



THE BARTLETT REVIEW 2018



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The difference between rules for transport on land and sea means that shipping's share of GHG emissions could rise from 2.5% to more than 20% by 2050. That would put it ahead of any single nation as a polluter. Find out how UCL Energy Institute has been working to make sure that doesn't happen on p.48.

In April 2018, the International Maritime Organisation (IMO) agreed to limit GHG emissions from international shipping by 2050 to at most 50% of 2008's output, while pursuing efforts to phase them out in line with the Paris Climate Agreement temperature goals. See the steps it took to get there on p.54.

## WELCOME

We're The Bartlett, UCL's faculty of the built environment. We're here to build a better future.

Combining architecture and planning with disciplines such as energy and construction, heritage and public policy, we explore human spaces. Not just physical structures like homes, office blocks and cities, but the invisible structures that govern them.

By sharing our research with leading thinkers from industry, government and beyond, achieving true diversity of perspective and expertise, we can understand how these structures affect the way we live. And we can create a vision of a fairer and more prosperous society.

*The Bartlett Review*, published once a year, is 100-plus pages of groundbreaking thinking and research to have emerged from The Bartlett in 2018 and its impact on the world.

## LETTER FROM THE DEAN

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Professor Alan Penn, in his last letter as Dean of The Bartlett, says that the built environment professions' primary responsibility must be to the public at large and to future generations.

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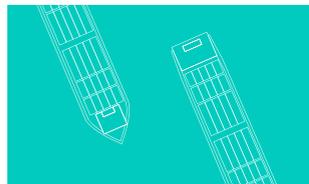
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### SPECIAL SUPPLEMENT

Enjoy 20 pages of radical thinking from across The Bartlett, including: Rainer Kattel on why entrepreneurial states need innovative bureaucracies; Maria Kamargianni on the demise of car ownership and the rise of Mobility as a Service; Caren Levy on one of The Bartlett's largest grant-based programmes to date – Knowledge in Action for Urban Inequality.

Sophia Psarra considers how the evolution of Venice offers lessons for the cities of tomorrow; Josep Grau-Bove wants to tackle unequal access to scientific culture; Josh Ryan-Collins makes the case for rethinking capitalism; Peter McLennan unpacks the benefits of PhDs sponsored by the service sector; and Claire McAndrew and colleagues reflect on the future of practice.

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**HUMAN SOCIETY AND TECHNOLOGY ARE NOW ENTANGLED WITH THE WHOLE PLANETARY ECOSYSTEM. OUR CLIMATE IS IN TRANSITION FROM THE HOLOCENE TO THE ANTHROPOCENE, CREATED BY THE PAST 10,000 YEARS OF HUMAN PROGRESS. SOCIAL AND ENVIRONMENTAL CATASTROPHE ARE ALL TOO POSSIBLE. IF WE ARE TO AVOID IT, OUR PRIMARY RESPONSIBILITY, AS BUILT ENVIRONMENT EDUCATORS AND RESEARCHERS, MUST BE TO FUTURE GENERATIONS AND THE PUBLIC AT LARGE.**

Over the past 10 years at The Bartlett, we have been preparing for this transition. It would be disingenuous to say that every move we've made has been deliberately strategic; some have been opportunistic, others because they felt like the right thing to do. But our growth – our expansion to accommodate 12 schools, institutes and centres, covering everything from architecture to economics – has been driven by a guiding question: what is the built environment's role in the world and how can it play a part in shaping a fairer, more prosperous society?

That the buildings and infrastructure we design, build and manage should exert such a force on society is not such a radical premise. The step change in human development occurred in about 10,000 BCE, when it is believed that the climate changes from the Pleistocene that gave way to the Holocene first made settled agriculture possible. At the same time,

humans first started to build dense settlements, which presaged a series of social and technological developments. In the space of just a few thousand years, writing, money, agriculture and communal infrastructure for storage and irrigation had all been developed. Sophisticated political structures and laws had been framed and the elements of the earliest states had been formed.

I have argued that one way human social progress was created was the effect of the configuration of built space on the construction of social interfaces. By configuring dense urban settlements with buildings, streets and places, we constructed a mixing mechanism through which new social relationships were generated. The built form directed behaviours and the rules imposed on its use by codes of social behaviour gave rise to new forms. This feedback loop in the built environment, then, is responsible for shaping the emergent pathway of future society.

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Today, social structures are not only formed by the way people meet and interact in real space, but also in the virtual space of social networks and communications infrastructure. These structures are transforming and developing more rapidly than was ever possible for the physical and spatial environment. In this situation, it is more or less impossible to rely on past history to predict whether some intervention will work as planned. We need to be able to imagine radical new futures.

Achieving this requires not just an education in new technologies, but also the capacity to think oneself into a future scenario. This relies on intuition, emotion, sentiment and new perspectives that can only be achieved by bringing together people and disciplines.

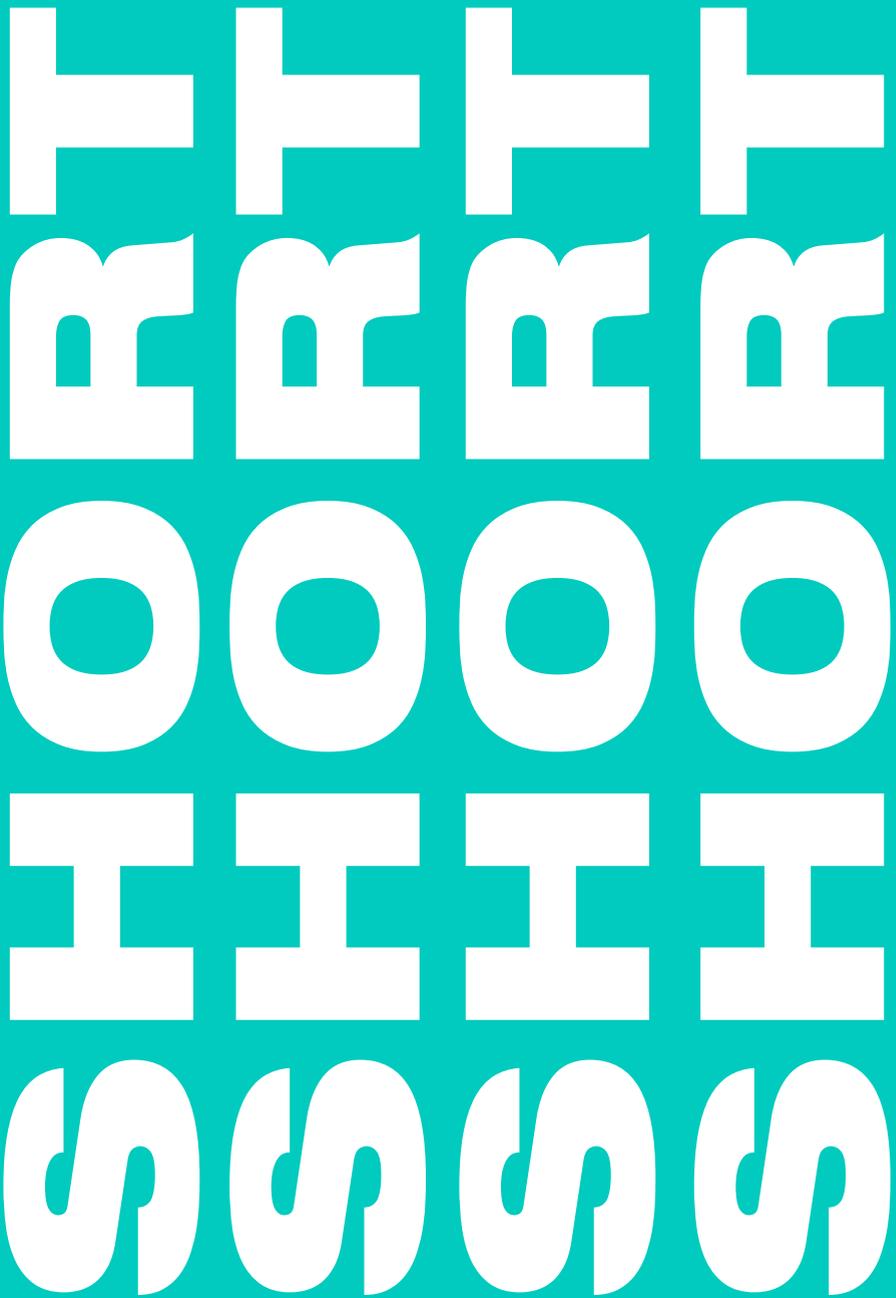
Our new base at Here East does this. Architects, computer scientists, medical engineers, civil engineers, surveyors, geomatic engineers, fabricators, dancers, acousticians and artists are exploring the benefits new technology creates for human society and the environment, from the macro to the micro. And we are venturing beyond the built form – developing new policy research units aimed at applying this thinking to institutional structures of government and markets, through which society develops.

The Institute for Global Prosperity takes anthropological methods and applies them to sustainable development. The Institute for Innovation and Public Purpose uses insights from institutional economics to redefine the policy debate on the role of public-sector innovation.

And The Bartlett Real Estate Institute is bringing analysis of intangible public goods to the valuation of property investment.

My view has always been that you cannot have an excellent education without a diverse cohort. Diversity in every sense of the word is not just something we ought to do, it is a necessary condition of living up to our responsibility to future generations. From 2019, we are announcing The Bartlett Promise. This is a commitment to waive fees and grant a living stipend to a percentage of all our students across all our UG, PGT and PGR programmes. This is a pilot study of how to provide a university education open to all regardless of means, and a challenge to ourselves to provide a higher quality of student experience and service for all. Yes, it is about funding – but it's also about putting in place the infrastructure for widening participation schemes. By diversifying our student body, our long-term goal is to diversify the built environment professions.

We have chosen to announce The Bartlett Promise in The Bartlett's centenary year. 2019 will mark 100 years since Henry Herbert Bartlett, a civil engineer and building contractor, whose donation of £30,000 funded a new building to house the School of Architecture, consented to the department being renamed 'The Bartlett'. We will be using 2019 to explore the radical thinking and projects that have characterised The Bartlett for a century. However, our intention is not to dwell too long on where we have come from, but to set a precedent for where we are going. ■



**IN THIS SECTION, WE INTERVIEW  
EIGHT BARTLETT ACADEMICS WHO  
HAVE BEEN FORGING CONNECTIONS  
BETWEEN THE BUILT ENVIRONMENT  
AND HOW IT AFFECTS THE WAY WE  
LIVE IN 2018.**



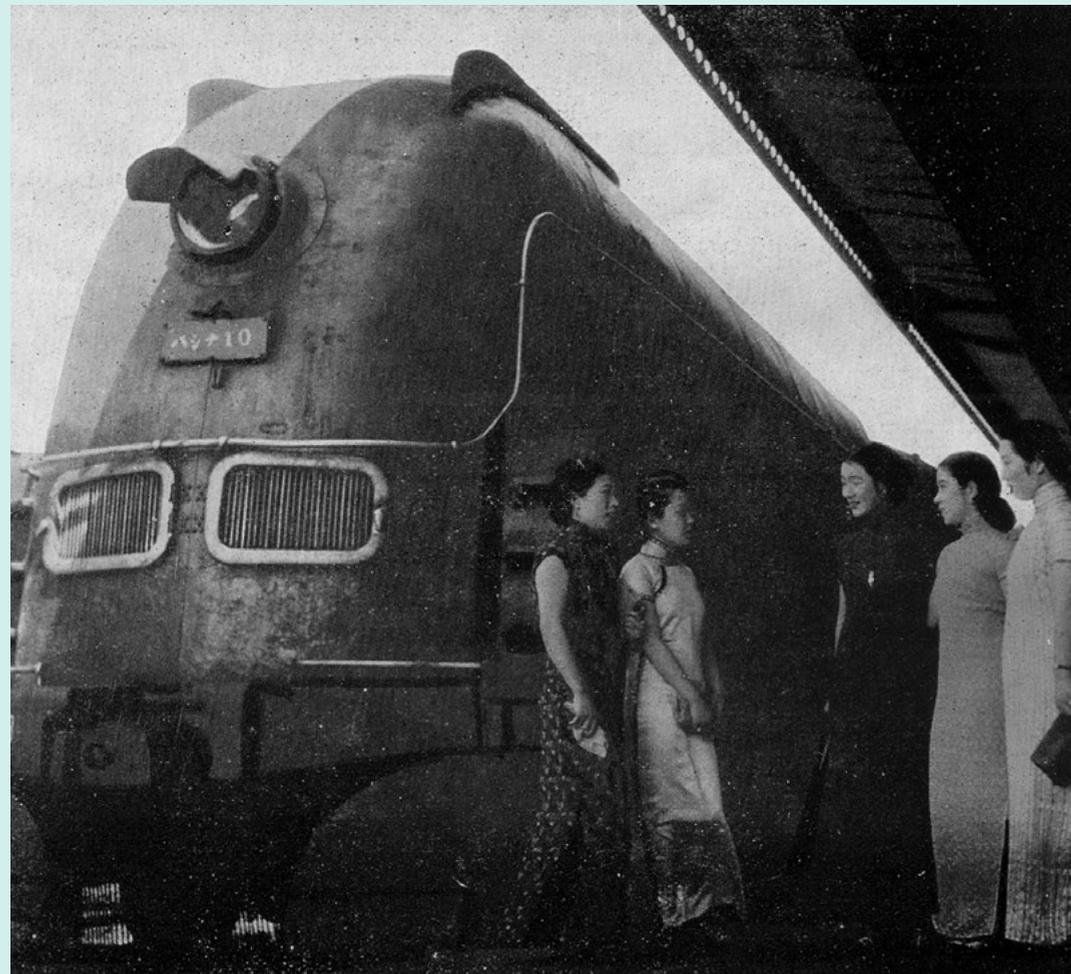
# ULTRA-MODERNISM

**An interview with Dr Edward Denison on a little-known period in Modernist history: 1930s Manchuria. Words: Debika Ray**

“We have entered the anthropocene – an epoch in which our species is dictating how the planet functions,” says Edward Denison, Director of the MA programme in Architecture and Historic Urban Environments at The Bartlett School of Architecture. “We need to think on a planetary level if we’re going to solve planetary problems – we can’t just keep our Western blinkers on.”

Along with independent researcher Guang Yu Ren, Denison is co-author of a book that hopes to open up conversations about lesser-known narratives in architectural history – ones that go unnoticed in the face of the dominant Modernist canon. “The Modernist movement is a Eurocentric notion, evidencing architectural history from a Western perspective,” says Denison, whose previous research centred on the Modernist colonial architecture in Eritrea. “The result is that we overlook vast swaths of the planet that were subject to modern architecture, design and urban planning.”

*Ultra-Modernism – Architecture and Modernity in Manchuria*, which won the RIBA President’s Medal for Research in 2017, focuses on a region in China that experienced a distinctive trajectory of urban development in the 1930s, when it was part of the Japanese empire. “It was subject to some of the largest, most ambitious urban plans and architectural projects of the time,” says Denison,



**“THE JAPANESE SAW MANCHUKUO AS THE FUTURE”**

referring to the 100 or so towns and cities built in Manchuria – known then as Manchukuo.

He contrasts this development and investment with that of cities in India and, in particular, Africa, that were under the rule of European colonists, who he says saw their role more as a civilising force. “The Japanese saw Manchukuo as the future – for example, there were faster trains and more radio listeners per capita than in Japan.” The sheer scale of ambition in planning Manchukuo’s capital Hsinking – now Changchun – makes it today one of the least densely populated cities in China.

Co-author Ren believes the lack of information about this period is partly because conducting comprehensive research in a place like China – with its size, diversity and politics – is complex. “A scholar from the south, for example, doesn’t necessarily have easy access to information about something in the north,” she says, adding that she and Denison found many documents in public archives had already been censored before being made available, so they also used alternative sources such as journals, magazines, literature and film.

This period has also been neglected because it didn’t produce architecture many Westerners would recognise as Modernist, since the Japanese sought to distinguish their version of modernity from the Western model. Japan’s 1930s ultra-modernism has been succeeded by China’s late-20th-century architectural development, which Denison describes as “Modernism on steroids” – something fundamentally different from the scale of development ever seen before. “In the 21st century, the same thing might occur in Africa, which is now experiencing the fastest urban development in the world.”

*Read more: “Ultra-Modernism – Architecture and Modernity in Manchuria” (E. Denison & G. Yu Ren, Hong Kong University Press, 2017)*

The SMR’s ‘ultra-modern’ 140kmph Asia Express, a quasi-colonial prototype for Japan’s famed bullet train.

# TAKING A STAND

**A study by Professor Alexi Marmot and colleagues reveals ways to combat unhealthy trends in office design and culture that keep people in their seats. Words: James Cash**

Since we spend about 90% of our lives inside buildings, how we spend that time may have an impact on our health and wellbeing. “Most of our indoor life – particularly our working life – is spent being sedentary and it has now emerged that the extent of sitting in and of itself is an additional risk factor to health” says Alexi Marmot, Professor of Facility and Environment Management and Director of the Global Centre for Learning Environments in The Bartlett Real Estate Institute.

The consequences of these low levels of physical activity can account for up to 3% of total healthcare costs and 10% of wider societal costs in high-income countries. Together with colleagues at The Bartlett and UCL, Marmot set up the Active Buildings Study to examine whether the spatial layout of office buildings influences office workers’ step count and sitting time, and whether it could be a tool for behaviour change. Funded by The National Institute for Health Research, the study was a collaboration between The Bartlett School of Architecture and the Health Behaviour Unit within UCL’s Department of Epidemiology and Public Health. The team included Dr Marcella Ucci, health psychologists Jane Wardle and Abi Fisher, and early-career researchers.

“There is considerable debate about the extent to which the built environment affects and encourages behaviours beneficial to health,” says

Marmot. The issue is also one of culture, so working with health psychologists provided a rounded approach to examining the problem.

The study collected data from 10 UK office buildings and asked workers there to complete a ‘movement at work’ survey, including questions on physical activity behaviour and the factors that create barriers to or opportunities for, movement. Participants also wore accelerometers and tracking devices to monitor their 24-hour physical activity over several days.

Key findings confirmed that office-based workers have low levels of physical activity, and also revealed that staff who perceived that management discouraged unscheduled breaks had significantly lower step counts than other colleagues. “Health behaviour specialists often work on campaigns to encourage people to move more in the office. Most campaigns work for a short while, and then people revert to ingrained behaviours,” Marmot explains. “The inertia of traditional practices limits change, so you have to work hard to find and communicate evidence that we should be doing things differently.”

Marmot notes that some research reveals that well-designed sit-stand desks can slightly reduce sedentary behaviours. With regards to the design of buildings she says: “There is reasonable evidence that the position and visibility of staircases matter.” While adequate fire escapes are mandatory, they tend to be tucked away discreetly. More obvious staircases in an office design can celebrate vertical movement and encourage employees to use the stairs rather than the lift.

*Read more: [activebuildings.co.uk](http://activebuildings.co.uk)*

# DISPUTING THE GREEN PARADOX

**Will energy majors ramp up production and revenues ahead of a meaningful global tax on carbon? Professor Paul Ekins doesn’t think so. Words: Brendan Maton**

‘The green paradox’ sounds like the title of a mystery thriller. In fact, it is the label for a theory that, as humanity turns to cleaner energy, companies that extract and refine oil, coal and gas will increase production before environmental taxes and regulation (or both) render fossil fuel production too costly to continue.

If you are motivated by profiteering, the green paradox makes sense – why not get the most out of an asset before its value diminishes? But Professor Paul Ekins, Director of UCL’s Institute for Sustainable Resources, says that there is no empirical evidence that major energy companies are pursuing such a course. There is more data for the counter-argument: as more green taxes and regulations appear in the chain of fossil fuel usage, affected companies will seek more profitable alternatives. However, this evidence is diffused across many industrial sectors.

Ekins, in a paper written with the UCL Energy Institute’s Christophe McGlade, academics from the Potsdam Institute for Climate Impact Research and the Mercator Institute on Global Commons and Climate Change, chose to focus specifically on the energy industry, modelling which course of action – increased production or alternative investments – would exert the strongest pull if it was known for certain that fossil fuels were going to become more expensive.

The novel examination was how the energy industry might act between announcement of

policy and its implementation. Most companies do not act before a policy comes into force. Having said this, energy majors have to plan further ahead than most because of the huge cost and construction time required for wells, pipelines, refineries and power plants. To reduce complexity, a single policy instrument was used: the carbon tax. It was modelled, however, using different prices and different periods between announcement and implementation. The authors assumed the tax was applied globally, with no backsliding by individual countries.

The results show that when carbon taxes are announced, the divestment effect dominates the green paradox effect in all tax cases, regardless of the implementation delay. Some of the most powerful effects are felt in the coal industry, doubling the cost of coal under some scenarios.

The green paradox is identified, but it never outweighs divestment. It occurs at different moments under different scenarios – for example, if the oil industry is put under pressure by a high carbon tax relatively soon. The green paradox’s most significant showing, however, would be under a weak carbon tax (just \$25 per tonne) and with the greatest delay between announcement and realisation. This last point has Ekins sounding alarm bells: “We have assumed 100% that the taxes will happen and that actors will take them seriously,” he says. For that to happen, policy-makers must produce strong signals and abide by them.

*Read more: “Divestment prevails over the green paradox when anticipating strong future climate policies” (N. Bauer, C. McGlade, J. Hilaire & P. Ekins, in “Nature Climate Change”, 2018)*

# GO TO THE POLLS

**Dr Michael Walls, Senior Lecturer at The Bartlett Development Planning Unit, talks about the election monitoring mission he co-ordinated in Somaliland in November 2017. Words: Sophie Arie**

**Q. How come an academic is doing election monitoring?**

None of the usual suspects were willing to do it. It's politically difficult because, although the region declared its independence from Somalia in 1991 and has held democratic elections ever since, Somaliland is not officially recognised as a country.

If the UN, the EU, the OECD or the African Union sent an observer mission it would be seen as recognition, and some of their member states would object. The UK has gone further than most towards de facto recognition. It is one of a number of countries that recognises Somaliland

passports. By funding our mission, the UK is saying that it's important that Somaliland's got a political system that's working, so, whatever their sovereign status, we want to support that.

**Q. Was it a free and fair vote?**

Overall, things went well. The elections were not perfect. The opposition party is still trying to blame everybody else for their loss and looking for any reason to say that the elections were flawed. But from our observation, irregularities did not occur in a systematic way that would suggest that the vote was anything other than a reasonably genuine reflection of the will of the people.

For the first time in any election worldwide, an iris recognition system was used to register voters. Long before the vote, eyes were scanned, fingerprints were taken and voter cards were issued. That did help stop multiple voting,

which was a huge problem in previous elections.

However, they don't yet have the means to keep the electoral register up to date, which is a problem. And, for all its technological capacity, iris recognition doesn't tell you the age of the person it is scanning. Underage voting is a problem in Somaliland. There is a genuine enthusiasm for voting in which parents say to their kids, "Go on, go and vote!" or "Go and register". We saw a significant number of kids lining up to register and then at polling stations with registration cards.

**Q. Was this a particularly important election to monitor?**

Apart from Somaliland, there has never been a successful Somali nation state that has lasted for more than a few years. It shows that whatever is going wrong in Somalia is not because of the Somalis. It is possible to make the tran-

**"IT SHOWS THAT WHATEVER IS GOING WRONG IN SOMALIA IS NOT BECAUSE OF THE SOMALIS"**

sition to a democracy. That's no small thing. All Somaliland's neighbours have different models. I think there will be some long term effect on them. It's too much to say that the reforms Ethiopia is going through are because of Somaliland. But it doesn't hurt that Somaliland is sitting next door showing what can be done.

*Read more: "A Somali Nation-State: History, culture and Somaliland's political transition" (M. Walls, Ponte Invisible, 2014)*

Image: Kate Stanworth



# CIRCULAR



# CITIES

School of Planning

**Associate Professor Joanna Williams is using a new network to test how models of the resource-conscious city might work in practice. Words: Debika Ray**

The circular city is regenerative, resilient and resource efficient. It is an approach to the way we design, plan and manage our cities; ensuring that we reduce our resource consumption, greenhouse gas emissions and waste, while adapting to change and regenerating essential urban ecosystem services.

Joanna Williams, Associate Professor of Sustainable Urbanism at The Bartlett School of Planning, established UCL's Circular Cities Hub in 2016. It is the first of its kind: an international, interdisciplinary virtual network of academics and practitioners interested in creating circular cities.

Williams was conscious that the circular city concept suffered from being seen as subjective: "There has been a tendency to focus on the circular systems of production for businesses operating in the city," she says. "The more strategic issues surrounding the planning, design and management of a regenerative, adaptive urban form, which enables the recycling and reuse of infrastructure, land, water, energy and materials is just not being discussed. So we formed the Hub to enable this discussion to start".

Part of this has involved viewing cities holistically. This means not just looking at resources, but seeing urban areas as organisms that constantly adapt to changes, such as migration and increasing diversity, as well as considering different trajectories of development, from shrinking, post-industrial cities such as Detroit, to places like London, where corporate and foreign investment is squeezing out lower-value, circular activities.

In terms of solutions, this requires a multi-faceted response. Williams explains: "For

example, in London we have been looking at 11 innovative, experimental schemes, which demonstrate how a circular city could function. These include: urban forestry and farming; biogas plants using food waste; community renewable energy schemes; local currencies promoting the looping of local resources; 're-makeries' and flexible buildings; collective co-working and co-living spaces, pop-up developments and 'meanwhile spaces'. We are trying to determine what mechanisms would be required to scale-up these projects."

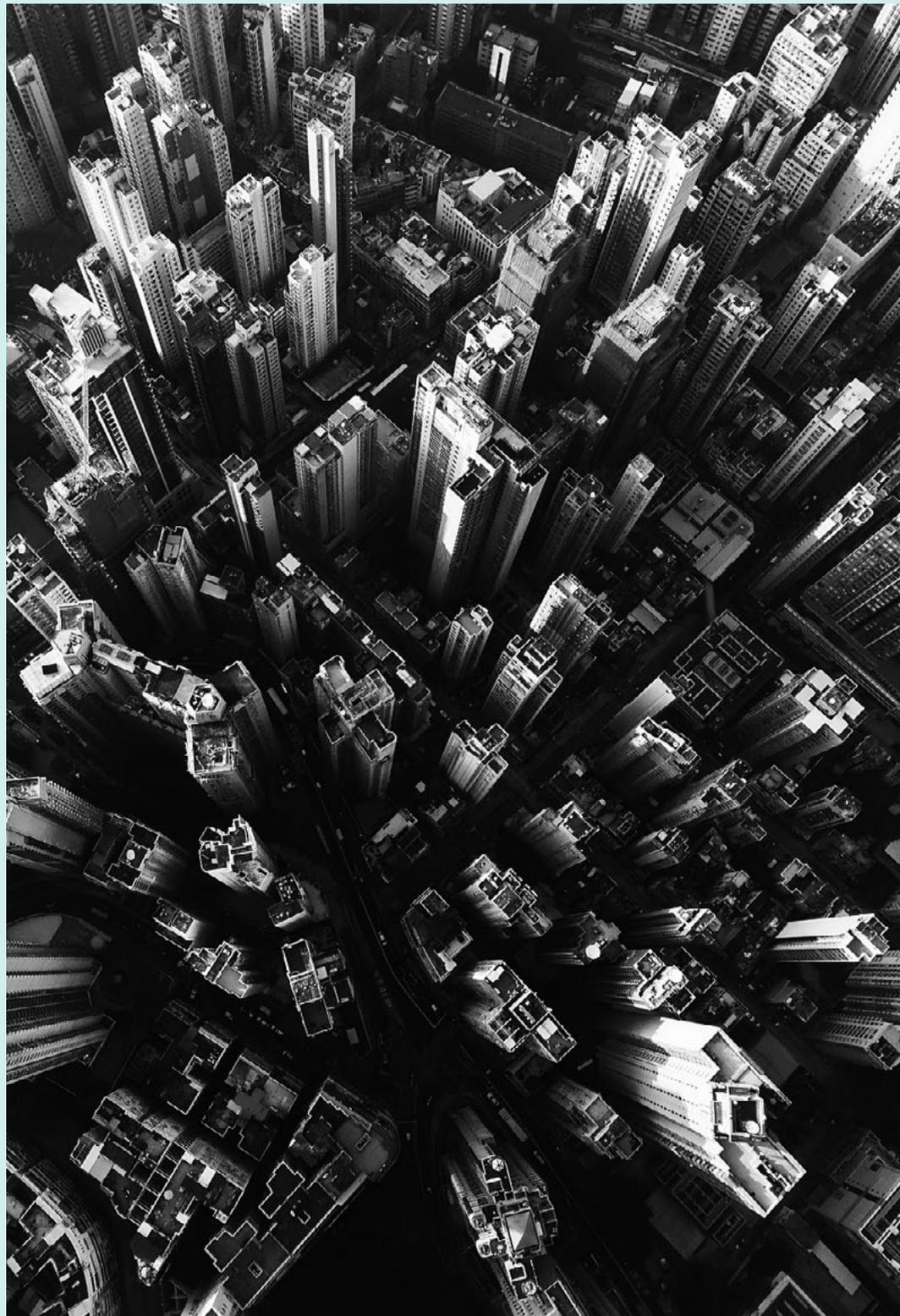
**"THERE HAS BEEN A TENDENCY TO FOCUS ON THE CIRCULAR SYSTEMS OF PRODUCTION FOR BUSINESS"**

The Hub is interested in how such ideas might be implemented. Crucial to this, says Williams, is working with organisations on the ground, such as utilities, construction companies, consultancies, city councils, community groups, developers, financial institutions, innovators and entrepreneurs.

"Also crucial to our success is working with academics and cities in other countries that are in the process of implementing circular solutions. We have many in our network and we compare our results with cities such as Amsterdam, Copenhagen, Paris, Stockholm, Hamburg and Lisbon." The network met to discuss its first results during the European Week of Regions and Cities in Brussels in October 2018.

Most of the Hub's studies are yet to conclude, but the first results should be published in 2019 and the book *Circular Cities: A Revolution in Urban Sustainability* written by Williams will be published by Routledge in 2020.

*Read more: [circularcitieshub.com](http://circularcitieshub.com)*



## BALANCING ACT

Dr Zhifu Mi, Research Fellow at The Bartlett School of Construction and Project Management, says cities are a trade-off between economic development and climate change mitigation. *Words: James Cash*

**Q. Why are cities so important to the study of climate change mitigation?**

Cities are at the core of climate change mitigation. They will soon be home to more than half the world's population and are also responsible for up to three-quarters of global greenhouse gas emissions. But cities are also the centres of wealth – they have the resources, and a responsibility, to address climate change. What's more, cities on the coast or on rivers are particularly vulnerable to its impact. It will bring much greater risk to urban settings.

**Q. What are the big knowledge gaps?**

The first big knowledge gap is data on emissions. Data is the foundation of research and critical to the policy mix for mitigation, and there is a lack of consistent and comparable carbon emission data at a city level.

Most of the metrics are at a global or national level, while different cities have different methods for compiling carbon emission data, which means that the data cannot be compared. This is the most important issue – to develop consistent and comparable emission data.

Image: iStock

**Q. How do you get consistent emissions data?**

An increasing number of studies are trying to solve this problem. For example, I've been looking at carbon emission data at the city level in China. We have emissions data for more than 150 Chinese cities, all collected using the same metrics, so they can be compared, and researchers can download this data for free.

**Q. Are city policy-makers sufficiently informed to make decisions on mitigation?**

When cities make climate change policies they need to do cost-benefit analyses: they need to know how climate change will affect them in the future and they need to know the risk and the cost of not taking measures to mitigate climate change. But currently there are large uncertainties about how climate change will affect cities.

We have a weak understanding of it. Climate change impacts are often examined at a global level, rather than at a local level, and it is much harder to predict the impact at a local level.

There is also lack of scientific understanding of the trends inclusive to development and climate change mitigation. Currently, cities would like a high GDP and also a good environment, so there is a trade-off between economic development and climate change mitigation. We need to better understand this balance point, as this will be different for each city.

*Read more: "The rise of South-South trade and its effect on global CO2 emissions" (J Meng, Z Mi et al., in "Nature Communications", 2018)*

# STATE OF PLAY

**Professor Andrew Burn's EPSRC-funded project to create a digital archive of traditional play culture aims to use the past to invent the future of urban play spaces.**

**Words: Clare Dowdy**

Negative stereotypes about contemporary play are being challenged through Playing The Archive, a project led by the UCL Institute of Education, collaborating with specialists in virtual reality at The Bartlett's Centre for Advanced Spatial Analysis. The project, which addresses the ephemeral nature of practices and memories encoded in play, could also inform the design of future urban play spaces.

The project's starting point is the Opie manuscript archive, which is held at the Bodleian Libraries. Husband-and-wife team Peter and Iona Opie, who collected children's folklore in the 1950s and 1960s, helped to establish childhood culture as a serious area of study.

Playing The Archive sets out to digitise and catalogue the Opie archive, creating a new catalogue to be designed and hosted by the Digital Humanities Institute at Sheffield University.

"Cataloguing sounds kind of dry but it's no mean feat," says Professor Andrew Burn at the UCL Institute of Education's Knowledge Lab,

who put the bid together. "Is it a clapping game, a singing game, a gender game? There needs to be a lot of cross-referencing."

The project also sets out to update the archive and look at cultures of contemporary play in playgrounds, in order to better understand them. "There is a feeling that traditional play is under threat from online games, but we know that's not true," says Burn. "Empirical research evidence can combat the simple stereotypes."

Burn explored the relationship between traditional and digital play in a project five years ago. Play has always been media-based, he explains. "The big difference now is that video games and virtual worlds are constructed not just as narratives but as games. But kids treat these media as cultural currency, to create their own play cultures."

Meanwhile, a virtual reality play environment based on the archive will be designed and installed at the V&A Museum of Childhood in London and at Sheffield's Weston Park Museum. This part of the project is led by the team at CASA: Andy Hudson-Smith, Duncan Hay and Valerio Signorelli. CASA will also contribute to experimental 'smart' playtrails in London and Sheffield, developed by landscape architects at the University of Sheffield.



A child uses a virtual reality headset to look at an image of a man and woman skipping as part of CASA's virtual reality play environment based on the play archive.

Images: Valerio Signorelli and John Porter

**"THERE IS A FEELING THAT TRADITIONAL PLAY IS UNDER THREAT FROM ONLINE GAMES, BUT WE KNOW THAT'S NOT TRUE"**

Some of the project's objectives will be delivered through merged or mixed reality, as a way of addressing the relationship between the physical and non-physical worlds in which children's play takes place.

Funded by the EPSRC through the Content Creation and Consumption in the Digital Economy theme, the programme has a string of illustrious partners, some of which were involved with Burn's previous project. As well as the Bodleian Libraries, Sheffield University and the UCL Institute of Education are involved.

The team's findings could have an impact on upcoming playgrounds, believes Burn: "We will be talking to play workers and policy-makers, so there's a possible planning dimension, which will allow us to consider how this can help us to design urban play spaces in the future."

*Visit the archive: [playingthearchive.net](http://playingthearchive.net)*

# THE SOUNDMAN

**Professor Jian Kang hopes to create a system for measuring soundscapes in terms of human wellbeing. Words: Clare Dowdy**

Around 80 million EU citizens suffer from noisy environments, and billions of euros are spent on noise control, “but sound quality is not necessarily getting better,” says Professor Jian Kang. That’s because the conventional approach, of reducing the sound level, “simply does not always improve people’s quality of life”, he explains.

Kang, who joined UCL’s Institute for Environmental Design and Engineering (IEDE) as Professor of Acoustics in 2018, is hoping to change the rules around noise.

Through a £2.5m European Research Council Advanced Grant, he and a worldwide team are

developing soundscape indices: a ground-breaking approach to measuring noise that should benefit urban dwellers.

Traditionally, noise levels have only been considered as something physical – a measurement of the acoustic environment using the decibel scale, which was created by Bell Systems a century ago. But in the past 10 years, the field of ‘soundscape studies’ has developed.

“Soundscapes exist through humans’ perception of the acoustic environment,” explains Professor Kang, who has worked in environmental and architectural acoustics for more than 30 years. However, soundscapes are hugely complex, and measuring them as a basis for environmental design requires a step change to the discipline.

Kang is spearheading a worldwide survey to collect data that reflects levels of human comfort. It’s about putting noise in context, so factors to be considered include the profile of the participant, who they’re listening with, what they’re listening for and where they are. The data collected will then be evaluated. “Hopefully in five years’ time, we will be able to say that a certain urban environment is good or not good, on a level of one to ten on the soundscape index, rather than just giving it a decibel measurement,” Kang says.

The programme has four aims: first, to characterise soundscapes by capturing them and establishing a comprehensive database. This will be a cornerstone for the proposed analysis. Second, to determine key factors and their influence on soundscape quality, by conducting evaluation,

factors analysis and research. Third, to develop, test and validate the soundscape indices, through analysing the influences of various factors. And lastly, to demonstrate the applicability of the soundscape indices in practice, by establishing frameworks for soundscape prediction, design and standardisation.

Kang’s wider goal is to move from noise control to soundscape creation. “If planning policies better reflect people’s quality of life, it will impact on their physical and mental health and wellbeing. And that will better guide the planning and designing of areas,” he predicts.

*Read more: “Soundscape and the built environment” (Edited by J.Kang & B. Schulte-Fortkamp, Taylor & Francis incorporating Spon, 2016)*

Image: Tin Oberman



The Sheaf Square in Sheffield is considered to be an example of positive soundscape applications in urban design practice.

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**AT THE BARTLETT, WE DON'T WANT  
OUR RESEARCH TO SIMPLY BE READ  
BY OTHER ACADEMICS IN ACADEMIC  
JOURNALS. SO, IN EACH ISSUE, WE  
COMMISSION SIX WRITERS TO TAKE  
AN IN-DEPTH LOOK AT HOW SIX  
RESEARCH COLLABORATIONS ARE  
HAVING REAL-WORLD IMPACT.**

# STOKED CITY

**YOU MIGHT NOT THINK SKATEBOARDING WOULD BE THE SUBJECT OF SCHOLARLY STUDY, BUT A GROWING NUMBER OF ACADEMICS BELIEVE IT HAS A LOT TO TEACH DEVELOPERS AND URBAN PLANNERS ABOUT HOW TO MAKE CITIES BETTER FOR CITIZENS.**

**WORDS: CLARE DOWDY**





The idea that skateboarding can be a boon for cities rather than a bane is sinking in, believes Iain Borden. As Professor of Architecture and Urban Culture at The Bartlett School of Architecture, a rider for more than 40 years, and an author on the subject, Borden is steeped in the activity. In his new book, *Skateboarding and the City: A Complete History*, he writes: “Skateboarding is being increasingly welcomed by a growing number of enlightened politicians, city managers and the general public, who all appreciate its help in addressing challenging social issues and in forming more diverse communities.”

What’s more, Borden believes skateboarding “challenges many of our society’s norms and conventions, positively contributes to contemporary culture and the economy, and helps open out city spaces to everyone”.

Dr David Knight of architecture firm DK-CM echoed this at a first-of-its-kind event earlier this year: “Skating is at the vanguard of a wider movement to rethink how we think about public space.” Dr Knight, who is researching how to reconnect communities with the power structures that define planning, was talking in June 2018 at Pushing Boarders, a two-day conference hosted by The Bartlett that explored the relationship between skateboarding and architecture, bringing together hundreds of skaters from around the world.

While Borden was the ‘intellectual parent’ of the event, Bartlett PhD student Thom Callan-Riley helped organise it. “This was the first time that all the scholars from around the world working on skateboarding came together,” he says. “But at the same time, it felt like a typical skate event, with people sitting on their boards on the floor during the packed-out talks.”

### MARGINAL REVOLUTION

How did skateboarding go from being a marginalised, even demonised, activity that was largely discouraged by the establishment, to a force for good, worthy of academic study? The answer lies in riders’ peculiar relationship with the built environment and how it reflects on the development of cities.

There are around 50 million riders worldwide, many of who frequent the thousands of urban skateparks. They also take their boards to city ‘spots’ – and this is where academia can bring insight, because riders’ relationships with architecture are completely different to those of the rest of the population.

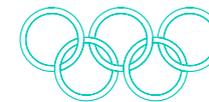


“Where handrails, curbs and banks are at first glance part of a system of mundane signals, skateboarding transforms these elements into sites of energetic pleasure,” Borden writes in his book. “It is this focus on texture, surface and tactility which gives skaters a different kind of urban and architectural knowledge.”

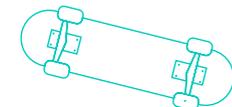
Borden talks about skateboarding as a ‘performative critique’, an idea derived from Henri Lefebvre, the 20th-century French Marxist philosopher and sociologist, who introduced the concepts of the ‘right to the city’ and the ‘production of social space’. He believed that the human body is a site of resistance to the excesses of neoliberalism. Or, as Borden puts it: “If we lose control of so many other things in the world, we still have ownership of our bodies: when we ride up the side of a building or down a staircase, there’s a critique of production, of the idea that we should be working all the time.”

Skateboarding is also a critic of consumerism, because skateboarders ride and use public space without paying for it. And a critic of the meaning of architecture, as they are only interested in its potential as a skateboardable object. Riders therefore think in terms of an alternative ranking of architecture. “That’s something which is really important for architects to know,” says Borden, “your buildings may get used, interpreted and understood by a completely different set of criteria.”

Through his or her experiences in the modern metropolis, a skater’s enhanced awareness of balance, speed, hearing, sight,



**SKATEBOARDING’S  
FIRST APPEARANCE AT  
THE OLYMPIC GAMES  
WILL BE TOKYO 2020.**



**THERE ARE  
APPROXIMATELY  
50 MILLION ACTIVE  
SKATEBOARDERS IN  
THE WORLD.**



**£26 MILLION WAS  
THE COST OF THE  
MOST EXPENSIVE  
SKATEPARK IN THE  
WORLD - SMP IN  
SHANGHAI.**



**THE WORLD’S  
MOST FAMOUS  
SKATEBOARDER,  
TONY HAWK, HAS  
12.3 MILLION SOCIAL  
MEDIA FOLLOWERS.**



touch and responsivity culminates in a form of sensory mapping. Borden describes this as a different edit of the city. “You map the city according to angled banks, smooth surfaces and noisy bits. It takes us back to this idea that we want to feel more alive in cities.”

In parallel with this visceral experience is the continual ‘mallification’ of towns and cities. Over the last three decades, many places have become increasingly ‘mallified’ as opportunities for retail transactions. “They’re not a good model for what we want our urban space to be,” believes Borden, “they tend to be closed in, to only be about consumerism, and everything else is excluded, including the homeless and skateboarders. That makes them safe but boring.”

What’s more, shopping malls suggest a passive form of bodily behaviour, he adds: “Walk don’t run, look don’t touch; your body is reductive, there’s no running jumping, sweating, shouting, being dynamic. For me, one of the most important things skateboarding does is to suggest that urban space doesn’t have to be like that.” So, by taking advantage of space without paying for it, skateboarding is indifferent to these purposes of exchange.

### SPACE TO SKATE

It’s not just malls. Whole parts of cities are unwelcoming to all but sensibly-behaved consumers. The privately-owned public realms have little truck with deviants such as the homeless or skateboarders. “Where the homeless are routinely ejected from business and retail areas by odd-shaped benches, window-ledge spikes and doorway sprinklers, so skaters encounter rough-textured surfaces, obstructive blocks, restrictive chains and scatterings of gravel,” Borden writes in his book.



**AFGHANISTAN IS THE COUNTRY WITH THE HIGHEST PERCENTAGE OF FEMALE SKATEBOARDERS.**



**\$2.7 BILLION WAS THE 2017 GLOBAL REVENUE OF VANS, THE BEST-SELLING SKATER BRAND.**

One concern is that cities are becoming too uniform, homogenous, safe and restricted. The privately-owned public realm model, while popular with many developers, is not always what people want. Along the River Thames in London is the world’s longest continually skated street spot: The Undercroft. Tucked under the Brutalist Queen Elizabeth Hall, it was a space intentionally left over by the architects in the 1960s for unpredictable uses. Campaigners fought to save it as a skateboarding venue when it was threatened with redevelopment. “The public was making a statement about what we want our cities to be,” says Borden, defining it as “a bit edgy rather than yet another coffee stall”.

Funds are still being raised to restore The Undercroft to the original designs of the GLC Architecture Department.

**“SKATEBOARDING IS ALSO A CRITIC OF CONSUMERISM, BECAUSE SKATEBOARDERS RIDE AND USE PUBLIC SPACE WITHOUT PAYING FOR IT. AND A CRITIC OF THE MEANING OF ARCHITECTURE, AS THEY ARE ONLY INTERESTED IN ITS POTENTIAL AS A SKATEBOARDABLE OBJECT”**

“We are looking to start construction in early 2019,” says Stuart Maclure, Project Manager of Long Live Southbank, which spearheaded the campaign. But the end goal, Maclure says, “is to influence a more open and democratic planning system, city and society”.

The Undercroft is an enlightened approach in microcosm. There are other instances where people have tried to create bigger public realms that are sympathetic to skateboarding. It’s already happened in Innsbruck, and Hull has announced it will become the UK’s first officially designated skate city, aligning itself with the highly successful Skate Melbourne and Skate Malmö campaigns. Borden holds up the latter as the exemplar.

The next step is to integrate the wider benefits that skateboarding brings into urban planning because, as Borden puts it in *Skateboarding and the City*: “through an everyday activity,



skateboarding suggests that pleasure rather than work, using space rather than paying for it, activity rather than passivity, performing rather than watching, and creativity rather than destruction, are all potential components of our cities. Skateboarding is therefore prefigurative, offering us not just a glimpse but a partially enacted vision of what a different world might be like.”

For Borden, the next step could be a tie-up with The Bartlett’s new Real Estate Institute. Under consideration is an event about urban design to explore “what a skatepark or multipurpose public space is, how you welcome skaters – something more nuts and bolts for policy-makers”.

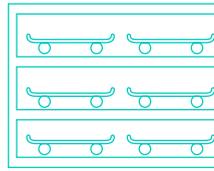
Meanwhile, Pushing Boarders was such a hit that a future event is being mooted. “We found that there is a huge appetite for this kind of event, and that skaters are very open to discussing, exploring and even challenging the community they inhabit,” says co-organiser Theo Krish at SkatePal, a London-based charity that builds skateparks in Palestine.

Pushing Boarders also helped the academics, according to The Bartlett’s Callan-Riley: “A lot of the work we do as academics should be situated within the scenes and cultures that we’re studying, rather than just researchers talking about their research.” A flip side of this was to expose boarders to the idea that their hobby could be a legitimate area for research. Typically, explains Callan-Riley, boarders going to university who want a job in skateboarding tend to do graphic design, photography or film-making.

Skateboarding is an urban phenomenon, and more study makes sense to Borden because lot of the world’s most pressing issues today seem to flow through skating. “Through the human body come issues of sexuality, class, race, gender, age, and all the things we find meaningful in life, what food we eat, what brands we like. There’s nothing in between skating and the world outside, it’s a direct engagement. You just need your body, flat shoes and an inexpensive bit of equipment.” ■

## READ THE RESEARCH

- “Skateboarding and the City: A Complete History” (Iain Borden, Bloomsbury, 2019)
- “The New Skate City: How Skateboarders are Joining the Urban Mainstream” (Iain Borden, *The Guardian*, 20 April 2015)
- “Another Pavement, Another Beach: Skateboarding and the Performative Critique of Architecture” (Iain Borden, 2001)
- “The Poetics of Security: Skateboarding, Urban Design, and the New Public Space” (Ocean Howell, 2001)
- “From Core to Consumer: The Informal Hierarchy of the Skateboard Scene” (Tyler Dupont, in “*Journal of Contemporary Ethnography*”, 2014)



**F51 IS THE NAME OF THE WORLD’S FIRST PURPOSE-BUILT MULTI-STORY SKATEPARK, CURRENTLY UNDER CONSTRUCTION IN FOLKESTONE, UK.**

Source for data, pp. 37–40:  
*Skateboarding and the City: A Complete History* by I. Borden, Bloomsbury, 2019.

## SKATERS’ PARADISE

**Malmö has the most progressive pro-skateboarding policy of any city in the world.**

One of the discussions at the 2018 conference Pushing Boarders, hosted by The Bartlett, looked at how to build a skate-friendly city. One shining example is Malmö, which has been transformed from a humdrum, post-industrial city in the south-west of Sweden into a skaters’ paradise.

“Malmö is the most progressive city in the world for skateboarding,” says Borden, “It’s managed to embrace, integrate and manage skating in its urban fabric.” There is even a secondary school whose curriculum is based on skateboarding.

How has Malmö done it? For the past two decades, its skaters have organised themselves to engage with City Hall. Inspired leadership within the corridors of power was minded to fund new skate parks – such as an old brewery, Bryggeriet, which became Malmö’s first indoor facility – and international competitions. As well as myriad designated areas, the city offers up its parks, plazas and public sculptures to boarders.

The former brewery also houses Bryggeriets Gymnasium, where the entire school day is built around skating. The students follow the national curriculum (English, social sciences, maths and Swedish), and get skate classes two afternoons a week. The idea is that, as well as studying for a high school diploma, art, photography and film are thrown in, and skating is used as a reference point across all subjects.



# ON THE

**HOW DO YOU CREATE PATHWAYS TO PROSPERITY IN AN AGE OF MASS DISPLACEMENT? THE RELIEF CENTRE, LED BY THE UCL INSTITUTE FOR GLOBAL PROSPERITY, AIMS TO RADICALLY RETHINK HOW TO HELP PEOPLE AND THEIR HOST COMMUNITIES - WHOSE LIVES ARE UPROOTED INDEFINITELY BY WARS OR OPPRESSION - TO THRIVE.**

**WORDS: SOPHIE ARIE**



# MOVE

Throughout history, millions of people have left their homes seeking a better life or fleeing wars and oppression. In recent years, two things have changed for those people: they tend to stay far longer in their 'host' countries or regions and, crucially, being uprooted no longer means being cut off from their networks. They may have little else, but many of today's migrants and refugees have some kind of access to a mobile phone and the internet. For individuals in this situation, connectivity has become a key part of their pathway to prosperity in the midst of a protracted crisis.

Different understandings and measurements of prosperity that go beyond GDP are key to the work of the Institute for Global Prosperity (IGP). The IGP prosperity index, developed by its researchers, is one way of measuring the prosperity of local communities: it proposes a unique approach to prosperity that goes beyond economic terms to include context-specific metrics. Using a locally-grounded approach such as this leads to a more detailed picture of life within communities across the world, and the varying preoccupations its members have. This provides a better idea of what prosperity looks like for different individuals, and the public services to be co-designed to meet community needs.

Like the IGP, the RELIEF Centre – a transdisciplinary research collaboration led by the Institute – is founded on the principle that for a community or a country to truly prosper, people's wellbeing and quality of life matters as much as their economic profile. "The goal of the Centre is to define prosperity in the age of mass displacement," says Professor Henrietta Moore, Founder and Director of the IGP.

### THE NEW NORMAL

Between 2000 and 2017, the numbers of people who left their countries because of wars, political violence, climate change, extreme poverty and many other issues increased by 49% (from 173 million in 2000 to 258 million in 2017), according to the UN.<sup>1</sup> In 2017 alone, there were 69 million new international migrants worldwide.<sup>2</sup>

"If movement is the new normal and you're not going to spend your whole life waiting for people to go back, what exactly are you going to do?" asks Professor Moore. Traditionally, she explains, refugees have been seen as either a drain on resources for their host communities or part of a crisis that needs a humanitarian response until it passes. Or both.

"None of the models that we have for migration are either good ways of managing migration or good ways of imagining how you ensure the prosperity of a country under conditions of mass displacement."

RELIEF has chosen to focus its work on Lebanon, which already had significant numbers of Palestinian refugees and has taken in over a million Syrians since the civil war began in 2011. Lebanon now has more refugees per capita than any other country and the thinking is that if new



**50% INCREASE  
IN THE TOTAL  
NUMBER OF  
INTERNATIONAL  
MIGRANTS  
SINCE 2000.**



**67% INCREASE  
IN THE  
NUMBER OF  
INTERNATIONAL  
MIGRANTS IN  
AFRICA SINCE  
2000.**



**1 / 300  
PERSONS  
WORLDWIDE IS  
A REFUGEE.**

**"IF MOVEMENT IS THE NEW NORMAL  
AND YOU'RE NOT GOING TO SPEND  
YOUR WHOLE LIFE WAITING FOR  
PEOPLE TO GO BACK, WHAT EXACTLY  
ARE YOU GOING TO DO?"**

approaches can be developed that produce prosperity for refugees and their hosts in this situation then they can then be adapted and replicated in other locations that are going through similar changes.

The project, which draws on the knowledge and experience of researchers from across The Bartlett and UCL, in partnership with the American University of Beirut and Centre for Lebanese Studies, has ESRC GCRF funding for five years. Its members are working on four distinct research themes: The Vital City, Creating Value, Future Education, and Prosperity Gains and Inclusive Growth.

Since the project started in April 2017, it has been forging close relationships with local partners, including citizen scientists, local communities, civil organisations, academic institutions, and others in Lebanon, to co-create pathways to prosperity for those affected by mass displacement. For the Future Education research theme, this has meant working closely with NGOs, the Ministry of Education and Higher Education within the Lebanese Government, UN agencies, citizens, educators, and refugee communities, to co-design appropriate education and learning opportunities for communities affected by mass displacement.

"Technology isn't necessarily a barrier for refugees, as many now have access to smartphones and some connectivity," says Diana Laurillard, Professor of Learning with Digital Technology at UCL's Knowledge Lab and a co-investigator for the RELIEF centre's work on education. While the UN and international aid agencies are developing a wide range of technologies to help refugees with education, they have not been "thinking big enough" to tackle the huge scale of the education gap, Laurillard says.

Academics have learned to think big since Massive Online Open Courses (MOOCs) emerged roughly 10 years ago. MOOCs offer multimedia courses to unlimited numbers of people who can interact with each other and with educators in online activities.

<sup>1</sup> & <sup>2</sup> UN International Migration Report, 2017.

## THE AGE OF MASS DISPLACEMENT

Source for all statistics, pp. 34, 36, 37 & 38:  
Population Facts No. 2017/5, United Nations  
Department of Economic and Social Affairs.

**970  
THOUSAND  
REFUGEES**  
NORTH AMERICA

**420  
THOUSAND  
REFUGEES**  
LATIN AMERICA &  
THE CARIBBEAN

**3.5  
MILLION  
REFUGEES**  
EUROPE

**6.3  
MILLION  
REFUGEES**  
AFRICA

Four out of every five  
refugees or asylum  
seekers are hosted  
by countries in the  
developing regions.

**14.7  
MILLION  
REFUGEES**  
ASIA

In 2017, countries of the  
Global South hosted 21  
million refugees or  
asylum seekers,  
representing **83%** of  
the global total.

**70  
THOUSAND  
REFUGEES**  
OCEANIA

Although migration is  
a global phenomenon,  
most movements take  
place within a **limited  
set of countries.**

Since 2000, the  
total number of  
international  
migrants has  
**increased by  
almost 50%.**

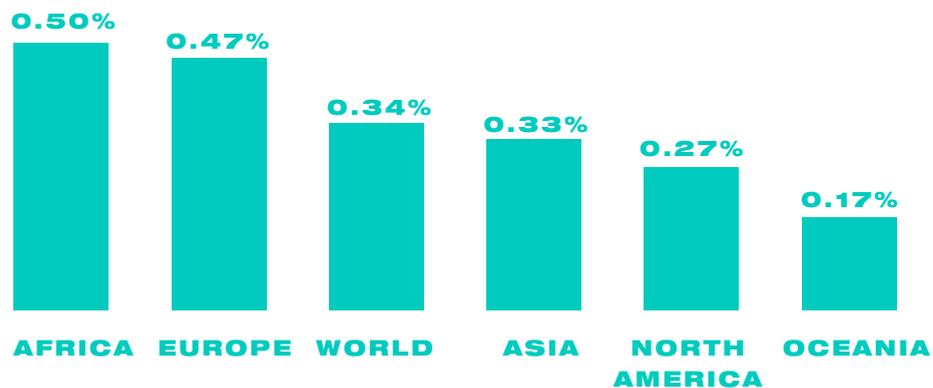
## DEMOCRATISING EDUCATION

The Future Education team's key concept is to use MOOCs to help local professionals, such as teachers, and paraprofessionals, such as community leaders, provide blended learning opportunities for refugees wherever they are. Digital technology is flexible and enables refugee learners to reduce the logistical difficulties with conventional place-based courses – such as having to be in a place at a certain time for a class when they are living far away, have no money and are struggling to cope with health and other problems. They can follow a class online whenever it's possible for them to use an electronic device and connect to the internet. RELIEF will be using MOOCs to support refugee teachers in providing blended learning classes for their students.

Using MOOCs means that the local grass roots organisations, charities, academics and refugees in Lebanon can also share knowledge, communicate and work with each other and with the RELIEF Centre to develop the kind of education they decide will help their community to thrive.

Since February 2018, the Centre's Future Education team has been working to develop two MOOCs. The first captures the experiences and reflections of community researchers, teachers and local journalists conducting research in their own communities, and aims to provide participants with basic research skills. The other focuses on teacher professional development. It aims to develop education knowledge and share diverse pedagogical practices among teachers, educators and humanitarian practitioners who are working in contexts of mass displacement.

## DESPITE AN INCREASE IN NUMBER, REFUGEES REPRESENT A SMALL SHARE OF ALL MIGRANTS



Refugees and asylum seekers as a percentage of total population (2017)

One local charity the RELIEF Centre works with in Lebanon, Multi Aid Programs (MAPs), shares IGP's core principle that what matters is helping people to thrive, not just survive. In terms of education, for Dr Fadi Alhalabi, the Syrian refugee founder of MAPs, that means that just trying to teach refugees to read and write is not enough.

"We need a new approach to education. We need to achieve dignity through innovation, creativity and productivity in education," Alhalabi, a high flying surgeon before he was forced to flee Syria, told *The Bartlett Review* by phone from Lebanon. MAPs provides elementary education for 3,500 child refugees, and teaches robotics, computer science, web design and engineering to older students.

In Lebanon, only 15% of refugees live in refugee camps where NGOs run informal schools. The rest are living in makeshift accommodation or hosted in crowded homes around the country. They do not have access to the national education system and refugee teachers are not officially allowed to set up schools because of long-standing laws designed to protect the jobs of the local population.

Alhalabi, started his aid agency in a lorry container and now has nine centres in Lebanon. By working with RELIEF there is the potential to grow his model exponentially. "We are trying to rupture some of the dominant thinking around what teachers can do," explains Tejendra Pherali, Senior Lecturer in Education and International

development at UCL Institute of Education and a lead researcher in the RELIEF Centre's Future Education team. "Ultimately we are trying to contextualise teaching," says Pherali. "Traditionally, teachers have had a limited amount of flexibility. They are supposed to follow a programme of learning set by their education ministry. We are rethinking that and giving teachers a sense of power to transform the lives of the people they teach."

"The human cost of not doing enough to provide education and jobs to a generation growing up as refugees is massive in terms of mental health, physical health, future conflict...and a whole range of issues," says Professor Moore. The multidisciplinary approach and collaborative models of work that RELIEF is developing, seeks to disrupt the conventional thinking around how learning can take place and prosperity is delivered. ■

### READ THE RESEARCH

- The RELIEF Centre: [relief-centre.org](http://relief-centre.org)
- Multi Aid Programs: [multiaidprograms.org](http://multiaidprograms.org)
- "The potential of MOOCs for learning at scale in the Global South" (D. Laurillard & E. Kennedy, Centre for Global Higher Education, 2017)

**"THE HUMAN COST OF NOT DOING ENOUGH TO PROVIDE EDUCATION AND JOBS TO A GENERATION GROWING UP AS REFUGEES IS MASSIVE IN TERMS OF MENTAL HEALTH, PHYSICAL HEALTH AND FUTURE CONFLICT"**

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**COMPLETED JUST MONTHS BEFORE THE CARILLION COLLAPSE, "CASTLES IN THE AIR?", PROFESSOR HEDLEY SMYTH'S ANALYSIS OF BRITISH MAIN CONTRACTORS, READS LIKE A PREMONITION. WE UNPACK THE STORY OF AN INDUSTRY THAT HAS TO DECIDE: IS IT ON THE BRINK OF COLLAPSE OR CHANGE?**

**WORDS: HUGO COX**





How does an industry go from being the envy of the world to producing one of Britain's biggest corporate failures of modern times? The story that links the 1960s behemoths of UK construction to the £7bn collapse of Carillion earlier this year contains no accidents, misfortunes or sudden technological disruption. It is a story of the steady siege of long-term business planning by short-term commercial considerations, that could only lead UK main contractors to where they are today: a broken business model, parlous prospects and little hope.

The story is told by Hedley Smyth, Professor of Project Enterprises at The Bartlett School of Construction and Project Management, in *Castles in the Air: The Evolution of British Main Contractors*, published in February 2018. It offers the key to understanding how the industry can rescue itself from its current perilous state.

### THE WORKING DOGS OF WAR

The story starts in the 1930s, when many of the firms that would dominate UK construction following WW2 were taking shape. Costain, Laing and Taylor Woodrow had been house-builders in the interwar years, supporting the growth of suburbia and the trend to office working. Sir Robert McAlpine focused on profitable, high-profile civil engineering or energy projects, such as building coal-fired power stations. Now their efforts were called upon for the re-armament effort – airfields, barracks, munitions and plant factories and so on.

These were exceptional times: with firms overstretched, government took increasing control of the market to get things done. No time for

competitive bidding meant work was concentrated in the hands of a few large reputed firms through cost-plus and then target-cost contracts, which many saw as unfair. Wimpey won so many Scottish airfield contracts that a public enquiry was launched into unfair allocation, but none was found.

With government quotas restricting the amount of work per office, the big firms simply added new offices, spreading them around the country and separating the centralised management of HQ from the operational control of the local branch. This distributed organisational model would help to define the contractor business model.

Post-war rebuilding efforts followed a similar pattern. The Labour government largely kept control of the market – a move that suited the major firms, who distributed their efforts between challenging civil engineering work and the scarcer opportunities available in the restricted commercial building sector. By the early 1950s, the sector was motoring; the size and expertise of the major UK construction firms was now bettered only by those in the US.

### FINANCIAL ENGINEERING

While government quotas were helping shape the successful organisational model of modern UK contractors, the economics of the 1950s were helping shape a financial one that would prove much more problematic.

With a burgeoning private sector now supplementing government demand, construction markets surged, nearly doubling between 1955 and 1968. The largest contractors diversified into industrial property, owner-occupied offices and the new property development sectors. Firms' growing capacity and technical proficiency saw them expand abroad: between 1955 and 1968 construction was Britain's fastest growing export industry, tripling in size.

While work was plentiful, however, margins were shrinking. Construction costs – notably raw materials and labour – were outstripping the gains in productivity needed to offset them at a ratio of nearly two to one between 1963 and 1970. There was a lack of investment to address

### “CONSTRUCTION COSTS WERE OUTSTRIPPING THE GAINS IN PRODUCTIVITY NEEDED TO OFFSET THEM AT A RATIO OF NEARLY TWO TO ONE BETWEEN 1963 AND 1970. THERE WAS A LACK OF INVESTMENT TO ADDRESS THE ISSUE: EXECUTIVES BATTENED DOWN THE HATCHES”

the issue: executives batted down the hatches, eschewing risk. Plenty of work, however, meant plenty of cash flow – ‘working capital’ in the parlance. A growth in subcontracting (which would become a defining trend in future years) meant this collected for a period in the hands of the contracting firms.

What to do with all the cash? The era's high interest rates meant good returns for those with spare cash to invest. If contractors could delay payment of their subcontractors, they had a huge pile of surplus capital to put to work collecting interest. A business model based on squeezing returns out of subcontractors and retaining trade credit led to a high return on capital employed, or ROCE.

This piece of early financial engineering was a key plank of the contractors' developing business model. It established a practice of under-investment alongside a strategic vacuum that remained the industry's main problems today.

Hobbled by the reluctance to invest, UK firms had established a pattern of chasing the work. As they reached out to international markets, such as the oil-boom-fuelled Middle East, new work was won by applying existing skills to new projects. This gave a false sense of security for continued growth.

The government-driven imperative for innovation that had characterised the wartime years was gone – replaced by the risk-aversion born of shrinking margins and a focus on short-term profits by managing cash flow and trade credit. The shift of ownership from families to professional managers accelerated the trend. As the modern era of globalised construction firms began, firm-wide strategic investment and innovation was ending. In its place came a focus on cost control, satisfying short-term shareholder demands and individual projects, rather than the wider firm.

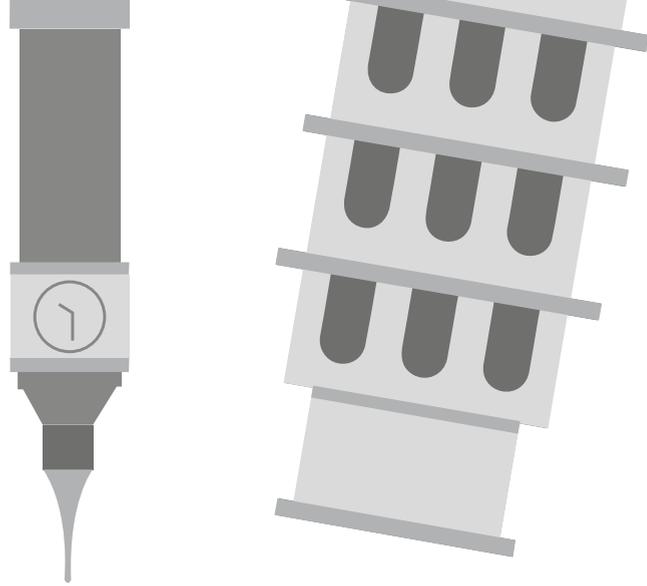
With the downturn of the 1970s, power slipped from the hands of engineers and construction staff – focused on technology and technical expertise – towards finance departments – focused on low investment and expenditure. In a shift that came to define the modern era, anything that was not generating revenue became an overhead, ripe for cutting: cash-flow management was king.

“What is important at the big firms is turnover. That is what analysts look at. Getting more work becomes more important than doing it at the right price,” says Jim Meikle, Professor in the Economics of the Construction Sector at The Bartlett School of Construction and Project Management.

### TURNED OVER BY TURNOVER

Short-sighted at the best of times, such an approach is particularly destabilising in a downturn. In the first case it encourages suicidal bidding, where firms price their bids so low they cannot make a profit (since the cash flow itself is valuable to them even when they make a project





**UNITED KINGDOM**  
**-18.7%**

**ITALY**  
**-6.3%**

loss). In the second case, it lengthens payment delays to subcontractors, so that firms can maximise the income from investing the cash. “This reduces stability within the industry as a whole,” says Brian Green, who edits the annual Housing Market Intelligence Report.

Governments indulged an unhealthy trend by continuing to award contracts purely on price, without taking into account the financial health of the firms doing them or the quality of the work, notes Meikle.

**(MIS)MANAGEMENT**

By 1990, Hillebrandt (a former UCL Professor) and Cannon could summarise the situation in their book *Modern Construction Firm* without any reference to building things: “the

principal resource of construction companies is management”.

Management turned out to be something that UK contracting firms weren’t very good at. While strategic planning was emerging as the central pillar of management in fast-developing sectors like car making, at UK main contractors the focus on cash flow sent them obsessively chasing the next job, stymying efforts at long-term strategic planning.

While all this was happening, European contractors, who were exposed to many of the same commercial pressures, were taking a very different path that would lead rapidly to their domination. These firms had made the same quest to cut costs while retaining a wider business strategy, based on expanding their geographic reach. Bouygues



**TRADING PLACES**

The figures show percentage change in market share of British and European contractors between 1993–1996. According to *Castles in the Air?*, further market decline of British contractors can be expected in Europe. In the long term, the majority of that decline will be experienced in the domestic market because other European contractors will be larger than those in Britain and thus will secure large-scale contracts.

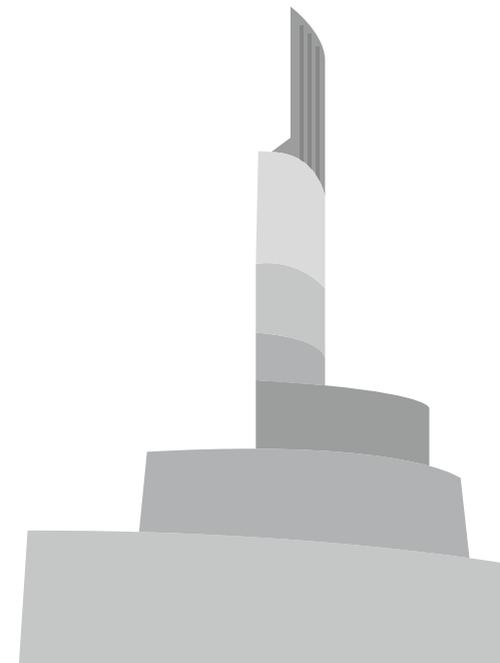
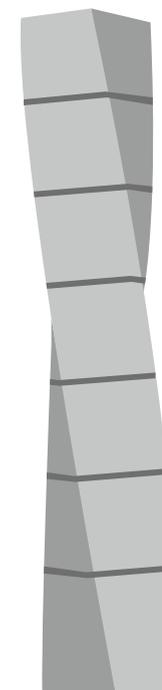
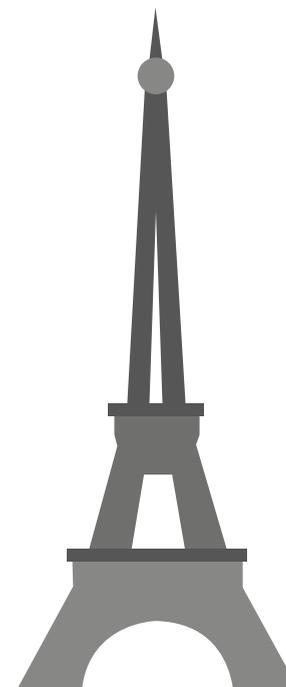
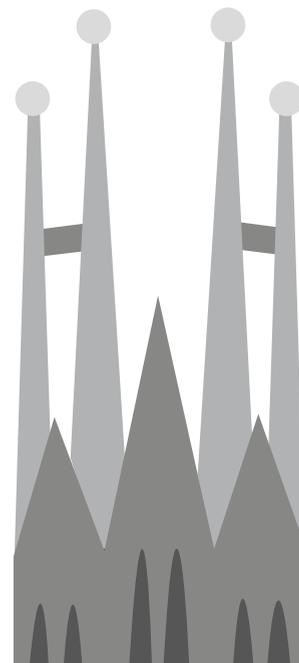
**SPAIN**  
**0.0%**

**FRANCE**  
**+1.1%**

**GERMANY**  
**+3.6%**

**SWEDEN**  
**+9.5%**

**NORWAY**  
**+11%**



Source for data pp.44–45: Adapted from Smyth (1998) and derived from data in *Building* (1994, 1997), in *Castles in the Air? The Evolution of British Main Contractors* (H. Smyth, 2018).



established a UK office then grew organically. Firms like Hochtief and Skanska, which favoured acquisition, found takeover opportunities.

In the 1980s and 1990s, investors began to refocus their portfolios on a diverse range of companies and sectors exposed to the economic cycle in different ways. This approach only worked if investors knew exactly which bit of the economy each stock was exposed to, so they pushed the firms they owned to focus on their “core competencies”, and to sell off anything else.

“It made the markets more short-term in their thinking and thus put pressure on stocks to deliver dividends above other factors. This reinforced the short-termism experienced by contractors,” says Smyth.

The cautious introversion of UK firms was no match for the bolder expansionism of their European peers. From their total dominance over European firms in the 1960s, by 1996 only one large UK contractor, Amec, could scrape into Europe’s largest 10 firms by turnover. Two decades later, in 2015, British contractors had 6% cent of turnover among Europe’s ten largest firms, compared to 47% for French firms and 27% for Spanish firms.

However, European firms were constrained by the same business model as those in the UK: their boldness owed more to market protection. “French contractors own shares in each other, meaning they can vote down takeovers from foreign companies. In Germany, all the major firms have full executives from the major banking groups on their boards, ensuring them preferential lines of credit, as well as providing a degree of external accountability,” says Smyth.

### THE CRASH

The collapse of Carillion – which began life as Tarmac – illustrates, in stark detail, the consequences of the long, slow failure of the UK main contractors’ business model.

Green says: “Having built a very diverse business with housing and materials underpinned with cash generated by contracting, Tarmac followed the fashion to divest and focus, as the environment changed.”

This saw a swap with Wimpey: Tarmac took Wimpey’s contracting and materials businesses; in exchange Wimpey took Tarmac’s housing business. Tarmac’s larger contracting business was then spun off to become Carillion.

“In turn, it began to move towards being a ‘services’ business following the fashion to focus on facilities management and support services. The shift tapped into the outsourcing move that was occurring in public services. There was an

Professor Smyth says: “While the papers made a lot of noise about the Carillion collapse, it was of no real surprise to anyone in the industry, partly because they knew about the state of the firm and partly because such an outcome has been a long time coming to the UK construction industry.”

### “[THEY] WERE LARGELY ABOUT REBADGING EXISTING ACTIVITIES TO PRESENT THE COMPANY AS DYNAMIC TO THE STOCK MARKET. BEHIND THE RHETORIC, LITTLE OF SUBSTANCE CHANGED”

added bonus for listed firms in that their share price was boosted, since the services sector was rated higher than construction,” says Green.

But the series of restructurings this entailed were little more than window dressing. “[They] were largely about rebadging existing activities to present the company as dynamic to the stock market. Behind the rhetoric, little of substance changed,” writes Smyth in *Castles in the Air?*

Carillion’s business model was still based on making whatever money it could out of the ROCE model – no easy feat in an era of low interest rates. “Growth came from acquisitions and securing work at low margins,” writes Smyth.

Governments – especially those of the austerity era – have done little to discourage the practice, instead driving down costs by taking tenders that they knew were unsustainable.

“This part of the business model no longer stands up in an environment of low interest rates and more stringent requirements to pay suppliers and subcontractors in timely fashion,” Smyth says. “While the papers made a lot of noise about the Carillion collapse, it was no real surprise to anyone in the industry, partly because they knew about the state of the firm and partly because such an outcome has been a long time coming to the UK construction industry.”

Image: Getty

### THE FUTURE

The role played by government indicates that more than firms’ management will be responsible for rescuing the UK’s main contractors. Since the firms’ management will be ultimately responsible for reforms, their inability to escape the current business model bodes ill for the future. A 2010 survey by Grant Thornton found that nine out of ten executives reckoned their models had been resilient in the downturn following the financial crisis and would succeed over the following year-and-a-half.

For Professor Smyth, the solution is not state intervention. Instead, he advocates a choice, starting with firms’ management but including shareholders – whose instincts will be to resist any change – and government, to cajole UK firms towards a business model that better services the wider economy. The recent ascendancy of European firms demonstrates the virtues of this mixed model.

There is plenty to incentivise firms to reform: \$57tn of global infrastructure investment is required by 2030 according to McKinsey. While recent decades have contained the story of UK main contractors’ decline, those of the future need not.

The global market needs larger firms. They must be big enough to absorb the risk associated with the largest and most complex projects in today’s market. And they must have the technologies and the management capabilities necessary to undertake them.

### READ THE RESEARCH:

- “Castles in the Air? The Evolution of British Main Contractors” (H. Smyth, 2018)

# THE CARBON

**THE RACE IS ON TO DECARBONISE THE INTERNATIONAL SHIPPING INDUSTRY AND THE UCL ENERGY INSTITUTE'S SCENARIO-BASED MODELLING IS GIVING POLICY-MAKERS THE DATA THEY NEED TO PUT THE PRESSURE ON.**

**WORDS: BRENDAN MATON**



# LEVIATHAN

↓

The Marshall Islands are a scattering of coral atolls, palm trees and white beaches lying low in the Pacific Ocean between Hawaii and Australia. None of the Islands' three exports – fish, coconuts and young emigrants – make a mark on global trading volumes. Yet the Marshall Islands registers more big ships than almost anywhere else on Earth. Over 3,000 seagoing vessels call the Marshall Islands home – on paper. They supply precious foreign income in exchange for the convenience of a rubber stamp.

Registration location is one of the many quirks of international shipping. Another is the exemption of shipping from climate change agreements. Transport on the high seas is responsible for 2.5% of global greenhouse gas (GHG) emissions but has so far avoided the kind of terrestrial regulation that is seeing coal phased out and the mass arrival of electric vehicles worldwide.

To put it another way: if shipping were a nation, it would be the sixth largest emitter of GHG emissions, behind Japan but before Germany. Moreover, the difference between the rules for transport on land and sea means that shipping's share of GHG emissions could rise from 2.5% to more than 20% by 2050, according to EU estimates. That would put it ahead of any single nation as a polluter.

One of the providers of the data behind those estimates is the UCL Energy Institute, a world leader in modelling shipping trends and energy demands. For over a decade it has been providing information on ways in which the maritime

transport sector could act to decarbonise profitably and the risks of 'business-as-usual' thinking.

The Institute's work is realistic, depressing and hopeful all at the same time – often in one paragraph. One of its findings is that charterers, who rent ships, have not thus far rewarded or looked to reward low-emission vessels. This lack of incentivisation is understandable: climate mitigation policies are inevitable but the actual form they will take and their commercial ramifications are not clear.

### SEA CHANGE

The industry knows change is coming, but has not pushed itself to reform. This is reflected in a 2017 joint study by UMAS, a commercial research arm of the UCL Energy Institute's shipping group. The study found that 80% of industry respondents feel Zero-Emission Vessels (ZEVs) are necessary and that reliability and scalability are more important than cost. But in the same study, the majority of respondents didn't want to pay more than 10% more for ZEVs than current vessels or see a carbon price higher than \$50 a tonne. That carbon price is far above current levels (although, unlike for gold or oil, there is no true global market for carbon trading yet). Nevertheless, \$50 a tonne is much lower than the estimates many academics reckon necessary to limit global warming to two degrees Celsius.

As no-one can be sure where carbon pricing will go, the Institute offers scenarios to help shipowners and charterers understand the

commercial consequences of a range of carbon prices alongside other germane factors such as freight rates, ship speeds and the cost of ZEVs. One interesting result from the research is that, amid all the many variables, the cost of borrowing money to purchase new vessels is not a major factor.

This would be welcome news in any line of business. However, as Nish Rehmatulla, Senior Researcher at the UCL Energy Institute admits, the problem with his team's work is that it does not always come up with the answers shipowners want to hear – even though UCL's GloTraM modelling is predicated on profit maximisation.

One recent paper, for example, showed that the cost of climate mitigation adaptation could reduce revenues under many scenarios. If the price of a tonne of carbon goes no higher than \$50 and freight rates are low, the academics foresee flat to falling revenues even for shipowners who take a long-term perspective, i.e. are prepared to wait at least seven years to

A still from shipmap.org, an interactive map showing the movements of the world's commercial shipping fleet over the course of 2012. Image: Kilm

**“TO PUT IT ANOTHER WAY:  
IF SHIPPING WERE A NATION,  
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EMISSIONS, BEHIND JAPAN  
BUT BEFORE GERMANY”**



**INTERNATIONAL SHIPPING  
PRODUCES NEARLY ONE  
BILLION TONS OF CO<sub>2</sub>  
EMISSIONS, WHICH IS  
APPROXIMATELY 2-3%  
OF TOTAL MAN-MADE  
EMISSIONS**

recoup essential green investments. Other scenarios suggest a carbon price of \$100–\$500 is necessary to make ZEVs as attractive, pricewise, as conventional ships.

If this sounds dissuasive, the academics simultaneously point out that many seemingly more comfortable approaches, such as a short-termist business-as-usual mentality might seduce ship-owners to virtual shipwreck: owning a fleet too expensive to be adapted to new technological regulations. This version of stranded assets is a warning that disruptive technology and/or stringent new regulations produces not just winners but also victims.

**NEW LAW OF THE SEA**

For the shipping world, 2018 brought a double dose of stringent new regulations when the International Maritime Organisation (IMO) – the UN body that organises international shipping

– agreed to put a cap on toxic emissions from maritime engines, notably sulphur dioxide, and bring the industry more in line with terrestrial ambitions for curbing carbon dioxide emissions.

Gambling that things won't change for shipping is no longer an option. The sulphur cap begins in earnest in 2020. The bigger target is to at least halve GHG emissions by 2050, leaving the door open to full decarbonisation.

Both targets have been welcomed by bodies all over the world, including some commercial shippers who see this as a chance to put clear water between themselves and dirtier rivals. The Marshall Islands early on put sustainability before profit and championed decarbonising. On coin-flat islands like theirs, every one-inch rise in sea levels jeopardises 10 feet of drinking water contained in the islands' aquifers.

Even the mighty US Department of Defense is starting to fret: it has tested missiles in the

Marshalls for decades, but some of its facilities could be permanently inundated within the next two decades.

Whether you are the Pentagon, a shipping tycoon or a Pacific islander, data should inform any sensible long-term policy. The UCL Energy Institute conducted research for the international Institute of Marine, Engineering, Science and Technology in its submissions to IMO debates. These submissions have grown in influence right up to last April's historic decision (see pp.54–55, 'How the war was won').

Now it is time for the whole shipping industry to engage. The new targets help to sharpen parameters for business planning. They do not, however, dictate how the emissions reductions are to be achieved. Regarding ZEVs, for example, it remains unclear what the winning fuel or technology will be.

**BRIDGES TO NOWHERE**

The response from Rehmatulla and colleagues at the UCL Energy Institute has been to map out the potential of new fuels under different economic scenarios and using various financial metrics. One is the cost of storing – 'bunkering' in shipping jargon – new fuels. Infrastructure for hydrogen is more complex than for biofuels. But biofuels cost more to make. You have to grow a crop 'upstream' first, and the total cost, including the preparation of arable land, severely lowers this energy's attractiveness.

Likewise, the Institute has been unambiguous that increasing capacity for Liquefied Natural Gas (LNG) is a 'bridge to nowhere'. LNG

facilities have been funded to the tune of E250m by the European Union alone because LNG is cleaner than current ship fuel in terms of local air pollution, as it reduces harmful sulphur and nitrogen oxides and particulates close to zero. But this fuel will not ultimately help meet the IMO targets for carbon dioxide, warns Rehmatulla.

On other metrics, such as the cost of the actual motor, electric fares well. But expensive batteries and this power type's unsuitability for long voyages is dissuasive in the modelling. This only leaves more work to be done, according to Dr Tristan Smith, the UCL Energy Institute's Reader in Energy and Shipping: "Unless action starts now on maturing these fuels options' applicability to deep-sea merchant shipping, we won't see ZEVs in the water by 2030 in order to meet the GHG target". ■

**READ THE RESEARCH**

- "Navigating Decarbonisation: An approach to evaluate shipping's risks and opportunities associated with climate change mitigation policy" (UMAS, commissioned by Carbon War Room, 2017)
- "An analysis of the MEPC 69 Debate on reduction of shipping GHG emissions" (UMAS, 2016)
- "Zero-Emission Vessels 2030. How do we get there?" (Lloyd's Register & UMAS, 2017)
- See a visualisation of the world's commercial shipping fleet over the course of the year 2012 at [shipmap.org](http://shipmap.org)



## HOW THE WAR WAS WON

Key milestones to the IMO's agreement to at least halve carbon emissions by 2050.

SEPTEMBER

# 2013

Pacific leaders launched the Majuro Declaration at the annual meeting of the Pacific Islands Forum in the Marshall Islands. Declares climate change the biggest threat to their people.

MAY

# 2015

The Marshall Islands submits a request to the IMO's Marine Environment Protection Committee asking for a debate on how shipping can reduce GHG emissions as part of the global effort to restrict further warming to 1.5 degrees Celsius. The motion was postponed, in part to see what would happen at the Paris negotiations on climate change later that year.

APRIL

# 2016

With France, Belgium, Germany and Morocco as co-sponsors, Pacific Island leaders make a further submission to consider shipping's 'fair share' of GHG emissions. This time almost one-third of country representatives support the motion (The IMO is a curiosity among UN organisations in that many delegates representing their country are actually employees of large shipping companies and exporters).

OCTOBER

# 2017

A harshly reduced cap on sulphur emissions is announced to commence from 2020.

APRIL

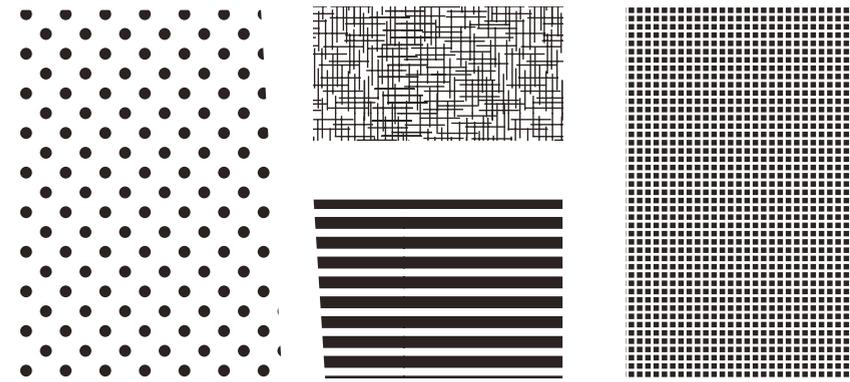
# 2018

The IMO agrees to limit GHG emissions from international shipping by 2050 to at most 50% of 2008's output, while pursuing efforts to phase them out in line with the Paris agreement temperature goals.

DESIGN

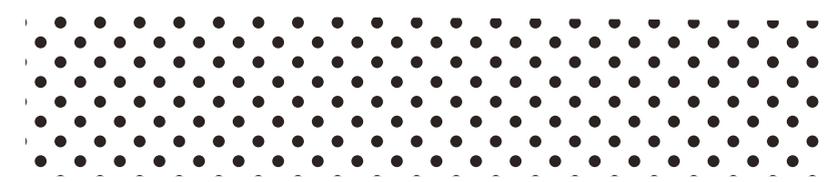
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## THOUSAND CUTS



**THE UK IS ON THE VERGE OF A MAJOR EXPANSION IN HOUSEBUILDING, YET NEW RESEARCH BY THE PLACE ALLIANCE HAS REVEALED A CHRONIC LACK OF URBAN DESIGN EXPERTISE IN LOCAL AUTHORITIES. WILL GOVERNMENT RAISE ITS GAME IN TIME?**

**WORDS: KATIE PUCKETT**





The first known use of the word ‘street’ in the English language was on 28 April 604, on a document showing the boundary of a plot of land in Rochester, where the castle and cathedral now stand. Many things have changed in Rochester during the 1,414 years since, but the line of the High Street is pretty much the same as it was then, and indeed as it was six centuries earlier when it was built by the Romans. This, says Robert Huxford of the Urban Design Group, shows how important it is to get planning right first time. “Once you’ve created a development, its effect will be there pretty much in perpetuity. Once you make a boundary between public and private land, it stays there unless money changes hands or there’s force majeure.”

Given the longevity of our streetscapes, you would expect that the creation of a new one would be subject to extensive consideration. But you’d be wrong. A survey of local planning authorities by The Bartlett School of Planning, part-funded by the Urban Design Group, has uncovered a chronic lack of urban design expertise within the organisations that are supposed to scrutinise new development to ensure that it’s attractive, integrated into the surrounding area and well-served by amenities such as public transport and green space. Almost half of local

authorities have no dedicated in-house urban design capacity at all, and of those that do, in most cases a single officer must cover design as part of a larger role.

This should be cause for alarm under any circumstances, but it’s all the more so when the UK is supposed to be on the verge of a major expansion in housebuilding. The government wants numbers of new homes to rise from 217,000 in 2017 to 300,000 a year by 2025 to address the housing shortage. But what kind of places are we going to create, if there’s no-one to oversee these crucial elements of placemaking?

“Local authorities have an absolutely critical role in ensuring high standards of urban design,” says Huxford. “Unless they demand good standards, there is an inevitability that we will have a legacy of poorly designed and located development – and indeed that’s what we are getting.”

The research was led by Matthew Carmona, Professor of Planning and Urban Design at The Bartlett, and prompted by growing anecdotal evidence that cuts in local authority budgets had left planning departments understaffed and ill-equipped. This was evident in feedback received by the Place Alliance, which is run by Carmona

**“ALMOST HALF OF LOCAL AUTHORITIES HAVE NO DEDICATED IN-HOUSE URBAN DESIGN CAPACITY AT ALL, AND OF THOSE THAT DO, IN MOST CASES A SINGLE OFFICER MUST COVER DESIGN AS PART OF A LARGER ROLE”**

and his colleague Valentina Giordano, but also during hearings of the House of Lords Select Committee on National Policy for the Built Environment, to which Carmona was appointed as specialist adviser. He says: “There were lots of reports about a real crisis of urban design skills within local authorities, but no concrete, empirical evidence that there was a problem.”

The last audit of this kind was carried out back in 2003, by the Commission for Architecture & the Built Environment, or CABE. After this, there was significant investment in skills and training, but this dropped off when austerity hit in 2011 and government funding to CABE ceased. Government systematically collects data on the number of planning applications and the speed of processing them, says Carmona, but not on the composition or skill levels of planning departments. “But these are the sorts of qualitative factors that determine whether the planning system can work properly.”





While speed might be important, explains Carmona, it has nothing to do with creating high-quality places. “Around the country, we see large schemes going through that are very poor quality. There are some developers that are excellent and produce amazing projects, but a lot need to be pushed. And if the local authority doesn’t do that, then nobody will.”

Ultimately, a lack of urban design expertise could thwart the government’s attempts to avert the housing crisis, he warns. “Local communities are often against new housing because they fear it will be poorly designed and unsympathetic to existing settlements. If we get the design right, local communities are much more likely to accept the new housing that the nation needs.”

### ONE-WAY STREET

The Bartlett survey, *Reviewing Design Review in London*, was compiled by sending freedom of information requests to 374 local planning authorities. It asked what in-house urban design skills were available within the local authority, and specifically how many qualified urban designers, landscape architects and architects were employed.

The headline figure is a 5% drop in qualified advisers since 2003, but this is almost certainly an underestimate. The comments accompanying the data refer frequently to resource sharing between departments or neighbouring authorities and to professionals from non-design backgrounds covering urban design roles. So while expertise may exist on paper, it may not be there in reality.

Valentina Giordano, Research Associate at The Bartlett School of Planning, who co-ordinated the research, was not surprised by this diminished capacity – she used to work in the private sector as an urban designer and had heard many of her former colleagues complaining about cutbacks in local authorities. “What did surprise me was the extent to which conservation officers now have to fulfil all sorts of roles,” she says. “Or maybe a planner is sent on a couple of CPDs so they can sit on a design review panel or comment on pre-application plans. Not only are people stretched, but they’re under pressure to do a job that isn’t their job.” Where local authorities have no expertise in house, it has become common practice to use external consultants on a needs-must basis, at considerable expense.

Without anyone to challenge developers, local authorities find it hard to understand the long-term implications of poor design. It’s not just a question of money: even small changes to a scheme can have a huge impact, Giordano says. “Things like the way parking is organised



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so that not all the public realm is tarmac, or making access routes safe by allowing for natural surveillance so people can walk to the shops.” With Carmona, she is now working on a follow-up study of attitudes to design among local councillors, and she hopes that the Place Alliance will secure funding to create a case-study library, to replace some of the CABI guidance that she and her planning colleagues used to find so invaluable.

Giordano is struck by how little public awareness there is of urban planning. “I always find it unbelievable that every time the planning minister changes it’s a non-news story. It’s quite tragic

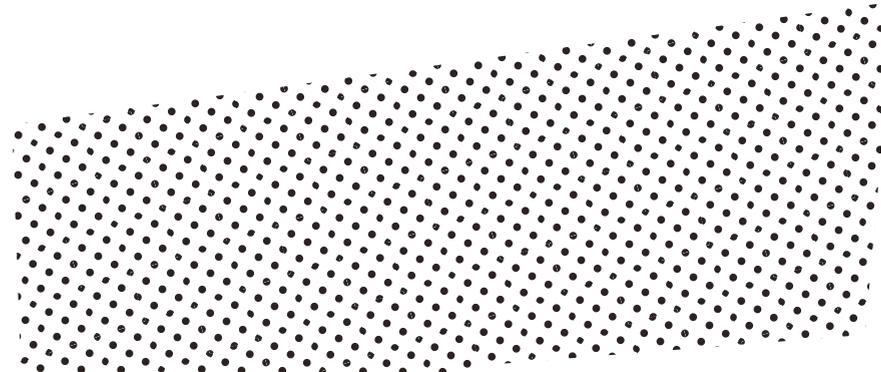
because the power that they hold is incredible, but it’s quite difficult for an ordinary citizen to realise how that power trickles down and affects the street where you live, the park where you go, the tower that you may or may not get.”

One bad decision early on has a cascade of negative impacts, says Huxford, most often the decision to allow development in areas where there are no local amenities and no alternatives to car use. Health outcomes suffer with no incentive for the residents to walk or cycle, and those without cars cannot access the services they need. Land is given over to hard surfaces for roads and parking, which increases the risk of flooding by stormwater runoff and creates a need for attenuation measures, which may reduce the amount of green space available. The retail economy shifts further in favour of car use, hindering the ability to walk or cycle elsewhere too.

“The built environment needs to be considered as a system,” he says, “and constantly tweaked and tuned and helped to change in response to human need, changes in the economy, technology and the environment and our best understanding of what makes people healthy and happy. It is in the national interest that local authorities have the expertise to do this.”

### A PLAN FOR GOOD DESIGN

The House of Lords Select Committee raised Huxford’s concerns in its 2016 report, *Building Better Places*. “Good design is really the key to not only pleasant places to live but also thriving communities,” says Baroness Janet Whitaker, who co-founded the select committee. “The problem is that local authorities have so few resources now and they keep being cut, hugely cut. It’s happening in so many other local authority fields – children’s centres, battered women’s centres are all suffering – so I’m not surprised



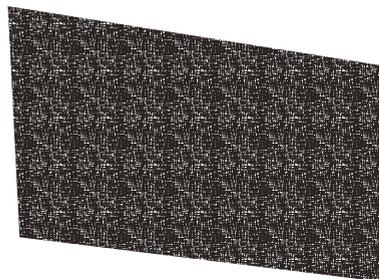


they decided to cut planning. There's no denying it that if you've got to cut somewhere, planning is an easy one."

Whitaker and Carmona agree that there is no substitute for additional government funding – local authorities could be allowed to borrow more, for example, says Whitaker. But there are low or no-cost options that local authorities can take advantage of, such as external design review panels.

There was dismay earlier this year when a revised version of the National Planning Policy Framework was released for consultation, with a clause on the importance of design review substantially watered down.

After an outcry, Carmona is cautiously optimistic that the final version, due later in 2018, will stick closer to the current wording. He also thinks there is a greater willingness in government to engage with issues of design – it held a Design Quality Conference in spring 2018, the first for many years, and two civil servants have been appointed to drive the design agenda forward.



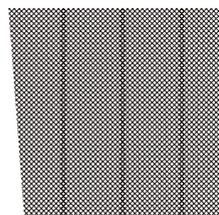
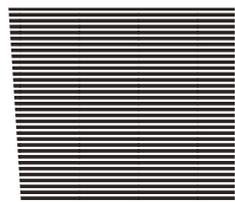
Most encouragingly, since the publication of The Bartlett's survey, part of a new fund called the Planning Performance Grant has been dedicated to design skills in local authorities. "Highlighting these issues and showing there's a real need encouraged the government to shift part of the grant specifically to design," says Carmona. "That's a very positive impact that we've had."

Stronger leadership from government is the key to creating better places, he believes: "Local authorities need to realise that design quality is a requirement of the planning system, not something they can pick and choose." After all, governments may come and go, but urban design is pretty much forever.

**READ THE RESEARCH:**

- "Reviewing Design Review in London" (Place Alliance, 2018)
- "Building Better Places" (House of Lords Select Committee on National Policy for the Built Environment, 2016)
- Place Alliance: [placealliance.org.uk](http://placealliance.org.uk)
- Place Value Wiki: [sites.google.com/view/place-value-wiki](http://sites.google.com/view/place-value-wiki)

Source for data, p.63:  
"Reviewing Design Review in London" (Place Alliance, 2018)



**PLACEMAKING ON A SHOESTRING**

**How design review panels can inform local authorities**

As well as asking local authorities about their in-house urban design capacity, The Bartlett survey also enquired how many were making use of design review panels to assess the quality of planning applications.

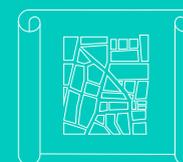
In an ideal world, fully staffed planning departments would make their own assessment but refer larger schemes to panels of their peers as an additional mechanism to improve quality. Where there is no in-house capability, design review should be an essential failsafe.

In reality, only two-thirds of local authorities use it and less than a fifth regularly, meaning monthly or quarterly. Outside London and the large metropolitan areas, uptake was particularly patchy.

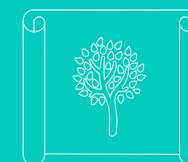
"One of the reasons that local authorities should be using this more is because they don't have to pay," says Carmona. "They can charge the developer for design review so it's a cost-neutral mechanism they can use in the absence of having people in-house."

Planning departments can then use these resources to fund in-house capacity – hiring someone to run the panel, while providing design advice with the rest of their time. Carmona says: "That's what an increasing number of local authorities are doing in London, and it's what they should all be doing. It's better to have something than nothing. One person is better than none, half a person is better than nothing. You need to start somewhere."

**DESIGN SKILLS IN LOCAL AUTHORITIES: THEN AND NOW**



**A QUALIFIED URBAN DESIGNER**



**A LANDSCAPE ARCHITECT**



**A REGISTERED ARCHITECT**

<b>2001</b>	<b>48%</b>	<b>57%</b>	<b>38%</b>
<b>2003</b>	<b>49%</b>	<b>56%</b>	<b>32%</b>
<b>2018</b>	<b>45%</b>	<b>47%</b>	<b>20%</b>

# “THE LANGUAGE OF CHANGE”

**THE WICKED PROBLEMS OF THE 21ST CENTURY ARE TOO COMPLEX AND SYSTEMIC TO BE SOLVED BY ONE SECTOR ALONE. GLOBAL ORGANISATIONS NEED TO REFRAME THE WAY THEY APPROACH INNOVATION INTO MISSIONS TO CREATE EQUAL PARTNERSHIPS WHERE ALL SECTORS SHARE THE RISKS AND REWARDS.**

**WORDS: BRENDAN MATON**

“There is huge potential in a missions-based approach to drive faster solutions – and it is an approach being pioneered here in the UK, by University College London... So today I am setting the first four missions of our Industrial Strategy – one in each Grand Challenge. If they are to be meaningful, they must be ambitious and stretching. That means that our success in them cannot be guaranteed. But I believe that by setting a high ambition, we can achieve more than we otherwise would.”

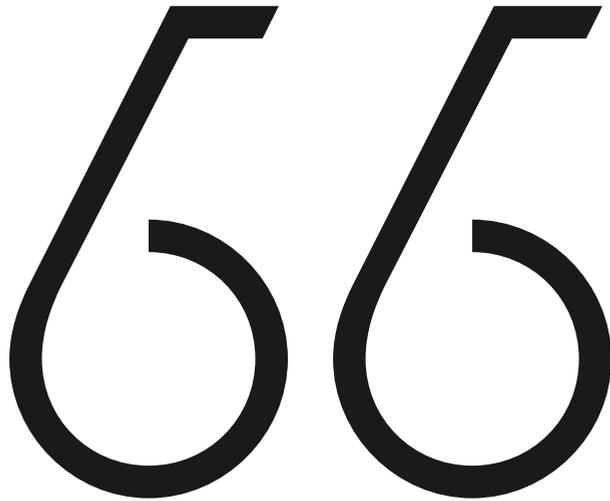
Who is speaking here? Anyone who has read policy papers issued by UCL’s Institute for Innovation and Public Purpose (IIPP) will recognise the language. So will readers of the books published by Mariana Mazzucato, IIPP’s charismatic director. But this was a speech by Theresa May, not Mazzucato. The Prime Minister was unveiling – at Jodrell Bank in May 2018 – how the UK was going to think big about societal challenges, namely artificial intelligence, ageing, clean growth and the future of mobility.

May is not the only leader to rapidly adopt

the language and paradigms of IIPP. Here’s First Minister of Scotland Nicola Sturgeon on innovation and public purpose: “We want Scotland in the future, just as we have in the past, to be inventing, designing and manufacturing the innovations and the products that will shape the world of tomorrow. We want to ensure those innovations don’t just benefit big business but wider society as well.”

And European Commissioner Carlos Moedas: “In the European Union we are very good at defining our challenges. But often we are not able to explain them or to find a solution for them. That is precisely why we have come up with the idea of missions: to create a link with people; to trace a path to solve problems.”

In all three cases the rhetoric of ambition and bravura are straight from the IIPP handbook, which encourages those in public service to remember that they direct society and should take pride in this responsibility, especially when it comes to tackling the biggest challenges. Success requires a lot of time, capital and expertise across



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disciplines; and the government alone has the capacity to direct missions.

### MEANING IS USE

The adoption by political leaders of IIPP's language should come as no surprise. Plato said that those who tell stories rule the world. Those who tell stories of invention, bravery and togetherness get re-elected.

But politics is a slippery business. Buzzwords such as 'missions' and 'moonshots' – originally used for the Apollo missions in the 1960s – could be deftly packaged and transmitted with no substance to follow. If IIPP were a PR firm, that would not matter. But Mazzucato and Deputy Director, Rainer Kattel, recognise the risk of hollow promises. "Look at the United Nations Sustainable Development Goals," says Mazzucato. "Something like 140 countries sign up to them because it makes everyone feel good but nothing happens."

So while IIPP is delighted that governments are rediscovering inspirational language to describe their own work, the substance has to be there too. In the case of the UK's four industrial challenges, one source of substance is the Commission for Mission-Oriented Industrial Innovation Strategy (MOIIS). Administered by IIPP

and comprising bright minds from academia, business, science, IT and healthcare, MOIIS liaises with the Department for Business, Energy and Industrial Strategy (BEIS) as inspiration, wayfinder and sounding-board.

In 2018, MOIIS discussed the challenge of putting the UK at the forefront of the AI and data revolution in the context of medical diagnoses. Britain has an enviable healthcare ethos but the NHS is far from unified when it comes to information-sharing – personal and genomic data are not currently combined, for example. Free-market theory would suggest at this point that private companies will devise the best information systems to combine the necessary data and consequently improve diagnostics. But the most successful data companies, from Google down, tend to monopolise. It is questionable who, apart from the data company's owners, would want it to control a nation's medical data. Medical records are highly personal – London's Royal Free Hospital has already been criticised by the Information Commissioner for how it passed patient data to Google's AI subsidiary, Deep Mind, in a joint venture.

MOIIS's Dan Hill, Global Digital Studio Leader at Arup and a member of the IIPP advisory board, mentioned the

DECODE project being piloted in Amsterdam and Barcelona to develop a data commons, but with control for each citizen to anonymise their own personal data. Could the DECODE paradigm work on a grand scale for patient records in the NHS? Kattel compares DECODE to a public library: "No one wants to own a library but everyone wants to use it." And of course, everyone understands what a library is, whereas most would struggle with the blockchain technology underlying DECODE and protecting citizens' interests.

### SWITCH METAPHORS

Public support is essential for any mission fulfilment. Often, however, politicians have a habit of pumping money into or taking it away from any cause of immediate public concern.

Nowhere is this more evident in the UK than the NHS, where government responses nowadays are almost always expressed in terms of cash. The manner in which these responses are

announced and the sums of money involved are born of fear. To use management-speak: the government has 'lost the room'.

Mazzucato reckons even Barack Obama, a great orator, was culpable on healthcare. "When the Tea Party accused him of meddling, he didn't go on the front foot and point out that caring for 60 million uninsured Americans is a multi-billion-dollar boost for the whole country in terms of costly medical operations avoided and labour fit to be active in the economy."

Here we come to valuing both formal and informal care, spanning healthcare and domestic support. In her latest book, *The Value of Everything*, Mazzucato shows how the predominant form of modern economics shies away from activities such as caring for relatives when there are no wages involved. The existence of wages means the activity has a price and thus a value. This is a monetary value, of course. Price-based economists don't want to evaluate quality of care (or housework) and even when it is paid, as in the NHS, the fact that there are no ultimate profits means that public services end up getting viewed in terms of cost-savings alone.

This is why public innovation – so prevalent in current speeches by politicians – has hitherto sounded like an oxymoron. It is also why those announcements of new cash for the NHS don't work: the public has got used to thinking good government saves money. If you want productivity, on the other hand, look to the private sector.

**"LOOK AT THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS. SOMETHING LIKE 140 COUNTRIES SIGN UP TO THEM BECAUSE IT MAKES EVERYONE FEEL GOOD BUT NOTHING HAPPENS"**





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**“CARE IS SOCIAL INFRASTRUCTURE. IT IS SEEN AS WELFARE PROVISION BUT IT IS PART OF INDUSTRIAL STRATEGY”**

Raising the status of formal and informal care (in some countries these duties have never lost status) is a project within Theresa May's designated Grand Challenge of ageing. Professor Sue Himmelweit, MOIIS Committee Member and Emeritus Professor of Economics at the Open University, points out that care has the biggest multiplier effect of all the Grand Challenges. What that means is that, while activities like AI get lots of attention because they are cool and futuristic, AI only occupies a small number of brainy people. If a society sorts out its care system, millions more people are healthy enough to work and spend, sustaining even more jobs and wealth.

Himmelweit wants to appropriate some language to give this project impetus. The public can usually be relied upon to get behind big infrastructure projects because we all know what a tunnel or bridge is for. But how about appropriating the language of construction to care? “Care is social infrastructure,” says Himmelweit. “It is seen as welfare provision but it is part of industrial strategy.”

If the BEIS can promulgate this message throughout the land, the work of millions of people – mostly women – gets greater recognition. If the Treasury matches the words with figures, by emphasising the multiplier effect of care in the national accounts, these will be big steps towards a society that does not rely just on cash prices or salaries to determine an occupation's benefit to the economy.

Perhaps the greatest compliment one could pay the IIPP is that it is gently but firmly leading governments away from costing projects, occupations and services – not least their own – to valuing them. ■

**READ THE RESEARCH**

- “Mission-oriented innovation policy and dynamic capabilities in the public sector” (R. Kattel & M. Mazzucato, IIPP WP 2018–05)
- “State investment banks and patient finance: An international comparison” (M. Mazzucato & L. Macfarlane, IIPP WP 2018–01)
- “Movements with missions make markets” (C. Leadbeater, IIPP WP 2018–07)
- “The Value of Everything: Making and Taking in the Global Economy” (M. Mazzucato, Allen Lane, April 2018)



**THE ECONOMICS OF CHANGE**

For almost half a century, the UK's civil servants have been turning to HM Treasury's Green Book for guidance on evaluating public projects. The book has been updated over the years but a paper published by the IIPP in 2018 suggests a radical rewriting is required.

Constraints on government departments are born out of prevailing economic theory, which assumes that we are all price-sensitive and markets are the best determiners of price. In this ideal world, cost is king and so public projects have to undergo a cost-benefit analysis. Such analyses do not work well for missions, which by their nature are messy, span industrial sectors and whose benefits cannot be known in advance, even if there is a specified goal (e.g. the BBC's attempts to make a micro-computer failed in the 1980s but the spillover effects led to the creation of ARM Holdings, one of the UK's most successful tech companies).

This is the first problem with estimating each project's worth in terms of cost. Much of the good in society for which governments are responsible cannot be rigidly priced. The authors of the IIPP paper argue that when it comes to augmenting the good in society via bold, expansive missions, an even deeper malaise is revealed: cost-benefit analysis in the public sector has come to mean ‘loss-limiting’. There is a presumption that only the private sector knows how to turn a profit. Government's role, meanwhile, is to step in like a handyman to fix market failures.

Missions shatter such a theory because they crowd in financial, human and physical resources from both the public and private sector. In such a

spirit of collaboration, innovation produces new markets and new profits. How can a new market be costed ex ante – as cost-benefit analysis invariably does? Which sub-projects within a mission should be valued most when each one's value will develop distinctly and unevenly over decades?

Even at the level of strategic assessment, the Green Book wants to avoid ambiguity and interconnectedness, hence the demand for half a dozen Specific Measurable Achievable Realistic Time-Limited (SMART) objectives per project. In the spirit of single project management, it also favours faster completion – a reward for efficiency that only suits conventional efforts such as building a motorway. But for heroic missions, such as making all UK roads ready for autonomous vehicles, time preference and SMART objectives seem to be the wrong kind of measures.

IIPP's Working Paper states that a more subtle evaluation system is required to encompass this kind of complexity:

“An analytical framework to support mission-oriented policy-making should place a low priority on the ability to confidently quantify precise future outcomes,” it says. “Instead, they should have explicit and transparent ways of working with irreducible uncertainty, bringing it to the centre of consideration.”

**READ THE PAPER**

- “The economics of change: Policy appraisal for missions, market shaping and public purpose” (R. Kattel, M. Mazzucato, J. Ryan-Collins & S. Sharpe, IIPP WP 2018–06)

# ANATOMY

**IN THIS SECTION, WE GO INSIDE THE ANATOMY OF THE BARTLETT TO EXPLORE THE BIG STORIES HAPPENING AT FACULTY LEVEL, FROM COLLABORATIVE PROJECTS, NEW PROGRAMMES AND BUILDINGS TO 2018 IN NUMBERS.**

# AGENTS OF CHANGE

**A SHORT HISTORY OF THE BARTLETT  
MATERIALISATION GRANT.**

**WORDS: VERONICA SIMPSON**

Cross-disciplinary research is one of the most exciting fields in academia today and, to foster a sense of its potential application within its own faculty, The Bartlett launched what it calls the Materialisation Grant in 2013.

Murray Fraser, Professor of Architecture and Global Culture, and Vice-Dean of Research at The Bartlett is champion of this initiative. “The Materialisation Grant came about because we wanted to do something different, and internal, to ensure that different parts of The Bartlett work together,” he says. “But then we also wanted to fund something that might not happen otherwise, that doesn’t fall into the usual funding categories.”

The Materialisation Grant – unlike most funding sources – seeks projects that blend two or more disciplines to generate new forms, awarenesses or tools. Fraser says: “We are looking for the strongest one, each time, but also a range of different proposals. Happily, each winner has been quite different.”

With a substantial sum on offer – £50,000, which must be supplemented by sponsorship – the scheme elicits around a dozen proposals every round, with four or five making it to the shortlist. Initially devised as an annual award, due to the immense time and preparation entailed in developing, implementing and sup-

porting proposals, in 2014 it was decided to run the scheme biannually. So 2018 saw the fourth iteration of this pioneering scheme. The winning project – A Memory Map of the Jewish East End – was announced in September and will be a collaboration between researchers at the Survey of London, the Centre for Advanced Spatial Analysis (CASA), the Space Syntax Laboratory and the artist Rachel Lichtenstein.

Some past projects have generated their own impressive legacies (see Re-imagining Lima); others have raised awareness on important environmental or cultural issues. But they all demonstrate the rich potential of harnessing the energies of different disciplines and communities towards a common aim – a positive message for the wider Bartlett and UCL community, thinks Fraser:

“The Bartlett is growing in its size and complexity. We are feeling positive about getting bigger, but as we do so, we need to think about how we, as the Dean says, ‘make it greater than the sum of its parts’”.

From A Memory Map of the Jewish East End, winner of 2018's Bartlett Materialisation Grant: Hasidic string and paper bag dealer Mr Katz in his shop on Brick Lane by Rachel Lichtenstein, 1997.



## FLOOD HOUSE (2014-16)

**Generating debate about the past, present and future of the Thames estuary.**

Matthew Butcher, Senior Lecturer at The Bartlett School of Architecture, has always been interested in the power of light-touch interventions – installations or mobile pavilions – to articulate the concerns of a community or place. The Thames Estuary is a particular subject of fascination, and his successful 2014 Materialisation Grant application proposed the creation of Flood House: a small-scale prototype structure along the Estuary that could function as part floating future dwelling, part laboratory, and part 1:1 case study for how construction materials operate within a specific tidal environment.

The project was developed together with The Bartlett School of Environment, Energy and Resources, with the advice of Rokia Raslan and Jonathan Taylor from the Institute for Environmental Design and Engineering.

Built from angular ply and weatherboard, and measuring 5.5m by 7.5m, the finished project floated on three steel pontoons off Canvey Island. Monitors placed in and around the structure assessed the hygrothermal performance of the materials, as well as the interior air quality. Inspired by the pillboxes, bunkers and fishing sheds that pepper the Thames coastline, Flood House became much more of an artistic provocation, visiting parts of the estuary (pulled by a tugboat), and drawing attention to the ever-changing conditions of the river and its residents.

Flood House attracted the attention of curator Jes Fernie at the Focal Point Gallery in Southend-on-Sea, who devised a whole programme of events to raise insight and awareness around the estuary environment's radical political past and its fragile future ecology – activities which generated worldwide media interest, from as far away as New York and China. Butcher says: "It became a topic of conversation and debate, and that, really more than anything, became the primary aim of the project."

Flood House at Southend-on-Sea. The weathervane on top of the structure is an artwork by Ruth Ewan titled *All Distinctions Levelled*. Photography: Brotherton-Lock.

## REFUGEE SPACES (2016-18)

**Demystifying the phenomenon of migration in Europe by focusing on data, not headlines.**

Refugee Spaces was conceived as a multi-scale analysis of the spatial, social and economic impacts of migration in urban contexts. A collaboration between the Development Planning Unit (DPU), the Space Syntax Laboratory and CASA, it combines data-driven mapping and ethnographic research.

Initially the proposal was to zoom in on Calais (France) and Lampedusa (Italy) to interrogate the richer stories of human diversification, resilience and integration, but the logistics – not to mention the demolition of the Calais ‘Jungle’ refugee camp – proved unworkable within the budgets and timeframes. So the project has evolved into an open platform to stimulate debate and demystify the phenomenon of migration by examining the evidence rather than speculating on what is usually presented as a crisis.

“Through mapping and analysis of the openly available data provided by institutional and governmental sources, we are spatialising the political and security measures designed to contain migration and the mobility of refugees,” says Professor Camillo Boano at the DPU.

The maps and analyses that the project has created emphasise the territorial relationships that link mass movement with urban hotspots in four selected countries: France, Germany, Greece and Italy. Further countries can be added to the platform in the future. At the urban scale, the project identifies urban clusters or regions that are integral to current migration influxes, and explores the different strategies for reception and control of migrants in those areas.



Image: Marco W. Unsplash

## REIMAGINING LIMA (2013-ONGOING)

**Influencing local and national housing policy for the urban poor in Lima, Peru.**

In 2012, Development Planning Unit (DPU) Professor Adriana Allen and her team forged links with a group of NGOs and grassroots organisations in Lima. These relationships were built under the Learning Alliance programme, which was set up for the DPU’s Master’s in Environment and Sustainable Development, founded by Allen in 1997.

The Alliance programme brings students, academics and researchers together with communities in the Global South. Through this, issues of contested rights to the city in the centre and periphery of Lima came to light. In both cases, collectives of the urban poor were invisible to the authorities, stigmatised, and exposed to complex risks with severe impacts on their everyday lives, homes and incomes.

A Bartlett Materialisation Grant was awarded to Allen’s team in 2013, in association with CASA and UCL’s Department of Civil, Environmental and Geomatic Engineering (CEGE), which added expertise in digital information systems, mapping and tracking. By using drones, 3D modelling and open-source mapping technologies, the team co-produced with local communities spatialised, quantitative and qualitative

data; making sure its visualisation and communication was accessible, as well as using it to build evidence-based tools for discussion at policy level.

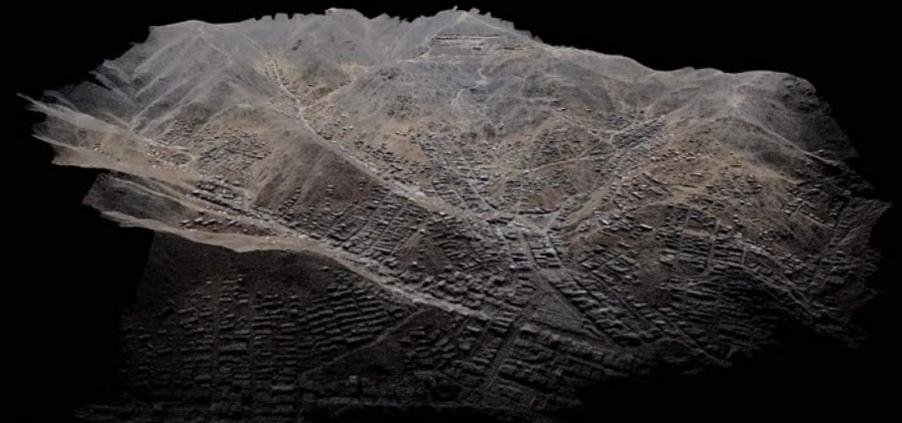
The team won the support of a Swiss drone manufacturer which sent experts with drones to visit Lima, supporting the original area surveys. These were then translated into a 3D online model, which became a platform for recording new layers of information and activity, disseminated via an accompanying website: [cLimasinRiesgo.net](http://cLimasinRiesgo.net). This laid the foundations for a transformative communication legacy, along with events and exhibitions.

The project proved so useful that further grant funding was supplied via the Climate Development Knowledge Network. The insights yielded so far have been influential on national and local policy for housing and services, as well as enriching the Lima authorities’ understanding of how these communities contribute to the city.

Allen says: “There has been a huge change in perception. At the beginning of the process, the tenants and settlers with whom we worked were commonly depicted as undeserving. We have been able to help show the huge investment the urban poor put into the city – and the urban poor represent 60% of the city of Lima.

This has found traction in a number of policy-making organisations, including the Ministry of Culture.”

3D image of the point cloud generated by the drone flights in Lima’s peripheral settlements. Visit: [reMapLima.blogspot.com](http://reMapLima.blogspot.com)



Images: ReMapLima (2014), UCL DPU / CASA

# IMMERSED IN THE CITY

SINCE ITS INCEPTION IN 2005, THE UCL URBAN LAB'S TRANSDISCIPLINARY APPROACH HAS CHALLENGED THE DISCOURSE ON HOW WE THINK ABOUT AND INTERVENE IN THE CITY. WITH A NEW GLOBAL MASTER'S PROGRAMME AND AN URBAN ROOM PLANNED FOR UCL EAST, IT AIMS TO WIDEN ITS PERSPECTIVE MORE THAN EVER BEFORE.

WORDS: DEBIKA RAY



**“OUR EMPHASIS ON OPENNESS, PUBLIC PARTICIPATION AND UNPREDICTABILITY IS MORE LIKE THE ARTS LABS”**

“Cities are an immense laboratory of trial and error, failure and success, in city building and city design. This is the laboratory in which city planning should have been learning and forming and testing its theories.” This is urbanist Jane Jacobs in her seminal 1961 text, *The Death and Life of Great American Cities*, lamenting the fact that practitioners and teachers of architecture and planning often ignored real life in favour of abstract principles. Criticism of the binary between theory and practice cuts across academia, but it is particularly acute when it comes to city-building. It’s more visible than in many other disciplines and professions, and has a direct impact on public life, community relations, social inclusion and democracy.

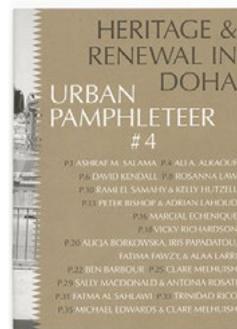
When the UCL Urban Laboratory was set up in 2005, it was, in part, to explore the divide between those producing and theorising about cities, and those using them (its work has consistently found that divide to be artificial). A transdisciplinary centre for critical and creative thinking, the Urban Lab brings together academics and students from across the university, from architects and geographers to engineers, artists and anthropologists. And when UCL’s new campus opens in east London in 2021, there will be an opportunity to widen this participation even further: new facilities, a new course that aims to challenge the Western-centric and theory-based biases of urban studies; and a public space for events, workshops and community-based activities.

Jacobs may have used it decades ago, but the word “laboratory” has become increasingly common in urban discourse over the past 10 years, as the world’s population has moved inexorably

‘Glass globes / 25 demolished houses’ by Mircea Nicolae, *Cities Methodologies* Bucharest 2010. Photography: Simona Dumitriu.



**2009** First *Cities Methodologies* exhibition launched in collaboration with the Slade School of Fine Art and the UCL School of Slavonic and East European Studies.



Urban Pamphleteer #4: Heritage & Renewal in Doha.

towards cities and the UN has warned of the consequences of this global shift. The ‘urban labs’ or ‘living labs’ that have sprung up as a result range from the university-academic-led initiatives such as UCLs and others in the international Urban Lab+ network, to think tanks focused on innovation and smart cities, such as the Guggenheim BMW Lab, and government initiatives, such as Mexico City’s Laboratorio para la Ciudad.

Clare Melhuish, Director of the UCL Urban Lab since May 2018, says its approach has always been about experimentation more than ‘innovation’ in a technical sense. “Our emphasis on openness, public participation and unpredictability is more like the arts labs,” she says, referring to the independent creative centres that opened up across the UK in the 1960s and 70s. This means Urban Lab’s focus goes beyond the social sciences – for example, it has appointed an artist-in-residence for a number of years and its annual *Cities Methodologies* exhibition – catalogued in a 2016 anthology, *Engaged Urbanism: Cities and Methodologies* – has brought together everything from film and art to architecture and design to explore new methods for understanding and intervening in the city.

The hope is that the new Global Urban Laboratory Master’s degree, which will launch at UCL East, will inject a similar dose of fresh thinking into the process of learning. “We’ve been struggling in urban studies with a way to train students to give them a more global perspective, so they don’t just become embedded in the literature,” explains course leader Jennifer Robinson, Professor of Human Geography at UCL. So the course will ask students to spend a year studying a specific city – first, Johannesburg: “We want them to think about ideas, practices, problems and interventions from different parts of the world and bring to London the tension and demands of the places we collaborate with.”

Meanwhile, a new public space on campus – an ‘Urban Room’ and ‘Memory Archive’ – will be about the local, creating an avenue for the university to engage in conversation in a part of London that has undergone rapid transformation in recent years. This is central to the Urban Lab’s vision for UCL East, which is being

**2005** UCL Urban Lab is founded by Matthew Gandy from the Department of Geography.

**2008** Urban Lab is Awarded £250,000 from the Provost’s Strategic Development Fund to expand its remit.

Launch of new interdisciplinary MSc Urban Studies.

**2011** Ben Campkin from The Bartlett School of Architecture is appointed Urban Lab Director.

**2013** Matthew Gandy awarded a €1.5m European Research Council grant, “Rethinking Urban Nature” (2014–19).

Urban Lab+ International Network of Urban Laboratories awarded funding under Erasmus Mundus Action III, European Commission, Education, Audiovisual and Culture Executive Agency, with Ben Campkin and Andrew Harris as UCL leads. Network runs for two years promoting interdisciplinary, inter-cultural, international and project-based urban education.

UCL Estates funds research programme on university-led urban regeneration led by Clare Melhuish.

*Urban Pamphleteer* series launches, edited by Ben Campkin, and Rebecca Ross from Central Saint Martins and designed by Guglielmo Rossi.



**2015** The City Centre, based in UCL English, becomes part of the Urban Lab under the title *Cities Imaginaries*, launching a new strand of work on the cultural representation of cities led by Professor Matthew Beaumont, and featuring a new annual lecture series.

**2016** Publication of *Engaged Urbanism: Cities and Methodologies* (I.B. Tauris).

**2017** Urban Lab commissioned by Greater London Authority to compile research on LGBTQ+ night-time venues in the capital, finding a net loss of 58% between 2006 and 2016. The research is cited in the Mayor of London's Cultural Infrastructure Strategy, Culture and the Night-time Economy Supplementary Planning. Guidance and Draft London Plan, and leads to the Night Czar's launch of an LGBTQ+ Venues Charter to work with developers and industry.



championed by Ben Campkin, The Bartlett's Academic Lead for the new campus and former Director of the Urban Lab.

UCL's presence in east London, with its public-facing remit, is underpinned by Melhuish's own 2013 research project, which looked at the role of universities in urban regeneration across the UK and US. Meanwhile, the 'urban room' is an idea Terry Farrell mooted in his 2013 review of architecture and the built environment in Britain: he described them as spaces where people can learn about and discuss the past, present and future of where they live, and pointed to examples in China, Japan and Ireland as inspiration.

In the UK, several such initiatives have since come together under the umbrella of the Urban Rooms Network. But Sol Pérez Martínez, a PhD student at The Bartlett School of Architecture, says the idea of bringing together practitioners, academics, policymakers and the public to discuss the city has a neglected precedent. "It has roots in the 'urban studies centres'" – the topic of a symposium Martínez recently led with Urban Lab.

These centres were grassroots initiatives – some privately funded, some supported by local government – that emerged during the 1970s, advocated most vocally by architect and anarchist writer Colin Ward and the Town and Country Planning Association. Their activities



Queer Zoo was hosted on 12 December 2014 by the Grant Museum of Zoology and UCL Urban Laboratory for UCL's new LGBTQ+ research network, qUCL. Photography: Christa Holka.

**2018** Clare Melhuish appointed Director of Urban Lab.

**2021** Launch of UCL East Urban Room and London Memory Archive and a new transdisciplinary Global Urban Lab and London Laboratory Master's programmes.



Do Ho Suh presenting at EDGE: Situated Practice in Art, Architecture and Urbanism at Here East. Photography: Jacob Fairless Nicholson.

'Navigating SOHO: Introducing a Series of Interdisciplinary Experiments' by Fiona Zisch, Panagiotis Mavros, Claudia Cialone and Dominik Zisch, *Cities Methodologies* 2014.



ranged from producing publications and teaching materials to initiating self-built community projects. "The idea was that only people with environmental literacy would have agency in the construction of their surroundings – so in a way they were a response to top-down planning and popular discontent about urban issues," says Martínez.

These centres disappeared after the introduction of the National Curriculum and cuts to local authority funding towards the end of the 1980s, but Martínez believes the urban rooms and laboratories of today should take note of their civic-minded approach. "These centres had a double function integrating citizens in the building process while making professionals aware of people's needs. It was a two-way process of people learning about the environment and professionals learning about people."

Today, Martínez worries that much of the discourse around similar spaces is driven by built environment professionals. The UCL urban room therefore presents a good opportunity to capture the spirit of the early urban studies centres, "to be a space for engagement rather than using the community for research".

What's clear, however, is that in a globalised world, where cities are shaped by all manner of external forces – from financial flows to geopolitics – there's an urgent need for city-dwellers to feel they are in control of their environment. In that context, says Robinson: "The repertoires of both theory and practice that shape how we teach about cities become bankrupt, so we have to look again at how we assemble our knowledge." As the Urban Lab expands its remit in London and abroad, it could be a learning opportunity for both the university and those it seeks to teach. ■

**READ THE RESEARCH:**

- "LGBTQ+ Cultural Infrastructure in London: Night Venues, 2006-present" (B. Campkin & L. Marshall, 2017)
- "Engaged Urbanism: Cities and Methodologies" (Eds: B. Campkin & G. Duijzings, I.B. Tauris, 2016)
- "Case Studies in University-led Urban Regeneration" (C. Melhuish, 2015)
- "Urban Pamphleteer #1: Future & Smart Cities" (Eds: B. Campkin & R. Ross, 2013)
- "Urban Constellations" (Ed: M. Gandy, 2011)



# BRAVE NEW WORLD

**A LITTLE OVER A YEAR AGO, THE BARTLETT ANNOUNCED ITS ARRIVAL IN EAST LONDON WITH A NEW BUILDING AND FOUR PIONEERING ARCHITECTURE COURSES. WE PAID A VISIT TO SEE HOW STUDENTS AND STAFF ARE SETTLING IN.**

**WORDS: CLARE DOWDY**



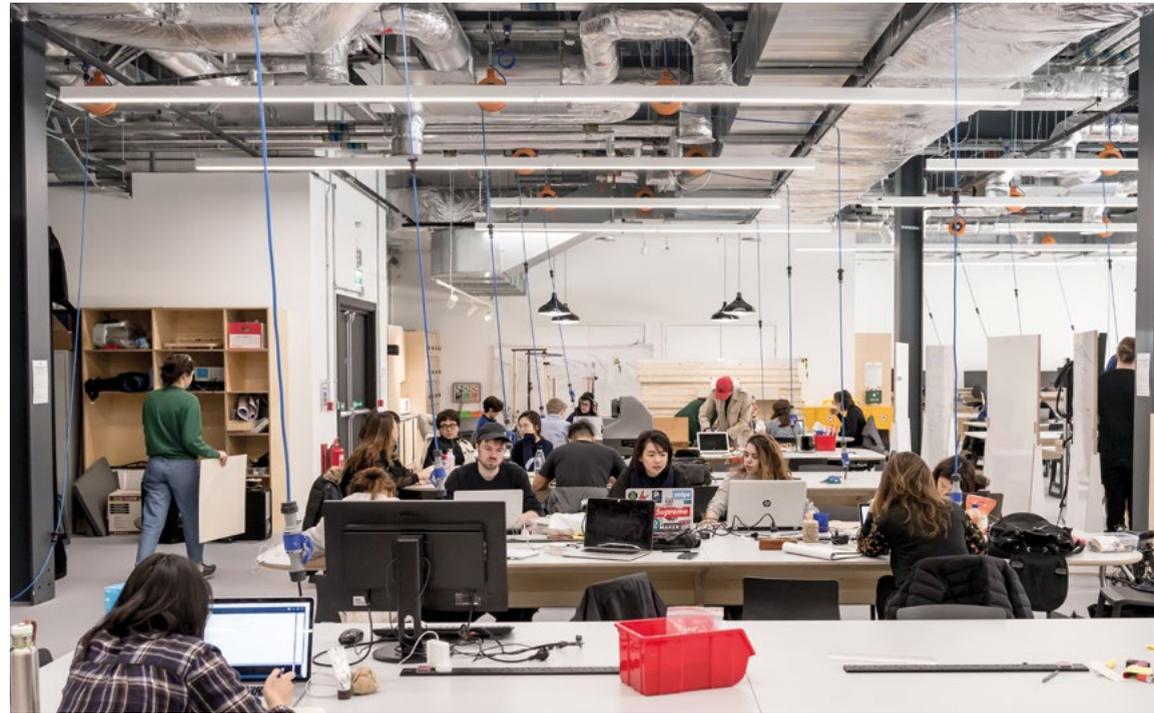


From Hackney Wick station, it's a short stroll along a canal towpath, with its appealingly shabby house boats, to The Bartlett's new outpost at Here East. Alternatively, students, staff and visitors arriving via Stratford can ape Google's Silicon Valley commuters and use the free shuttle bus. Either way, on a sunny afternoon, Here East in Queen Elizabeth Olympic Park feels like an academic's idyll: a big new building surrounded by loads of space and tranquility. But spaciousness and peace come courtesy of its remoteness, because Here East is more Wild West than West End.

The Hawkins\Brown-designed scheme is a collaboration between The Bartlett and UCL's Faculty of Engineering Sciences and is the university's first presence in the Park, meaning that, while it coexists with a diverse mix of other organisations in the Here East cluster, its surrounding neighbours are yet to start rising out of the ground.

Despite the empty plots around them, many students have the vision to see the area's potential: "We are the first generation, so there's more freedom to take ownership," says Changhao Xin, a Master's student in Design for Manufacture.

Kaia Wells, an MEng Engineering and Architectural Design student, echoes this: "We have liberty because it's a big open space. As a whole complex, I can imagine it as a self-sufficient city, with cafés, businesses, universities, and its own bus system!" But pioneering can be a lonesome existence. "It doesn't have the hustle and bustle of a central location," admits Fiona Zisch, a Teaching Fellow on the Design for Performance and Interaction Master's programme.



Previous page: The 2,000sqm robotics and advanced prototyping space at Here East. This page (left to right): Prototyping; a crit session in progress; students in the open-plan workshop at the front of the building.

### FLUID DYNAMICS

It is up to the teaching staff to make the connection with 22 Gordon Street – The Bartlett School of Architecture's HQ – as seamless as possible. No mean feat, when it comes to logistics. Luke Olsen, Senior Teaching Fellow at the School of Architecture, describes his efforts to get the timetabling to work as 'balletic'. "We don't travel between the two [sites] in a single day, in order to keep travel time and costs down for students," he says.

With its large-scale amenities, Here East is where one-to-one prototyping is done. Meanwhile, "Gordon Street is about working at a desk," says Olsen. Or as Wells puts it: "In Gordon Street I prefer drawing, and I do portfolio work here."

The vast auditorium is more comfortable now that cushions have been bought for the bench seating. And the smaller curtained area to one side is being used by students for prototype

**"WE HAVE LIBERTY BECAUSE IT'S A BIG OPEN SPACE. AS A WHOLE COMPLEX, I CAN IMAGINE IT AS A SELF-SUFFICIENT CITY"**

work. As well as its size, staff and students are full of praise for the quality of Here East's equipment. "The workshop is amazing, and the students have access to world-class kit," says Zisch.

Above the workshop sits the mezzanine studio, where there is "a lot of ebb and flow between groups", says Olsen. And it's very flexible. "Up here, you can have a seminar, give a lecture, move tables around, the flexibility is very good."

### COALITION BUILDING

While everyone is finding their feet with the building, there is real delight around the new





**“WHY ARE DIFFERENT FACULTIES SHARING SPACES? TO ENCOURAGE DISRUPTIVE BEHAVIOURS BETWEEN THE INTERFACES OF DIFFERENT COURSES”**

programmes’ potential. “What we do has been around at the school since the 1990s,” says Zisch of Design for Performance and Interaction, “so it’s come out of a long legacy. We’re all excited that it now has its own programme, we integrate so many different ideas and disciplines. It’s exciting for us as educators to bring that together, as the norm has been to only mix with architects.”

In a broader context, there is the appetite and opportunity here for more cross-pollination, as Olsen puts it. “There’s an interesting overlap between research and teaching that can afford to be more open, and this culture could be really extraordinary,” he suggests, rather than operating in silos, which can happen at the Bloomsbury site. “Here, I feel like an organiser trying to get people to meet and talk and present [to each other].”

This sentiment is echoed by Peter Scully, Technical Director for The Bartlett Manufacturing and Design Exchange (B-made), and Deputy Programme Director for the Design for Manufacture Master’s course, who was also on

the project team for delivery of this building. He sees his role as getting people to break out of their silos. “Why are different faculties sharing spaces here? To encourage disruptive behaviours between the interfaces of different courses. We’ll have the best of both worlds if they collaborate.” His hope is to get a “coalition of the willing”.

Olsen admits that it can be difficult for researchers to share, when traditionally they prefer to reveal completed work. Perhaps students will make the first move: “Because quite a few interdependent faculties are in the same building, there’s the opportunity for collaboration,” says Syazwan Hanif, who is studying for a Master’s in Design for Manufacture.

Such multidisciplinary cross-pollination will



Far left and above: Students assemble temporary pavilions for an installation in Here East Yard. Left: Student work ready for a crit.

become increasingly relevant to architecture education across the board, the academics believe. “This is not just something that’s peripheral but essential to what architects do,” says Zisch. “That more than hints at the way the world is developing, and how to shape the world we live in.”

Now it’s time for the powers that be to take the learning from The Bartlett’s experiences at Here East and apply them to the design of UCL East’s next buildings. “What we are learning here is so relevant [for them],” Olsen believes. “As an experiment in interdisciplinary and sharing ground... How do you make adaptable, multi-functional spaces?”

‘Here East-ers’ are turning their location into an asset. Olsen has been bringing in collaborators from the barges to share skills such as theatre rigging: “We’re always looking for ways to get experimental things made – they offer so much that you wouldn’t get in an institution.” ■

Photography: Jack Hobhouse, Richard Stonehouse, Kirsten Holst.

**FIRST RESPONDERS**

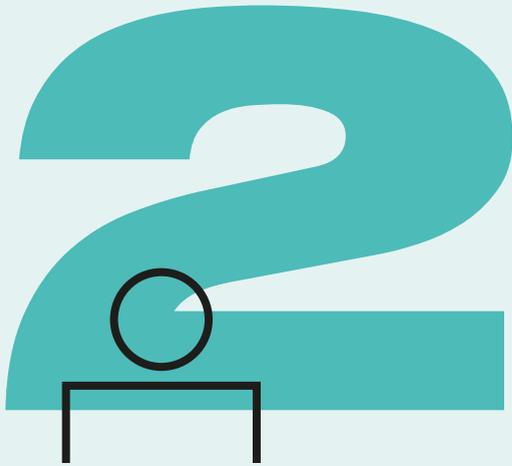
In 2018, The Bartlett School of Architecture launched a Bio-integrated Design MArch and Bio-integrated Design MSc at Here East. These new design-led Master’s degrees respond to the impact of biotechnology, computation and climate change on the built environment.

These courses build on the school’s offering at Here East, which launched in 2017 with new Master’s programmes in Design for Performance and Interaction, Design for Manufacture, and Situated Practice, alongside an integrated Engineering and Architectural Design MEng for undergraduates – a pioneering collaboration with UCL’s Institute for Environmental Design and Engineering and UCL’s Department of Civil, Environmental and Geomatic Engineering.

# DYNAMIC STATE

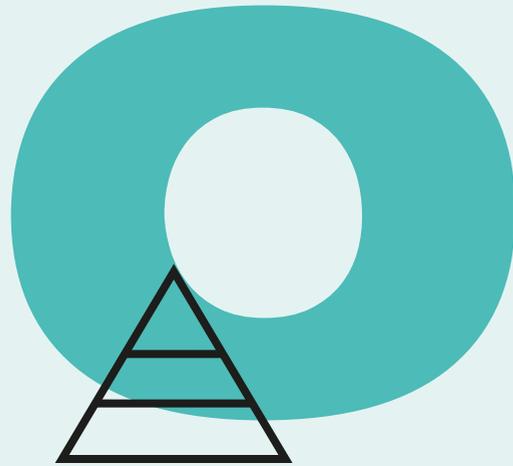
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THE BARTLETT REVIEW 2018  
THE NUMBERS



**20.4%**  
INCREASE IN UNDERGRADUATE STUDENTS FROM 637 IN 2017 TO 767 IN 2018

**12.7%**  
INCREASE IN POSTGRADUATE STUDENTS FROM 2,156 IN 2017 TO 2,429 IN 2018

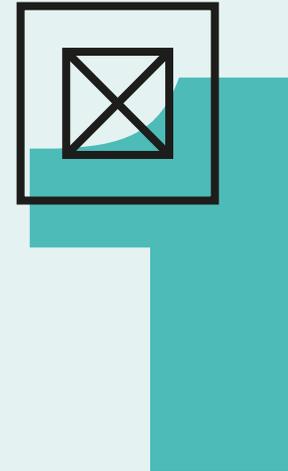


**195**  
BACHELOR'S DEGREES AWARDED IN 2017/18

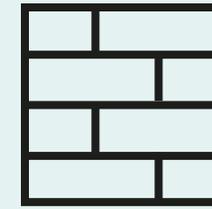
**1,414**  
MASTER'S DEGREES AWARDED IN 2017/18

**57**  
RESEARCH DEGREES AWARDED IN 2017/18

**+3.2%**  
INCREASE IN SPACE FOR TEACHING, MAKING AND RESEARCH BY END OF 2018 (14,000M<sup>2</sup>)



**7.7%**  
INCREASE IN RESEARCH FUNDING IN 2017/18 (£13.1M) COMPARED TO PREVIOUS YEAR



## NEW INSTITUTES

**2017/18**  
Real Estate Institute  
Institute for Innovation and Public Purpose



## NEW PROGRAMMES

**2016/17**  
MSc Health, Wellbeing & Sustainable Buildings  
MEng Engineering & Architectural Design  
MA Situated Practice  
MArch Design for Performance & Interaction  
MArch Design for Manufacture  
MPlan City Planning  
MSc Spatial Data Science & Visualisation

**2017/18**  
MArch Biointegrated Design  
MSc Biointegrated Design  
MA Landscape Architecture  
MLA Landscape Architecture  
MSc Integrated Building Systems Design & Operation  
MSc Energy Systems & Data Analytics

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## 01 MaaS appeal

*“Travellers could have access to easy, flexible, reliable, price-worthy and seamless everyday transit from A to B”*

### **Mobility as a Service is ushering in the demise of car ownership and the rise of the new urban traveller.**

For the mobility sector, change has been the name of the game for decades. But, over the past decade in particular, automotive players have experienced one of the largest strategic shifts in car history. Tightening global CO<sub>2</sub> regulations and, more recently, the Paris climate agreement, have forced the industry to adopt disruptive technologies faster than anticipated. In addition, technological advancements and the rise of the sharing economy have revealed new opportunities for products and services in the transport sector.

New mobility services, such as peer-to-peer mobility and vehicle sharing, have challenged the taxi and public transport establishment, and personal vehicle ownership. Disruptive innovations like these have the power to redefine industries and the behaviour of users. While the baby boomers' vehicle buying habits were fuelled by the car's role as a status symbol, the significance of car ownership for millennials has notably decreased. Instead, younger generations place much higher value on owning electronic devices, such as laptops and smartphones. While young baby boomers obtained their ultimate sense of freedom from owning their own cars, today's teenagers and young adults achieve the same through mobile communication devices. This changing transport landscape has triggered the development of new mobility concepts, such as the Mobility as a Service (MaaS), that may change or disrupt current models of transport provision, particularly in urban areas.

MaaS is a user-centric, intelligent mobility management and distribution system, in which an integrator – the MaaS Operator - brings together offerings of multiple mobility service providers and provides end-users access to them through a digital interface, allowing them to seamlessly plan and pay for mobility. Public transport modes are usually the backbone in this concept, which may increase their usage. It has the potential to curtail dependence on private vehicles and deliver seamless

mobility as it allows integration and co-operation across transport operators, the bundling of transport services and their provision to travellers as one product. Through MaaS, travellers could have access to easy, flexible, reliable, price-worthy and seamless everyday transit from A to B that includes combinations of public and on-demand transport and shared vehicles. In addition, MaaS initiates new concepts for mobility products: for example, users can buy either all the modes needed for a trip (pay-as-you-go) or monthly mobility plans, including different amounts of transport services, based on their needs, through a single interface.

Although the MaaS concept has only recently emerged, it has attracted the interest of several public and private actors around the world. MaaS Lab at the UCL Energy Institute is the world-leading group working on MaaS. We conduct cutting-edge research on this topic that provide insights for the development of MaaS systems in several cities around the world and also the development of MaaS products within the industry.

Studies that MaaS Lab has conducted for the UK Department for Transport and for Transport for London have shown that MaaS could be used to introduce more people to public and shared transport modes. MaaS has the potential to impact both car-owners' and non-car-owners' behaviour. For example, car-owners in London state that MaaS would help them depend less on their cars, or it would even make them sell their cars for unlimited access to car-sharing. Non-car-owners state that they would either delay purchasing a car or they would not purchase a car at all if MaaS were available. Similar results have been found in other cities around the world that MaaS Lab works with.

MaaS is a promising concept that could cover citizens' mobility needs and has the potential to boost the transition from vehicle ownership to 'usership'. However, it is worth noting that, although it may result in a decline of private vehicle sales, this decline is likely to be partially offset by increased sales of shared vehicles that need to be replaced more often due to higher use and related wear and tear. But it also has other advantages: when the era of connected and autonomous vehicles comes, MaaS systems and autonomous vehicles will exist in symbiosis. In fact, MaaS could prepare the transport ecosystem for a smooth adoption of, and transition to, autonomous vehicles.

## 02 Science on the road

*“We need to be thoughtful about engagement, as thoughtful as we are about our research”*

### **Tackling unequal access to scientific culture means taking science communication out of its usual venues.**

When the Mobile Heritage Lab visited Wilberforce School in Queen’s Park, London, the school kids played a detective game – unmasking a ‘forger’ using the scientific method. In the National Museum of Wales, local high-school students joined us in taking measurements of air quality all around the museum. At the Royal Academy of Chemistry, our PhD students helped school children from around London to conduct experiments. For the past three years, the ‘Lab-on-Wheels’ – an EPSRC – funded joint venture between UCL, the University of Oxford and the University of Brighton – has encouraged our PhD students to inspire, inform and entertain the public.

We should not be complacent about what public engagement can achieve. The Mobile Heritage Lab is an experiment: it is designed to explore new ways in which universities can fulfil their mission of communicating science. We could easily settle for watered-down versions of public engagement that tick funders’ boxes but achieve little social change. The Lab’s role is to make us think harder.

This is important because the need for public engagement is not obvious, in the UK at least. The House of Lords report on science and society found that 84% of the UK public agrees that science is such a big part of our lives that everyone should take an interest. A 2014 BIS report found that 91% of the public believes that young people’s interest in science is essential for prosperity. These percentages are pretty high: the people of the UK love science. Does this mean that our job is almost done? Will the public ever be ‘engaged’ enough so that we can stop engaging them, and get on with our research?

I believe public engagement in science can have another role. It can tackle inequality. Not income inequality, but one of its consequences: the inequality of access to scientific culture. There is little data available on public participation in

science, but existing data on cultural participation more broadly shows obvious barriers to entry. Aggregate data for the whole of the EU, for example, reveals a strong correlation between income and cultural participation. In the UK, this relationship has been statistically modelled in more detail: the Culture and Sport Evidence Programme found that income is only one among many factors that explain cultural participation. The culturally active tend to be old and educated or have educated parents, for example. Proximity of cultural facilities also matters: a privileged 30% of the UK has a museum within 20 miles of their place of residence, whereas most of the population has to travel 50 miles.

Most of the public engagement that we do doesn’t tackle these issues. Science festivals are attended by the same public that attends other cultural events. In fact, looking at data from the British Science Festival, the only demographic difference seems to be a higher attendance of scientists (about a third of the participants). Talks and demonstrations in university settings, historic houses or museums are also attended by culturally-active citizens. So these activities do not bridge the gap.

This is why we need mobile labs. We need science communication to happen outside its usual venues, as far from them as possible. We need to speak to young adults and inspire them to pursue a scientific education. We need to be thoughtful about engagement, as thoughtful as we are about our research. We need to look for the gaps, and propose ways to bridge them.

### 03 The case for rethinking capitalism

## Western capitalism is in crisis and new approaches to economics and policy that challenge conventional thinking are needed to reform it.

Capitalism, as Marx argued, is prone to crises. But since the last ‘great crisis’ of 2007-08, there have been only the most meagre signs of recovery. Instead, our economic system is generating widening inequalities of wealth and income, a growing threat of catastrophic climate change and resource scarcity, under-investment in public services, infrastructure, science and innovation, falling living standards and rising private debt. The political consequences of these developments are now coming home to roost with the rise of increasingly authoritarian and populist regimes across the world.

In the face of such deep-rooted systemic failures, it is tempting to bury one’s head in the sand. At The Bartlett’s newest research and policy centre, the Institute for Innovation and Public Purpose (IIPP), we’re taking a more optimistic view. We argue that, to reform capitalism we need to start with a different understanding of the key capitalist institution: markets.

Mainstream economic theory teaches that markets are essentially neutral optimisation machines. They enable the efficient co-ordination of the needs and wants of the many millions of economic actors that make up the economy: Adam Smith’s ‘invisible hand’. But this view tells us little about where markets come from and who created the rules that govern them.

At IIPP, we argue that markets are, like buildings, designed – and that they can be designed and built well or not so well. Take the land market as an example. Land does not obey the standard rules of supply and demand. It is inherently limited in supply and fixed in location. This means its price tends to rise much more rapidly than other commodities when demand increases. In cities in particular, we have seen house prices – driven by rising land values – rise well above average incomes.

*“A more thoughtful response would be to take a step back and consider how the design of the [land] market affects both demand and supply”*

The standard policy response has been to assume that the land market is the same as any other market and try and bring down prices by increasing supply (build more houses), neglecting the fact that there isn’t enough locationally-desirable land to build them on.

A more thoughtful response would be to take a step back and consider how the design of the market affects both demand and supply. For example, is there an excessive amount of speculative demand driven by bank lending or foreign investors? Should capital gains on land be taxed in the same way that they are on stocks and shares? Does it make sense to aim for a housing market where all land is privately owned or might social and co-operative housing models create better outcomes? In other words, by taking a ‘market-shaping’ or ‘market-creating’<sup>1</sup> role rather than a more short-term, ‘market-fixing’ role, the state can help generate more sustainable outcomes that are more aligned with long-term public purpose.

To this end, in January 2019, IIPP will be launching a new module – available to UCL undergraduates as an elective and also available online – called Rethinking Capitalism, which links new economic thinking to new economic policies. The course will draw on the book of the same name, edited by IIPP Director Mariana Mazzucato and Michael Jacobs. The course will feature top economists who are challenging the status quo on the workings of capitalism, including the Bank of England’s Chief Economist Andy Haldane, Bernie Sanders’ ex-economic adviser Stephanie Kelton, William Lazonick, Carlota Perez, Branko Milanovic and Eric Beinhocker, along with IIPP staff members Rainer Kattel and myself.

Rethinking Capitalism will apply the ‘market-shaping’ lens to a wide range of topics, from fiscal and monetary policy to innovation, inequality, the rise of the digital platform economy and climate change. To give students a grounded understanding of the challenge of turning ideas into policy, these lectures will be combined with presentations by policy-makers working at the frontline of the issues under discussion, including from UK government departments dealing with finance, innovation and climate change. We hope Rethinking Capitalism will become a favoured choice for UCL students and establish IIPP as a centre for the kind of new economic thinking needed to meet the grand challenges of the 21st century.

<sup>1</sup> “From market fixing to market-creating: a new framework for innovation policy” (M. Mazzucato, 2016)

## 04 The city as an algorithm

### What can the cities of tomorrow learn from the evolution of Venice with its millenia-long reputation for innovation and enduring stability?

The urban environments we live in today are undergoing radical transformations comparable in scale and magnitude with the changes brought about by the industrial revolution. Leveraging new materials, infrastructures and means of production, architects and planners in the 19th and 20th centuries created both the modern industrial city and social reform. In the 21st century, some of the old disciplines, along with new specialisms and a host of digital businesses, have stepped in, re-conceptualising the city of the past as a 'smart city', a new urban ideology of pervasive digital transformation.

As the emphasis shifts from the hard infrastructures of road networks, water and sanitation systems to digital technology, cities of tomorrow will become the domain of algorithms, capturing, analysing and ultimately influencing human behaviour. The balance will be transferred in favour of those controlling the digital machines that turn the enormous amount of data now at our disposal into real-time knowledge, optimising functions and built forms. For architects and urban professionals, the key to improving our everyday urban realities is to mediate between the digital city and its physical counterpart, whose socio-economic processes have been inscribed from its early origins on its three-dimensional form.

If urban intelligence is the ability to retrieve information and apply it as knowledge, there is a rich history of cities of extraordinary intelligence, creativity and foresight. Despite the long-term uncertainty about its survival, the pre-industrial city of Venice, for example, continues to inspire architects and urban designers, containing lessons for other cities as a resilient urban environment.

Venice's reputation for innovation and enduring stability for over a thousand years and its contribution to architecture and cities – two of the leading expressions of culture in modern society – invite investigation, begging the question: what lessons

does an evolved city like Venice offer for the cities of tomorrow? If future cities will automate their intelligence through algorithms, where was Venice's intelligence stored and how did it structure human action?

To understand Venice – and cities in general – we need to understand its process of emergence through the collective actions of people. The origins of Venice were in the archipelago of island communities, which joined together to form the city as a whole. Analysis of the urban networks of Venice shows that it was the product of two interlocking systems – the canal and the street network. The canal network served large-scale communication, essential for economic activity, while the street network was the domain of neighbourhood relations and residential culture. The two networks intersected in the centres of the island communities, the *campi* (squares) of Venice comprising churches, palaces, wells for water collection, guilds, and *scuole* (charitable institutions). They thus facilitated interlocking relations between Venice's social networks, that is, a governing oligarchy of merchants-patricians, whose palace-warehouses were dispersed throughout the city, and the rest of the citizens. This intertwining of spatial and social networks interwove public and private interests, commercial and cultural pursuits, forging strong bonds of solidarity between different members of the community and mitigating conflict.

Over time, an urban ideology emerged in synergy with the urban morphology, manifested in popular beliefs, community actions and ritual; an expression of the physical and social compact between the city and its citizens. Stored in the network structure of physical sites, events, behaviours and the minds of its inhabitants, Venice's intelligence was spatialised, balancing socio-economic innovation through the city's canals with the more stable operations of community life in the *campi* and the belief systems of people.

At this point in the 21st century, addressing the seemingly paradoxical challenge of maintaining stability while enabling change through algorithms, Venice at its height may have some fundamental insights to impart. It too had its algorithm: interlocking networks and a menu of urban elements repeated with infinite variation in each *campo*, almost a precursor to the digital customisation of the present. But as Venice's example demonstrates, successful cities are much more than this. They intensively spatialise webs of social relationships, aligning public interests with the private pursuits of citizens and the social welfare of people.

In developing our algorithms, are we just replicating Venice's analogue approach with a digital substitute, or are the needs of citizens different nowadays? If they are, what can our current exploration of digitally-based solutions be expected to deliver? What is it that distinguishes urbanism – the spatial and civic culture of cities – from the mere assembly of social behaviours, and can our algorithms capture it? Furthermore, in an era of the 'wisdom of crowds', will we be able to plug in an artificial intelligence loop, to compensate for the collective urban intelligence of the Venetians?

## 05 Service included

### **PhDs supported by the service sector are opportunities to drive research and development in built environment organisations operating outside the physical sciences.**

By the end of the Second World War, the benefits of research collaboration and funding between university, industry and government within the UK had an established and valued position. This link between research expenditure and industrial growth remained a key indicator of 'progress' until the rise of the service economy brought about by globalisation and technological advancement.

The UK had been a leader in the development of the service economy since the early 1900s; however, by the 1980s, the shift from manufacturing to services had had a disruptive, destructive and, ultimately, devastating effect on all developed economies, not just the UK. Furthermore, the social sciences were – like services in Adam Smith's terms – seen as economically non-productive, as opposed to the physical sciences that supported industry.

What tangible economic benefit did the social sciences bring to the economy or business? Why fund this research activity as part of the public good of government-sponsored research? What are the social sciences' value-for-money propositions? These were all questions that university faculties like The Bartlett had to answer in order to develop 'scientific knowledge' within the built environment discipline.

One solution to this knowledge creation problem within The Bartlett has been to collaborate directly with industry in developing new knowledge through co-operative research. One example is Professor Michael Pitt's long-standing relationship with Modus Services and HCP Social Infrastructure (winners of the UCL SME Partner of the Year Award 2013), service companies that provide operations management support for buildings in occupation under Private Finance Initiative contracts. But, like most service organisations, they lack a research and development capability that would enable innovation within their organisations. So instead they've developed this capability over the past seven years through doctoral sponsorship.

*“We need to look again at the economic benefits of established research paradigms that favour physical sciences”*

Modus and HCP have collaborated on a number of projects that can best be described as 'participatory action research'. Unlike a traditional doctoral research approach, the sponsored research students are embedded within the organisation. This has a number of advantages, such as enhanced problem formulation, engagement with local knowledge – in this instance, other employees within the organisation – and improved quality of data acquisition, synthesis, and application.

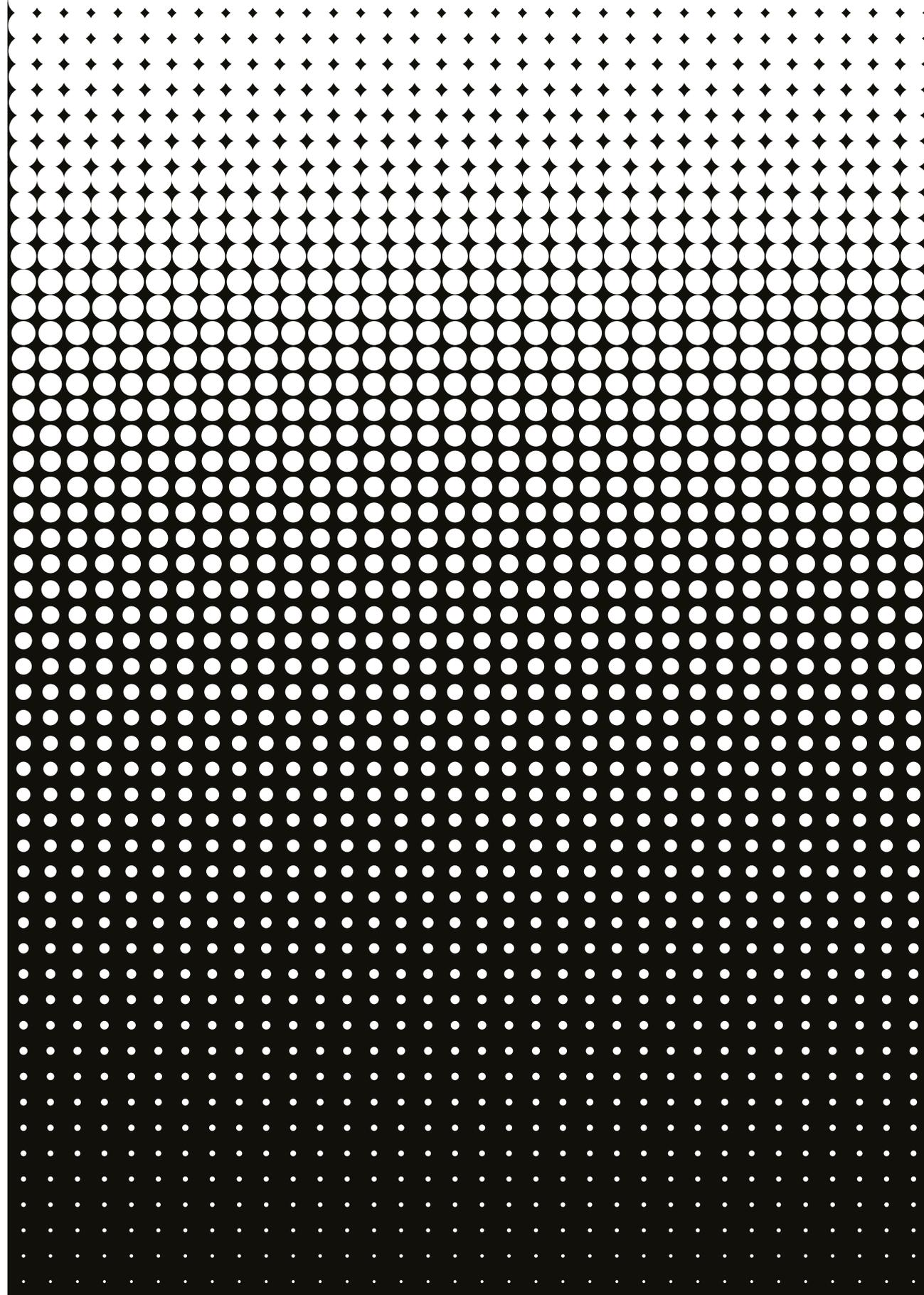
The projects to date include: using vibration analysis to shift from planned preventive maintenance to condition-based maintenance; capturing failure data visually to establish asset funding risks and requirements; identifying electronic component obsolescence profiles; and exploring visual techniques to improve healthy eating within Barts Hospital in London. These projects were all based on problems identified and refined through dialogue with the senior management team at Modus and HCP. In one case, an additional £350,000 was committed to further the project through an equipment grant.

What of the benefits of this collaboration between all parties – university, organisation and student? Do they show that knowledge of the social sciences is of equal value to that of the physical sciences? The results in all cases to date have shown material benefits for all parties. The organisation gains clear financial benefits, but also enhanced management process capabilities. In a number of instances, local staff morale has been positively affected. The university gains through an improved understanding of the problems the service sector faces in terms of operational challenges. The student is the final beneficiary: conducting systematic research in a competitive environment provides a broader understanding of how it can positively impact an organisation.

As 85% of the economy consists of service activities, we need to look again at the economic benefits of established research paradigms that favour physical sciences. At The Bartlett, this construct is already being reconsidered through the sponsored doctoral work being undertaken by Professor Pitt and a number of staff across the faculty. Innovation in the service sector is by its nature untidy, unpredictable, and non-predetermined (to use Karl Polanyi's broader conception of research) – the sponsored PhD approach provides tangible capabilities to all parties, generates financial benefits and, as with all services, creates unexpected areas of innovation as new processes are put in place.

**“Originally, the word ‘capacity’, which seems to be medieval neo-Latin, strictly meant ‘space for something’, a sense in which it is also still used today: capacity for innovation in bureaucracy is about having the space – skills, networks, organisations – for both agility and stability.”**

**Rainer Kattel  
Deputy Director, IIPP**



## 06 Innovation bureaucracy

### Why the capacity for rejuvenation is the lifeblood of the entrepreneurial state.

If you are reading this on an electronic device, much of the technology in that device was funded by the government or is a spillover from government funding. It may have been commercialised and packaged into new desirable and useful products, but the fundamental technologies that make our modern devices ‘smart’ were publicly funded. This was set out in 2013 in Mariana Mazzucato’s highly-influential book *The Entrepreneurial State*, which showed that governments can be, and are, essential actors in co-shaping the direction of innovation.

But what makes states entrepreneurial? What is it that makes government machinery dynamic and bold enough to shape future innovation? Some may shudder when encountering such questions: aren’t governments more often failures than markets? Aren’t governments just supposed to provide basic and stable states in which markets can function and innovate?

Something seems to have shifted since the global financial crisis of 2008. This might not be immediately obvious, as the last decade has been dominated, at least in the West, by austerity, rising inequality, migration fears, the rise of populism and terrorism. However, slowly but surely, the state and its relationship to innovation are visibly growing in importance. Even President Donald Trump has created an Office for American Innovation to “bring together the best ideas from Government, the private sector, and other thought leaders to ensure that America is ready to solve today’s most intractable problems”. Whether this is sincere is not the point – the point is that it is recognised, by all parties, regardless of political creed, that something must change.

The global debate over the past few years has not so much been about whether or not bureaucracies can innovate, but – at least implicitly – about how they can. The more policy-makers realise that an increasing number of policy issues are

‘intractable’ and ‘wicked’ – meaning that we as humans are as much the cause of these problems as we are sources for potential solutions – the more innovation and public leadership of innovation seem to matter.

Of course, that something is fashionable does not mean that there is substance behind it. One is tempted to paraphrase Oscar Wilde here: policy fashions are a form of shallowness so intolerable that we have to change them every six months. Innovative bureaucracies might sound like a fad; however, when we look at history, we can see that public organisations face a peculiar kind of ‘innovator’s dilemma’: what makes public bureaucracies important for innovation is their simultaneous capacities and need for agile change, but also, crucially, their simultaneous need to provide stability. This sounds oxymoronic, but taking care of public business – public administration – often means balancing the need to change (because life around us is changing) and the requirement for permanence (because nobody wants policy that experiments with their pension, even if investing it in Bitcoin might seem attractive in the moment).

As weird as it may sound, successful governments – entrepreneurial states – manage precisely this. Originally, the word ‘capacity’, which seems to be medieval neo-Latin, strictly meant ‘space for something’, a sense in which it is also still used today: capacity for innovation in bureaucracy is about having the space – skills, networks, organisations – for both agility and stability. Nothing exemplifies this perhaps better than the 2015 European refugee crisis. Governments had to find quick solutions, from personal identification to housing hundreds of thousands of refugees, while at the same time needed to make sure that these quick fixes were not only compatible with existing legal frameworks but also offered long-term solutions for integrating the new arrivals.

History tells us that governments create capacity for innovation through new organisations or new organisational forms, often led by charismatic outsiders or networks of such people. This seems to be the origin of the concept of innovation: none other than Niccolò Machiavelli argued that replacing old political institutions with new ones is ... innovation. Today’s popular call to disrupt the government through innovation is as old a hat as that on the head of a Renaissance soldier of fortune in an Uccello painting. In the European context at least, political peace and order are sustained by including elements and institutions of constant change and innovation into the very order itself.

Today we see a flurry of activity around the edges of the public sector in the form of innovation, design and policy labs. In some cases, these new organisational forms and ways of working reach close to the heart of government machinery, as MindLab did in Denmark and Government Digital Service (GDS) did in the UK. Yet MindLab was closed in 2018 and GDS has arguably lost its revolutionary zeal. Agility itself then, is not enough; its strengths need to become part of ‘the routine’, part of what governments do in daily life. The capacity for rejuvenation is at the heart of innovative bureaucracy. Without it we can’t change the restrictive narrative that limits the public sector to just being a market fixer – and that means that we risk losing the important innovations of tomorrow.

## 07 Future practice

### **Creating the space for tomorrow's professionals means tearing down the barriers between disciplines and opening dialogue on the beliefs that guide our design processes.**

Being a professional means being able to sensibly “judge and choose the ends of work”<sup>1</sup>. It requires an overall understanding of the real issues – the ethical matters, moral questions, social and political concerns – that are involved in one's practice, in context. In building terms, this demands a discourse that starts with design through to the management of the project and the eventual ‘life’ of the building.

The political, intellectual and moral implications of the work of architects, digital innovators and project managers, by definition, extend beyond boundaries. However, the level of specialisation that different disciplines entail frequently becomes a barrier in this quest towards a deep appreciation of the complexities of practice as it is performed. The meaning and importance of the project for the user in society, the professional themselves, and other stakeholders – suppliers, regulators and political leaders – as well as the norms and values of the society in which the project is embedded and which the professional embodies, are changing and dynamic. As a result, the boundaries at the beginning of any learning experience that allow one to focus on one's discipline, and to understand and critically evaluate its practices, need to be progressively torn apart as studies progress.

The production of the built environment has many stakeholders; their relationship to one another is complex and often in contradiction, due to differences in social, political or economic position. It is important to enable educational experiences that keep this awareness at the forefront of the discussion across disciplines, embedding equitable and democratic processes into our design methodologies, conversations and debates. This way we can be more concerned with how to educate, and thus produce knowledge that is concerned with providing for the greater good of all stakeholders.

<sup>1</sup> “Professionalism: The Third Logic —On the Practice of Knowledge” (E. Friedson, Chicago: University of Chicago Press, 2001)

*“This new type of practice ought to be focused on opening up dialogue: illuminating the beliefs that guide our practices”*

We need to be concerned not only with how to embed knowledge socially and politically in our work, but how to share it and understand the ethical positions of others. Digital platforms for information exchange across the lifecycle —of which there is much hype —are going to be insufficient in providing such comprehension. For this, a new future of practice is called for. One that expresses a different culture and way of thinking that is not insular or self-referential when it comes to ethics. It needs to draw attention to the nexus of connected practices that fold into one another in the creation of legacy, perhaps more critically, also paying attention to those that diverge. This new type of practice ought to be focused on opening up dialogue: illuminating the beliefs that guide our practices and instilling different forms of legacy in the buildings we design, project-manage and use.

At The Bartlett, we are united by the mantra ‘the sum is greater than its parts’. This vision is a necessary condition, a requirement and defining feature of education and learning in the faculty. This means that we have to fundamentally change the way we think about our students and our role in designing leading-edge educational and pedagogical experiences.

*This essay is inspired by conversations as a part of a collaboration between Unit 19 in the School of Architecture and the postgraduate taught modules, Digital Innovation: Collaborative Practice in the Institute for Digital Innovation in the Built Environment, and Project Operational Legacy in the School of Construction and Project Management.*

## 08 Pathways to urban equality

### **Over the next four years, Knowledge in Action for Urban Equality (KNOW) aims to deliver transformative research and capacity for innovation in policy and planning in 12 cities across Latin America, Asia and Africa.**

Achieving sustainable development requires putting a stop to the growing rates of inequality around the world. KNOW asks how citizens can be involved in delivering equality in the cities of the future. With over half of the world's populations living in urban areas, according to UN-Habitat 2016 figures, improving living conditions around the world depends on humanity's capacity to address urban challenges to what we are witnessing as growing urban inequality on a global scale.

KNOW is a research and capacity building programme that seeks to address and promote pathways to urban equality by working closely with a diverse range of cities in Latin America, Asia and Africa. Led by The Bartlett Development Planning Unit, KNOW brings together a global consortium of researchers and partners across 13 institutions and 12 cities in Africa, Asia and Latin America. Supported by the Global Challenges Research Fund (GCRF), KNOW represents one of The Bartlett's largest grant-based programmes to date with funding secured over four years to the end of 2021.

Urban (in)equality is a multi-dimensional experience for urban dwellers, reflecting different wellbeing aspirations and urban conditions. For that reason, KNOW focuses on equality and its relation to three key challenges: delivering prosperity, tackling extreme poverty, and building resilient cities. To respond to these challenges, KNOW aims to shape pathways to urban equality through three core objectives:

1. Transformative research for urban equality – focuses on co-producing knowledge with our partner cities, specifically addressing aspects of prosperity, resilience, and extreme poverty in each location.
2. Building research capacity – aims to build and strengthen research capacity for countries within the Global South and the UK.

*“KNOW focuses on equality and its relation to three key challenges: delivering prosperity, tackling extreme poverty, and building resilient cities”*

3. Developing urban learning hubs – sets up knowledge-based resource ‘Learning Hubs’, to co-produce, analyse, monitor, and compare city progress towards national and global goals of urban equality as highlighted in the UN Sustainable Development Goals (SDGs) and UN-Habitat New Urban Agenda.

With such a wide-reaching project, KNOW is structured around six streams of transformative research and capacity building – or Work Packages (WPs) – to address these three core objectives. This will span across our partner cities in Latin America (Barranquilla, Havana, Lima and San José), Asia (Da Nang, Jaipur, Nakhon Sawan, Yangon and Yogyakarta), and Africa (Dar es Salaam, Kampala and Freetown). KNOW will tackle the challenges and opportunities of vulnerable urban communities in these cities through what we call ‘partnerships with equivalence’ between networks and organisations of the poor, government, the private sector, and academia.

In WP1, KNOW partners have identified a range of research priorities of significance to the urban inequality that exists within each of their cities, recognising that urban equality is understood differently, both among different groups within cities and also across different urban places. WP2 compares and contrast these findings. It links city-based research with contemporary debates on global urbanism through the themes of prosperity, resilience and extreme poverty, and contributes to the newly emerging reporting process being set up to monitor global targets like the UN SDGs.

Our other four WPs build on the results of WP1 and WP2, to shape an understanding of pathways to urban equality. It does this through deepening understandings of the ethical challenges that pervade research on urban equality (WP3), the possibilities to accelerate equality gains through recommendations for policy and practice (WP4), the development of new programmes of learning in higher education (WP5), and the development of existing capacity to respond to the challenges of the changing context of Official Development Assistance research capacity in the UK (WP6).

KNOW will take this opportunity to contribute to the planning of the city of the future – and to ensure that it is a city that delivers quality of life and prosperity for all.

**The Bartlett Review 2018**  
[ucl.ac.uk/bartlett/review](http://ucl.ac.uk/bartlett/review)