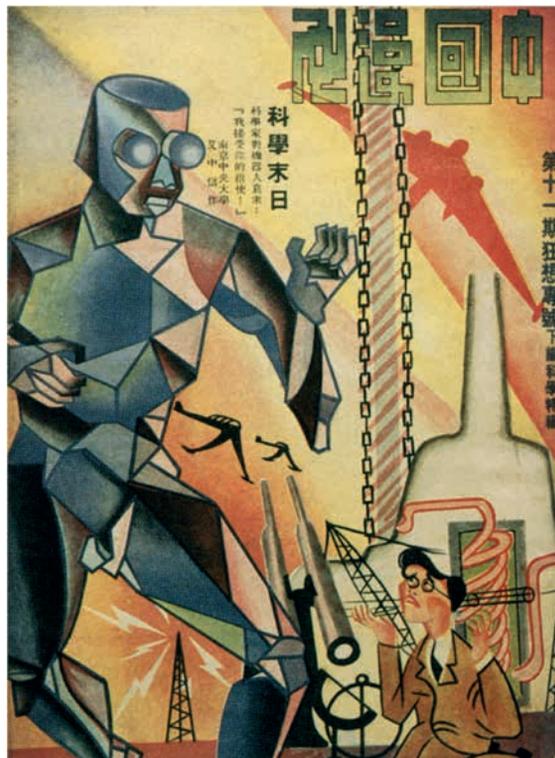
- Historical research of direct relevance to a project, e.g. conservation plans and reports
- Cultural studies relating to architecture, professionalism and the built environment
- Histories of construction, science and technology
- Historical and/or theoretical research on place, space and urban planning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

## The Advent of Architecture in China

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

A century ago the Chinese architect did not exist. However, since 1980, countless Chinese architects have participated in the largest construction project in history, in which 450 million people have been lifted out of poverty and 600 million have moved into cities, precipitating the urbanisation of our species and an entirely new geological age: the Anthropocene. For those interested and engaged in China's built environment, it is important to understand this epochal transformation. This study focusses on the advent of architecture in China for the Chinese (as opposed to foreign architects), an experience that occurred in the first half of the twentieth century during which professional practices, schools and institutions were established on which subsequent developments could be achieved. For China's first architects, the foremost conundrum was reconciling their modern profession with the country's incomparably ancient building traditions and wider modern artistic landscape. As part of a wider body of research spanning two

decades that set out to disclose and re-evaluate architecture in the comparatively under-researched Chinese context, the premise of this investigation proposes that China's encounter with architecture was mediated multifariously, negotiated by internal and external political circumstances that gave rise to unique conditions in which architecture was produced – nationalist, imperial, colonial, quasi-colonial, and hybrid. To cope with the unique multiplicity of China's experience, the methodological approach is geographically, temporally and architecturally inclusive. It is geographically broad within the bounds of China, seeking insight from the collective experience rather than individual sites in isolation. Temporally, while focusing on the early twentieth century, it acknowledges China's incomparably long building traditions and recent urbanisation. Architecturally, while focussing on Chinese architects, it acknowledges their shared experiences with foreign counterparts as integral rather than separate.



Dystopian scene on the cover of Zhong Guo Man Hua (Chinese Comic), depicting the technological, industrial, scientific and military advancements that accompanied the advent of architecture in China in the early twentieth century. Out of print 1930s

# An architectural and social history of the mosque in Britain 1889-2017

**Shahed Saleem**, Architecture and Cities, University of Westminster, UK



Brick Lane Jamme Masjid, Spitalfields, London  
 © Shahed Saleem

This research presents the first overview of Muslim architecture in Britain, from the earliest examples in the late 19th century, to the mosques being built today. Key architectural stages are identified and explained alongside the social history of Muslim settlement and growth. The analysis focuses on the way in which the mosque has adapted into the existing urban fabric of Britain's towns and cities, and how this new building type has then impacted its urban landscape, socially, culturally and architecturally. The mosque in Britain is historically understudied, so whilst a handful of academic articles exist on individual mosques in Britain, these are generally from a social science viewpoint, and there is no architectural overview.

'The British Mosque' is an architectural as well as a social history, and describes the evolution of Britain's Muslim communities through the buildings they have

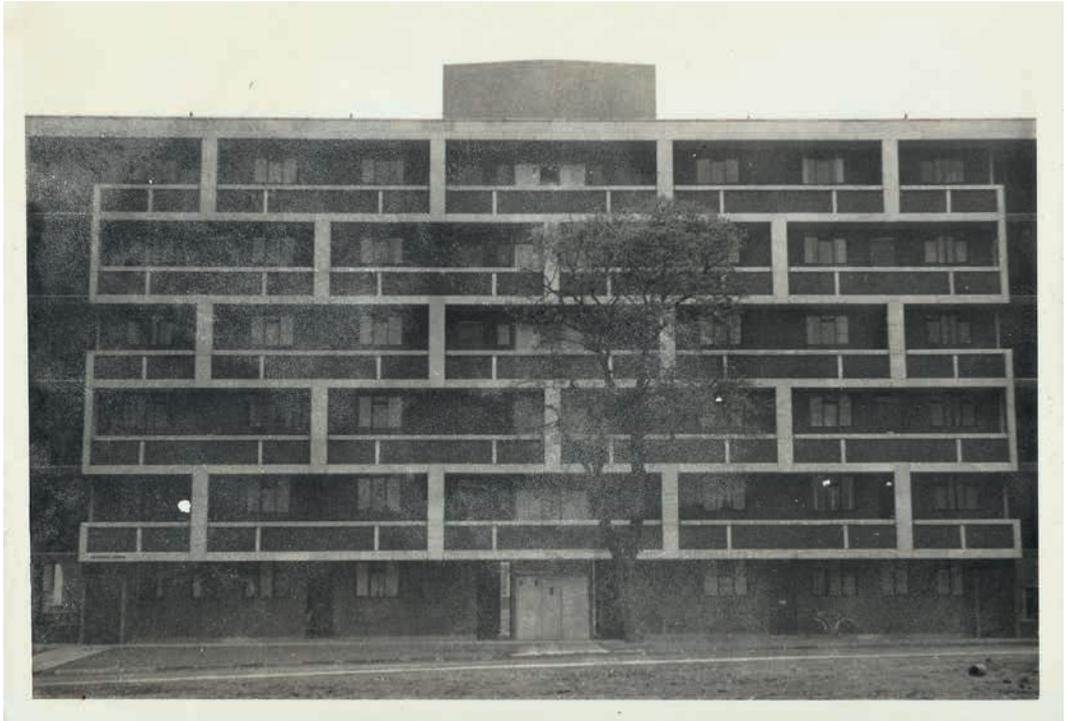
built. By presenting this architectural narrative for the first time, the publication opens up a new field of study of British Islamic architecture. The architectural story charts a course from the earliest mosques formed from the conversion of houses, to other large scale conversions through to purpose built mosques and with these the emergence of an Islamic architectural expression in Britain.

The mosque is not solely considered in terms of its architectural style, but also from its social history and cultural meaning. The book therefore provides an observation into the character of British Muslim life and practice and how these have been embodied through its buildings. The future of Islamic architecture in Britain is also considered, and how this will be affected by the growing cultural and social diversification of Britain's Muslim communities.

## May Mo(u)rn: transitional spaces in architecture and psychoanalysis – a site-writing

Prof Jane Rendell, Bartlett School of Architecture, UCL, UK

The Hallfield Estate (1952-1955), Bishops Bridge Road, W2, London, designed by Tecton, Drake and Lasdun for Paddington Borough Council. Salvaged photograph.



How do external, material environments and the inner worlds of emotion, imagination and memory influence each other? This research aims not only to use psychoanalysis as a theoretical tool for interpreting architecture; but instead to show how a knowledge of psychic processes can help to understand the design and use of buildings. Drawing on the practice of architectural history as a form of site-writing, the research develops several different strands of enquiry – each with a distinctive ‘voice’ – interweaving them throughout the essay.

Addressing the architectural concept of the ‘social condenser of a transitional type’, the research traces this idea’s progress from the Narkomfin Communal House in Moscow (1928-29), to Le Corbusier’s Unité d’Habitation in Marseilles (1947-52), to the Alton West Estate in London (1954-58). At the same time, with reference to the work of Sigmund Freud, D.W. Winnicott, André Green and Jean Laplanche, the research investigates the inherently spatial

vocabulary of psychoanalysis, in particular notions of the transitional space of the ‘setting’. This physical and psychic scene of the psychoanalytic encounter is shown to offer new approaches for understanding relationships between subjects, objects, concepts and sites in architectural historical research and practice. This essay is woven together out of three transitions composed of specific image-text relations: a sequence of theoretical insights drawn from psychoanalysis concerning the transitional spaces which exist in the relationships between subjects and objects sit alongside a series of transitions from one architectural space to another. These two are joined by a third strand, which narrates the discovery of an arts and crafts building in London’s green belt and the photographs of modern architecture found within it, aiming to situate this discussion of architectural and psychoanalytic transitional spaces to London’s current housing crisis.

## Space Design, Making and Tectonics in Palestinian Architecture in Israel: Impacts of the Israeli Project

Dr **Abed Badran**, Welsh School of Architecture, Cardiff University, UK

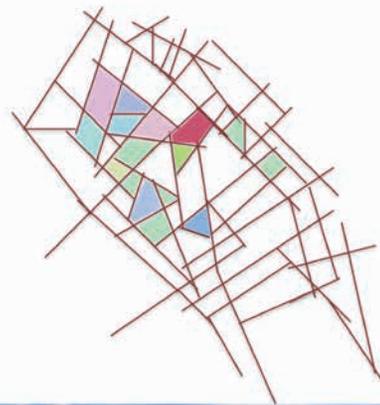
The physical construction of the Israeli state has brought massive destruction, demolition, and expropriation of Palestinian cities, villages, lands, and natural resources. In addition, Palestinian common spatial memory and culture were blurred over nearly one century. The thesis assesses the dynamics and processes which were caused, and occurred exclusively at Palestinian architecture, by the mechanism and practice of the 'Israeli Project'.

Critical review of the literature on Palestinian villages and architecture in Israel has revealed that research has yet to read the relationship between the 'Israeli Project' practice, and the transformed Palestinian domestic space, tectonics, making and its shaping factors. Furthermore, the current literature reveals misunderstanding of the traditional Palestinian architecture's essence, its intrinsic values and its evolutionary shaping factors.

The thesis discovers that the traditional Palestinian house before 1948 had evolved in accordance with the evolution of Palestinian settlements; the Early/Pre-Form (nomadic), the Fluctuating-Form (rise and

fall regularly), Emergence (birth), Deforming (into a better form or condition), Metamorphoses (complete homogenous village form), Heterogeneous Form (annexing of outsiders, group of interests), and the Ascendant Form (the urban).

The thesis notably develops a thorough reading of the asymmetrical power or the intercultural relations between the Israeli order and Palestinian architecture and the spatial practice post-1948, integrating postcolonial discourse, and explores a range of critical issues through the concepts of 'dichotomy', 'hybridity', 'third space', 'resistance' and the 'in-between'. During the last three decades, more and more Palestinians have embraced their culture in resistance to obliteration, exclusion and meltdown. As the thesis examines, an important aspect of this resistance is evidenced in crucial changes in the spatial boundaries of Palestinian dwellings, evolving from a space of inaction or reaction, to a space of action, thereby departing from a long history of cultural diffidence towards a new experience of resistance, towards a 'fourth space'.



Practice of the "Fourth space"-  
 Design of the Arab Cultural Centre, Haifa. Conceptualising the historical urban syntax of Haifa into the metal facades of the building. "This reading extends into the public spaces inside the building, where the old construction stays in place, then the origin, the deformed and the new, become the three immortal scenes in the novel's memory and existence."  
 © Abed E. Badran

## Housing Social Demands: The Church of England

**Susana Rojas Saviñón**, Architectural Association, UK

This project questions the role of the English religious institution in the twenty-first century. It examines how the Church of England, as the state church, has gained a remarkable architectural heritage, an incomparable socio-political and economic power, and, more importantly, a social and moral responsibility. Given this context, one can argue that the Anglican Church ought to ameliorate public services and social conditions, and return to an innovation of architectural typologies and urban interventions.

The institution's territorial prominence through historical land division and emblematic church buildings has been essential to the successful management of the

Church's continuous charitable work. Taking advantage of an existing, multi-scalar approach, this dissertation proposes a new collective infrastructure consisting of housing, education, and healthcare facilities. Developed from the Church's original purpose of 'housing' social needs, the proposed network of Parish Centres creates a new public service and housing infrastructure. The design proposal is based on historical precedents of English religious institutions and their translation into the present socio-political context. The main aim is to envision how the Church can provide adequate services and infrastructures for the necessities of the present-day society.



Kitchen Passage  
© Susana Rojas  
Saviñón

## The Venice Variations

Dr Sophia Psarra, Bartlett School of Architecture, UCL, UK



Architecture is defined by the humanistic idea of authorship. In contrast, the numerous places where civic life takes place are considered the outcome of socio-economic process. This opposition divorces the social purpose of individual architectural works from collective architectural and urban production, fragmenting architecture into different fields of knowledge. One side of the debate sees architecture as liberal art, the other as part of the scientific method. The opposition of individual and collective authorship contains another binary: the 'built environment', with existing buildings and cities, versus design as the domain of possible configurations. Few cities encompass the intertwined sphere of the "authored" and the "authorless" as Venice does, a city holding unique answers to the relationship between the individual and collective imagination. This work culminated in the recent publication of the first book addressing the original context of this split created by the Western architectural canon. The research

sees in Venice and two other artefacts owing their inspiration to Venice, Calvino's *Invisible Cities* and Le Corbusier's *Venice Hospital*, the opportunity to address architecture and cities as a matter of authorship. Why has Venice inspired, and continues to inspire, creative invention? Do sites like Venice still matter and what matters most, the individual output of architecture or the city as the creative output of society?

The analysis of the three artefacts explores the devices in crafting the city, creating the novel and designing the building, and how they stimulate creative invention, exposing conspicuous gaps in our architectural knowledge: Where do architectural ideas come from? Are architecture and the city defined by the creative imagination or by external influences and factors? Analysing the affinities between the three artefacts, this research proposes a new expanded view of architecture and the city, opening up the original binaries to overlapping definitions of authorship and architectural production.

## The layered absences of the Heygate Estate

Felipe Lanuza Rilling, Bartlett School of Architecture, UCL, UK



Fragments of the Heygate Estate model, on a printed photograph of the site taken in 2012. © Felipe A. Lanuza Rilling (2016)

This paper introduces the notion of absence to interpret the experience of disused spaces and structures, which escape the present definition of architecture and the city as a designed and planned environment. Through this lens it looks into the Heygate Estate in South London, a modernist council estate that remained almost empty for a decade, and was demolished in 2014 to give way to a contentious regeneration project. Before being demolished, the Heygate accumulated a range of interrelated absences linked to its state of disuse: its detachment from and interruption of the formal urban system, the displacement of people, and its impending erasure – loading the experience of the site.

The proposed method to represent these absences is layering, a form of inquiry using photography, video, drawing and writing. In this way layering responds to absence's capacity of evoking distant, uncertain and multiple presences that remain away from our grasp, so they have to be recreated through memory and imagination.

In its openness, alternativeness, and in its social and political meaning, the disused and neglected Heygate strongly incarnated the values of Ignasi de Solà-Morales' (1996) concept of *terrain vague* as "the form of absence" in contemporary cities. The Heygate, nonetheless, challenged that definition in its clearly delimited physical structure, reflecting Pier Vittorio Aureli's notion of absolute architecture (2010), which describes the potential of architectural form and limits to counter the forces of capitalist urbanisation. Here, both apparently opposite terms converge and complement each other, blending to situate and give a possible role to the layered absences of the Heygate Estate. In accounting for a place left over by urban change, this paper advances alternative imaginaries to reflect on and critique the underpinning narratives of urban regeneration shaping the contemporary city, which determined the Heygate's ultimate disappearance.

## Designing for Heritage: Contemporary Visitor Centres

**Prof Ruth Dalton**, University of Northumbria, UK

**Aims:** statistics indicate the numbers of visitor centres built every year is still rising and that they have not yet 'peaked'. Could this be a new building type? The aim of this study is to determine what exactly is a visitor centre and if they are a new building type. Since visitor centres are potentially new building types this work also has to address the rarely raised question of how new building types arise. The main hypothesis underlining this study is that the visitor centre is a newly emerging building-type, distinct from its constituent parts (the museum/gallery, cafe/restaurant and shop).

**Methods:** in the course of conducting this research, 43 buildings were studied and visited. All buildings were photographed, and the architects contacted to provide drawings and complete a 'key facts' data-sheet/questionnaire. The drawings were subsequently re-drawn then formally, functionally and spatially analysed. A series of in depth interviews was conducted with a range of stakeholders (funder, client,

architect, local councillor and neighbour) for one visitor centre. Finally, 20 'exemplar' buildings were studied in more detail. They were selected to show the widest possible range of sizes, of ages and the greatest range of locations and of attraction types/themes.

**Findings:** the first findings of this research are that three attributes appear fundamental to a visitor centre: iconicity, invisibility and synergy but that individual buildings will have differing emphases on these and that an architect designs a meaningful and rich visitor experience through empathy and by putting themselves into the visitor's shoes. The primary outcome is that this work attempted to identify an archetypal visitor centre based on observed/calculated functional, spatial and formal similarities between the 43 visitor centres studied. A summary of those features typically found in an archetypal visitor centre is presented concluding that a new building type has emerged.



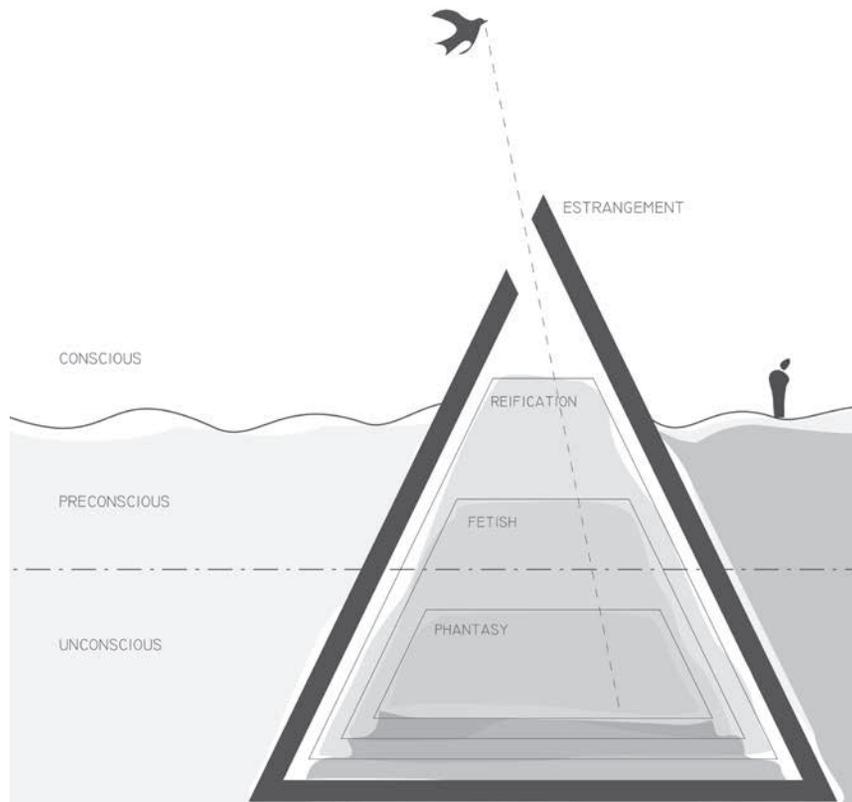
Hafod Eryri visitor centre  
© Ruth Dalton

# The Reproduction of Architecture: A Cognitive Map to Traverse the Discipline

**Prof Camilo de Lima Amaral Vladimir**, Universidade Federal de Goias, Brazil

This research developed a cognitive map of architectural reproduction to better understand it as both a medium for and the end result of disciplinary practices. To this end, the production of architectural space is understood as a form of mediation in which social relations are reproduced. This analysis is undertaken in an original manner – departing from live experiments in design workshops; using tools of Marxist cultural theory, the sociology of art, and accounts of the production of subjectivity; and focusing on the contradiction between ‘discipline’ and ‘dialectic’. The aim is to investigate possible routes for counter-hegemonic architectural practices that confront ideology and engage in politics. This cognitive map thus aims to clarify – in order to question – the traditional myths of the field and the notion of the individual architectural genius as an independent agent. To call these myths into question, we present an alternative to the narrative of the individual architect as the engine of

architectural history – namely, trans-individuality – and conceptualize architecture as an operation rather than a ‘thing’. Restoring architecture’s dialectical relationship with the social mode of spatial production, the idea of a ‘reproduction of architecture’ reveals its triple meaning: society reproduces the discipline; the discipline reproduces society; and architecture reproduces itself by reproducing subjectivities. For this reason, architecture was investigated in terms of its processes of estrangement and the resulting reproduction. This reproduction was investigated in terms of its reification (production of things), its fetish (the technique of hiding artifices), and its fantasies (narratives that justify desire). The result is a cognitive map that is conceived as a tool for traversing the myths that reproduce architecture – in the sense that it provides aesthetic perceptions of these phenomena and enables self-reflexivity for collective subjects.





## Within and Against: The Architectural Idea of The Building

Dr Xiang Ren, University of Sheffield, UK



Multiple temporalities in tempo-spatial threshold between the old and the new parts  
© Xiang Ren

It is more than ever urgent to readdress the intellectual lifeblood of architecture as both a slowly-growing discipline and a quickly-marginalised profession, not only in search for the fundamental authenticity of architecture but also redefine architectural idea amid the obscure postmodern theories and current tendency towards standardization, rationalisation and automation from the scientific and technological power. Architecture as a fragile discipline should not merely return to the endless self-referential debates on discipline autonomy, although the idea of patron, form, structure, material, tectonic, bodily experience and temporal use does matter and will still matter in architectural professional daily practice. What architecture needs to return to is that very fundamental idea of architecture as a single coherent whole, within and against the power simultaneously, no matter whether that comes from scientific, social-scientific or art-historian perspectives. The idea of architecture should also go beyond ideological baggage of capitalism

and socialism, neither the normative definition of 'the idea of architecture' within Euro-centric modern perspectives, nor the opposing binaries of East-West differentiations on 'the idea of architecture'. The idea of architecture as architecture is not in contraction with the production and consumption in and around architectural object, image, process and relationship. There is an urgent need but also existing possibilities and routes to nurture and reinvent the very archetypical idea of a building, which grows in its own right, reduces to its irregular and bare form, and mediates the conflicting desires from architects and non-architects for permanence and temporality, clarity and vagueness, authority and anonymity. That core-form constituted and will sustain the very single idea of architecture as both a discipline and a profession, particularly in confrontation with the very current increasingly and seemingly unlimited possibilities of building standardization and automation.



**The layered  
absences of the  
Heygate Estate**  
Pollock Road  
in the Heygate  
Estate, 1972  
and 2012.  
Photographic  
composition.  
© Felipe A. Lanuza  
Rilling (2012)

THE  
RUTLAND  
ARMS

BROWN STREET



Looking for  
answers -  
unknown artist  
Dylan Dixon /  
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# 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.

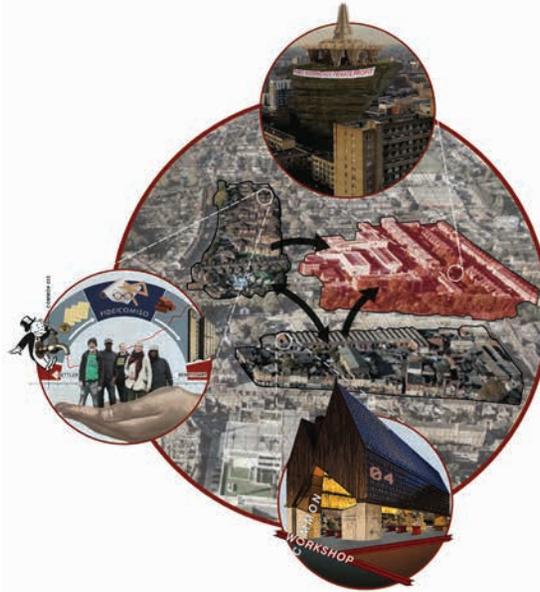
This year's conference was held in Sheffield, co-hosted by the School of Architecture at the University of Sheffield and the Department of the Natural and Built Environment at Sheffield Hallam University.

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

# Riot to buy: To what extent did political contestation influence and accelerate development of neoliberal urban policy in Britain?

Ben Beach, Faculty of Architecture, University of Cambridge, UK

With post-riot regeneration schemes enabling speculative finance to enter new territories, what would a community counterattack look like? The project examines whether models of development finance like 'Fideicomiso', new fabrication techniques and strategically located construction of "nail houses" could combine into a neighbourhood-wide strategy for the defence and extension of the urban commons.  
© Ben Beach

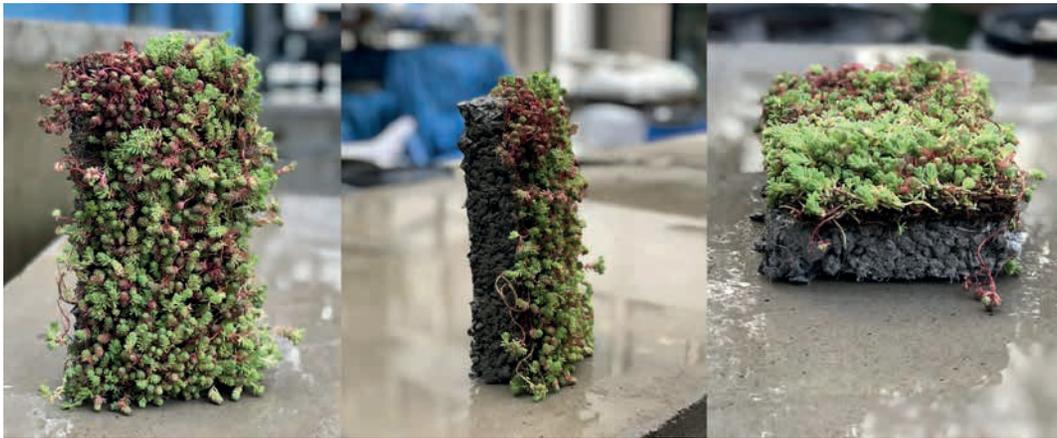


This paper will demonstrate that since 1979, incidences of political contestation have triggered and accelerated development of neoliberal urban policies in British cities, aimed at neutralising dissent through the comprehensive redevelopment of restive neighbourhoods. I will argue that central to instituting neoliberal policies is a process of fragmentation and territorialisation of space; executed on local, national and international scales to effect economic restructuring and redraw boundaries of political power. I will explore how this process developed and extended into urban centres - with a transposed and highly authoritarian focus on social control - as a direct consequence of neoliberal governance encountering mass rioting. In particular, the Broadwater Farm Estate, North London, will form a unit of analysis for an exploratory case study in how disorder in 1985 and 2011 provoked spatial responses, with the principle aim of pacifying and dispersing populations hostile to state power. I will contend this demonstrates the arguments advanced by the Italian Autonomism movement - that capitalist development is fundamentally reactive to working class struggles - can be successfully applied to urban space; which is subjected to programmes of recomposition preceded and prefigured by the actions of urban social movements. Whereas historiographical narratives continue to centre trade union unrest as the predominant challenge to

Thatcherism throughout the 1980's, I argue that mass unemployment shifted the site of contestation from the workplace to the street in the form of the urban riot. With the riots chaotic nature proving illegible to analysis by governments' unwilling to acknowledge links to policy or economic difficulties, an alternative focus on environmental factors culminated in a spatialised reaction.<sup>4</sup> Through extensive archival research and analysis of newly declassified government files, my research concretely demonstrates that beginning with Michael Heseltine's 1981 paper "It Took A Riot" - in response to unrest in Toxteth - strategic, financed approaches to urban regeneration have been successively developed and impelled by the 'crisis' moment of mass disorder. As my research continues through pursuing interviews with primary sources in Tottenham, the links from this early policy development to contemporary regeneration schemes are becoming ever clearer: for example, the highly controversial 'Haringey Development Vehicle' was preceded by a paper entitled "It Took Another Riot" authored following the 2011 London Riots. I believe my findings point to an urgent need for a reappraisal of the political function of architects and urbanists - especially in the context of 'regeneration' schemes - by demonstrating the continued utility of architecture as a tool of social control, with significant consequences for social justice concerns.

## Super green2: An architects journey in material development

Elizabeth Gilligan, Prof Ruth Morrow, Dr Rory Doherty & Dr Sree Nanukuttan, School of Natural and Built Environment, Queens University Belfast, UK



Bio-receptive concrete; Sedums  
© Elizabeth Gilligan

The repositioning of materials in architecture from superficial surfaces to elements that need to be understood through physical contact and informed research-lead exploration, has begun.

As architects take a step away from the digital space and back into the world of materials, the growing question among practices and universities is: Can material development be harnessed into a design-led practice?

This research project proposes a new methodology that locates the architect within the early stages of material development, in collaboration with other experts, and questions what the architect's contribution is to the process. The specific process in question is the development of a sustainable facade/component, made of concrete using waste streams and acting as a biotope for plants, microbes and micro-organisms. The project throws up many questions e.g. Why can't building façades grow/absorb water or dirt? Can a concrete façade act as a habitat or biotope? These questions are framed both within the context of design and material development.

The reason research into new lower carbon-building materials such as this is so important is explained below by Blanchard;  
"Global warming is not only the number one environmental challenge we face today, but one of the most important issues facing all of humanity... We all have to do our part to raise awareness about global warming and the problems we as a people face in promoting a sustainable environmental future for our planet." (Blanchard, 2007).

To morally look the other way while concrete is still one of the world's most carbon intensive practices would be obscene; every piece of research that can increase the green credentials of the concrete industry is a step in the right direction. The greatest threat is the belief that someone else will save the planet. Everyone can make a difference and it starts with a small change.

We all share one planet in common. We breathe the same air, we drink the same water, and we depend on the same oceans, forests, and biodiversity. There is no space left on earth for egoism. The global commons must be kept within their safe operating space, and we can only do it together (Ishii, 2018).

The project itself is unique in the fact that it is not confined to answering one line of questioning, similar to most scientific research. It begins by hypothesising that facades can do more for people and the environment than simply satisfying technical requirements. It then uses a process of questioning to find its research axis, making this more of a journey rather than a planned A-B route.

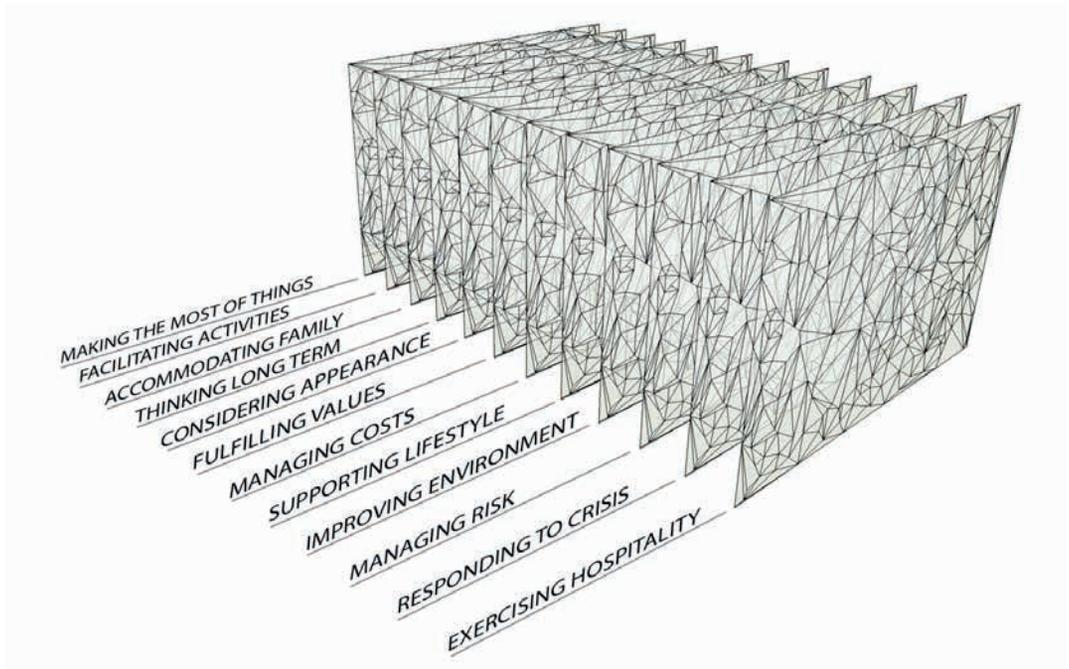
The project is about documenting the process of material development from start to finish, with this aim in mind not everything can nor will be full resolved, but a critical encapsle for material development will be established.

Blanchard, T. (2007) *Green Is the New Black: How to Change the World with Style*, London: Hodder & Stoughton .

Ishii, N (2018) Naoko Ishii: An economic case for protecting the planet. [https://en.tinyted.com/talks/naoko-ishii\\_an\\_economic\\_case\\_for\\_saving\\_the\\_planet](https://en.tinyted.com/talks/naoko-ishii_an_economic_case_for_saving_the_planet)

# Understanding home improvements within the wider nexus of practice: Implications for encouraging owner-occupier low carbon retrofit

Tara Hipwood, School of Geography and Planning, Cardiff University, UK



Teleological constellations in the nexus of practice  
© Tara Hipwood

In the context of global climate change and UK government targets to reduce carbon dioxide (CO<sub>2</sub>) emissions by 80% before 2050, low carbon retrofit of the existing UK housing stock, which is responsible for more than a quarter of UK energy use, is imperative. Whilst grants and subsidies addressing fuel poverty in vulnerable households have resulted in increased energy efficiency of housing amongst these populations, incentive schemes, such as the GreenDeal, aimed at more affluent households have demonstrated low levels of uptake.

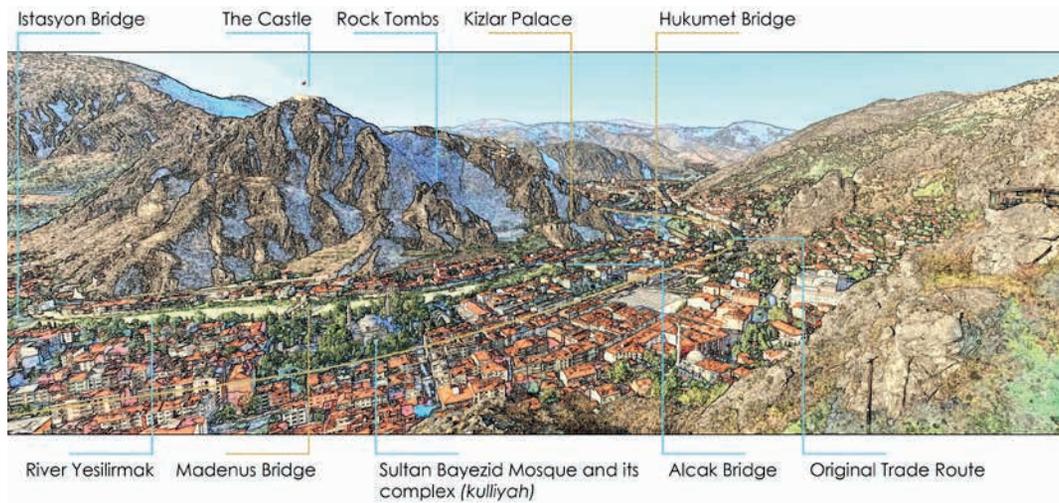
Drawing on 31 in-depth interviews and walk-through tours with affluent owner-occupiers undertaking home improvement projects, this thesis examines why, and how some of these projects incorporated low carbon retrofit measures, while others did not. Using a practice theory approach, the relationships between the 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. Furthermore, the thesis employs a methodology that allows the relationships between the material home, teleo-affective structures and competences,

to be examined using the home improvement measures themselves as the unit of analysis, rather than the individual. It is proposed that this not only more appropriate to the ontological assumptions underpinning practice theory, but also to specialisations within the construction industry which are focussed around specific home improvement measures rather than specific types of owner-occupier.

In conclusion, this thesis proposes a series of teleological constellations that provide a theoretical tool to further our empirical understanding of how low carbon home improvements fit within the wider nexus of practices that make up social life. These teleological constellations provide an alternative dimension through which the nexus of practices can be understood, revealing connections between practices that appear otherwise temporally and spatially dispersed. These connections, in turn, have implications for the way in which policy seeks to induce higher levels of low carbon retrofit in order to help meet national CO<sub>2</sub> reduction targets and contribute to addressing global climate change.

## Understanding Urban Conditions of an Ottoman City through 19<sup>th</sup> Century Travelers' Accounts: The case of Amasya in Turkey

**Meryem Gurel & Dr Magda Sibley**, Sheffield School of Architecture, University of Sheffield, UK



Panorama of Amasya, 2017, and some of its important landmarks that were mentioned in the first impressions on approach by travellers  
© Meryem Gurel

This research aims to investigate how the urban fabric and life of Amasya (Turkey), an Ottoman city on the Silk Road, was depicted by various 19th Century travellers of different origins. Located in the northern part of Turkey and at the crossroads of major trade routes, Amasya was a cradle of civilization for many centuries. It played important administrative, religious, educational and economic roles within the Ottoman Empire. It has always attracted travellers from different countries, cities, religion and culture, particularly in the 19th Century, when the number of travellers visiting Amasya increased rapidly as a result of the Industrial Revolution and the invention of steam-powered trains, easing the accessibility to the Ottoman Empire territories. A total of 17 travellers' accounts have been identified in the previous centuries preceding the 19th Century and a total of 20 travellers' account were identified for the 19th Century alone, despite the need for foreigners to get a travel permit to visit and record the Ottoman cities. In this research, 10 travellers who visited in the first half of the century will be presented. It was in the 19th Century that the decline of the Ottoman Empire started, and major changes introduced as part of a systematic transition towards 'modernisation' in different fields. During this era, Amasya was visited by various travellers, mostly European but also a small number of Turkish travellers. These travellers visited Amasya either for travel and pleasure, or as a stop on their journey and they had different political, religious and personal motives in the way they described Amasya.

Texts from their accounts bear witness and contribute to present an account of the urban life of Amasya in the 19th Century and the changes it had witnessed. Furthermore, as there were no official Ottoman maps of the city and limited visuals, the first pictures and gravures of the city were produced for the first time by these travellers with their detailed accounts of the city, hence allowing the research to start mapping the city, based on fragments of information provided in the different accounts of the different travellers. Therefore, this paper presents the very first understanding of the urban fabric of 19th Century Amasya and its key landmarks as well as cultural and socio-economic conditions of the city. This research allows the mapping of the city in the 19th century through the analysis and synthesis of travellers' accounts. Information that is relevant to the research was extracted from the texts, then, categorized into themes, and finally, key facts were selected according to their frequency of appearance in the texts, in order to present a synthesis of travellers' description of the city. Bridges, axis, roads and streets, as well as important monuments from different eras and residential neighbourhoods were examined and located on a generic map. The texts also extensively reveal information about trade routes, trade activities, ethnicities, religious and cultural activities, educational and administrative roles of the city as well as the public life. This allows the researcher to develop a clear understanding of the urban conditions of Amasya at that time.

## Building with Care: Learning from the design and construction of architecture for later life

**Mikaela Patrick & Dr Chris McGinley**, Helen Hamlyn Centre for Design, Royal College of Art, UK

**Prof Sarah Nettleton, Dr Daryl Martin & Dr Christina Buse**, Department of Sociology, University of York, UK



Participatory  
design exercises  
for a co-created  
garden, Case  
Study 3  
© Christina Buse

“Building with Care” is a collaborative research project on the process of design and construction of architecture for later life care. Building on the findings of the three-year ESRC-funded project: “Buildings in the Making: Architecture in the context of health and social care”, it aims to bridge divides between research and practice by looking at new ways to communicate research findings through participatory workshops with industry professionals and how to embed and evidence values of care within working processes in the construction industry.

The project’s methodology followed the Double-Diamond Design Process: Discover, Define, Develop, Deliver (Design Council) and embedded inclusive design approaches throughout. The Discover phase analysed the original findings from “Buildings in the Making” which sought to open up the ‘black box’ of the design and construction process of architecture in the care sector; following a series of case studies over a period of 9-18 months. The findings highlighted the importance of good working relationships, shared vision and values in a project team and engaging and designing with building users. Broader research identified the wealth of guidance on design outcomes, the contrasting lack of guidance around working methods and an aspiration to consider how we evidence value beyond economic value. Following that, the define phase outlined the complexity of working in this sector, the multitude of factors involved in producing a building of care, potential opportunities for improving working processes and the constraining factors. The varieties of ‘architectures of care’ were

also explored, and the research highlighted how every project should be approached as individual, and there is a need to be adaptive to evolving architectural typologies. Participatory workshops and consultations built on these findings, leading to the development of ‘values of care’ (guiding principles for best practice) and working towards a model of ‘building with care’. This model aims to frame an inclusive design approach to designing and constructing architecture for later life care and outlines a series of working processes (such as vision and value, commission, brief, realisation, collaborate, learning), and the factors/drivers that impact those processes. Further, it suggests that we should find opportunities to learn from our experiences, embedding and evidencing value, at each stage of a project, not just on completion.

This has led to the development of an interactive online learning platform based on the processes of “Building with Care” and can be explored in depth over time or through a condensed training module; providing guidance, real world examples from the research data in the form of quotes, images, and diagrams, and links to external resources. The platform also brings together concepts of what is a building of care, considering the inclusive design of ‘spaces that care’ as places to live, work and as communities. This broader vision is considered fundamental as architectures of care are constantly evolving, so a focus on the process of realising them could be more adaptive and innovative than providing another piece of guidance on design. The project is currently in its delivery phase and the prototype is being developed for user testing.

# Mapping Parameters for Liveable Streets in Contemporary China: A Case Study of Five Neighbourhoods in Nanjing.

Sheng Song, Sheffield School of Architecture, University of Sheffield, UK



A street barricaded to be used as a playground for the students  
© Sheng Song

In view of the existing problems in contemporary Chinese cities, this paper focuses on the concept and mechanism of liveable streets during the development of urbanization. In the period from 1996 until now, generally seen as the period of rapid growth and urban expansion in China, old streets and alleys have been disappearing together with urban vitality and diversity. This was mainly caused by the construction of large-scale 'regeneration' projects. Traffic engineering dominates street forms in newly-built districts while the needs of pedestrians are undermined. The hierarchy and width of streets are defined and designed by traffic volume and speed only. There is little recognition and description of streets as places for urban public life, and there is a void of effective design guidelines in city planning and the conflict between traffic and daily life on streets has become more and more serious in Chinese cities.

This paper is part of a research project concerned with the quality of Chinese streets and neighbourhood public spaces for citizens. It takes Nanjing and within it five distinct neighbourhoods as its case study. The research aims to identify key parameters of liveable streets in a contemporary Chinese context through reading and understanding streets and their urban context in as many ways as possible. A set of intertwined methods is used to interpret the physical, spatial and social dimensions of the streets, including:

- 1) gathering existing 'official' maps and statistics of the neighbourhoods
- 2) walking as a method to investigate urban

functions, elements and phenomena

- 3) sketching of maps, plans, sections and axonometric drawings
- 4) photographing the urban fabric to set up a base and panorama
- 5) interviewing residents, designers and policy-makers to obtain the perceptions of the streets
- 6) conducting participant observation to understand peoples' activities and movement.

The data is analysed based on the theory constructed from approaches used by both Kevin Lynch and Jan Gehl.

Concretely, this paper will demonstrate how an intricate set of interrelated architectural mappings, diagrams and spatial drawings in terms of form, scale, morphology, time, as well as the forms of activities can be used in a socio-spatial analysis for liveability parameters of streets and its public spaces. Currently, the research is on the stage of data analysis. The early findings are categorised and documented systematically to help to develop a framework for reading such urban context. As Chinese cities are changing rapidly, it is necessary to think the need to understand the special defining characteristics of Chinese urban context. This paper aims to present a mapping-based, transferable methodology through which Chinese public spaces can not only be analysed but through which one can also engage transformatively in the creation of liveable streets within existing as well as newly planned urban settings.



Super green2: An architect's journey in material development. Compilation of experimental, growth and design images. © Elizabeth Gilligan



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